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Technical assessment of the eReefs biogeochemical (BGC) simulation [gbr4_H2p0_B3p1_Chyd_Dcrt] against observations and comparison with BGC version B3p0

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Acknowledgements

eReefs simulations were developed as part of the eReefs project (http://ereefs.org.au/ereefs), a public-private collaboration between Australia's leading operational and scientific research agencies, government, and corporate Australia. Integrated Marine Observing System (IMOS) supplied IMOS mooring data. IMOS is supported by the Australian Government through the National Collaborative Research Infrastructure Strategy and the Super Science Initiative. The Marine Monitoring Program (MMP) managed by the GBR Marine Park Authority, with funding from the Department of the Environment and Energy and co-funding from research partners supplied MMP moorings and tri-annual water samples that are conducted by the Australian Institute of Marine Science, James Cook University, University of Queensland, Queensland Parks and Wildlife Service, Reef Catchments and community volunteers. We thank our many colleagues involved in developing the eReefs model; particularly Rob Ellis and David Waters for the catchment modelling as part of the Queensland and Australian Government's Paddock to Reef program that is funded by the Queensland Department of Natural Resources and Mines 'Queensland Regional Natural Resource Management Investment Program 2013–2018' with support from the Department of Science, Information Technology, Innovation and the Arts (DSITIA). Particular thanks also to our colleagues: eReefs hydrodynamic modelling team: Mike Herzfeld, John Andrewartha, Philip Gillibrand, Richard Brinkman and Emlyn Jones. Software engineer and architect: Farhan Rizwi. AIMS colleagues: Britta Schaffelke, Miles Furnas, David McKinnon and CSIRO colleagues: Ruth Eriksen, Anthony Richardson, Claire Davies and Andy Steven and GBRF associate: Cedric Robillot.

1. Summary:

This document is a technical assessment of eReef model version: gbr4_H2p0_B3p1_Chyd_Dcrt. [GBR4: model grid with approximate 4 km grid resolution, H2p0: hydrodynamic model version 2.0, B3p1: biogeochemical model version 3.0, Chyd: Department of Environment and Science QLD catchment model, 2011, Catchment version is May 2019 catchment, Dhnd: deployment in hindcast mode].

The eReefs model configuration and results used in this assessment is available via https://research.csiro.au/ereefs/models/ where the assessment link is labelled "Reanalysis [GBR4_H2p0_B3p1_Chyd_Dhnd]"

The model simulation period is from 1 Dec 2010 to November 2019
In this technical assessment it is compared with observations and the previous biogeochemical model version (gbr4_H2p0_B3p0_Chyd_Dcrt)

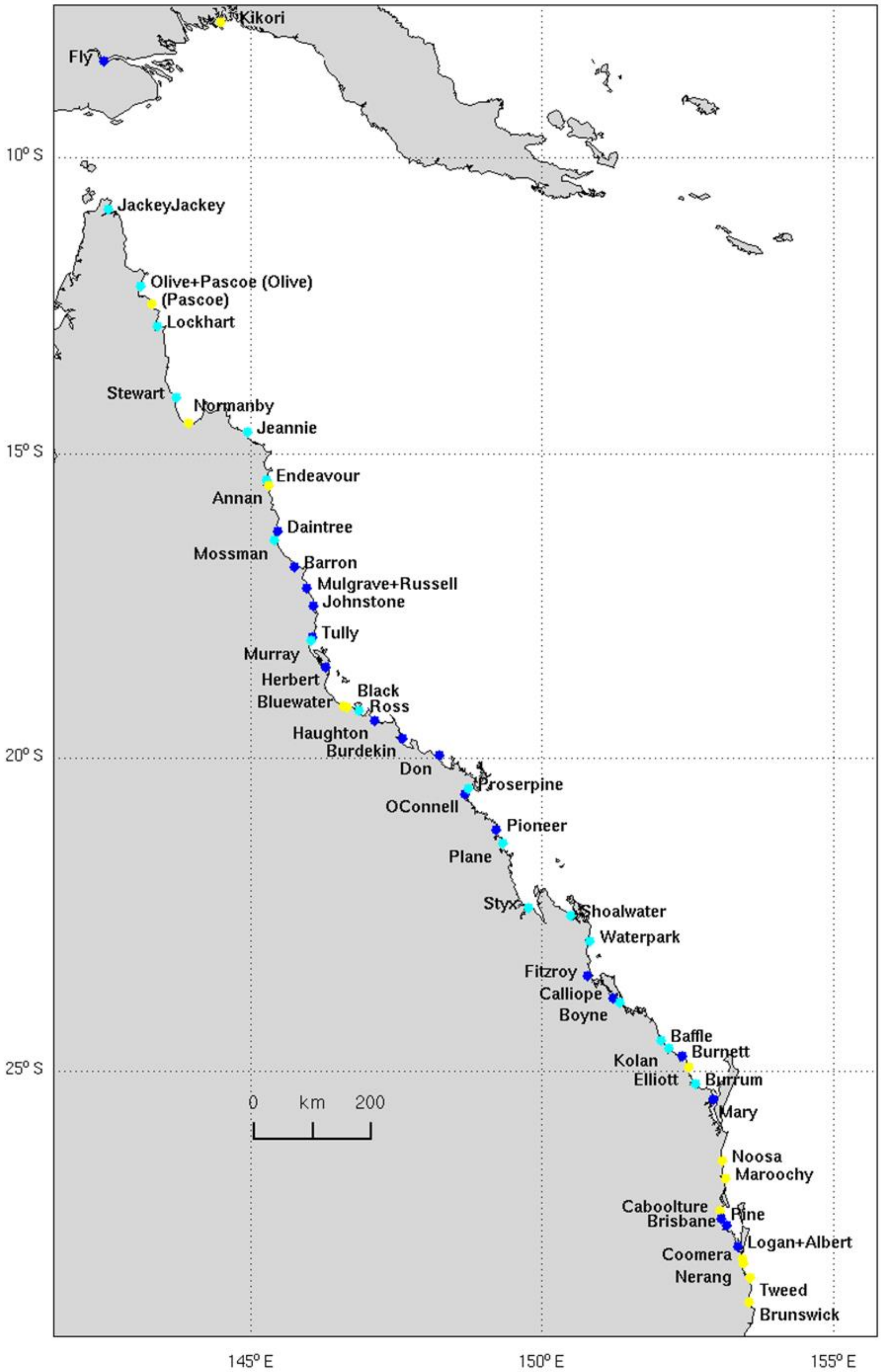
Access to the assessment is from the links in the table of contents.

Model metrics updated 23 April 2020
Word document updated: Thursday, 27 August 2020

2. Abbreviations

AIMS	Australian Institute of Marine Science
B2p0	B2p0: biogeochemical model version 2.0
B3p1	B3p1: biogeochemical model version 3.0
CDOM	colour dissolved organic matter
Chl a	chlorophyll a
CTD	Conductivity Temperature Depth profiler
d2	Statistical metric, aka Willmott index (see page **Error! Bookmark not defined.**)
DIN	dissolved inorganic nitrogen
DIN	Dissolved inorganic nitrogen (NH3 plus NOx)
DIP	dissolved inorganic phosphorus
DOC	dissolved organic carbon
DON	dissolved organic nitrogen
DOP	dissolved organic phosphorus
GBR	Great Barrier Reef
gbr4_H2p0_B3p1_Cb	gbr4 : model grid with approximate 4 km grid resolution, H2p0: hydrodynamic model version 2.0, B3p1: biogeochemical model version 3.1, Cb: catchment model baseline version using empirical SOURCE Catchments (2019 version)
IMOS	Integrated Marine and Observing System
Kd(PAR)	light attenuation coefficient
LTM	AIMS long term monitoring site
mae	mean absolute error
mape	mean absolute percentage error
MMP	AIMS Marine Monitoring Program
NH3	ammonia
NOx	nitrate plus nitrite
NRS	IMOS National reference station within the model grid these are Yongala (GBRYON) and North Stradbroke Island (GBRNSI)
NSI	North Stradbroke Island
NTU	Nephelometric Turbidity Unit
PON	particulate organic nitrogen
POP	particulate organic phosphorus
QA/QC	quality assurance/quality control
rms	root mean square
secchi	measurement of water transparency (depth in m)
TSS	total suspended solids
Willmott	statistical metric

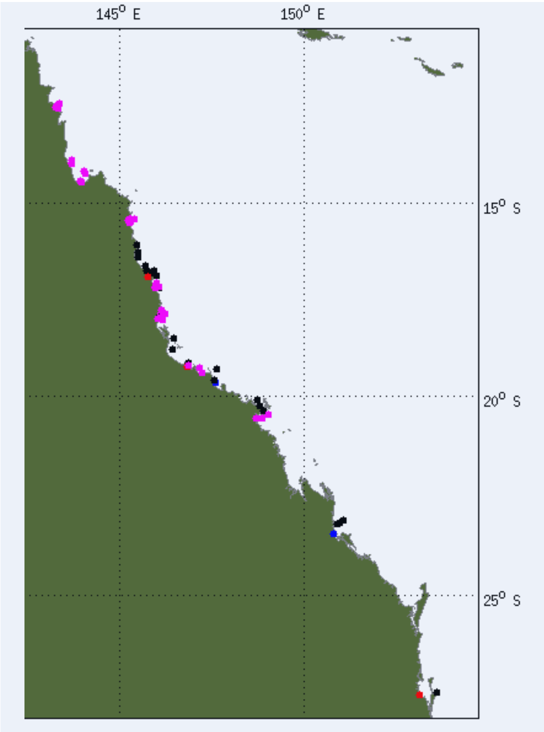
3. River and catchments in eReefs reanalysis 2020

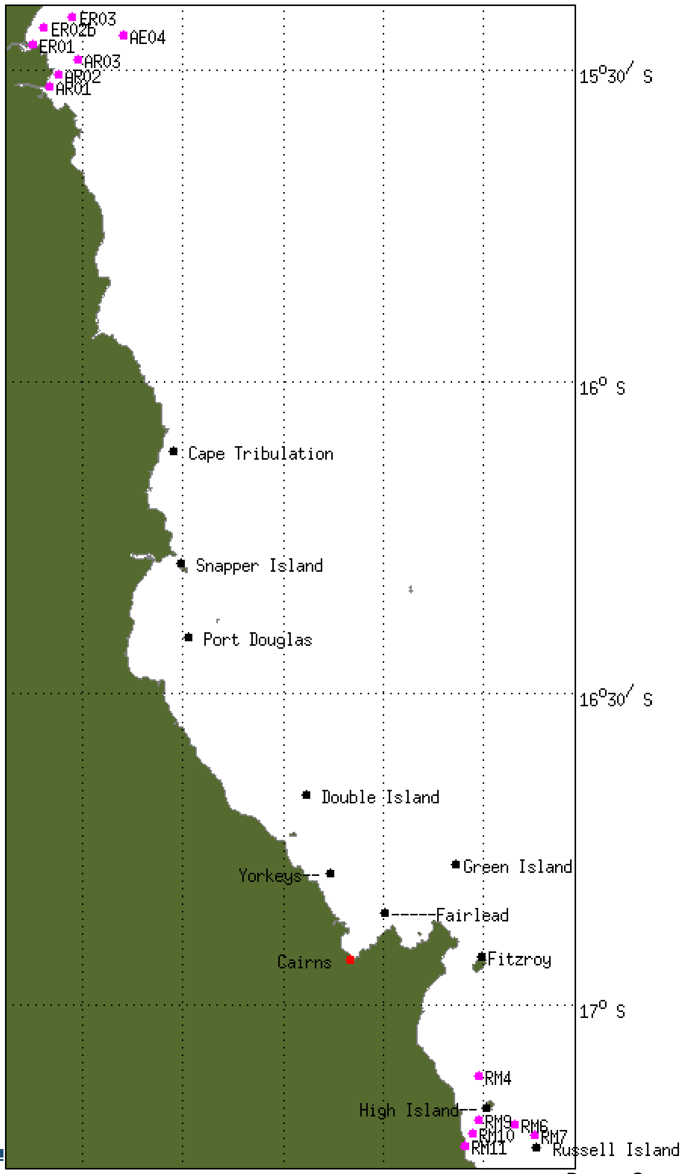


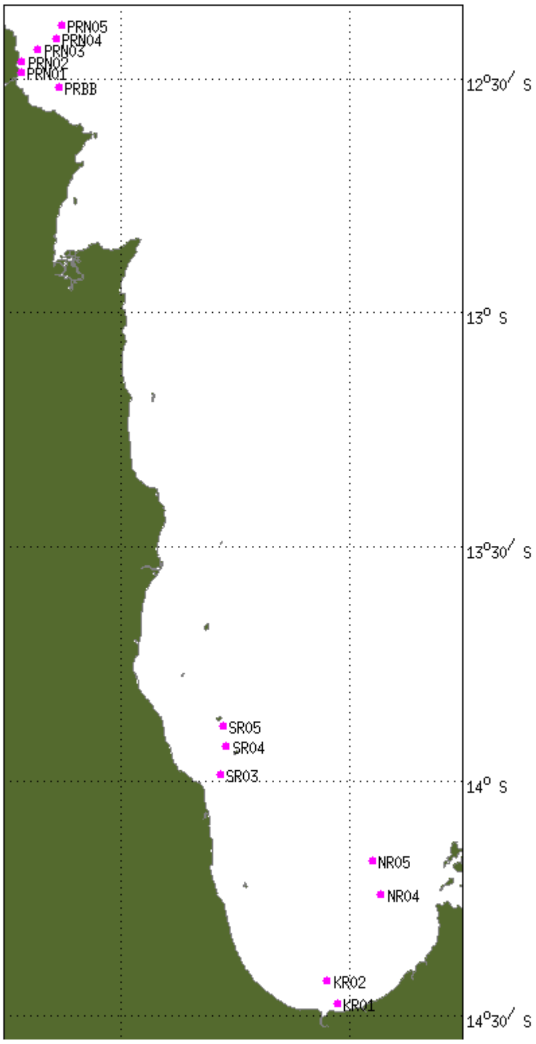
● Rivers and catchment model with hydro flow catchment loads
● Extra rivers in B3p1 where catchment is included as point source loads
● Rivers in hydrodynamic model, some without flow, no catchment model data

Figure 1 Map of Queensland rivers included in eReef model reanalysis version B3p1. Includes extra rivers for B3p1 in light blue

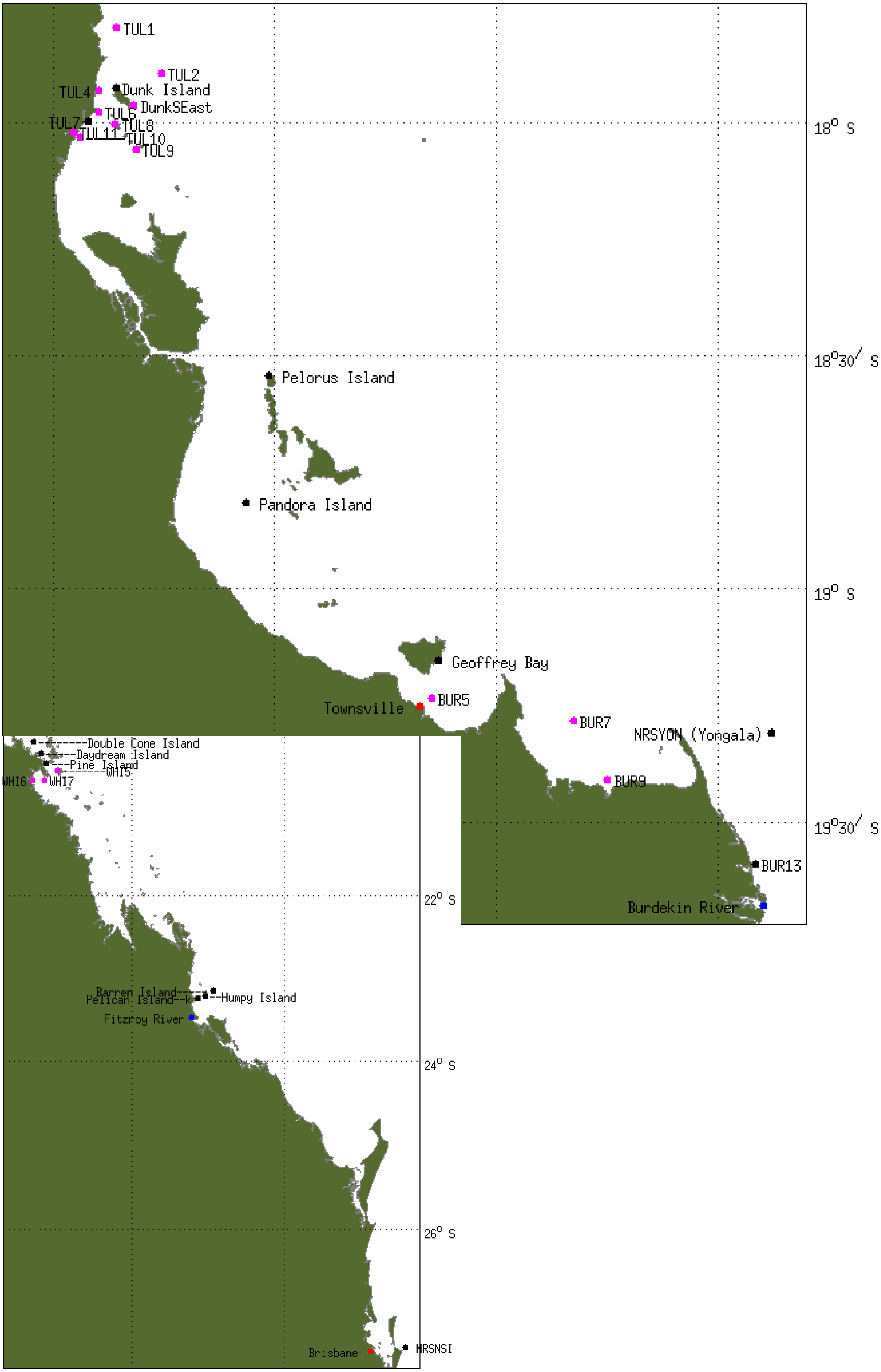
4. AIMS Long Term Monitoring Marine Monitoring Program 2020 sites (pink), 2019/2020 sites (black) and IMOS NRS stations (NRSYON, NRSNSI)







PRN05
PRN04
PRN03
PRN02
PRN01
PRBB
12°30′ S
13° S
13°30′ S
SR05
SR04
SR03
14° S
NR05
NR04
KR02
KR01
14°30′ S


TUL1
TUL2
TUL4
Dunk Island
DunkSEast
TUL6
TUL7
TUL8
TUL11
TUL10
TUL9
18° S
18°30′ S
Pelorus Island
Pandora Island
19° S
Geoffrey Bay
BUR5
Townsville
BUR7
NRSYON (Yongala)
BUR9
19°30′ S
BUR13
Burdekin River
Double Cone Island
Daydream Island
Pine Island
WHI5
WHI6
WHI7
22° S
Barren Island
Pelican Island
Humpy Island
Fitzroy River
24° S
26° S
Brisbane
NRSNSI

5. eReefs biogeochemical model schematic

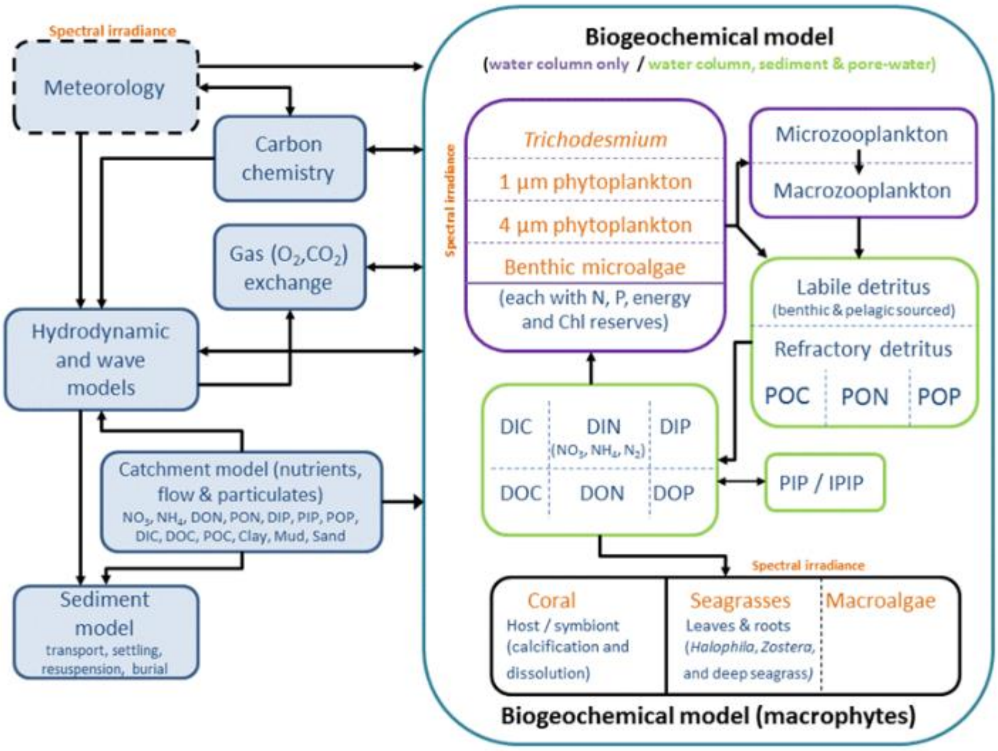


Figure 2.The eReefs modelling system, showing the linkages between hydrodynamic, wave, sediment and the optical and biogeochemical models, as well as the individual linkages within the biogeochemical model. The optically-active components are identified with orange colouring (adapted from Baird et al., 2016b).

6. Model skill metrics used in reanalysis

To evaluate model skill, we consider; bias, the root mean square (RMS) error, the mean absolute error (MAE). and the modified Willmott index or 'd2' (Willmott et al., 1985). The Willmott index uses the sum of absolute values.

Model bias assesses whether the simulated variables are under- or over-predicting observed values. The RMS error is a measure of the absolute magnitude of the "error"/square deviation averaged over the time-series. An RMS or MAE of 0 indicates a perfect fit.

The Willmott index of agreement is designed to quantify errors that are unevenly distributed in time or space and reduce the influence of errors during periods of large observed mean or variance. The Willmott index is the ratio of the mean absolute error and the mean absolute deviation about the observed mean and varies between 0 and 1. A value of 1 indicates a perfect match (x = y), and 0 indicates no agreement.

Willmott = 1 - [∑ | x - y |) / [∑ | x - ȳ |) + (| y - ȳ |)]

where x and y are vectors or arrays of time series data (x =observed, y = modelled).

A Willmott index above 0.7 is regularly obtained for high resolution models with high spatial and temporal observations for physical parameters such as salinity and temperature. In most cases for the eReefs model the salinity and temperature index was ≥ 0.8 when compared with observations (Appendix 1 of Herzfeld et al., 2016).

7. Simulated Chl *a* assessment against AIMS Long Term Monitoring

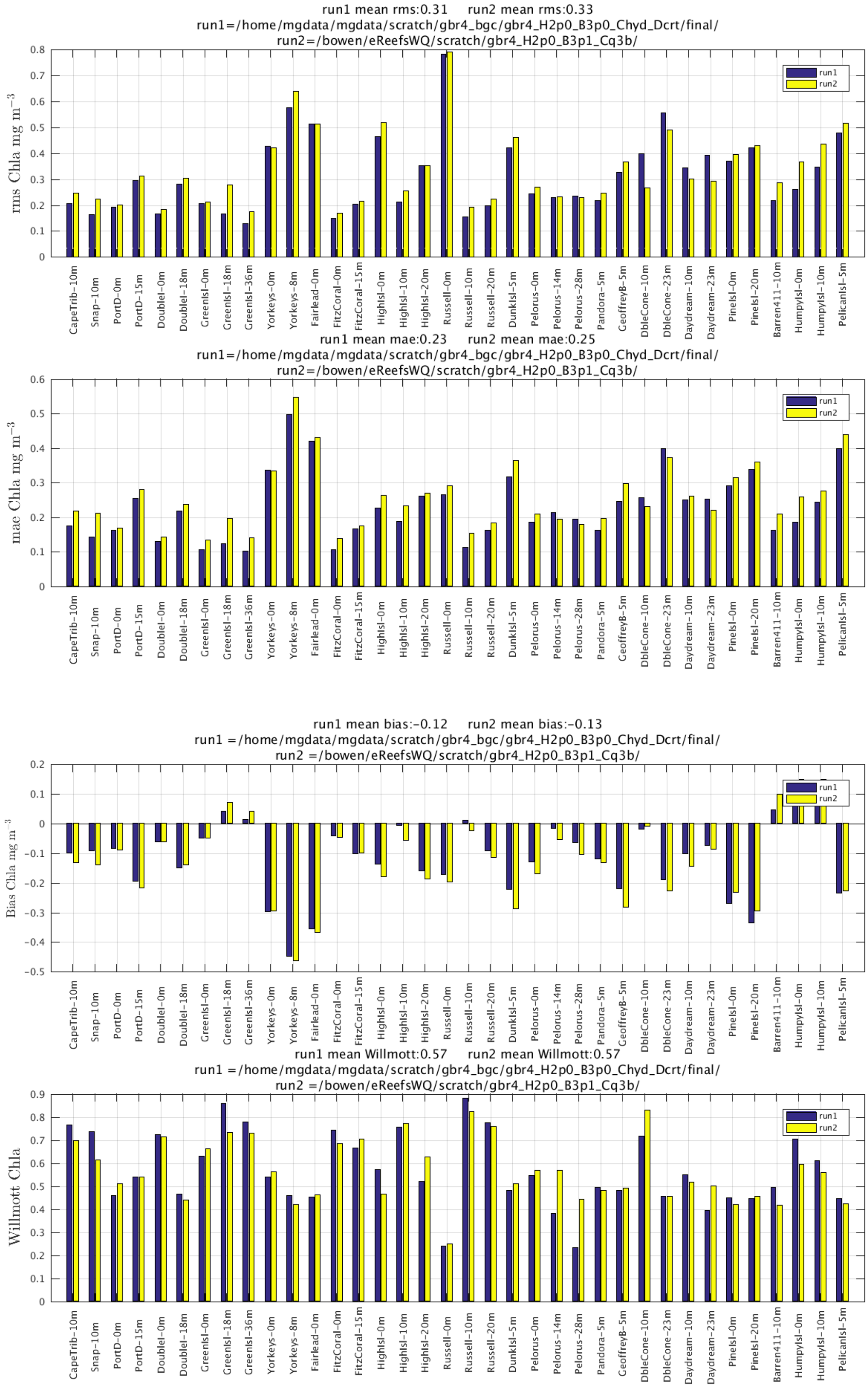


Figure 3 Metrics for Long Term Monitoring Sites simulated Chlorophyll a against observations

Snap_10m run1 d2:0.74, mape:35.6, rms:0.1617
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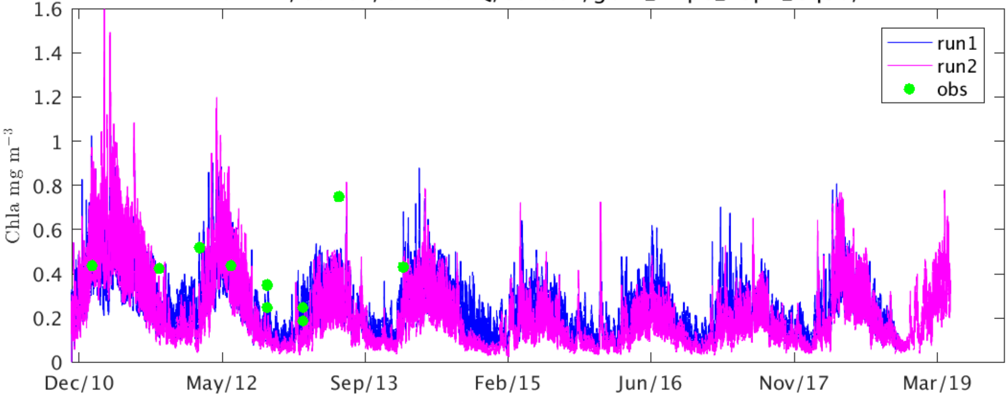

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PortD_0m run2 d2:0.51, mape:52.5, rms:0.2015
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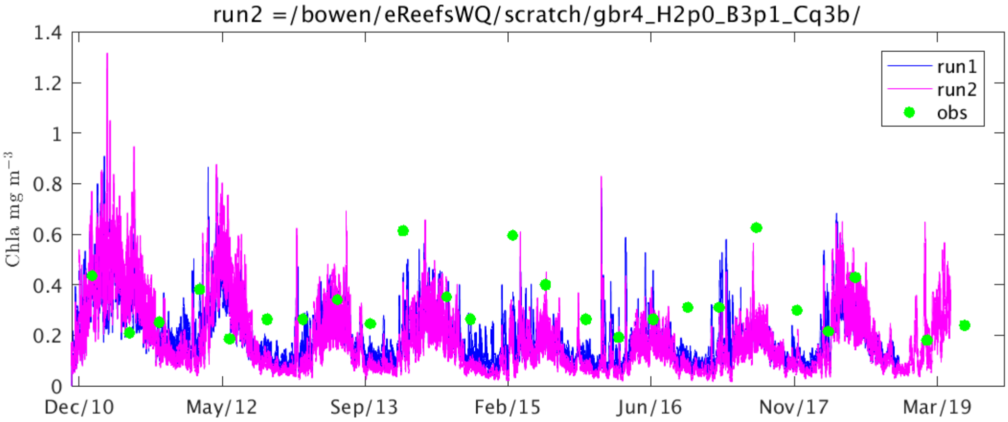

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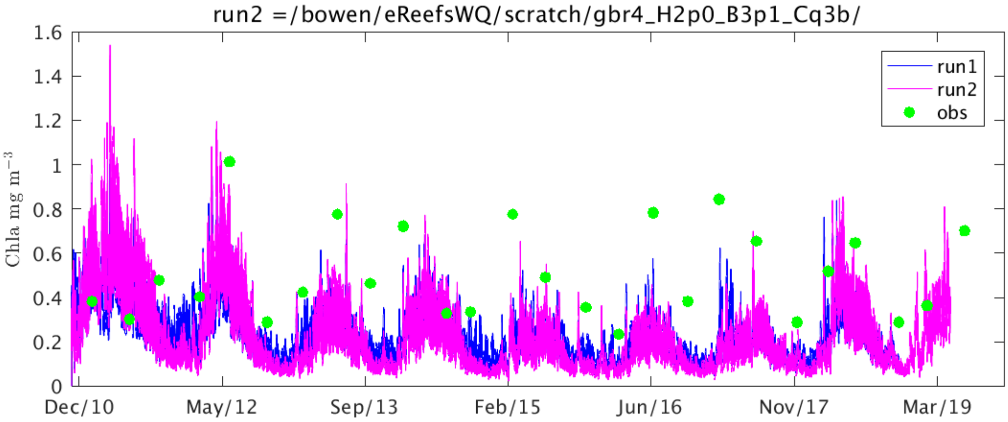

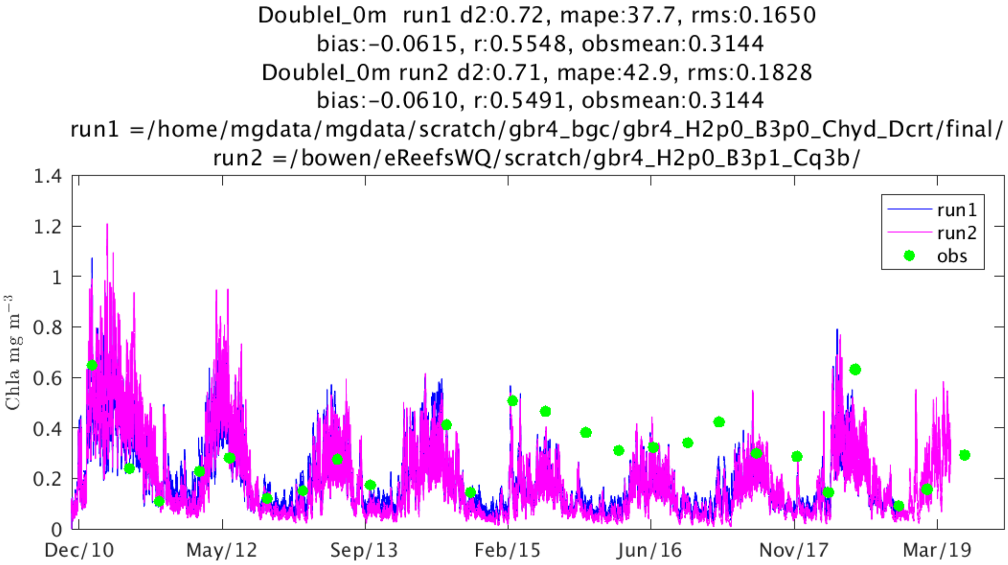
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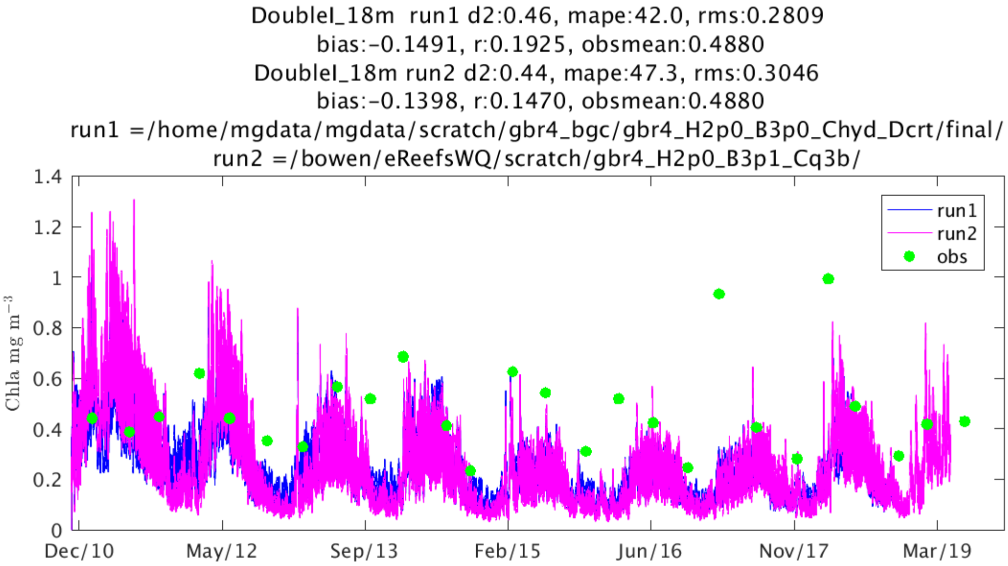
Chla mg m^-3
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19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run1
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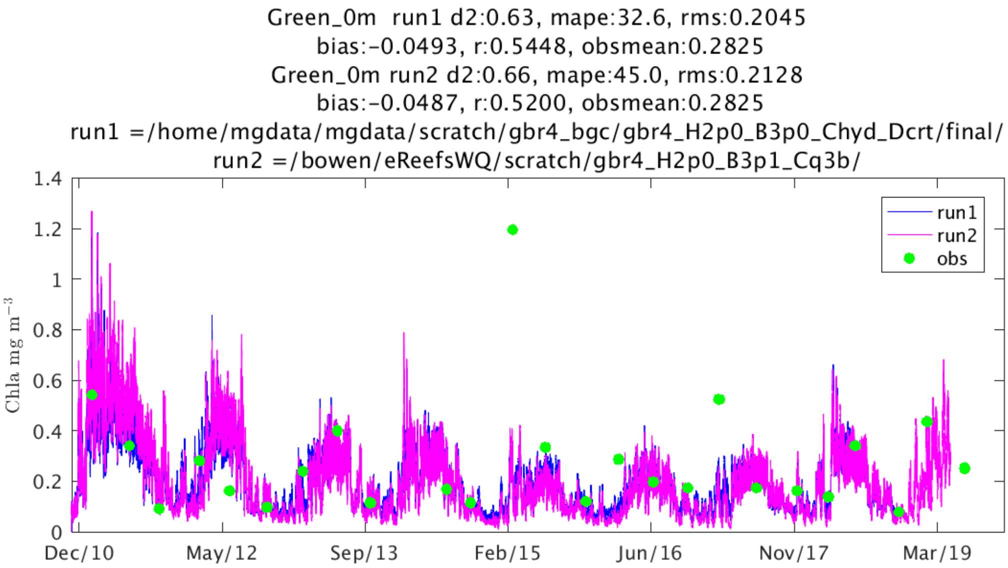
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Chla mg m^-3
run1
run2
obs
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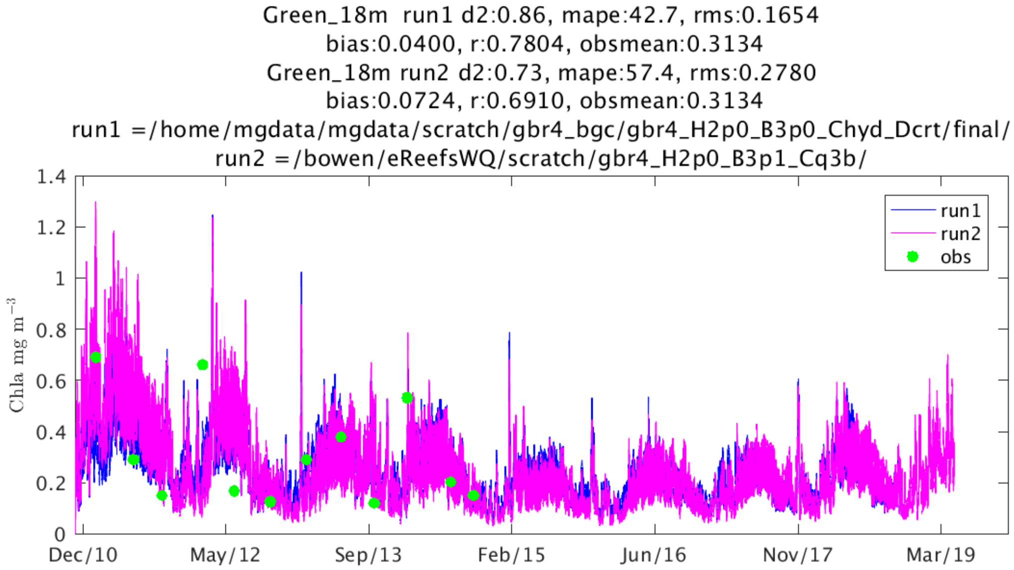
Feb/15
Jun/16
Nov/17
Mar/19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Chla mg m⁻³
run1
run2
obs
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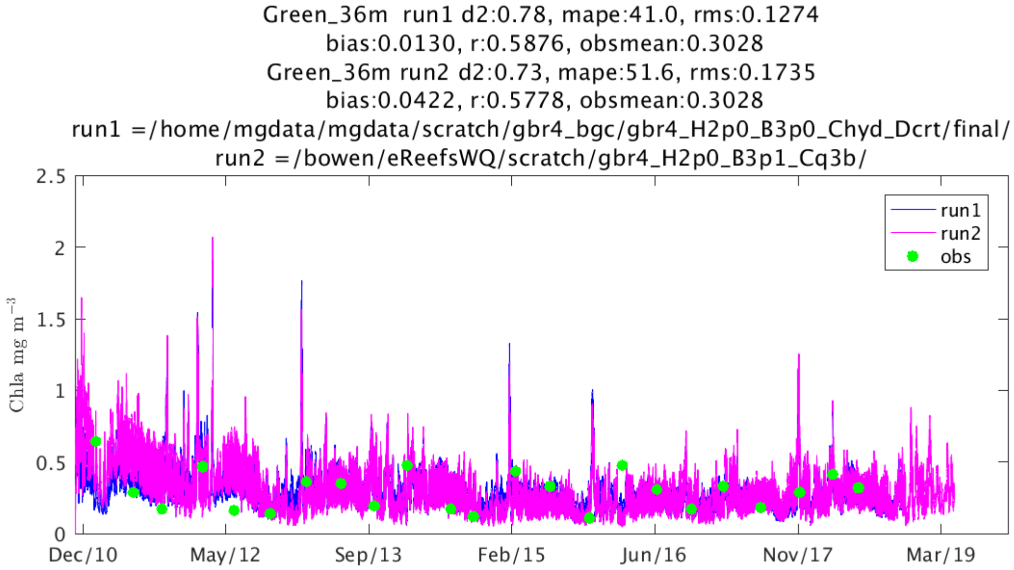
Mar/19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Chla mg m⁻³
run1
run2
obs
Dec/10
May/12
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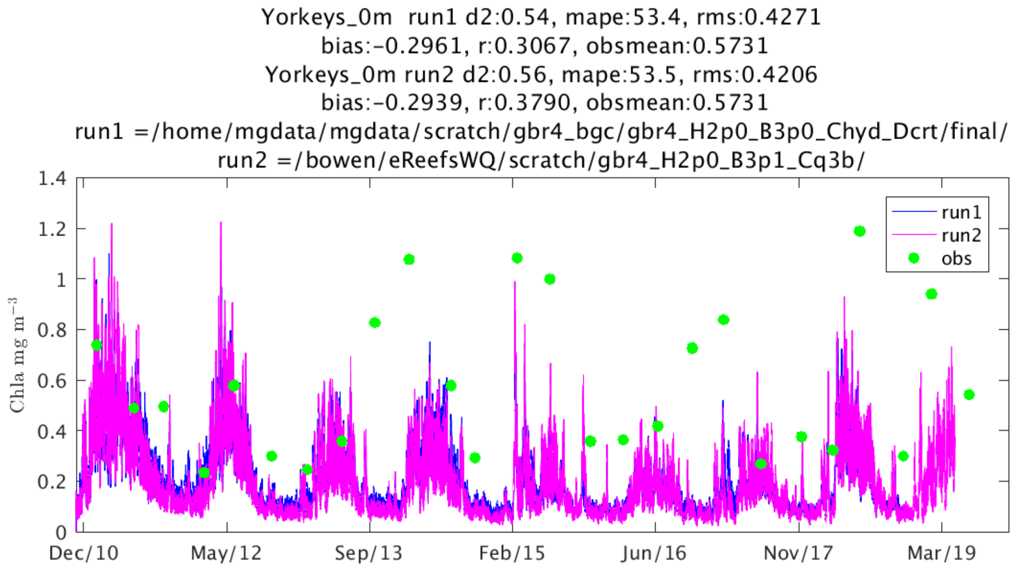
Nov/17
Mar/19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Chla mg m⁻³
run1
run2
obs
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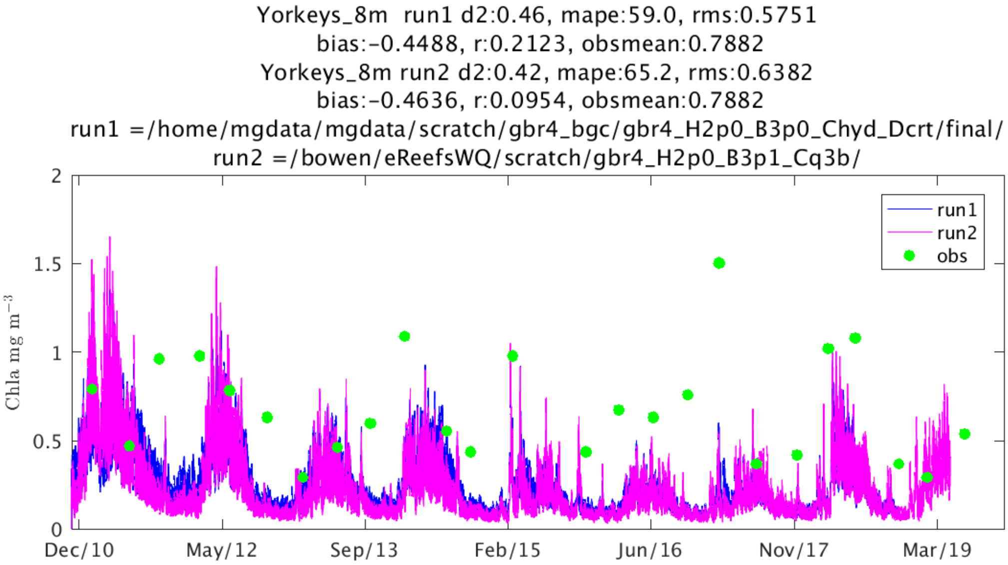
Jun/16
Nov/17
Mar/19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run2
obs
Chla mg m^{-3}
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May/12
Sep/13
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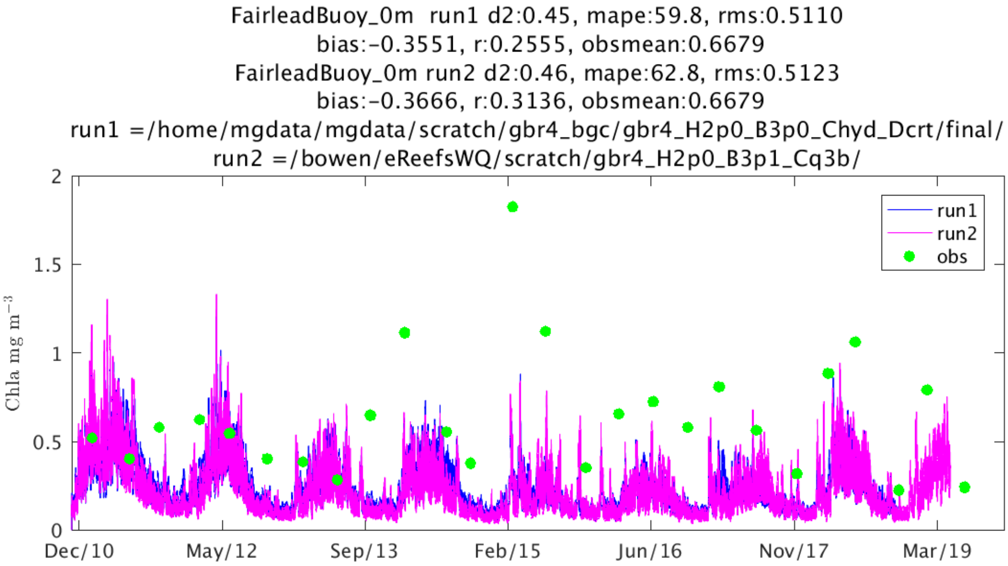
Jun/16
Nov/17
Mar/19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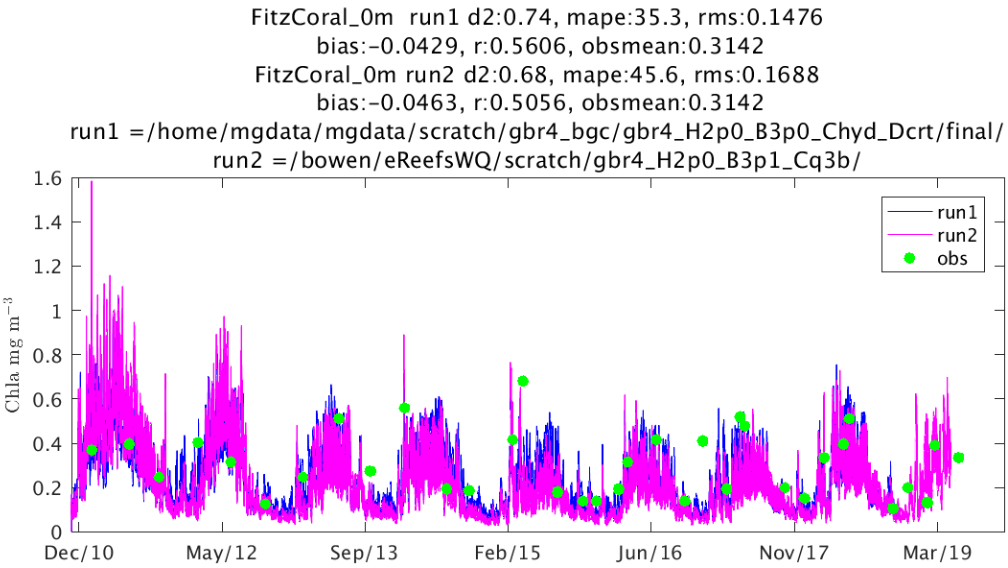
run2
obs
Chla mg m^{-3}
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19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run1
run2
obs
Chla mg m^{-3}
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19

FitzCoral_15m run1 d2:0.67, mape:38.0, rms:0.2033
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FitzCoral_15m run2 d2:0.70, mape:42.8, rms:0.2142
bias:-0.0985, r:0.5532, obsmean:0.4460
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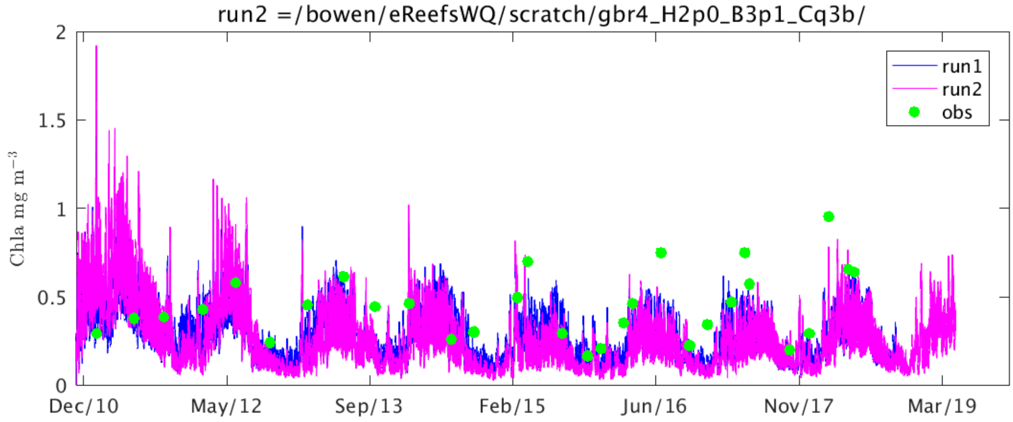

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HighI_0m run2 d2:0.47, mape:44.0, rms:0.5169
bias:-0.1785, r:0.3093, obsmean:0.4801
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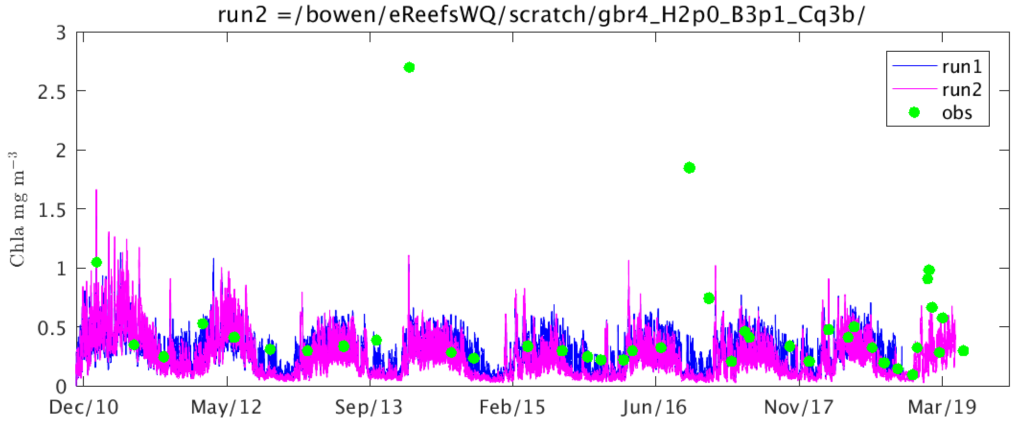

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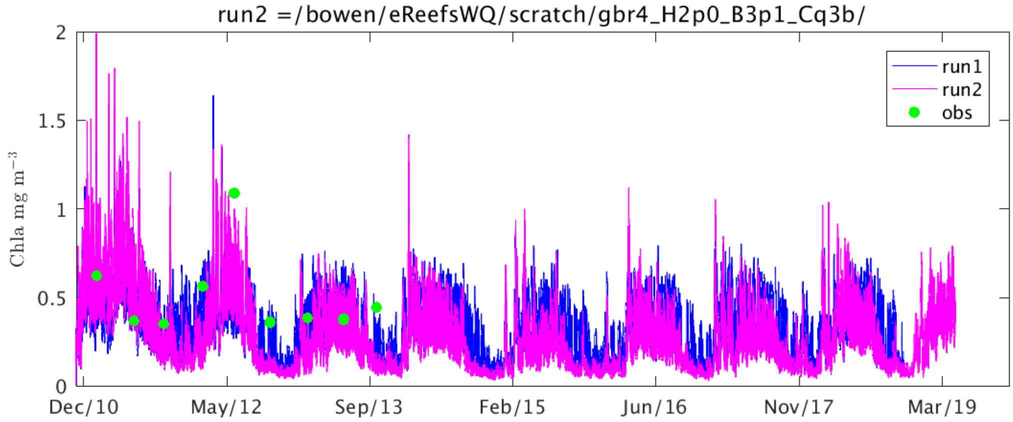

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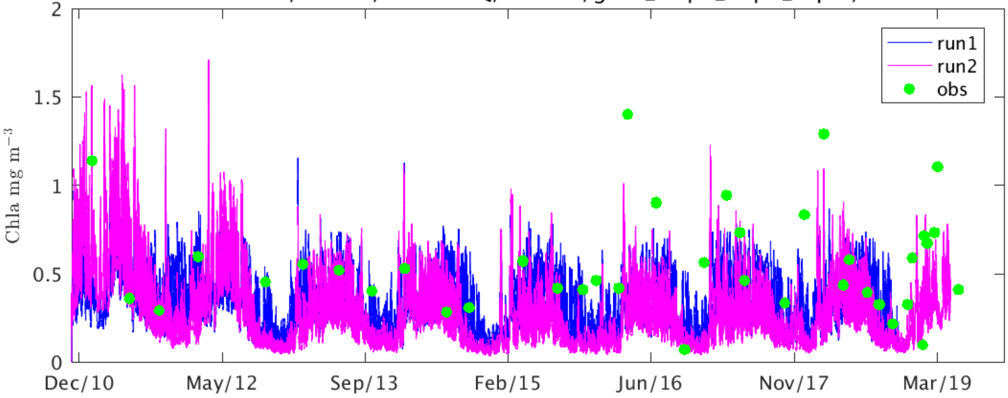

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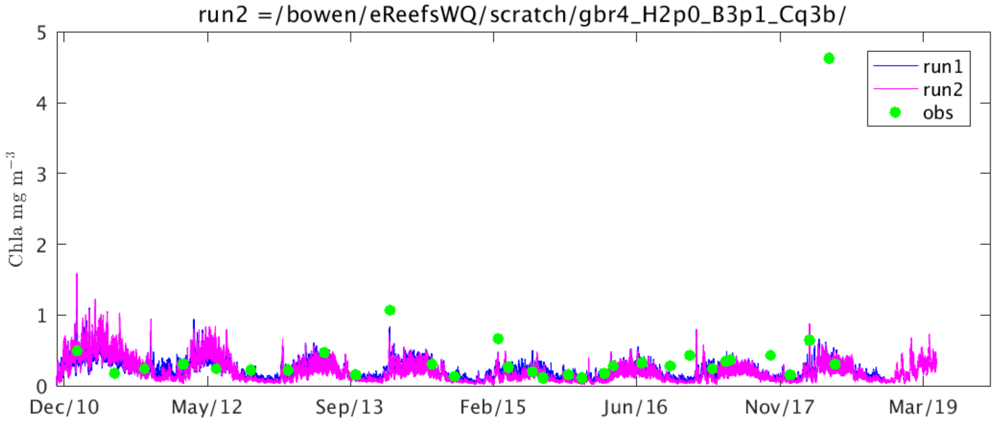
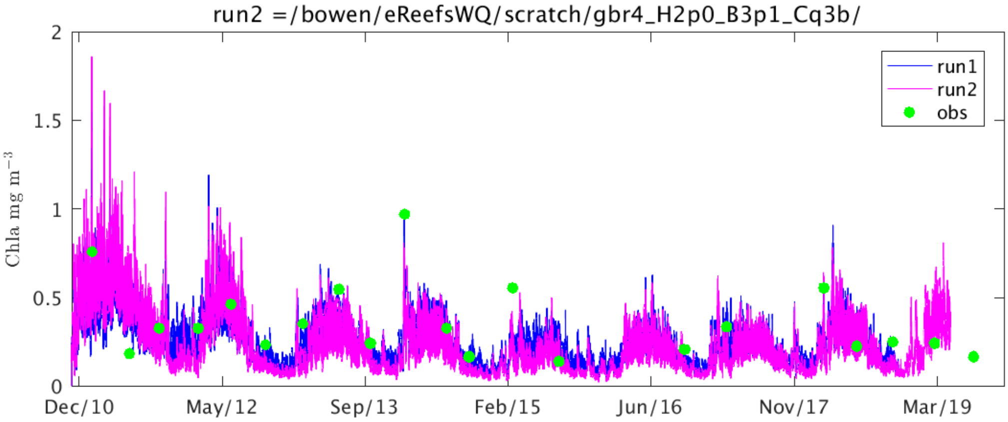
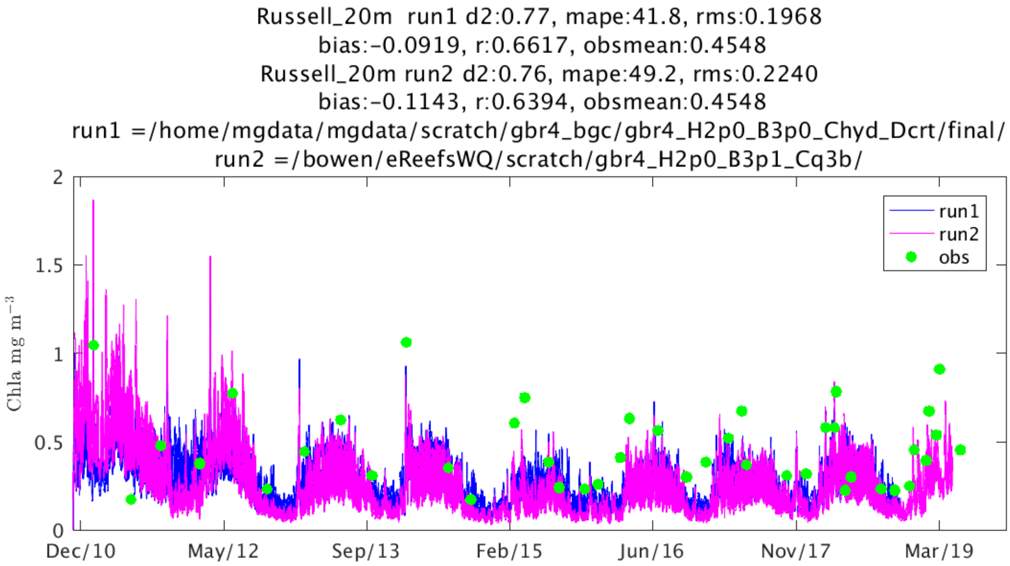
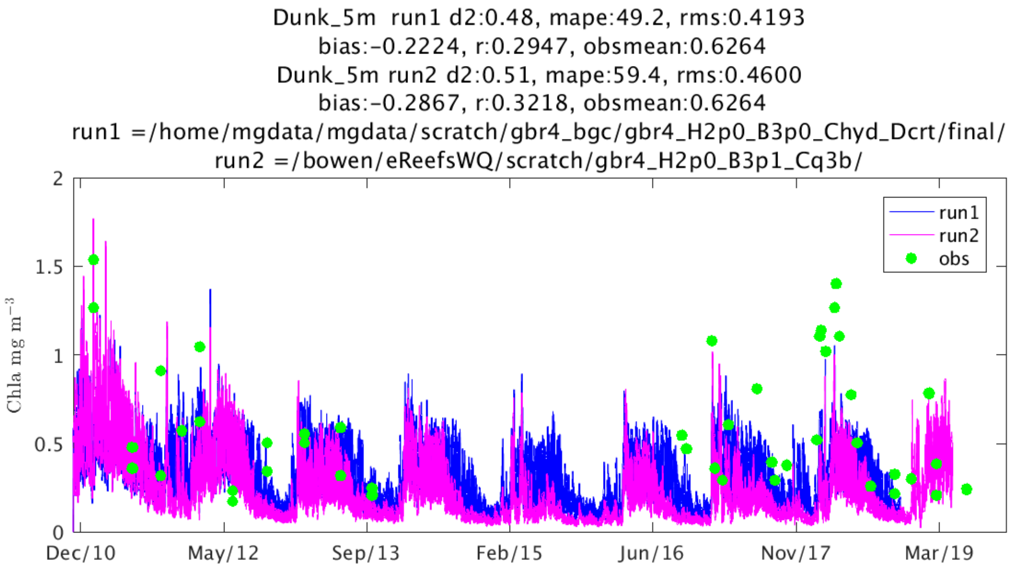
bias:-0.1969, r:0.2214, obsmean:0.4608
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/

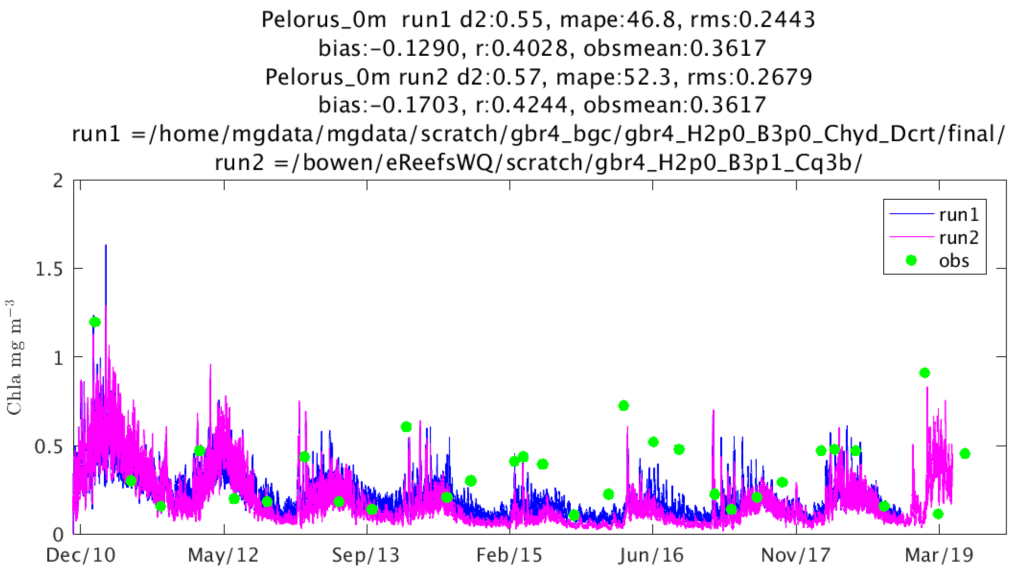


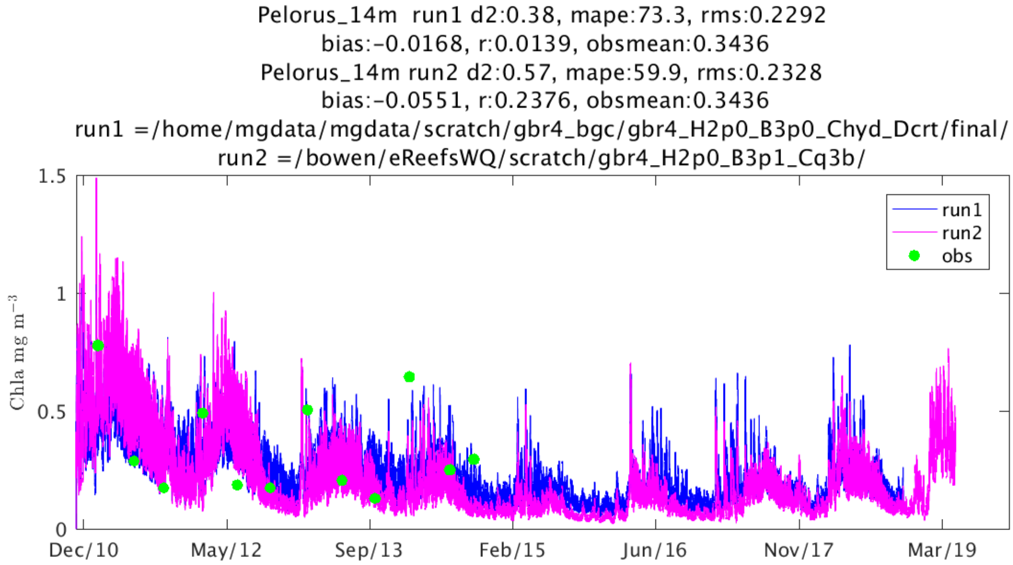
Russell_10m run1 d2:0.88, mape:41.2, rms:0.1553
bias:0.0105, r:0.7776, obsmean:0.3776
Russell_10m run2 d2:0.82, mape:52.3, rms:0.1907
bias:-0.0248, r:0.6909, obsmean:0.3776
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/

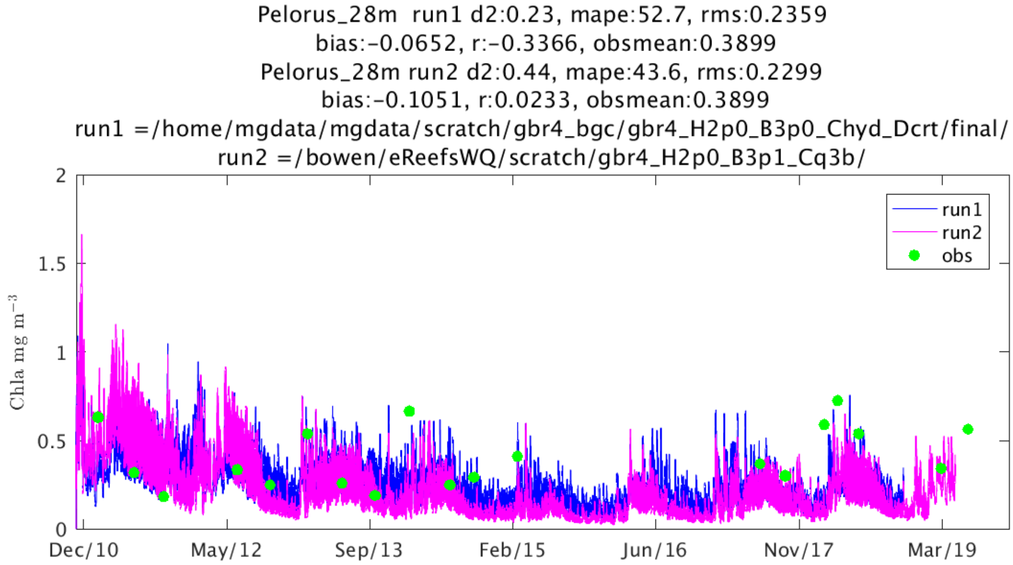


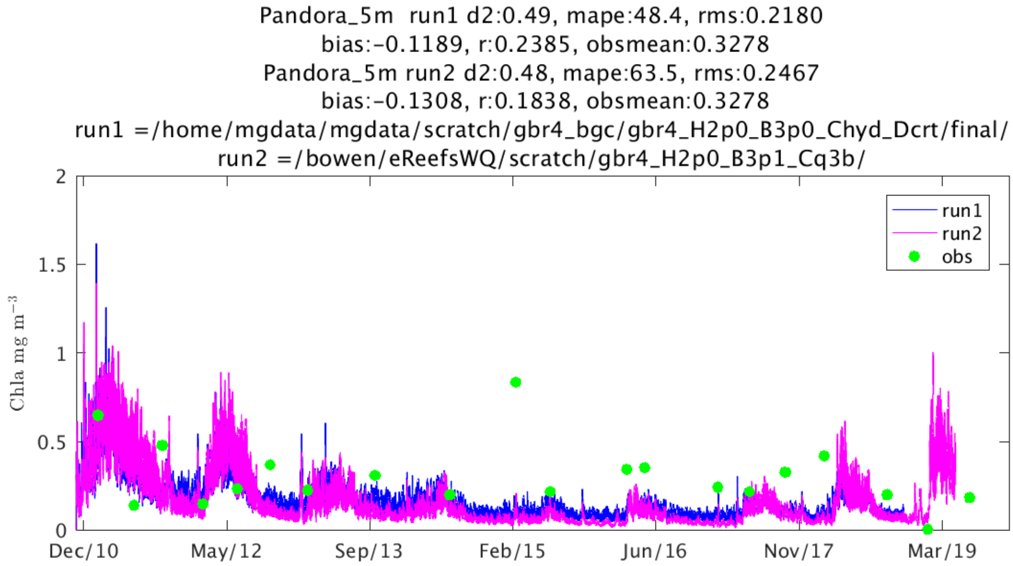

Russell_20m run1 d2:0.77, mape:41.8, rms:0.1968
bias:-0.0919, r:0.6617, obsmean:0.4548
Russell_20m run2 d2:0.76, mape:49.2, rms:0.2240
bias:-0.1143, r:0.6394, obsmean:0.4548
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
Chla mg m^{-3}
0
0.5
1
1.5
2
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19
run1
run2
obs

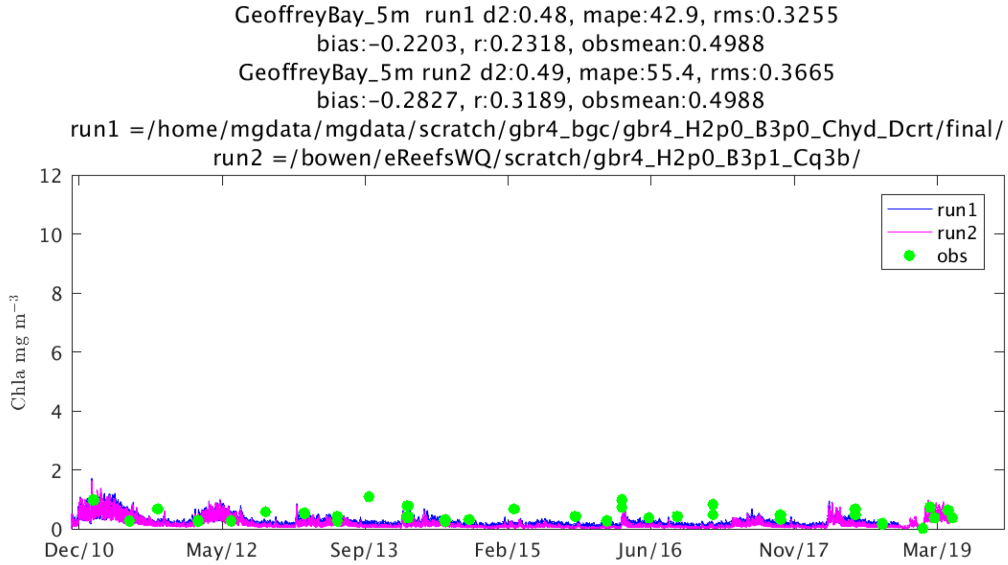

Dunk_5m run1 d2:0.48, mape:49.2, rms:0.4193
bias:-0.2224, r:0.2947, obsmean:0.6264
Dunk_5m run2 d2:0.51, mape:59.4, rms:0.4600
bias:-0.2867, r:0.3218, obsmean:0.6264
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
Chla mg m^{-3}
0
0.5
1
1.5
2
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19
run1
run2
obs

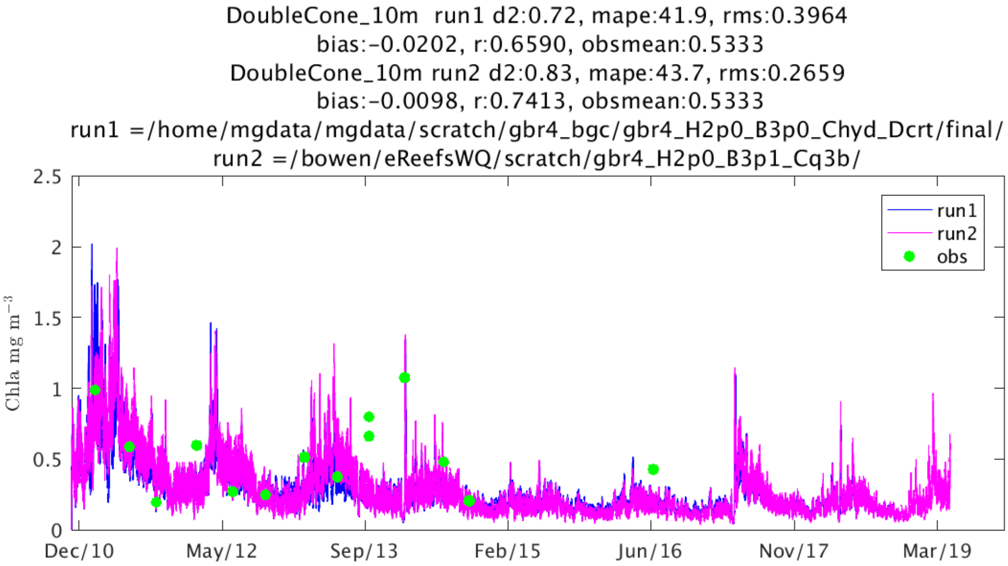

Pelorus_0m run1 d2:0.55, mape:46.8, rms:0.2443
bias:-0.1290, r:0.4028, obsmean:0.3617
Pelorus_0m run2 d2:0.57, mape:52.3, rms:0.2679
bias:-0.1703, r:0.4244, obsmean:0.3617
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
Chla mg m^{-3}
0
0.5
1
1.5
2
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19
run1
run2
obs

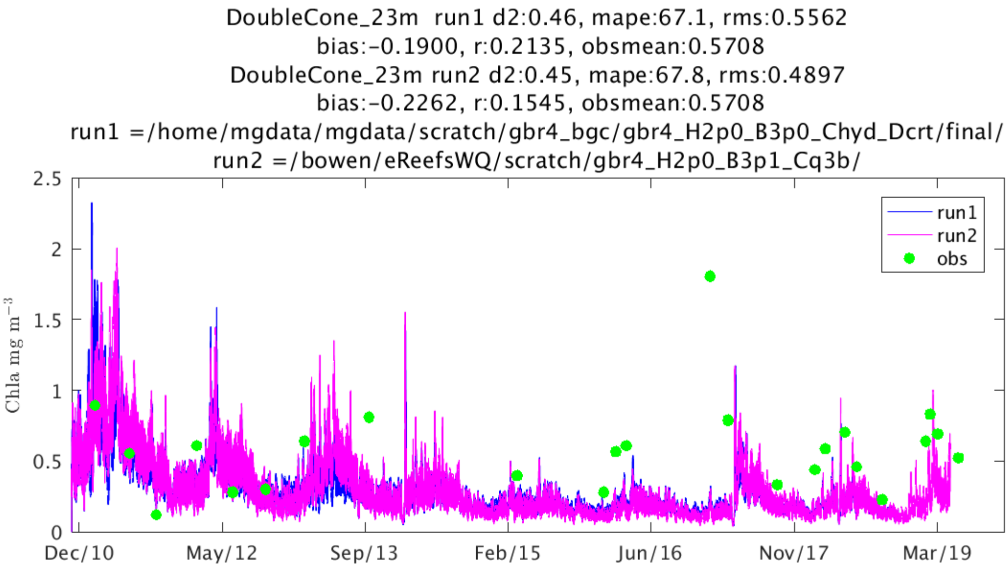

Pelorus_14m run1 d2:0.38, mape:73.3, rms:0.2292
bias:-0.0168, r:0.0139, obsmean:0.3436
Pelorus_14m run2 d2:0.57, mape:59.9, rms:0.2328
bias:-0.0551, r:0.2376, obsmean:0.3436
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
Chla mg m⁻³
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19

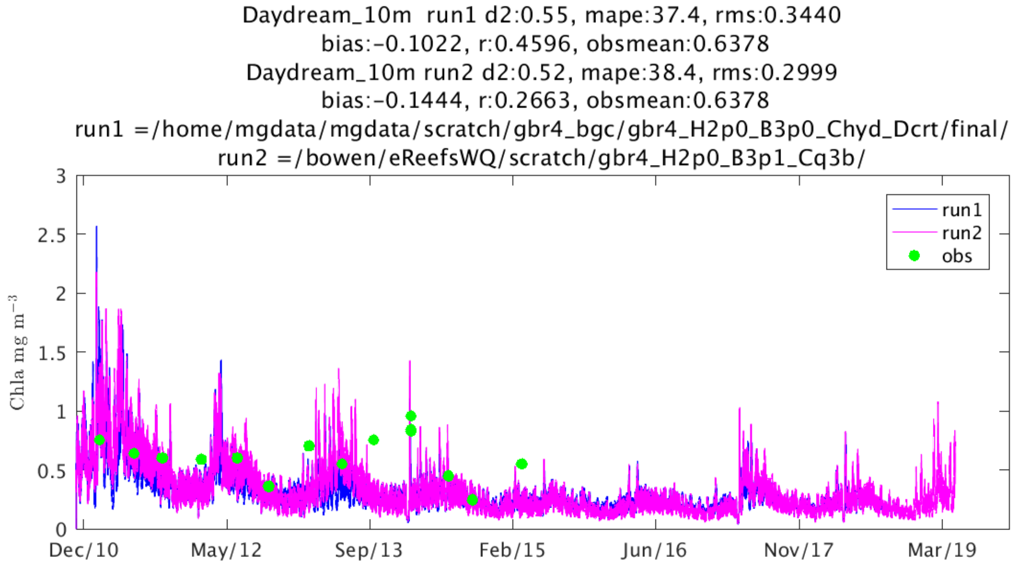

Pelorus_28m run1 d2:0.23, mape:52.7, rms:0.2359
bias:-0.0652, r:-0.3366, obsmean:0.3899
Pelorus_28m run2 d2:0.44, mape:43.6, rms:0.2299
bias:-0.1051, r:0.0233, obsmean:0.3899
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
Chla mg m⁻³
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19

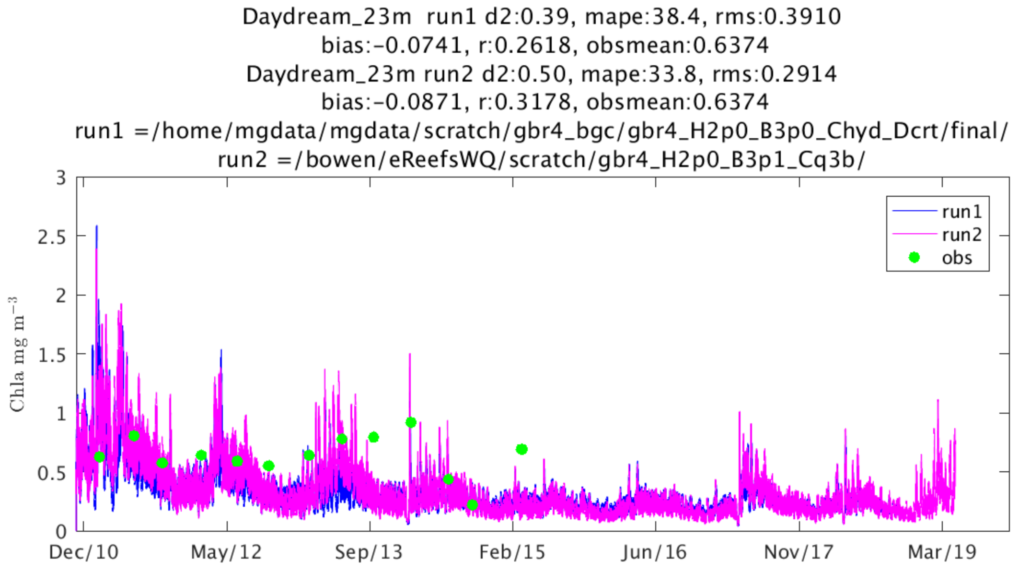

Pandora_5m run1 d2:0.49, mape:48.4, rms:0.2180
bias:-0.1189, r:0.2385, obsmean:0.3278
Pandora_5m run2 d2:0.48, mape:63.5, rms:0.2467
bias:-0.1308, r:0.1838, obsmean:0.3278
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
Chla mg m⁻³
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19

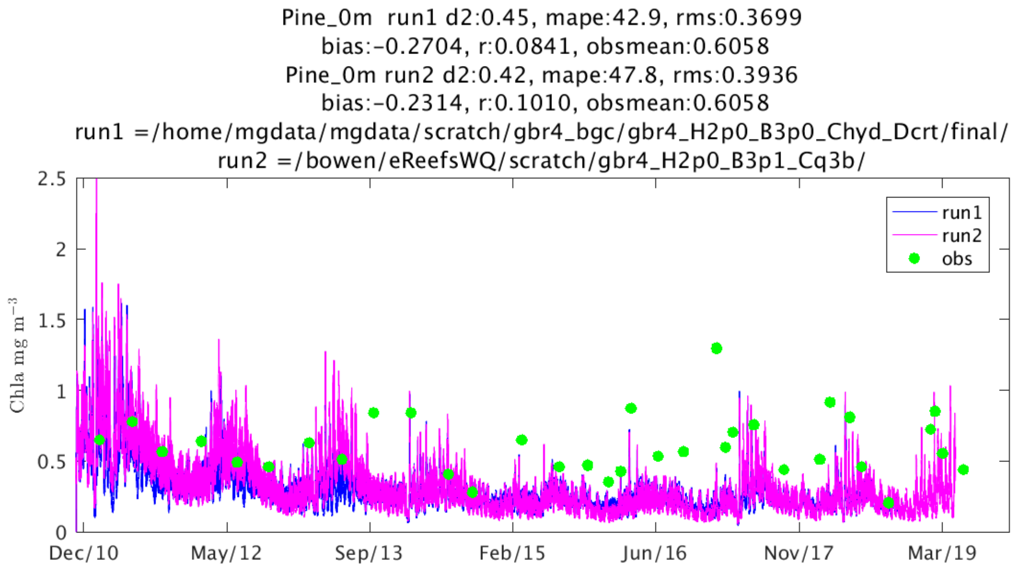

GeoffreyBay_5m run1 d2:0.48, mape:42.9, rms:0.3255
bias:-0.2203, r:0.2318, obsmean:0.4988
GeoffreyBay_5m run2 d2:0.49, mape:55.4, rms:0.3665
bias:-0.2827, r:0.3189, obsmean:0.4988
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
Chla mg m^{-3}
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19

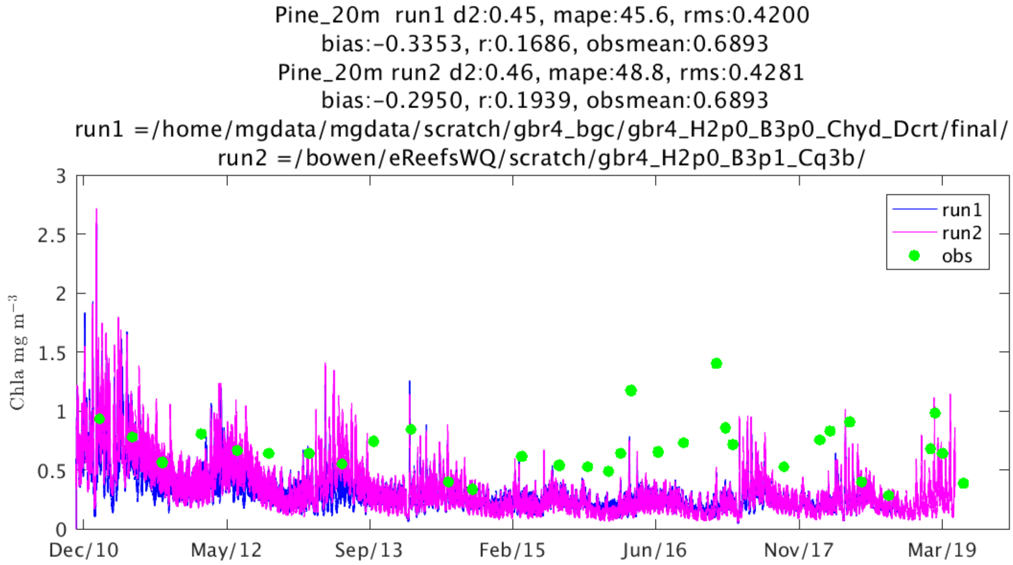

DoubleCone_10m run1 d2:0.72, mape:41.9, rms:0.3964
bias:-0.0202, r:0.6590, obsmean:0.5333
DoubleCone_10m run2 d2:0.83, mape:43.7, rms:0.2659
bias:-0.0098, r:0.7413, obsmean:0.5333
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
Chla mg m^{-3}
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19

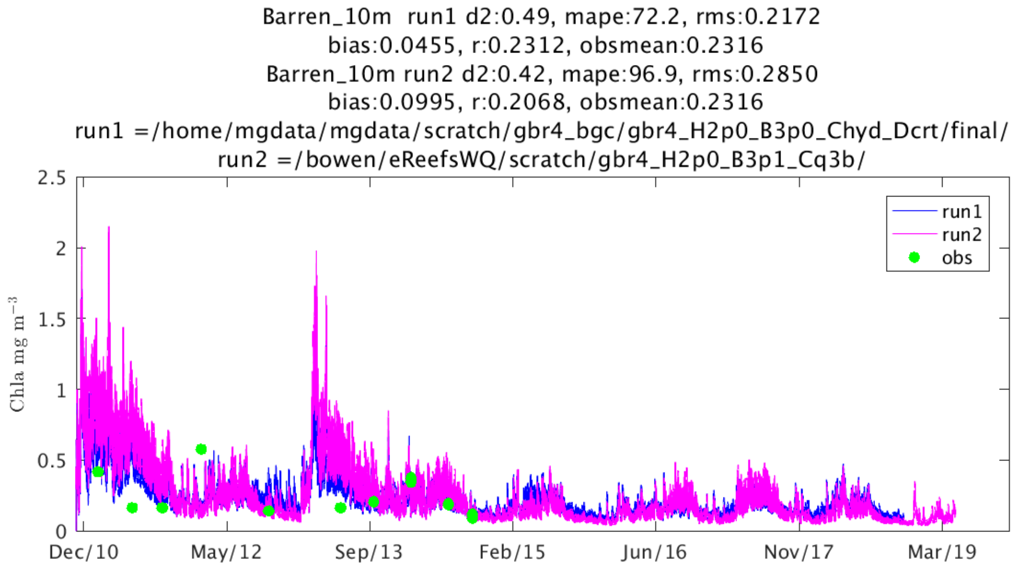

DoubleCone_23m run1 d2:0.46, mape:67.1, rms:0.5562
bias:-0.1900, r:0.2135, obsmean:0.5708
DoubleCone_23m run2 d2:0.45, mape:67.8, rms:0.4897
bias:-0.2262, r:0.1545, obsmean:0.5708
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
Chla mg m^{-3}
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19

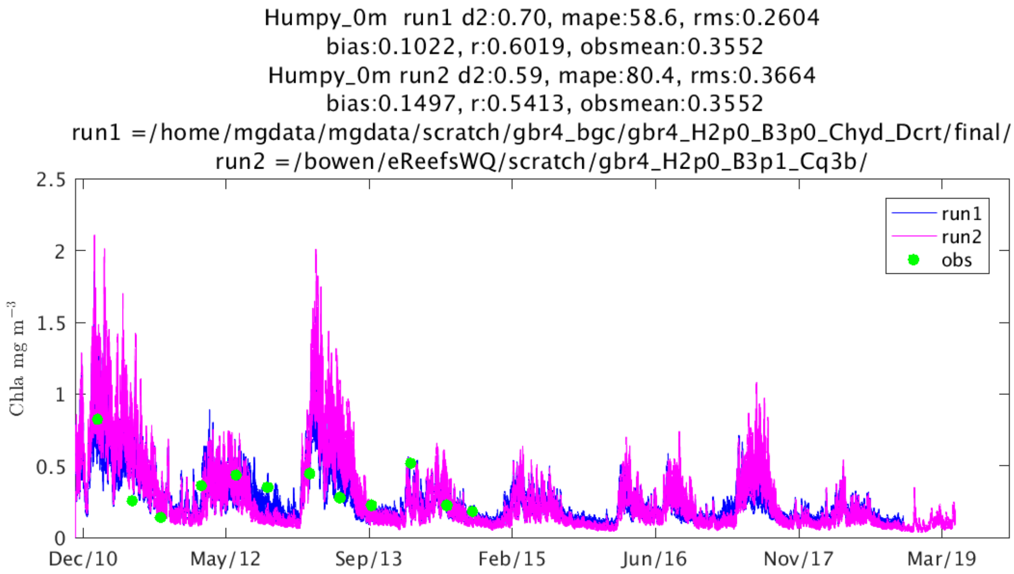

Daydream_10m run1 d2:0.55, mape:37.4, rms:0.3440
bias:-0.1022, r:0.4596, obsmean:0.6378
Daydream_10m run2 d2:0.52, mape:38.4, rms:0.2999
bias:-0.1444, r:0.2663, obsmean:0.6378
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
Chla mg m^{-3}
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19

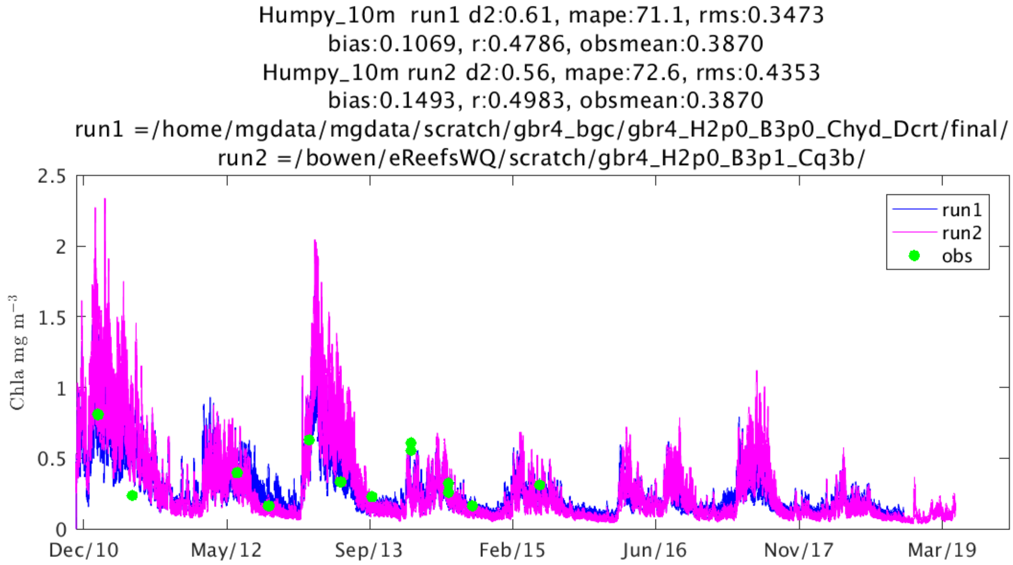

Daydream_23m run1 d2:0.39, mape:38.4, rms:0.3910
bias:-0.0741, r:0.2618, obsmean:0.6374
Daydream_23m run2 d2:0.50, mape:33.8, rms:0.2914
bias:-0.0871, r:0.3178, obsmean:0.6374
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
Chla mg m^{-3}
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19


Pine_0m run1 d2:0.45, mape:42.9, rms:0.3699
bias:-0.2704, r:0.0841, obsmean:0.6058
Pine_0m run2 d2:0.42, mape:47.8, rms:0.3936
bias:-0.2314, r:0.1010, obsmean:0.6058
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
Chla mg m^{-3}
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19

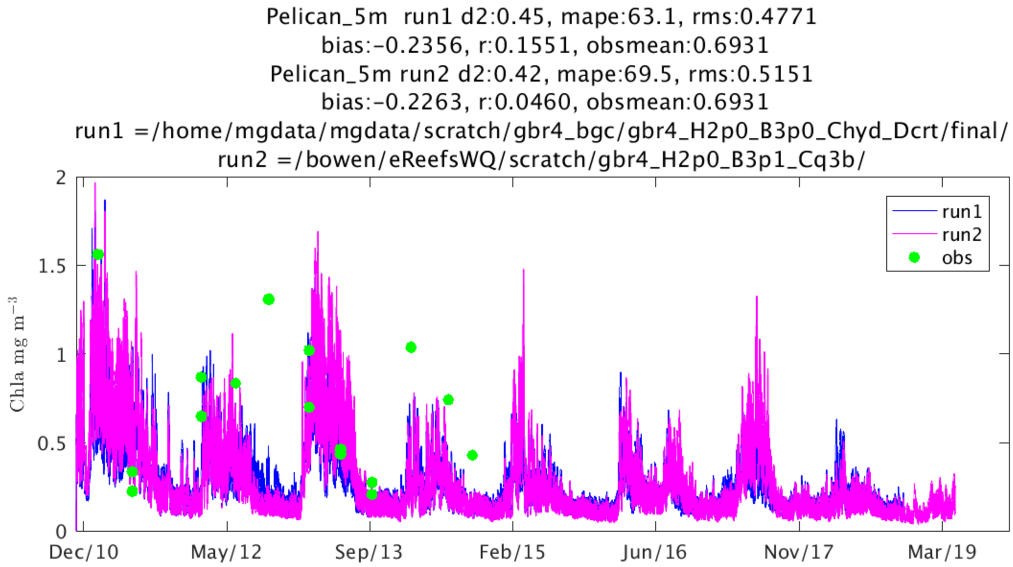

Pine_20m run1 d2:0.45, mape:45.6, rms:0.4200
bias:-0.3353, r:0.1686, obsmean:0.6893
Pine_20m run2 d2:0.46, mape:48.8, rms:0.4281
bias:-0.2950, r:0.1939, obsmean:0.6893
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
run1
run2
obs
Chla mg m^{-3}
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19


Barren_10m run1 d2:0.49, mape:72.2, rms:0.2172
bias:0.0455, r:0.2312, obsmean:0.2316
Barren_10m run2 d2:0.42, mape:96.9, rms:0.2850
bias:0.0995, r:0.2068, obsmean:0.2316
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
run1
run2
obs
Chla mg m^{-3}
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19


Humpy_0m run1 d2:0.70, mape:58.6, rms:0.2604
bias:0.1022, r:0.6019, obsmean:0.3552
Humpy_0m run2 d2:0.59, mape:80.4, rms:0.3664
bias:0.1497, r:0.5413, obsmean:0.3552
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
run1
run2
obs
Chla mg m^{-3}
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19



Humpy_10m run1 d2:0.61, mape:71.1, rms:0.3473
bias:0.1069, r:0.4786, obsmean:0.3870
Humpy_10m run2 d2:0.56, mape:72.6, rms:0.4353
bias:0.1493, r:0.4983, obsmean:0.3870
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
Chla mg m^-3
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19



Pelican_5m run1 d2:0.45, mape:63.1, rms:0.4771
bias:-0.2356, r:0.1551, obsmean:0.6931
Pelican_5m run2 d2:0.42, mape:69.5, rms:0.5151
bias:-0.2263, r:0.0460, obsmean:0.6931
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
Chla mg m^-3
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19

8. Simulated Secchi depth assessment against AIMS Long Term Monitoring (includes scatter plots)

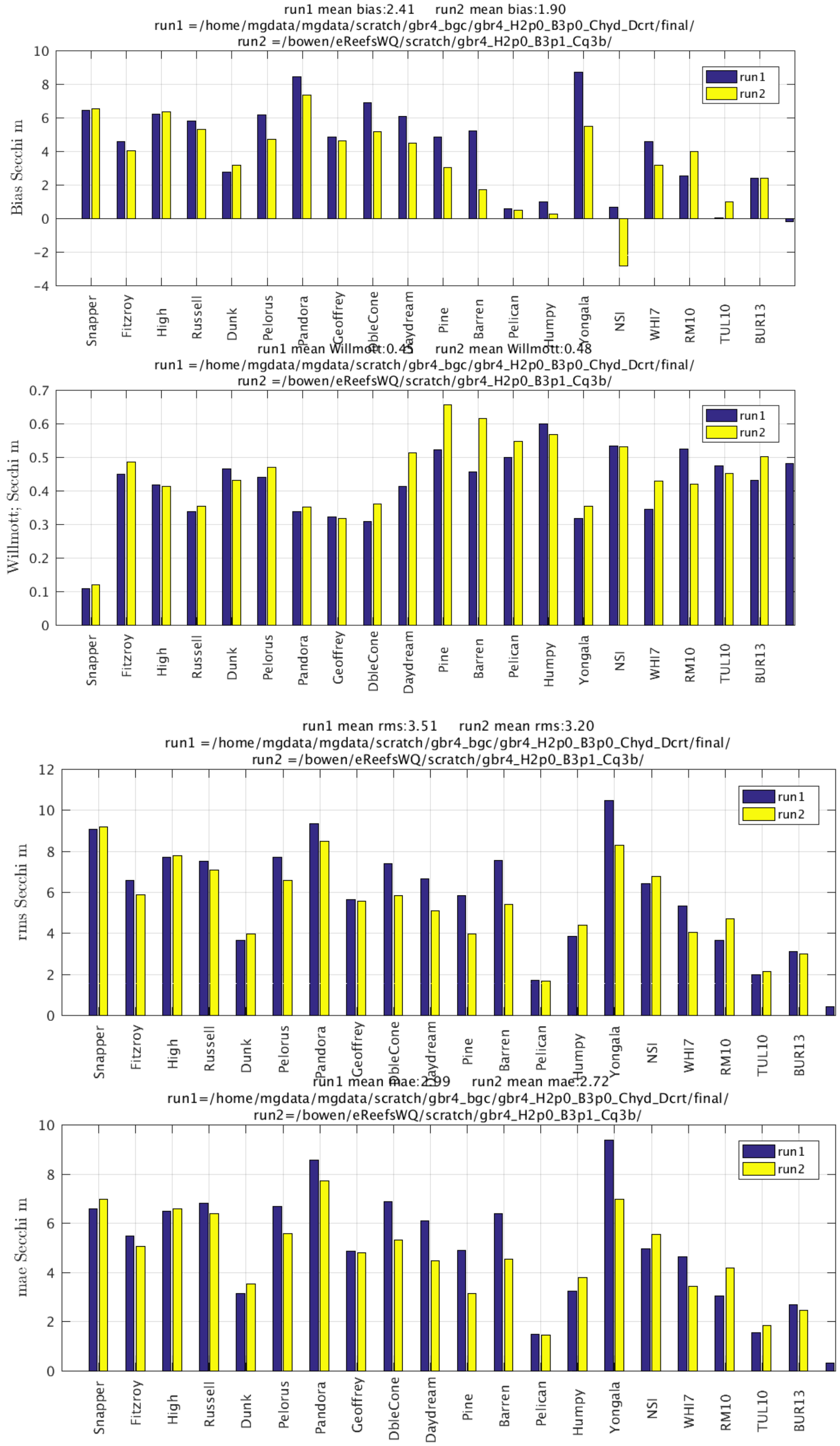
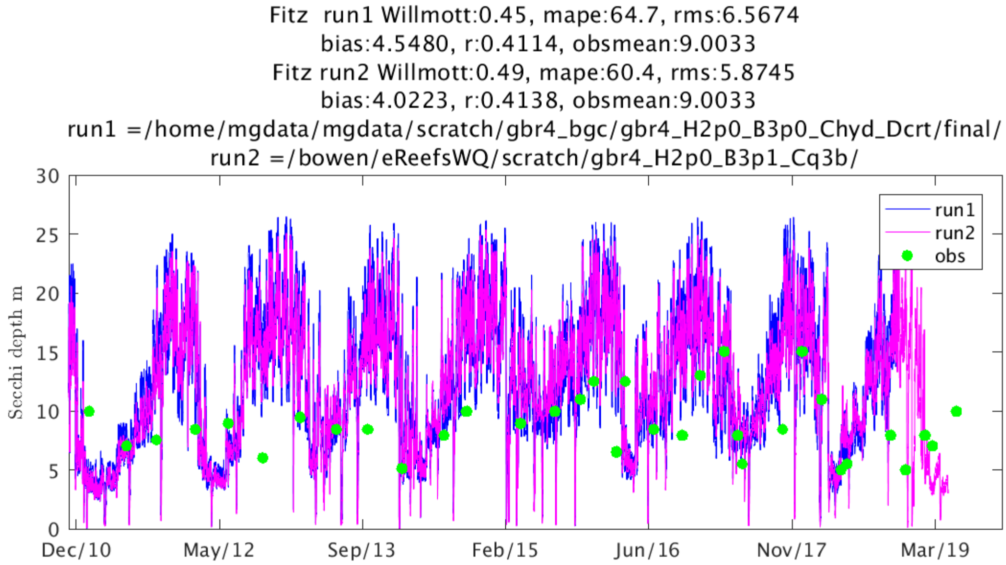
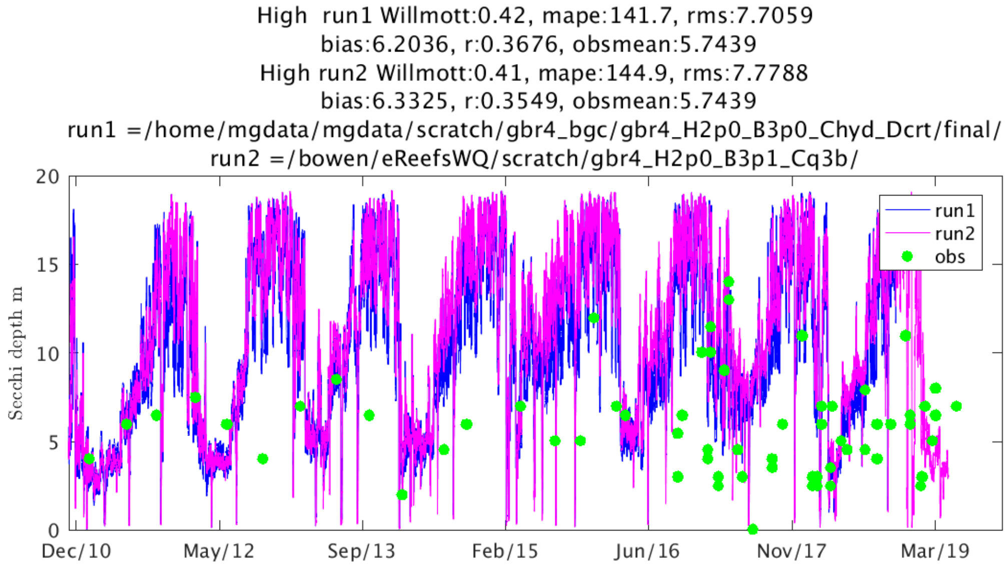
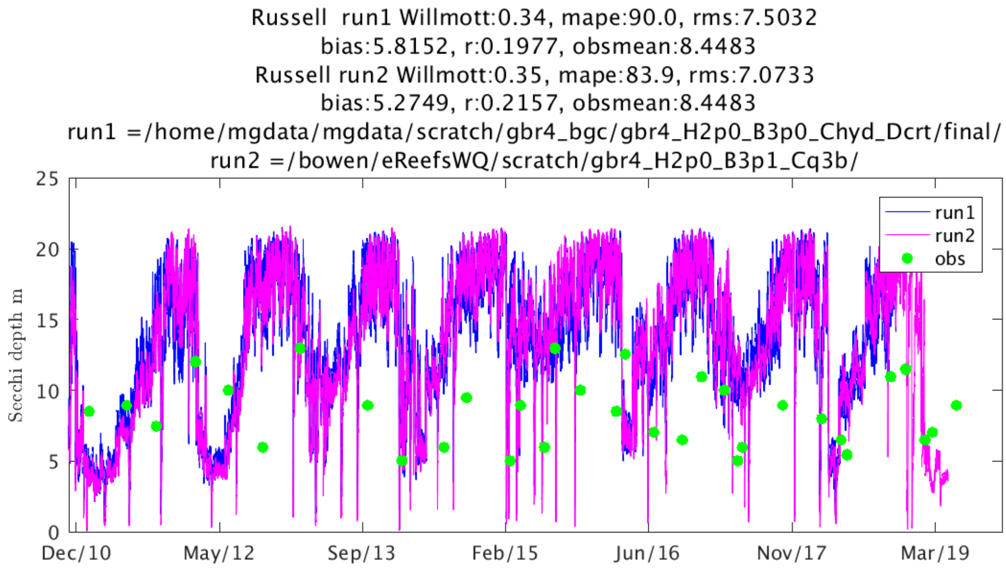


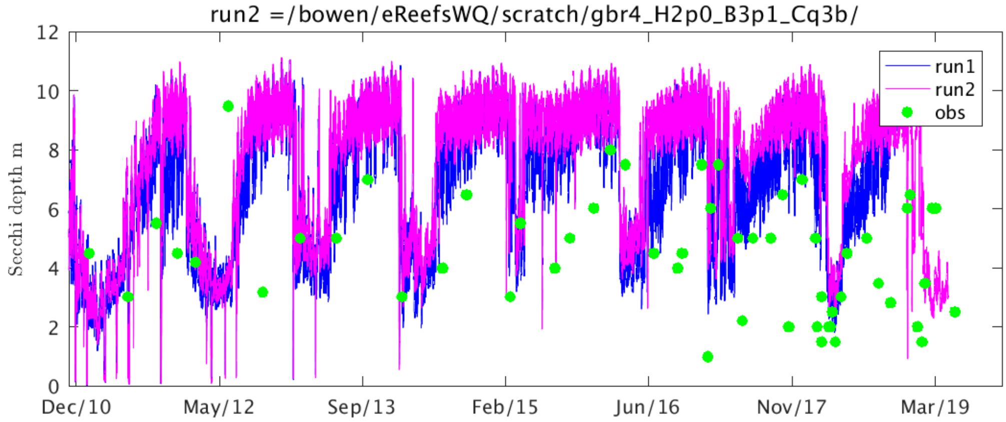
Figure 4 Metrics for Long Term Monitoring Sites simulated Secchi depth against observations


Fitz run1 Willmott:0.45, mape:64.7, rms:6.5674
bias:4.5480, r:0.4114, obsmean:9.0033
Fitz run2 Willmott:0.49, mape:60.4, rms:5.8745
bias:4.0223, r:0.4138, obsmean:9.0033
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
Secchi depth m
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19

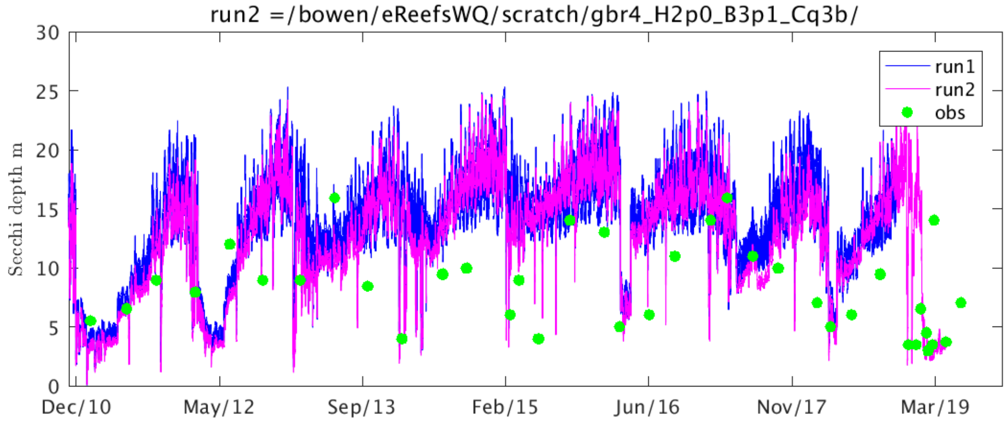

High run1 Willmott:0.42, mape:141.7, rms:7.7059
bias:6.2036, r:0.3676, obsmean:5.7439
High run2 Willmott:0.41, mape:144.9, rms:7.7788
bias:6.3325, r:0.3549, obsmean:5.7439
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
Secchi depth m
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19


Russell run1 Willmott:0.34, mape:90.0, rms:7.5032
bias:5.8152, r:0.1977, obsmean:8.4483
Russell run2 Willmott:0.35, mape:83.9, rms:7.0733
bias:5.2749, r:0.2157, obsmean:8.4483
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
Secchi depth m
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19

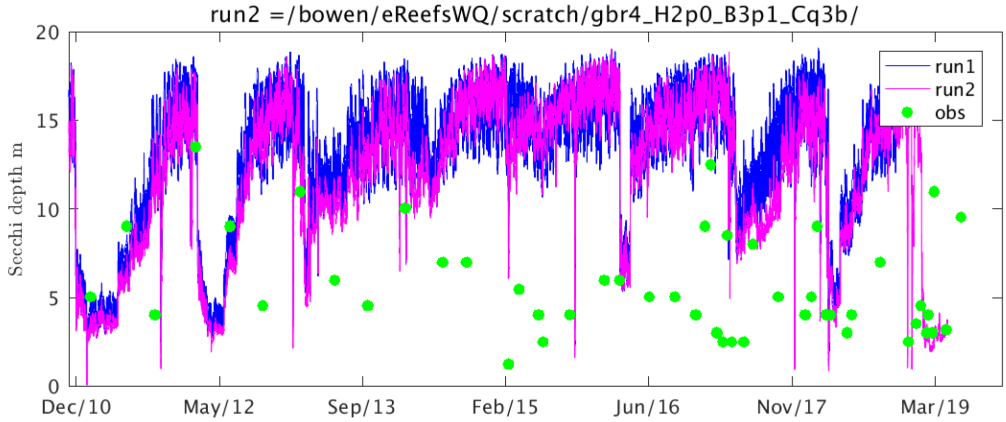
Dunk run1 Willmott:0.46, mape:96.7, rms:3.6375
bias:2.7372, r:0.3227, obsmean:4.4660
Dunk run2 Willmott:0.43, mape:109.3, rms:3.9740
bias:3.1498, r:0.2912, obsmean:4.4660
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/

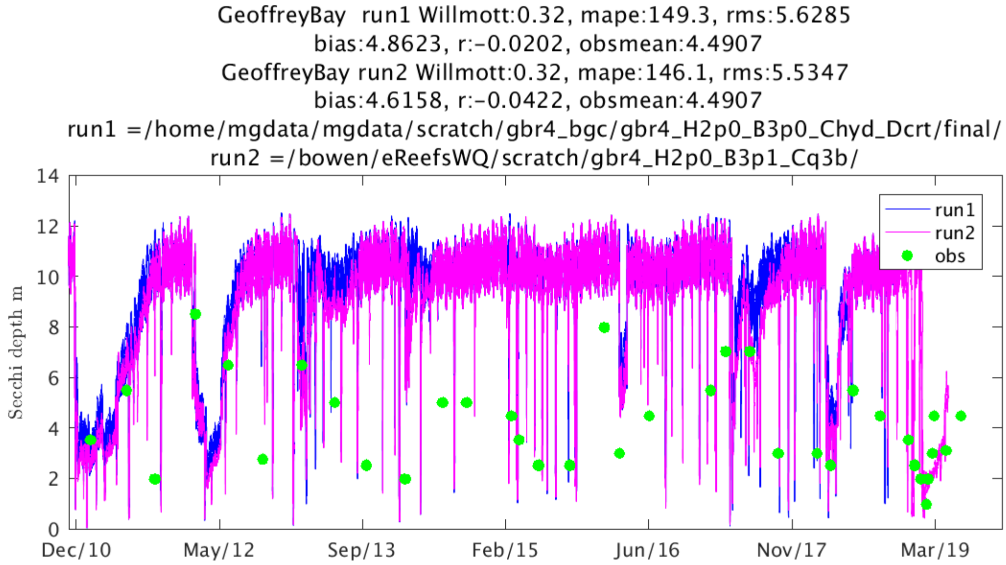


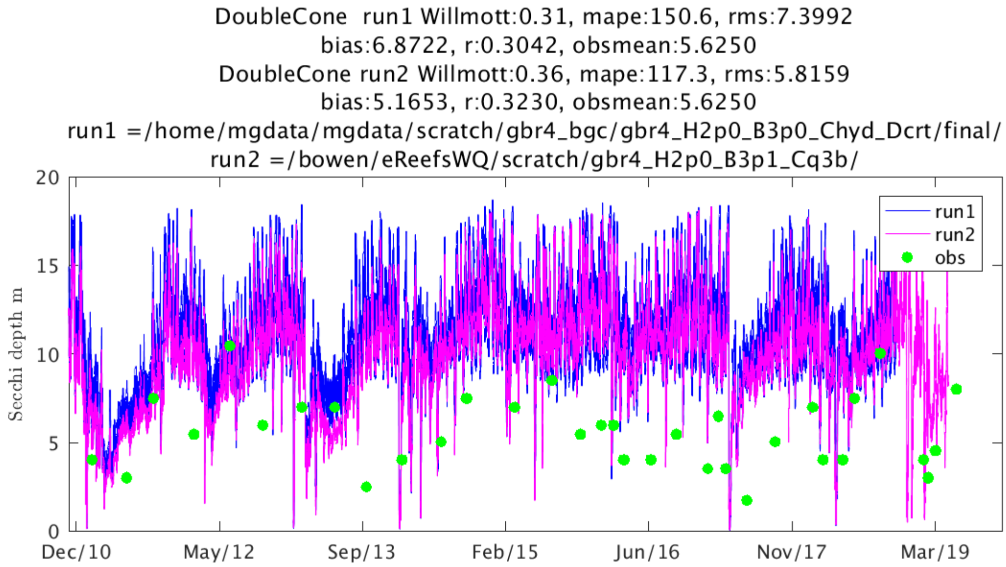
Pelorus run1 Willmott:0.44, mape:93.7, rms:7.7045
bias:6.1435, r:0.3079, obsmean:9.0536
Pelorus run2 Willmott:0.47, mape:78.6, rms:6.5776
bias:4.7222, r:0.2863, obsmean:9.0536
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/

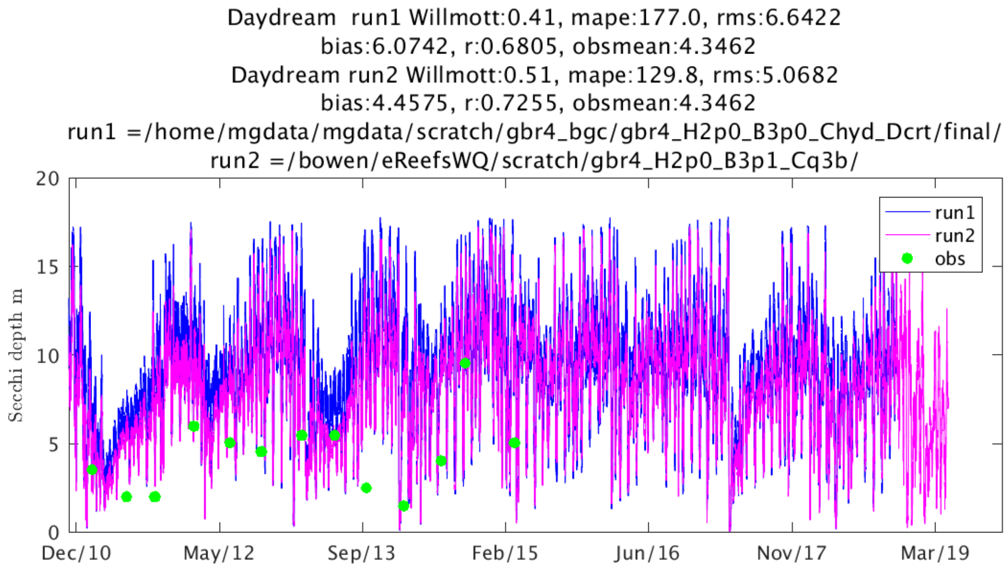


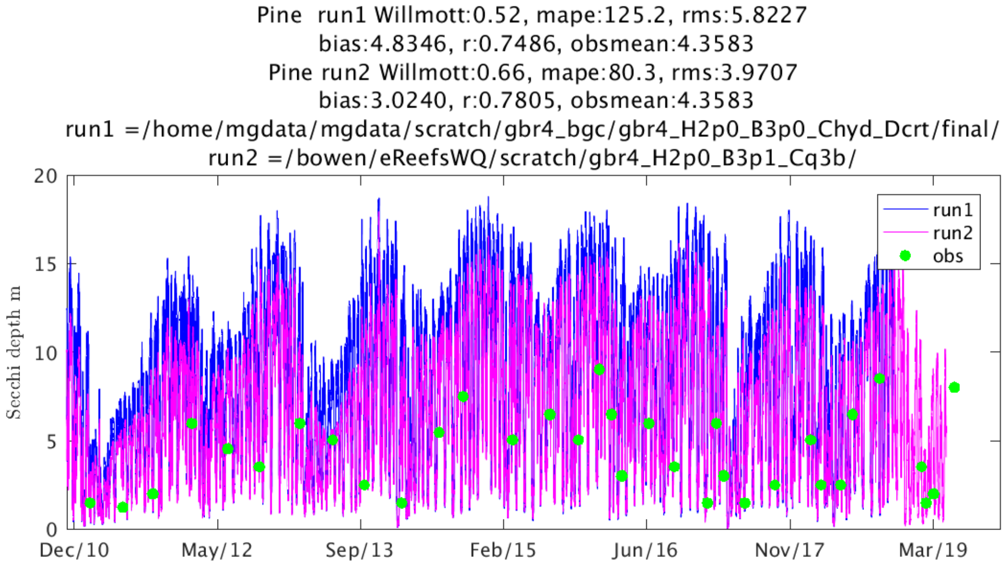
Pandora run1 Willmott:0.34, mape:213.3, rms:9.3360
bias:8.4418, r:0.2323, obsmean:5.7800
Pandora run2 Willmott:0.35, mape:188.6, rms:8.4799
bias:7.3517, r:0.1961, obsmean:5.7800
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/

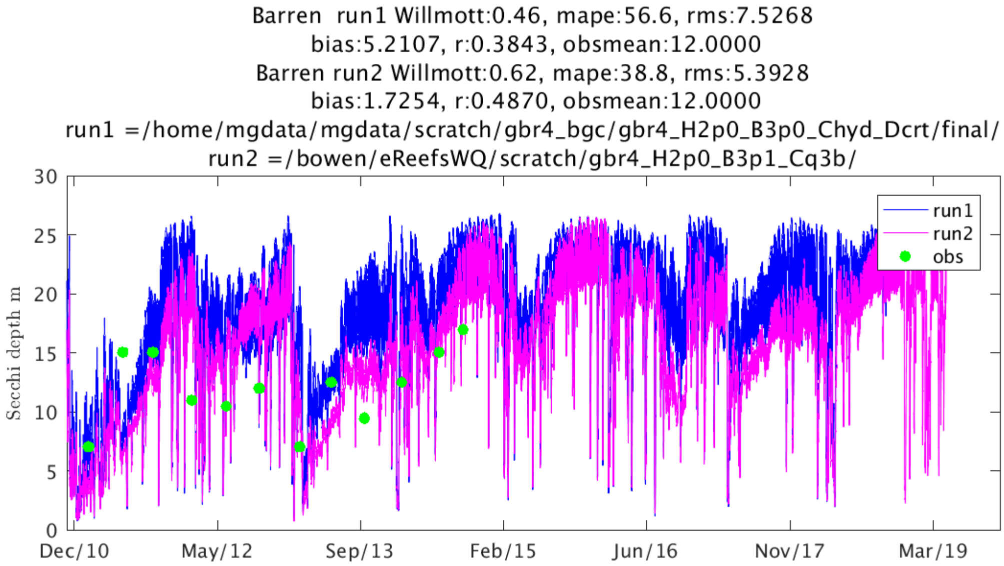


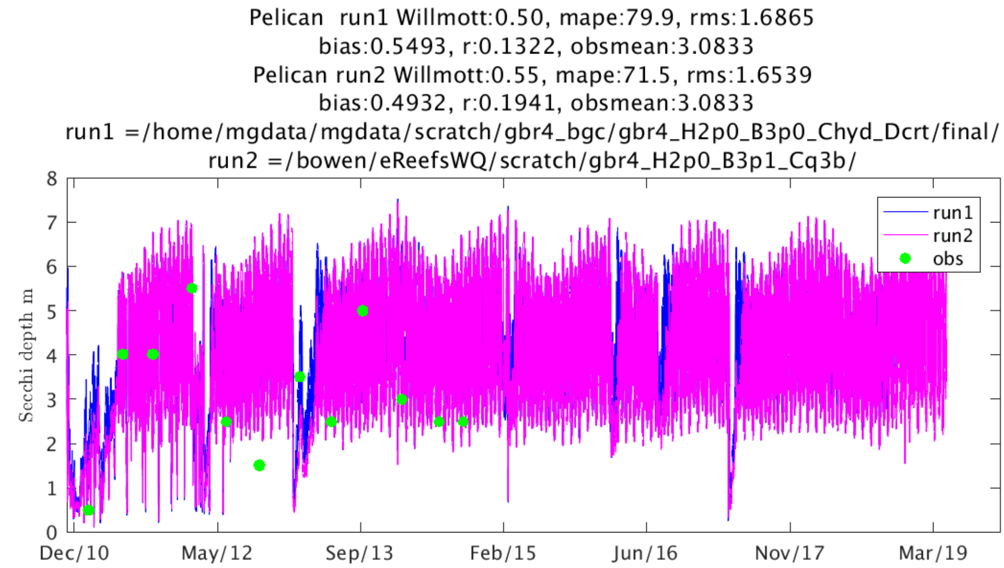

GeoffreyBay run1 Willmott:0.32, mape:149.3, rms:5.6285
bias:4.8623, r:-0.0202, obsmean:4.4907
GeoffreyBay run2 Willmott:0.32, mape:146.1, rms:5.5347
bias:4.6158, r:-0.0422, obsmean:4.4907
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
Secchi depth m
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19


DoubleCone run1 Willmott:0.31, mape:150.6, rms:7.3992
bias:6.8722, r:0.3042, obsmean:5.6250
DoubleCone run2 Willmott:0.36, mape:117.3, rms:5.8159
bias:5.1653, r:0.3230, obsmean:5.6250
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
Secchi depth m
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19

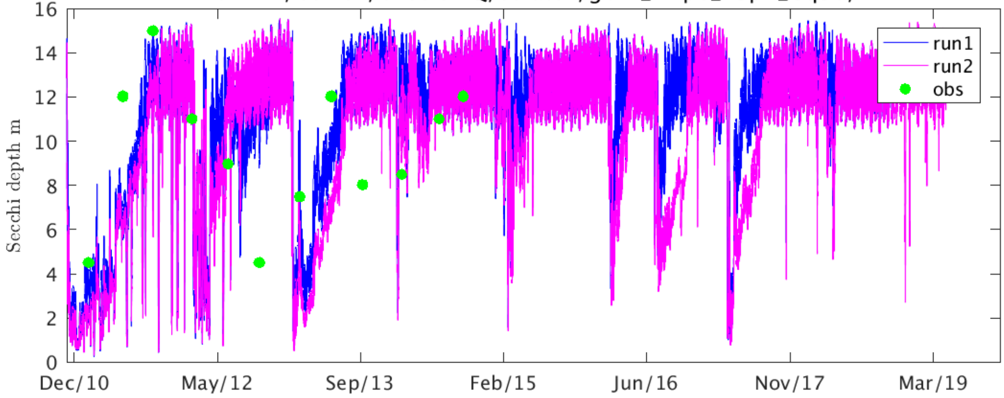

Daydream run1 Willmott:0.41, mape:177.0, rms:6.6422
bias:6.0742, r:0.6805, obsmean:4.3462
Daydream run2 Willmott:0.51, mape:129.8, rms:5.0682
bias:4.4575, r:0.7255, obsmean:4.3462
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
Secchi depth m
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19


Pine run1 Willmott:0.52, mape:125.2, rms:5.8227
bias:4.8346, r:0.7486, obsmean:4.3583
Pine run2 Willmott:0.66, mape:80.3, rms:3.9707
bias:3.0240, r:0.7805, obsmean:4.3583
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
Secchi depth m
20
15
10
5
0
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19
run1
run2
obs

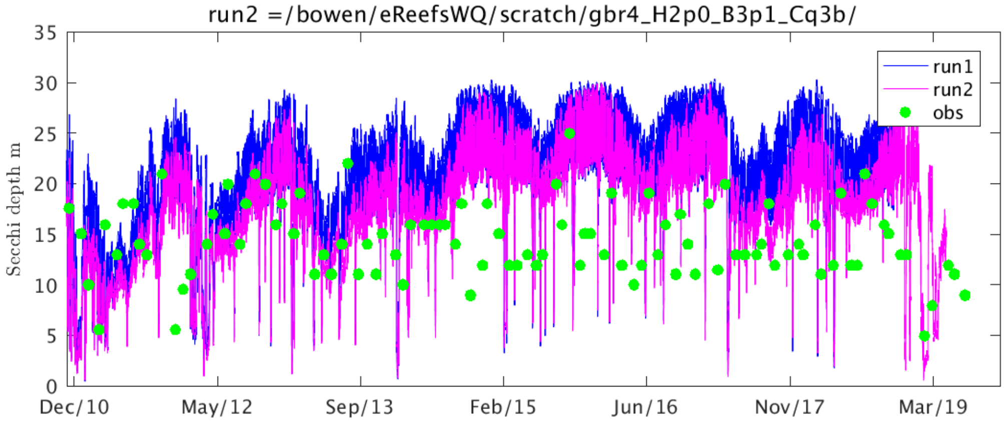

Barren run1 Willmott:0.46, mape:56.6, rms:7.5268
bias:5.2107, r:0.3843, obsmean:12.0000
Barren run2 Willmott:0.62, mape:38.8, rms:5.3928
bias:1.7254, r:0.4870, obsmean:12.0000
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
Secchi depth m
30
25
20
15
10
5
0
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19
run1
run2
obs


Pelican run1 Willmott:0.50, mape:79.9, rms:1.6865
bias:0.5493, r:0.1322, obsmean:3.0833
Pelican run2 Willmott:0.55, mape:71.5, rms:1.6539
bias:0.4932, r:0.1941, obsmean:3.0833
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
Secchi depth m
8
7
6
5
4
3
2
1
0
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19
run1
run2
obs

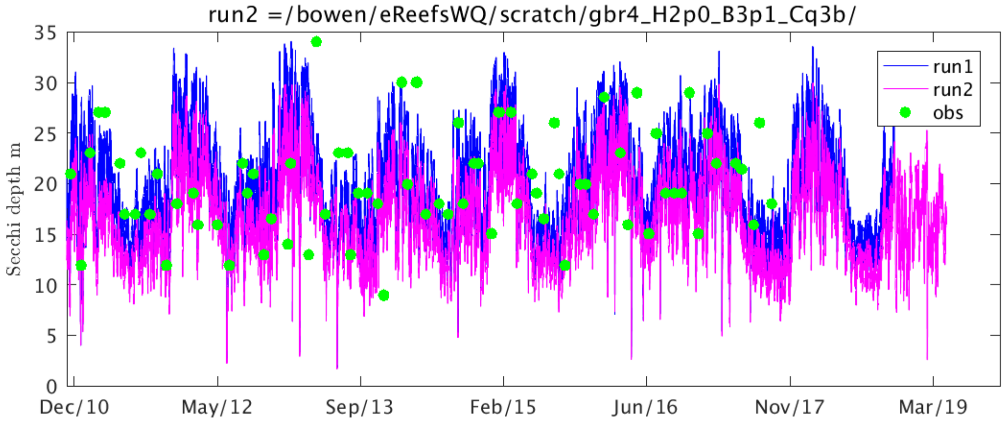
Humpy run1 Willmott:0.60, mape:41.5, rms:3.8537
bias:0.9846, r:0.2959, obsmean:9.5833
Humpy run2 Willmott:0.57, mape:49.5, rms:4.3787
bias:0.2360, r:0.2182, obsmean:9.5833
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/

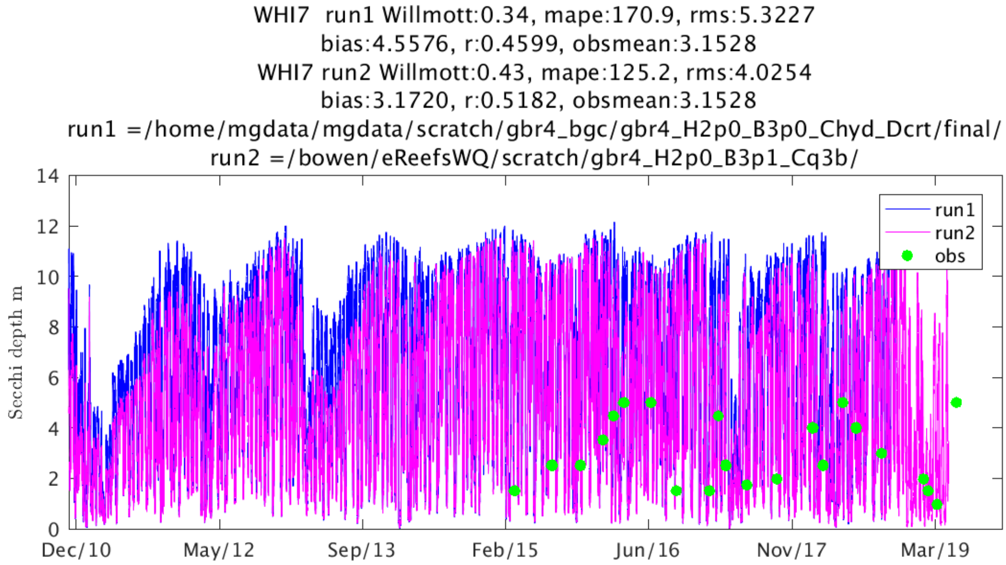


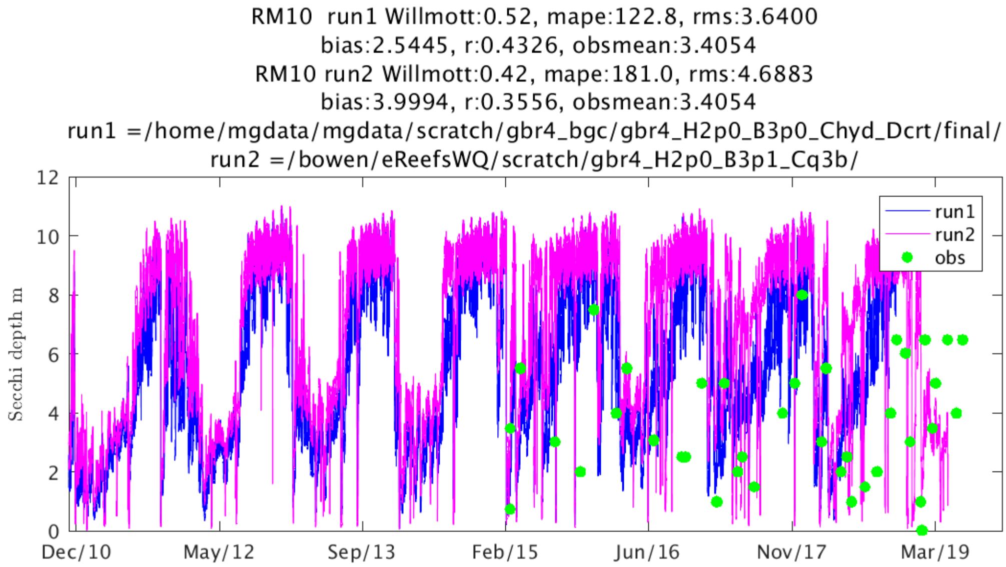
Yongala run1 Willmott:0.32, mape:74.0, rms:10.4730
bias:8.7182, r:0.0083, obsmean:14.6398
Yongala run2 Willmott:0.35, mape:54.6, rms:8.2765
bias:5.4869, r:0.0419, obsmean:14.6398
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/

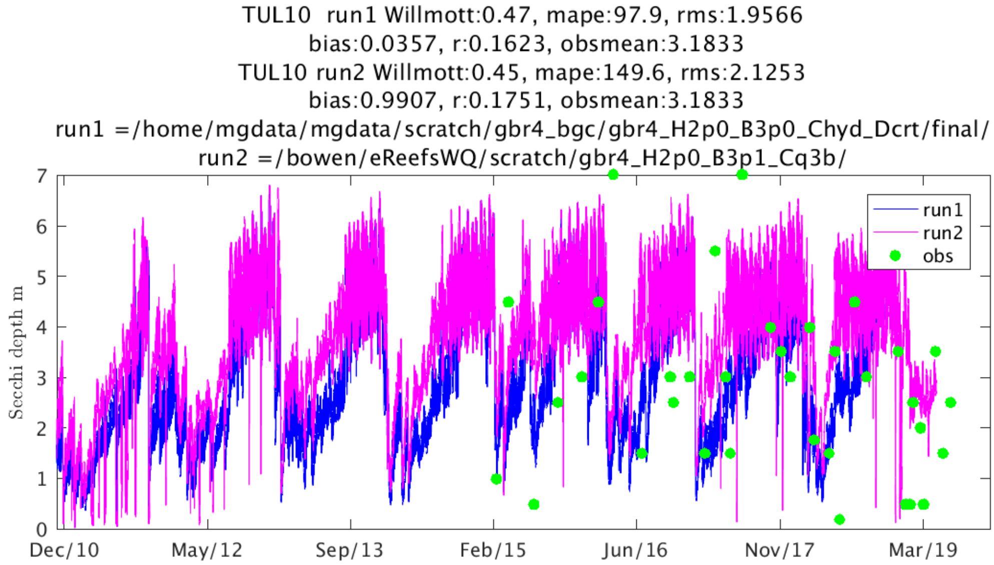


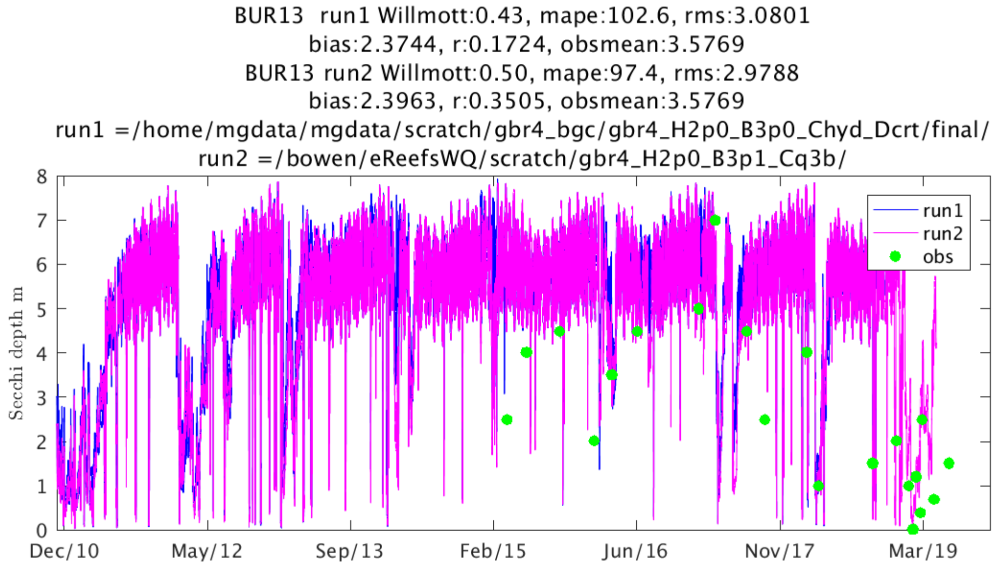
NSI run1 Willmott:0.53, mape:26.9, rms:6.4217
bias:0.6439, r:0.2152, obsmean:20.0400
NSI run2 Willmott:0.53, mape:27.5, rms:6.7731
bias:-2.8621, r:0.2376, obsmean:20.0400
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/




WHI7 run1 Willmott:0.34, mape:170.9, rms:5.3227
bias:4.5576, r:0.4599, obsmean:3.1528
WHI7 run2 Willmott:0.43, mape:125.2, rms:4.0254
bias:3.1720, r:0.5182, obsmean:3.1528
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
Secchi depth m
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19


RM10 run1 Willmott:0.52, mape:122.8, rms:3.6400
bias:2.5445, r:0.4326, obsmean:3.4054
RM10 run2 Willmott:0.42, mape:181.0, rms:4.6883
bias:3.9994, r:0.3556, obsmean:3.4054
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
Secchi depth m
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19


TUL10 run1 Willmott:0.47, mape:97.9, rms:1.9566
bias:0.0357, r:0.1623, obsmean:3.1833
TUL10 run2 Willmott:0.45, mape:149.6, rms:2.1253
bias:0.9907, r:0.1751, obsmean:3.1833
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
Secchi depth m
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19
run1
run2
obs


BUR13 run1 Willmott:0.43, mape:102.6, rms:3.0801
bias:2.3744, r:0.1724, obsmean:3.5769
BUR13 run2 Willmott:0.50, mape:97.4, rms:2.9788
bias:2.3963, r:0.3505, obsmean:3.5769
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
Secchi depth m
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19
run1
run2
obs

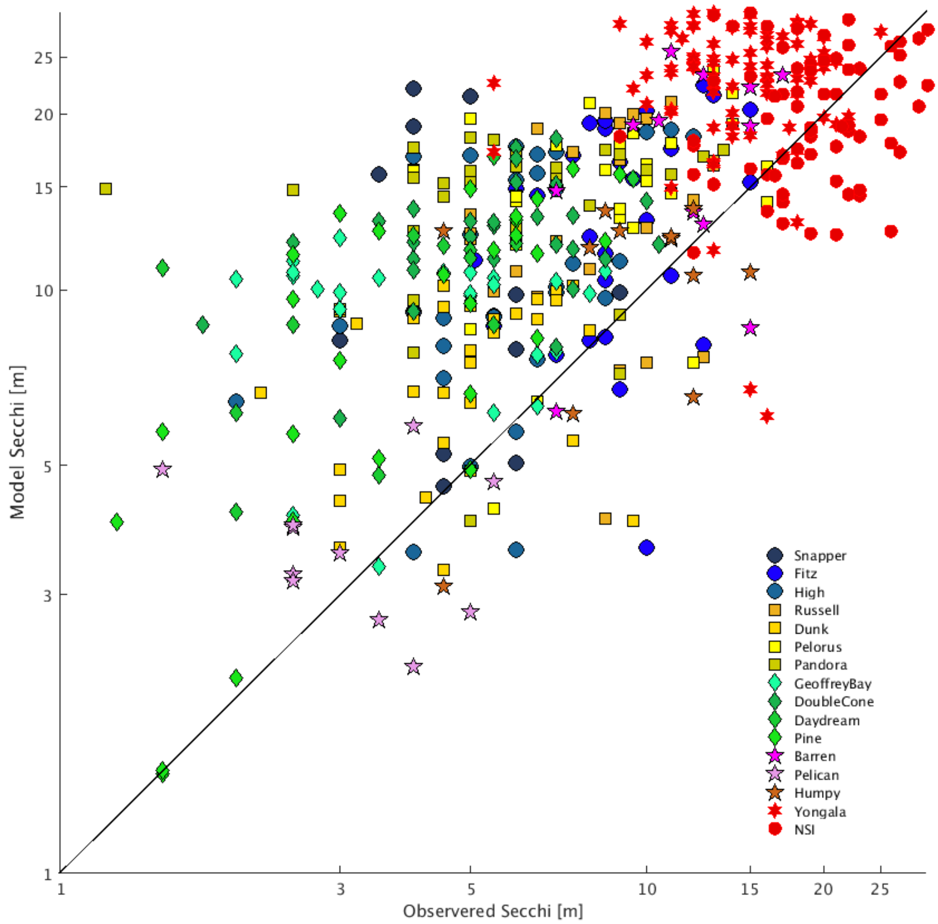


Figure 5 Scatter plot of observed Secchi for Long Term Monitoring sites and NRS sites (Yongala and North Stradbroke) assessment against simulated Secchi for model version 3p1

9. Simulated DIP assessment against AIMS Long Term Monitoring

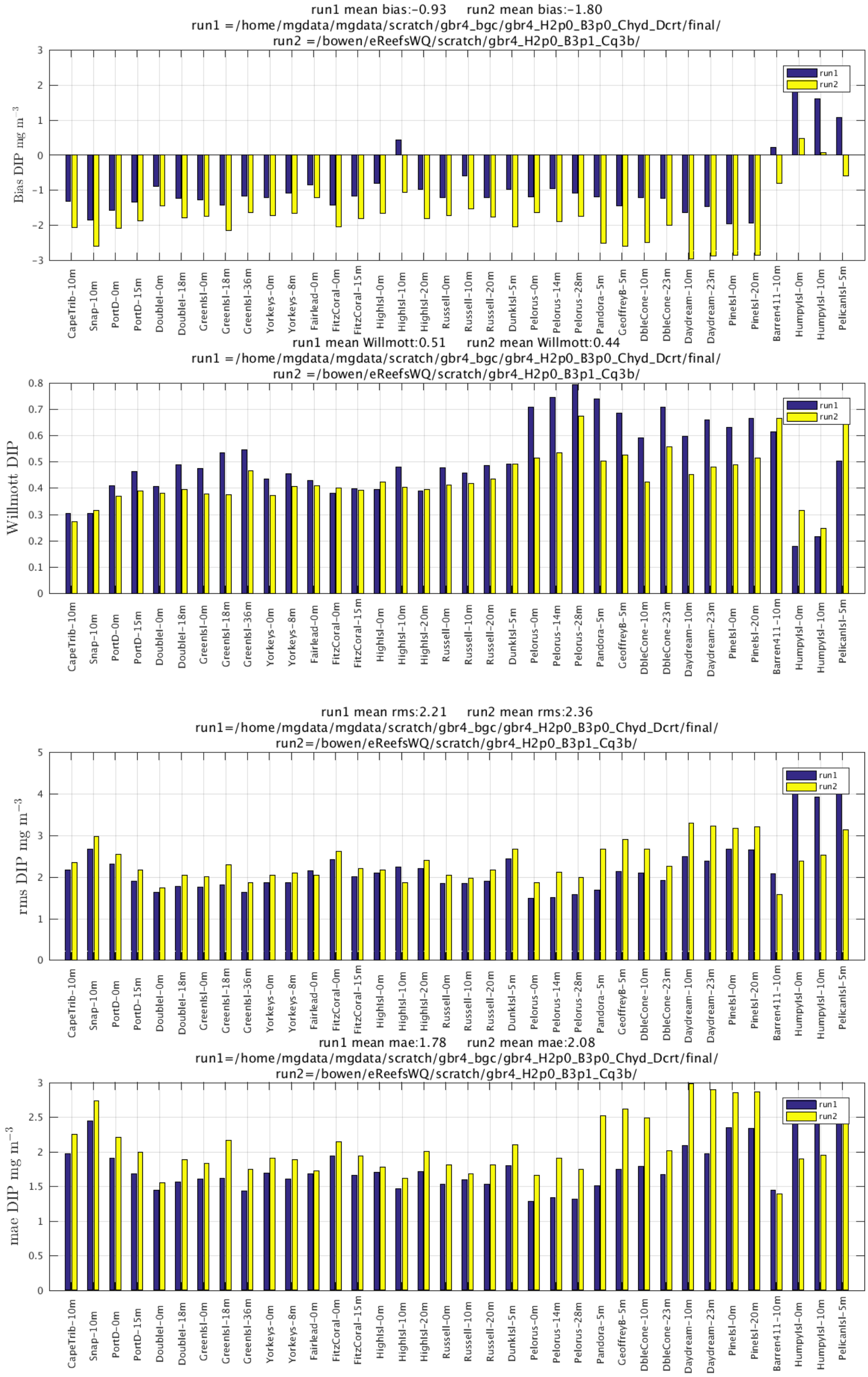
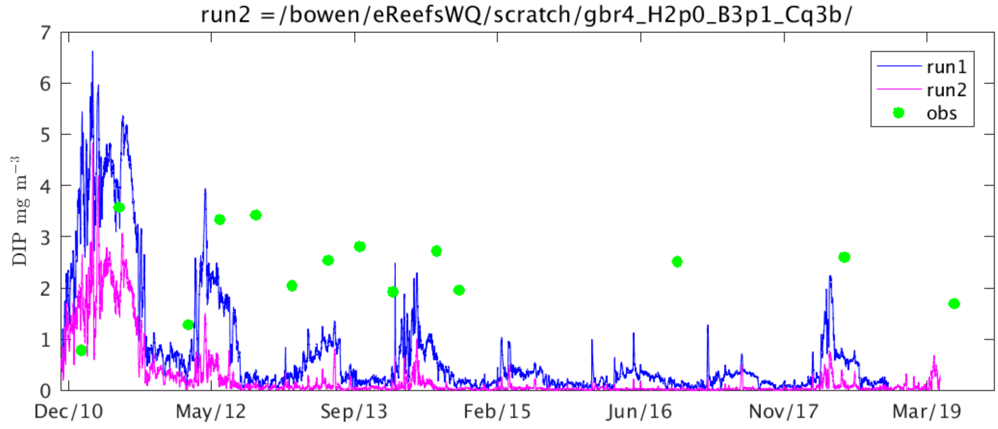
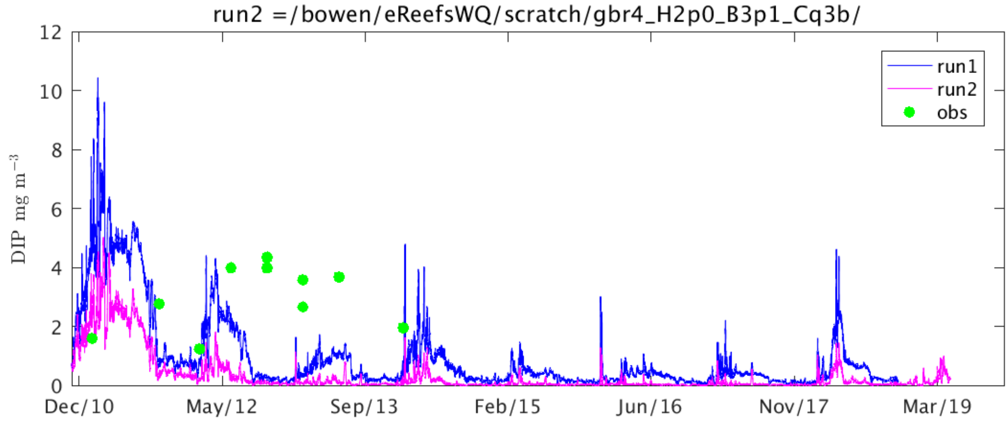


Figure 6 Metrics for Long Term Monitoring Sites simulated DIP *against observations*

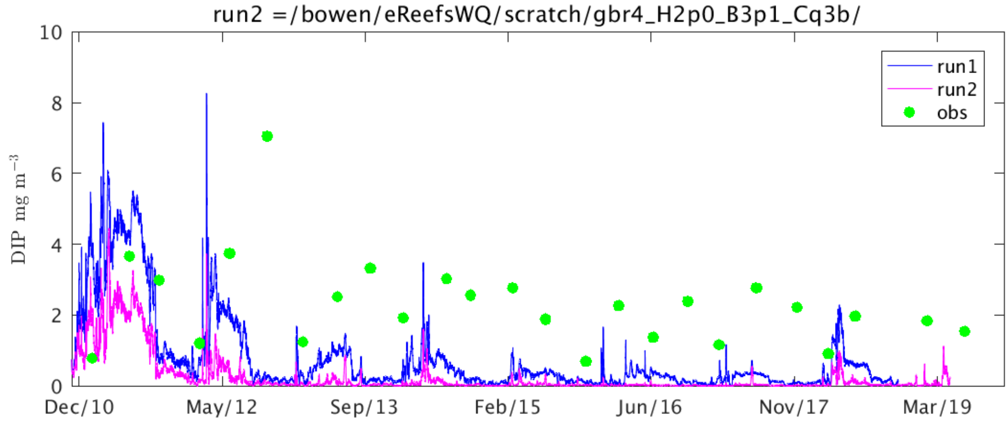
CapeTrib_10m run1 d2:0.30, mape:106.3, rms:2.1699
bias:-1.3295, r:-0.1383, obsmean:2.4248
CapeTrib_10m run2 d2:0.27, mape:97.0, rms:2.3396
bias:-2.0714, r:-0.1630, obsmean:2.4248
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/

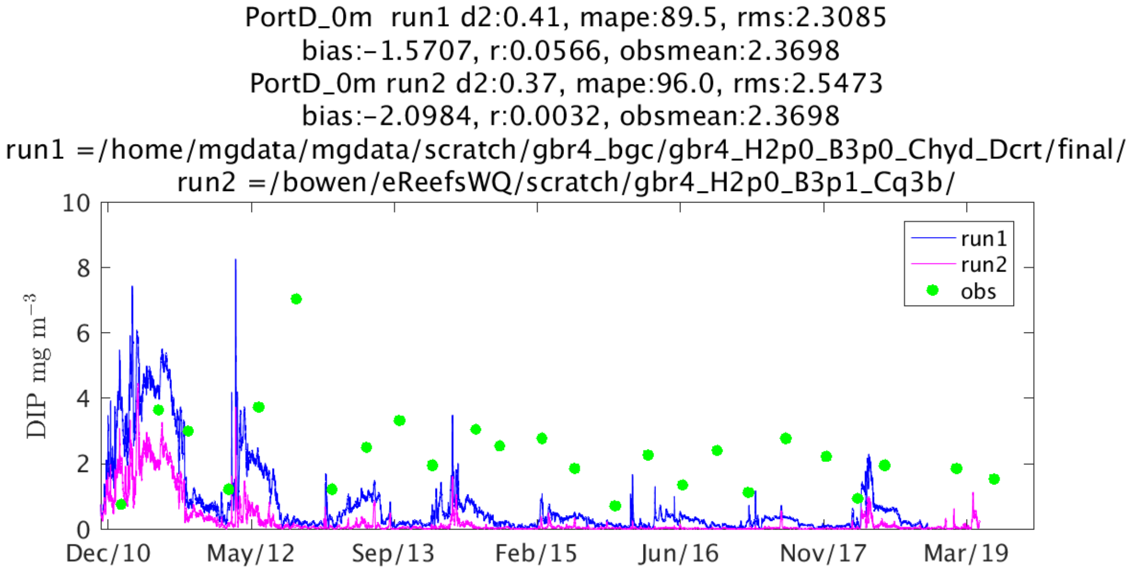


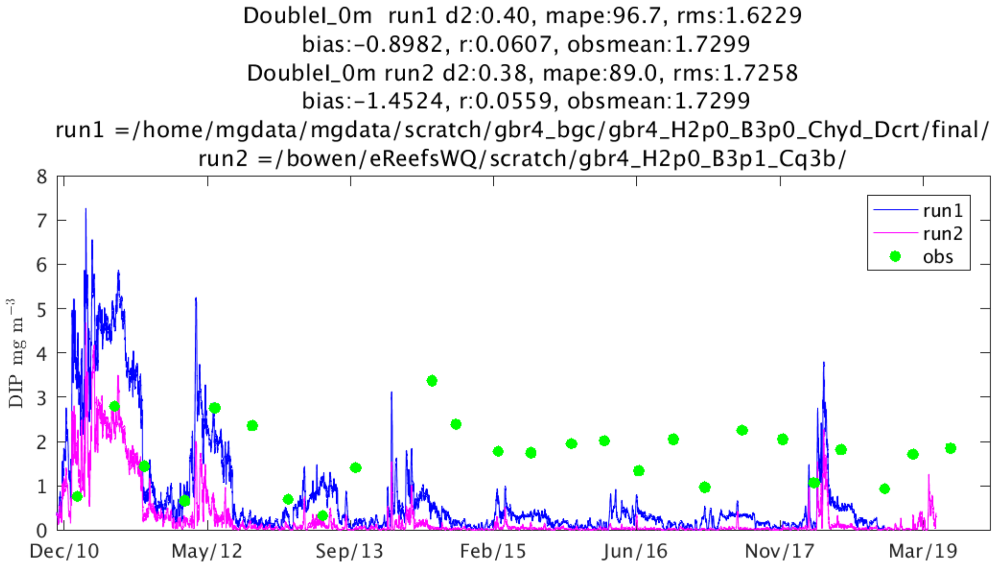
Snap_10m run1 d2:0.30, mape:83.6, rms:2.6619
bias:-1.8640, r:-0.3331, obsmean:2.9856
Snap_10m run2 d2:0.31, mape:87.6, rms:2.9774
bias:-2.5983, r:-0.4618, obsmean:2.9856
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/

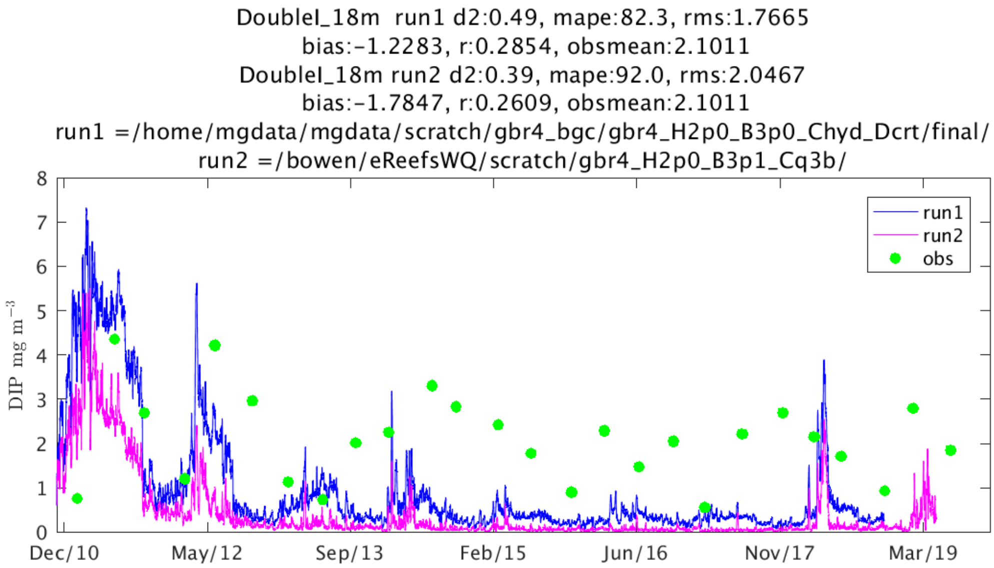


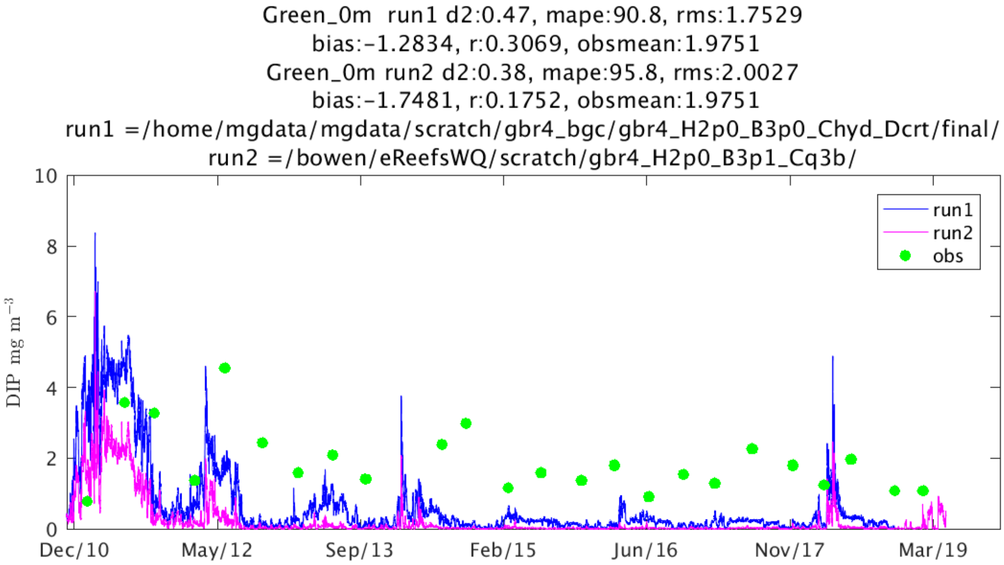
PortD_0m run1 d2:0.41, mape:89.5, rms:2.3085
bias:-1.5707, r:0.0566, obsmean:2.3698
PortD_0m run2 d2:0.37, mape:96.0, rms:2.5473
bias:-2.0984, r:0.0032, obsmean:2.3698
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/

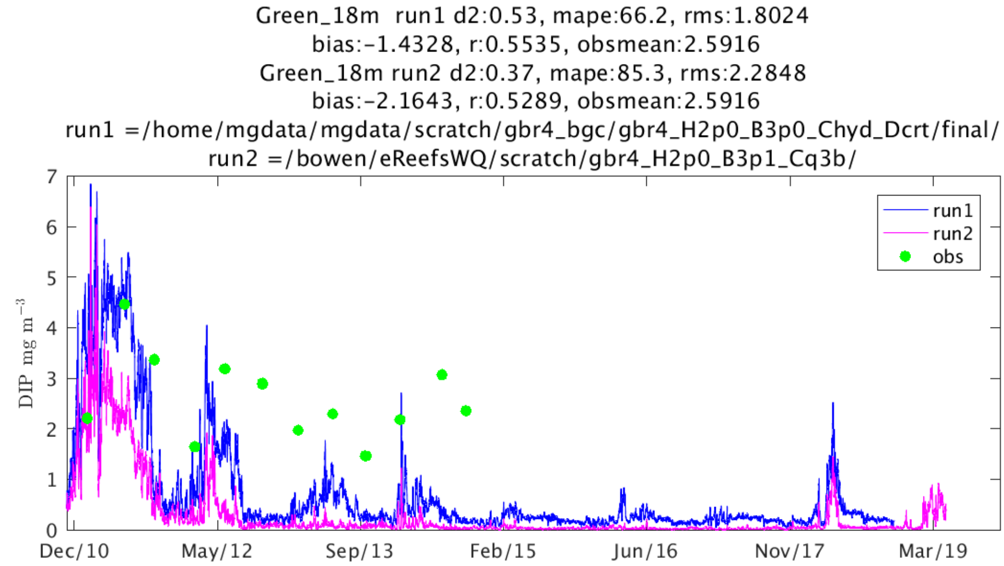


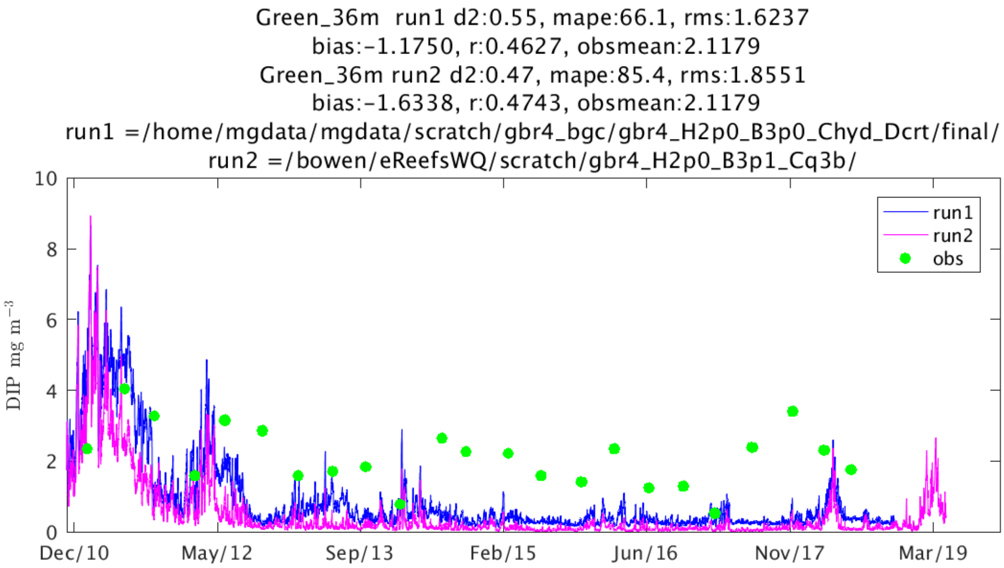

PortD_0m run1 d2:0.41, mape:89.5, rms:2.3085
bias:-1.5707, r:0.0566, obsmean:2.3698
PortD_0m run2 d2:0.37, mape:96.0, rms:2.5473
bias:-2.0984, r:0.0032, obsmean:2.3698
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
DIP mg m^{-3}
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19

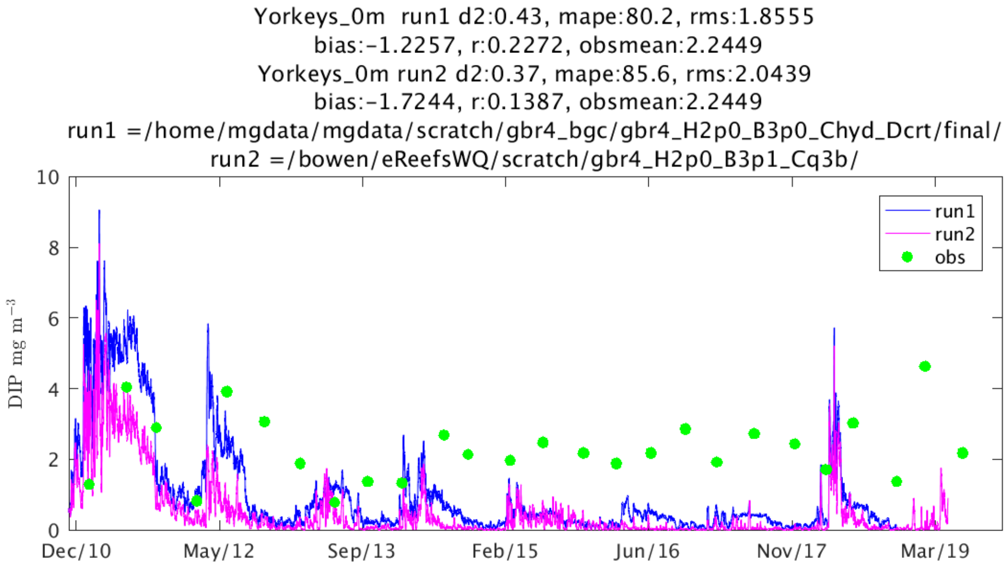

DoubleI_0m run1 d2:0.40, mape:96.7, rms:1.6229
bias:-0.8982, r:0.0607, obsmean:1.7299
DoubleI_0m run2 d2:0.38, mape:89.0, rms:1.7258
bias:-1.4524, r:0.0559, obsmean:1.7299
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
DIP mg m^{-3}
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19

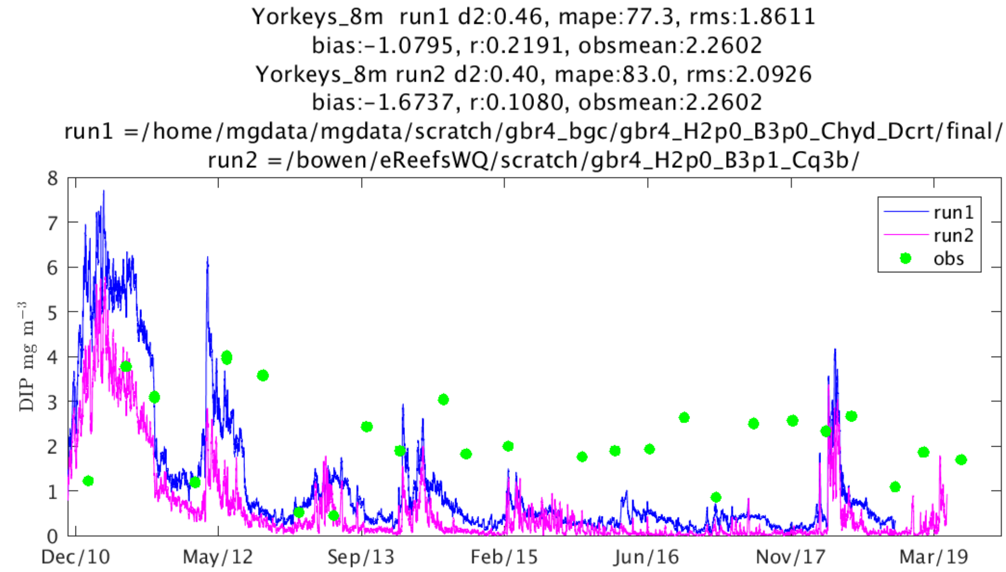

DoubleI_18m run1 d2:0.49, mape:82.3, rms:1.7665
bias:-1.2283, r:0.2854, obsmean:2.1011
DoubleI_18m run2 d2:0.39, mape:92.0, rms:2.0467
bias:-1.7847, r:0.2609, obsmean:2.1011
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
DIP mg m^{-3}
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19

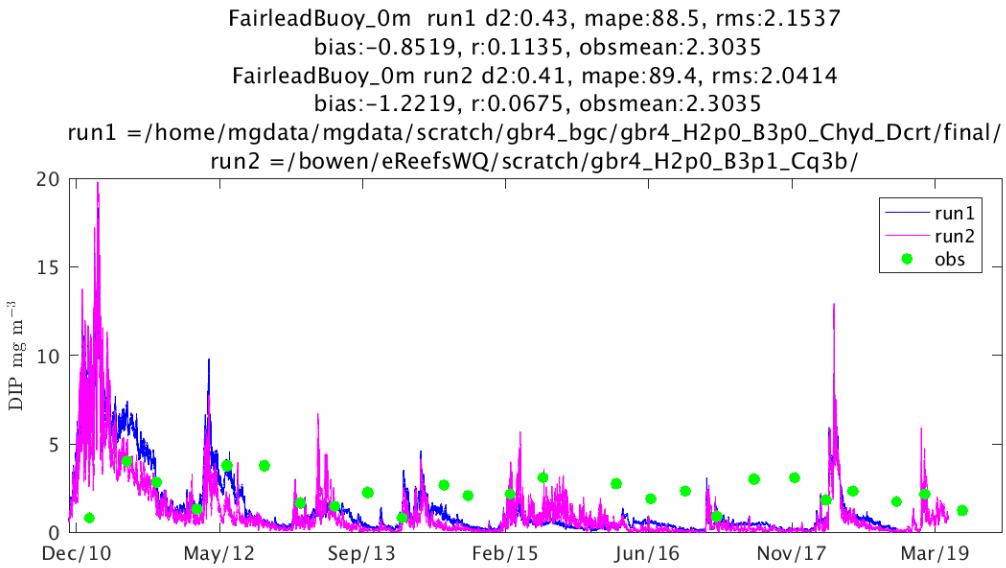

Green_0m run1 d2:0.47, mape:90.8, rms:1.7529
bias:-1.2834, r:0.3069, obsmean:1.9751
Green_0m run2 d2:0.38, mape:95.8, rms:2.0027
bias:-1.7481, r:0.1752, obsmean:1.9751
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
DIP mg m^{-3}
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19

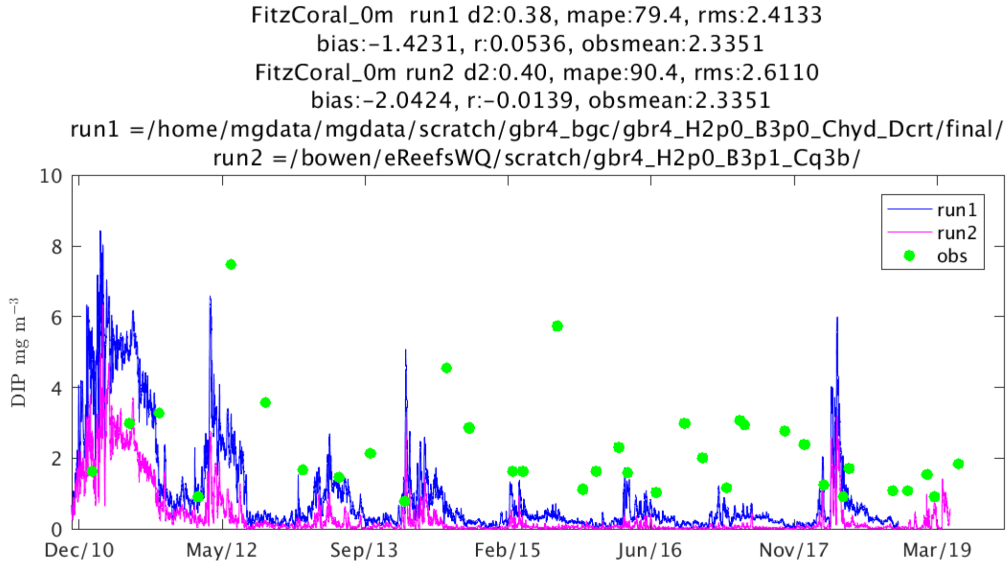

Green_18m run1 d2:0.53, mape:66.2, rms:1.8024
bias:-1.4328, r:0.5535, obsmean:2.5916
Green_18m run2 d2:0.37, mape:85.3, rms:2.2848
bias:-2.1643, r:0.5289, obsmean:2.5916
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
DIP mg m^{-3}
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19

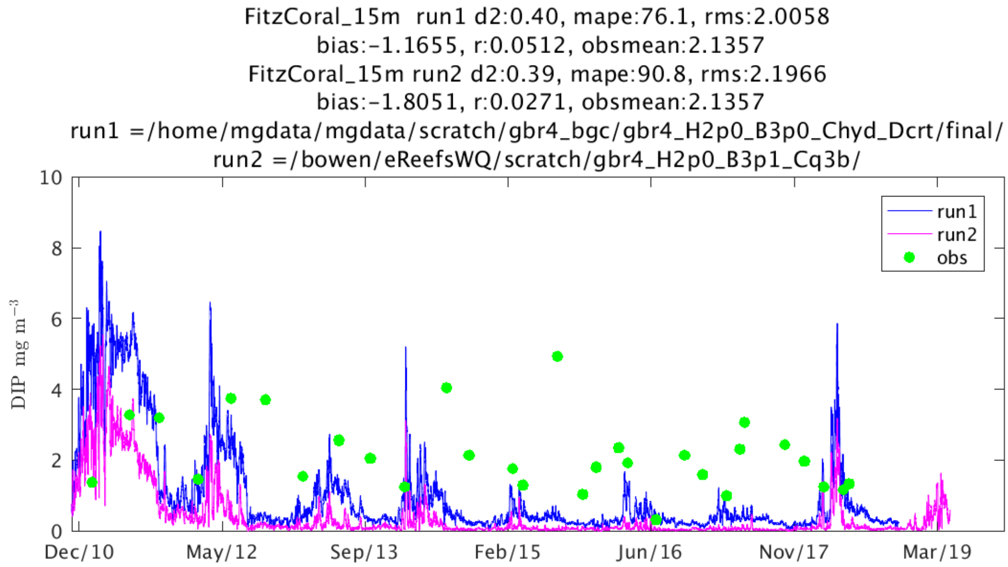

Green_36m run1 d2:0.55, mape:66.1, rms:1.6237
bias:-1.1750, r:0.4627, obsmean:2.1179
Green_36m run2 d2:0.47, mape:85.4, rms:1.8551
bias:-1.6338, r:0.4743, obsmean:2.1179
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
DIP mg m^{-3}
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19

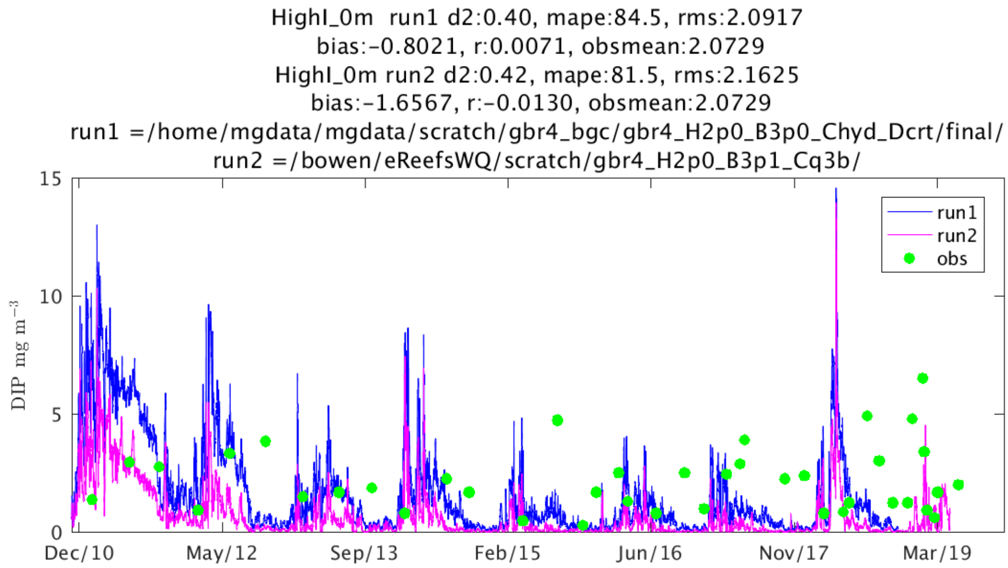

Yorkeys_0m run1 d2:0.43, mape:80.2, rms:1.8555
bias:-1.2257, r:0.2272, obsmean:2.2449
Yorkeys_0m run2 d2:0.37, mape:85.6, rms:2.0439
bias:-1.7244, r:0.1387, obsmean:2.2449
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
DIP mg m^-3
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19


Yorkeys_8m run1 d2:0.46, mape:77.3, rms:1.8611
bias:-1.0795, r:0.2191, obsmean:2.2602
Yorkeys_8m run2 d2:0.40, mape:83.0, rms:2.0926
bias:-1.6737, r:0.1080, obsmean:2.2602
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
DIP mg m^-3
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19


FairleadBuoy_0m run1 d2:0.43, mape:88.5, rms:2.1537
bias:-0.8519, r:0.1135, obsmean:2.3035
FairleadBuoy_0m run2 d2:0.41, mape:89.4, rms:2.0414
bias:-1.2219, r:0.0675, obsmean:2.3035
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
DIP mg m^-3
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19


FitzCoral_0m run1 d2:0.38, mape:79.4, rms:2.4133
bias:-1.4231, r:0.0536, obsmean:2.3351
FitzCoral_0m run2 d2:0.40, mape:90.4, rms:2.6110
bias:-2.0424, r:-0.0139, obsmean:2.3351
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
DIP mg m-3
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19


FitzCoral_15m run1 d2:0.40, mape:76.1, rms:2.0058
bias:-1.1655, r:0.0512, obsmean:2.1357
FitzCoral_15m run2 d2:0.39, mape:90.8, rms:2.1966
bias:-1.8051, r:0.0271, obsmean:2.1357
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
DIP mg m-3
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19


HighI_0m run1 d2:0.40, mape:84.5, rms:2.0917
bias:-0.8021, r:0.0071, obsmean:2.0729
HighI_0m run2 d2:0.42, mape:81.5, rms:2.1625
bias:-1.6567, r:-0.0130, obsmean:2.0729
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
DIP mg m-3
run1
run2
obs
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Jun/16
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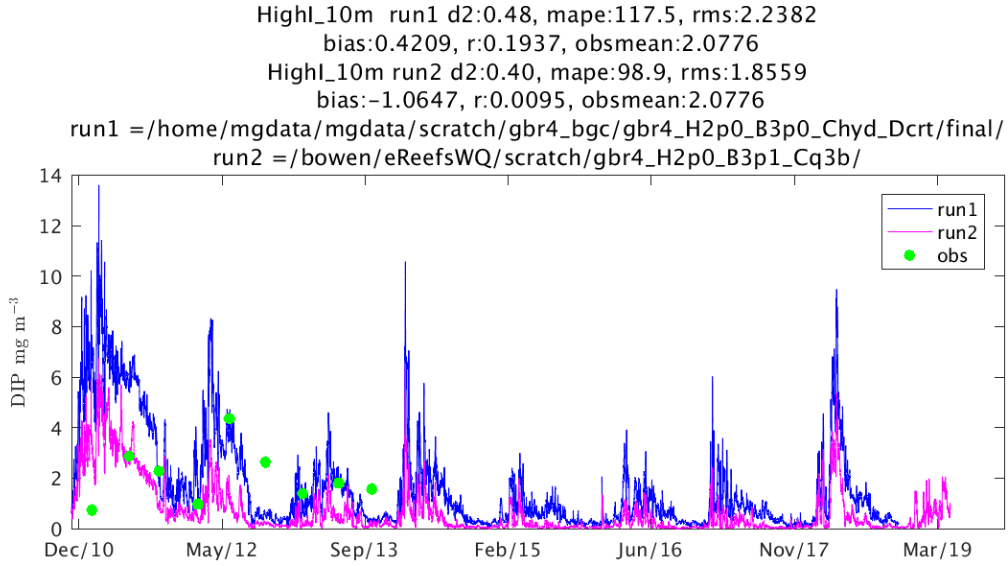
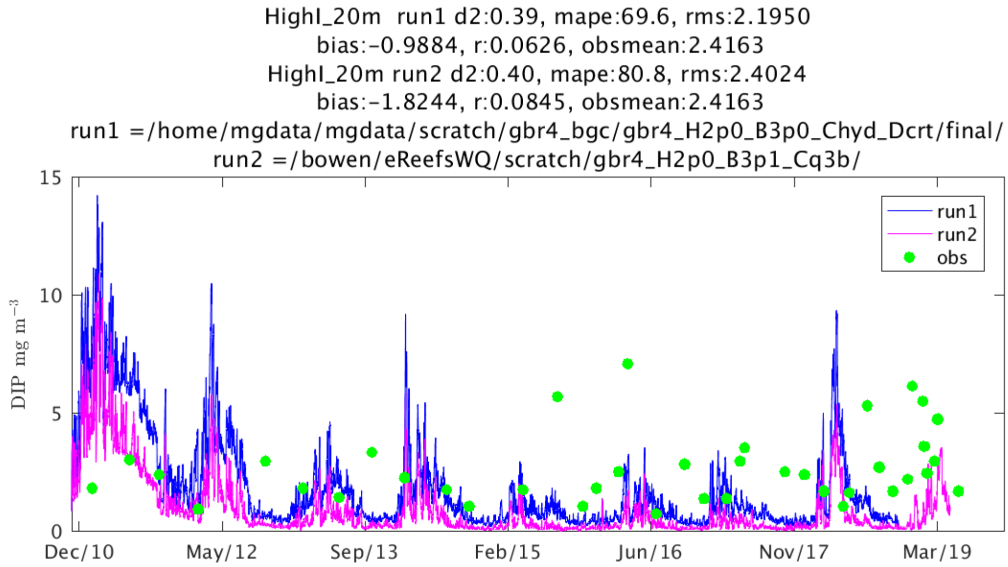
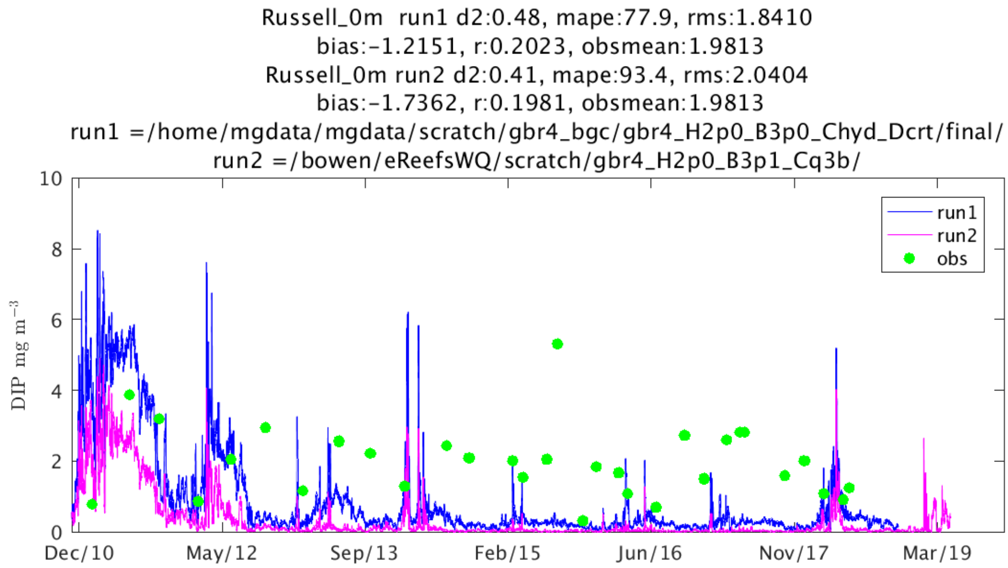
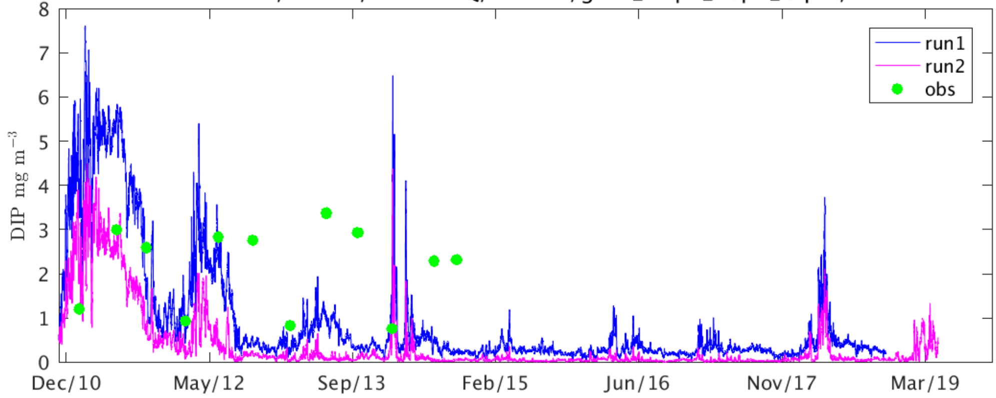
CSIRO


HighI_10m run1 d2:0.48, mape:117.5, rms:2.2382
bias:0.4209, r:0.1937, obsmean:2.0776
HighI_10m run2 d2:0.40, mape:98.9, rms:1.8559
bias:-1.0647, r:0.0095, obsmean:2.0776
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
DIP mg m^{-3}
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19

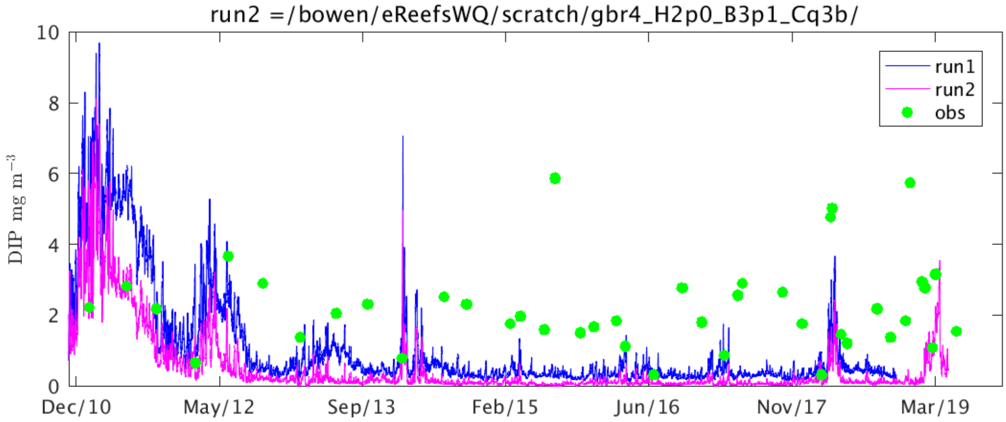

HighI_20m run1 d2:0.39, mape:69.6, rms:2.1950
bias:-0.9884, r:0.0626, obsmean:2.4163
HighI_20m run2 d2:0.40, mape:80.8, rms:2.4024
bias:-1.8244, r:0.0845, obsmean:2.4163
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
DIP mg m^{-3}
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19


Russell_0m run1 d2:0.48, mape:77.9, rms:1.8410
bias:-1.2151, r:0.2023, obsmean:1.9813
Russell_0m run2 d2:0.41, mape:93.4, rms:2.0404
bias:-1.7362, r:0.1981, obsmean:1.9813
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
DIP mg m^{-3}
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19

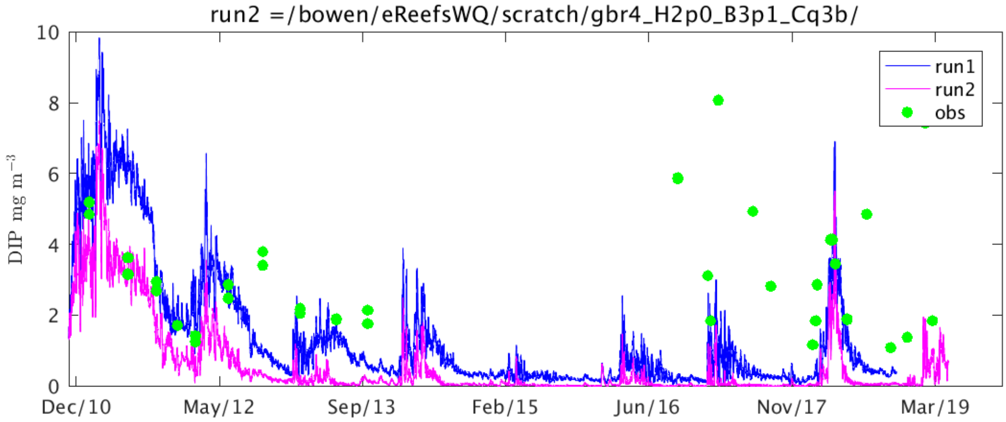
Russell_10m run1 d2:0.46, mape:77.7, rms:1.8505
bias:-0.6011, r:0.1504, obsmean:2.1510
Russell_10m run2 d2:0.42, mape:77.6, rms:1.9651
bias:-1.5357, r:0.0597, obsmean:2.1510
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/

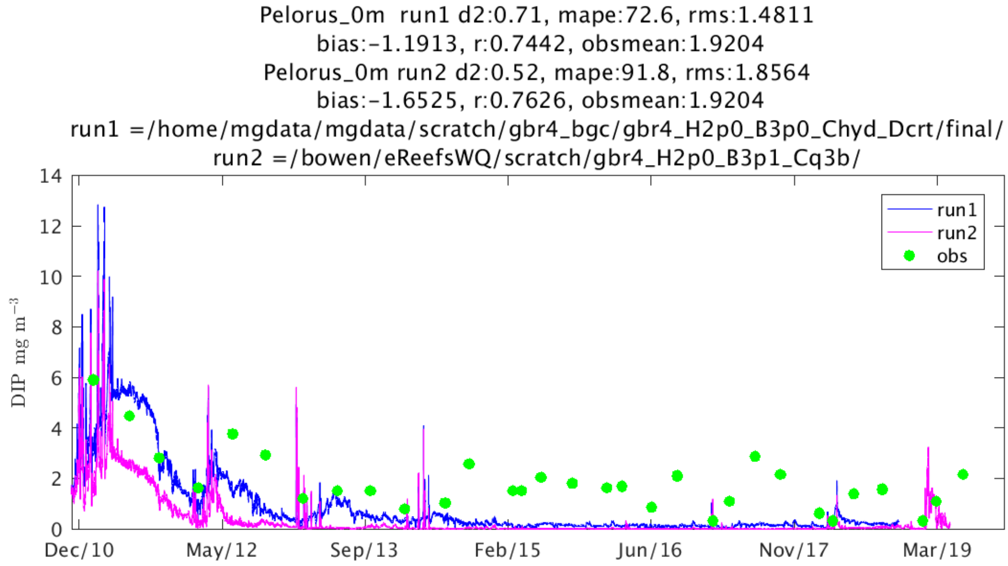


Russell_20m run1 d2:0.48, mape:64.8, rms:1.8928
bias:-1.2075, r:0.2763, obsmean:2.1466
Russell_20m run2 d2:0.44, mape:84.1, rms:2.1595
bias:-1.7809, r:0.2625, obsmean:2.1466
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/

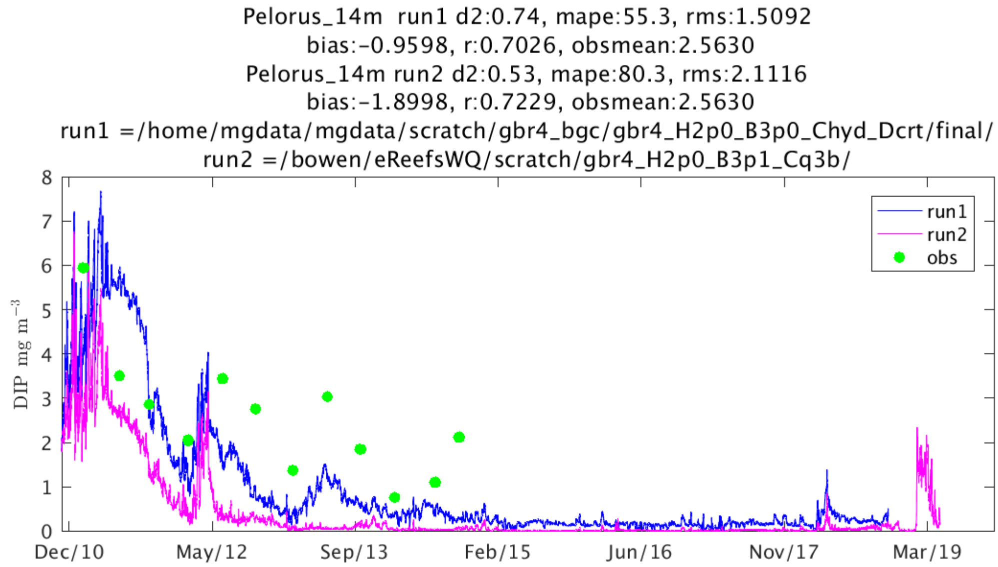


Dunk_5m run1 d2:0.49, mape:57.4, rms:2.4370
bias:-0.9750, r:0.1714, obsmean:3.0397
Dunk_5m run2 d2:0.49, mape:69.9, rms:2.6682
bias:-2.0562, r:0.2659, obsmean:3.0397
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/

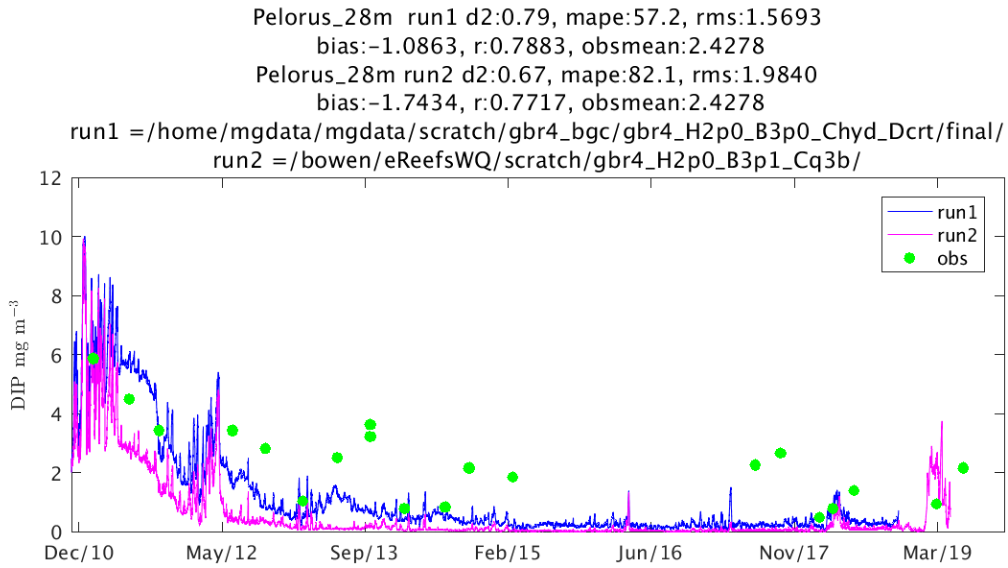




Pelorus_0m run1 d2:0.71, mape:72.6, rms:1.4811
bias:-1.1913, r:0.7442, obsmean:1.9204
Pelorus_0m run2 d2:0.52, mape:91.8, rms:1.8564
bias:-1.6525, r:0.7626, obsmean:1.9204
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
DIP mg m⁻³
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19

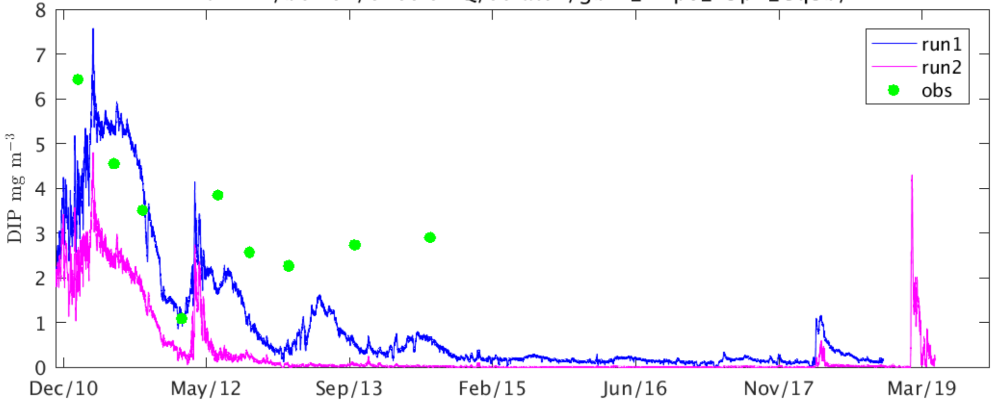


Pelorus_14m run1 d2:0.74, mape:55.3, rms:1.5092
bias:-0.9598, r:0.7026, obsmean:2.5630
Pelorus_14m run2 d2:0.53, mape:80.3, rms:2.1116
bias:-1.8998, r:0.7229, obsmean:2.5630
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
DIP mg m⁻³
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19

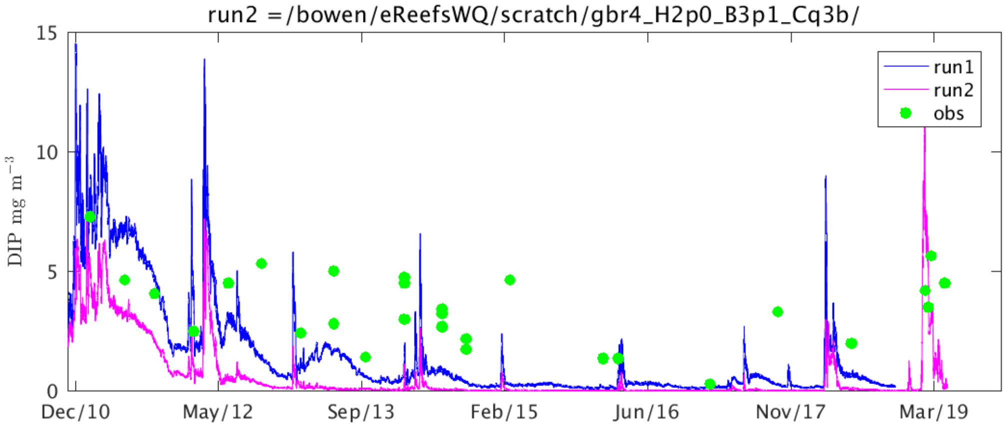


Pelorus_28m run1 d2:0.79, mape:57.2, rms:1.5693
bias:-1.0863, r:0.7883, obsmean:2.4278
Pelorus_28m run2 d2:0.67, mape:82.1, rms:1.9840
bias:-1.7434, r:0.7717, obsmean:2.4278
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
DIP mg m⁻³
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19

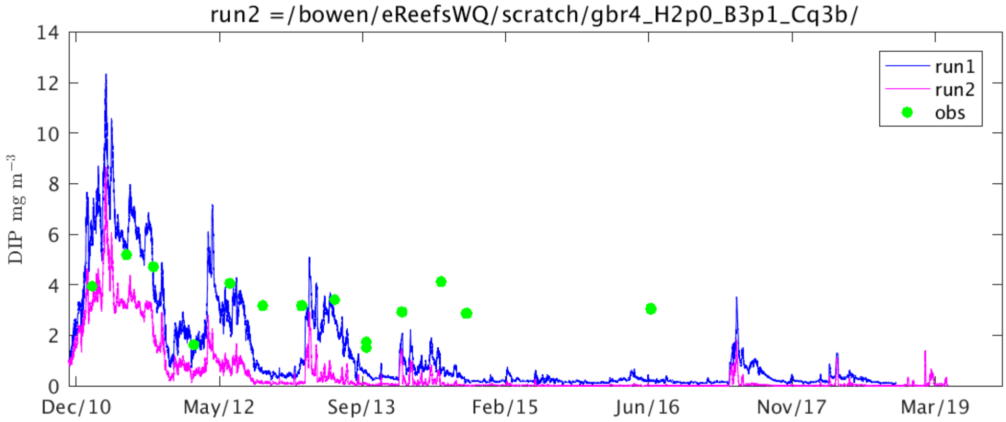
Pandora_5m run1 d2:0.74, mape:47.5, rms:1.6855
bias:-1.1941, r:0.7463, obsmean:3.3284
Pandora_5m run2 d2:0.50, mape:80.1, rms:2.6644
bias:-2.5123, r:0.7988, obsmean:3.3284
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/



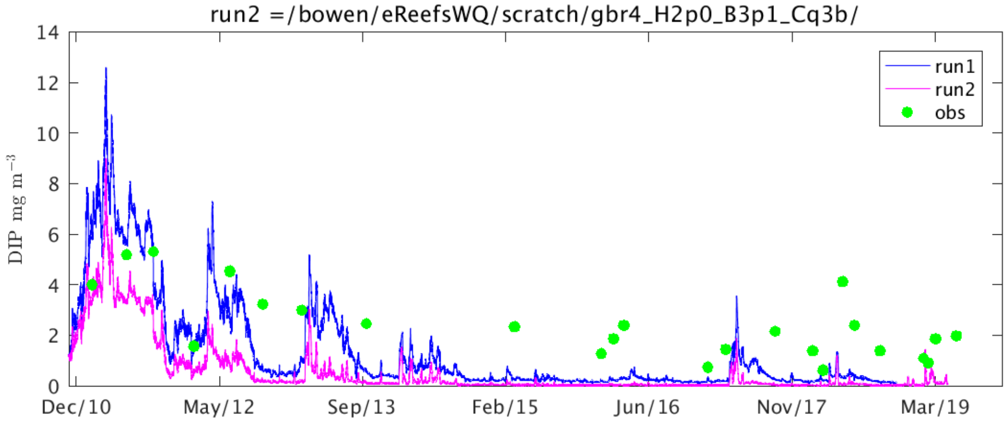
GeoffreyBay_5m run1 d2:0.69, mape:54.6, rms:2.1350
bias:-1.4448, r:0.6098, obsmean:3.2362
GeoffreyBay_5m run2 d2:0.52, mape:85.4, rms:2.9008
bias:-2.6091, r:0.6069, obsmean:3.2362
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/



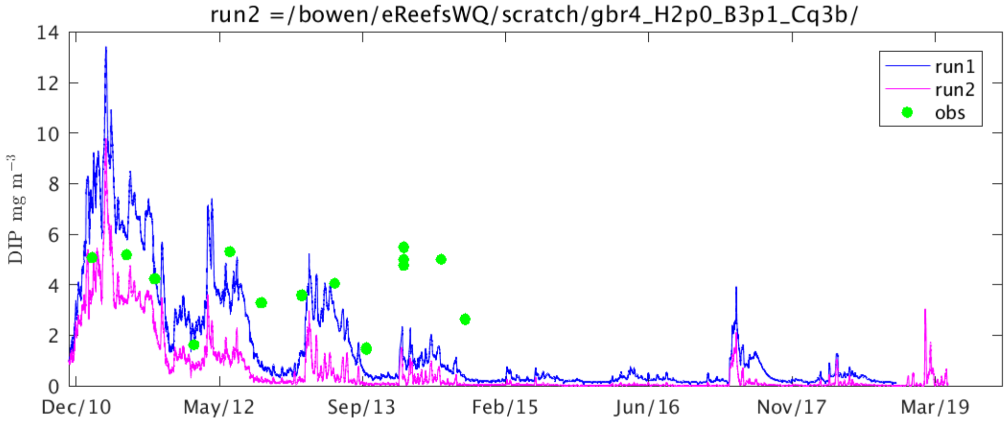
DoubleCone_10m run1 d2:0.59, mape:57.0, rms:2.0926
bias:-1.2126, r:0.6099, obsmean:3.2550
DoubleCone_10m run2 d2:0.42, mape:80.5, rms:2.6695
bias:-2.4892, r:0.6227, obsmean:3.2550
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/



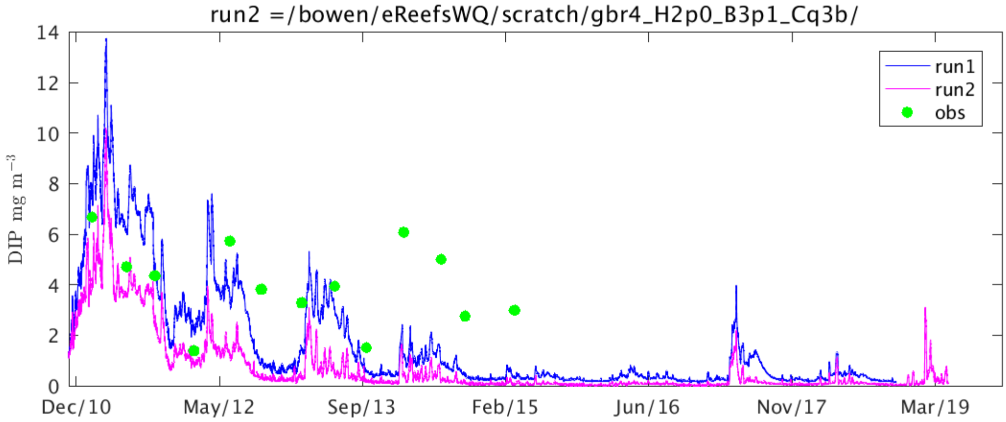
DoubleCone_23m run1 d2:0.71, mape:70.2, rms:1.9202
bias:-1.2323, r:0.6944, obsmean:2.5747
DoubleCone_23m run2 d2:0.56, mape:85.7, rms:2.2544
bias:-2.0131, r:0.6821, obsmean:2.5747
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/

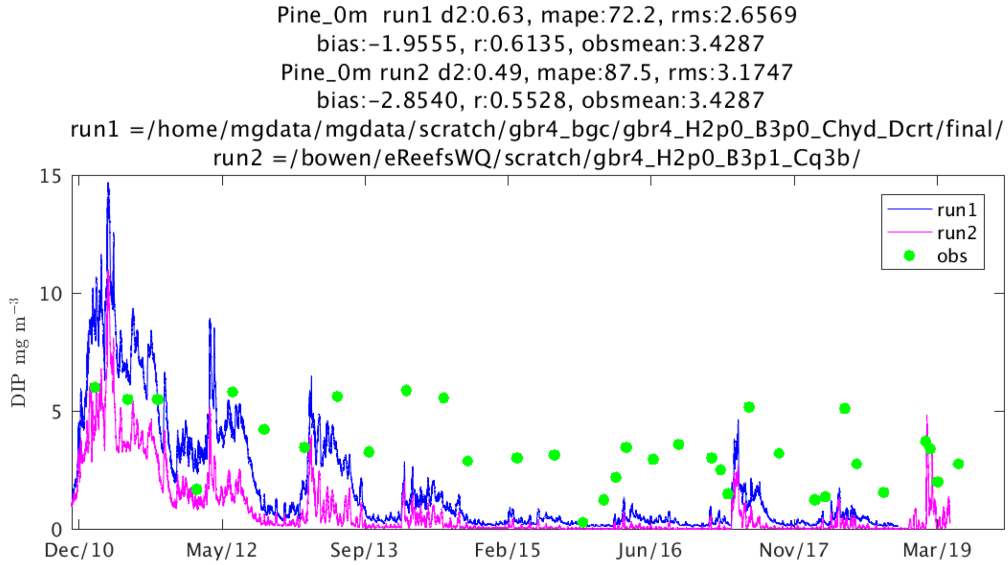


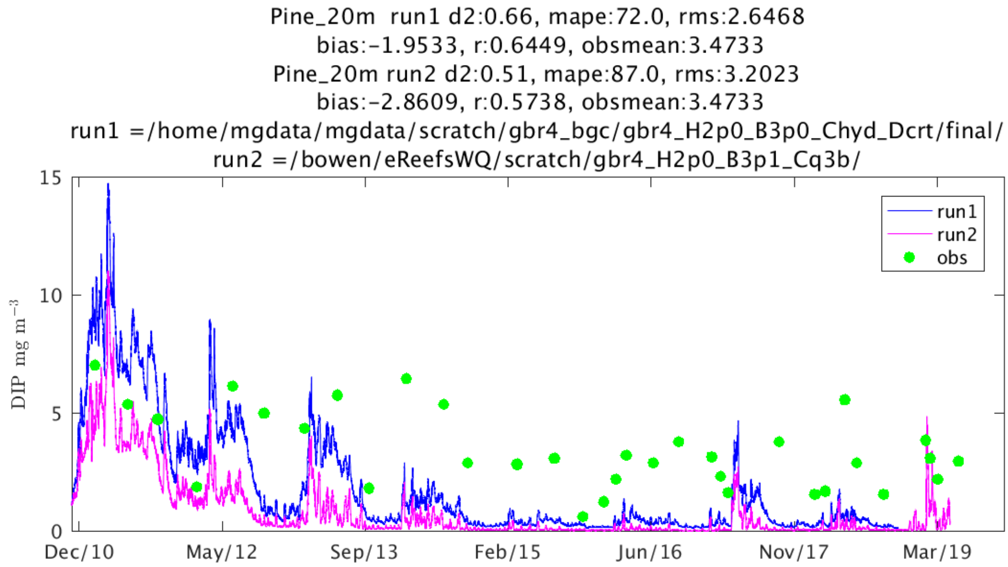
Daydream_10m run1 d2:0.60, mape:54.2, rms:2.4856
bias:-1.6428, r:0.4652, obsmean:3.8784
Daydream_10m run2 d2:0.45, mape:78.7, rms:3.2849
bias:-2.9749, r:0.4235, obsmean:3.8784
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/

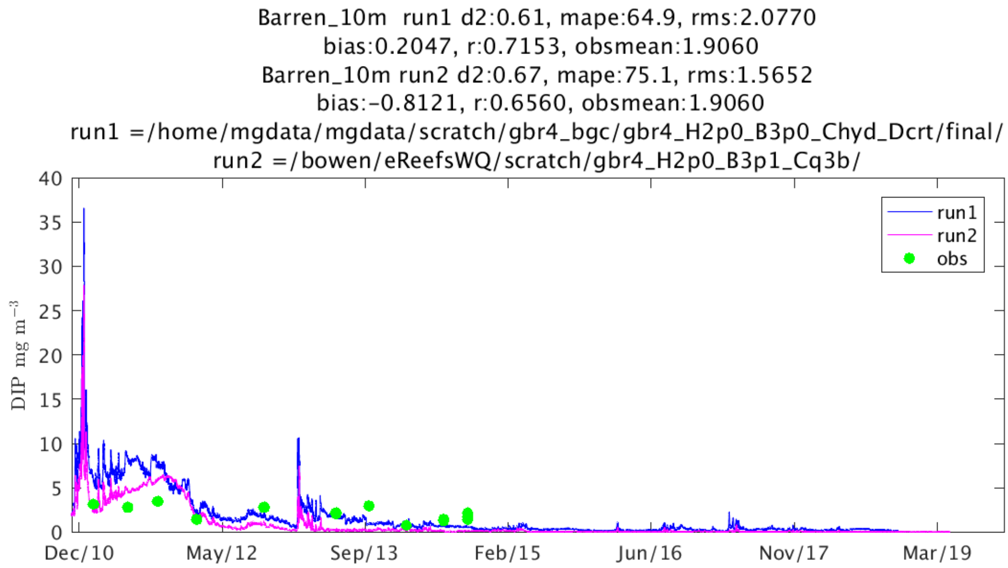


Daydream_23m run1 d2:0.66, mape:52.5, rms:2.3761
bias:-1.4731, r:0.5653, obsmean:4.0245
Daydream_23m run2 d2:0.48, mape:73.4, rms:3.2235
bias:-2.8915, r:0.5260, obsmean:4.0245
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/

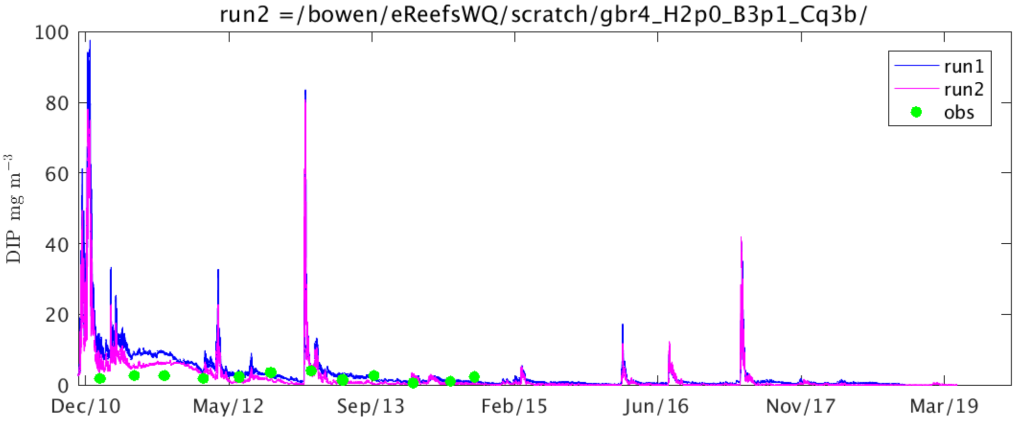



Pine_0m run1 d2:0.63, mape:72.2, rms:2.6569
bias:-1.9555, r:0.6135, obsmean:3.4287
Pine_0m run2 d2:0.49, mape:87.5, rms:3.1747
bias:-2.8540, r:0.5528, obsmean:3.4287
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
DIP mg m^{-3}
0
5
10
15
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19
run1
run2
obs

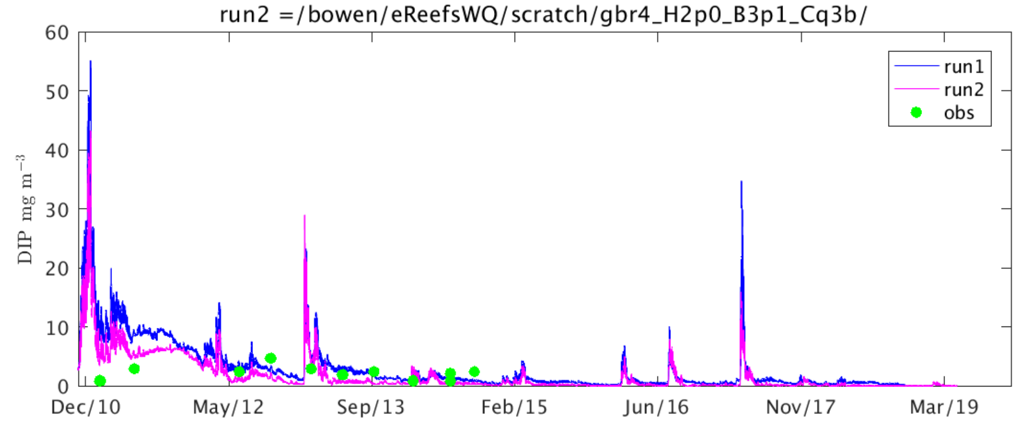

Pine_20m run1 d2:0.66, mape:72.0, rms:2.6468
bias:-1.9533, r:0.6449, obsmean:3.4733
Pine_20m run2 d2:0.51, mape:87.0, rms:3.2023
bias:-2.8609, r:0.5738, obsmean:3.4733
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
DIP mg m^{-3}
0
5
10
15
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19
run1
run2
obs


Barren_10m run1 d2:0.61, mape:64.9, rms:2.0770
bias:0.2047, r:0.7153, obsmean:1.9060
Barren_10m run2 d2:0.67, mape:75.1, rms:1.5652
bias:-0.8121, r:0.6560, obsmean:1.9060
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
DIP mg m^{-3}
0
5
10
15
20
25
30
35
40
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19
run1
run2
obs

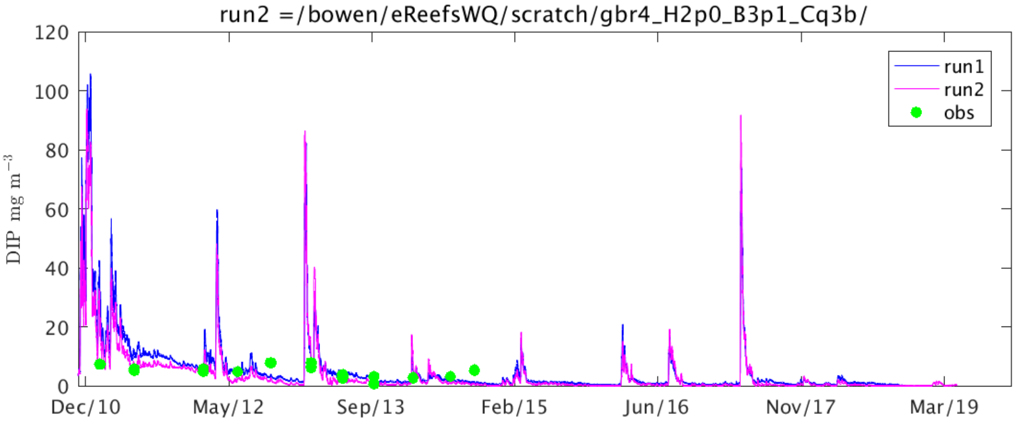
Humpy_0m run1 d2:0.18, mape:136.5, rms:4.1244
bias:2.2803, r:0.1179, obsmean:2.2715
Humpy_0m run2 d2:0.31, mape:95.9, rms:2.3724
bias:0.4732, r:0.1385, obsmean:2.2715
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/



Humpy_10m run1 d2:0.22, mape:199.1, rms:3.9143
bias:1.6046, r:-0.0382, obsmean:2.0978
Humpy_10m run2 d2:0.25, mape:147.2, rms:2.5182
bias:0.0651, r:-0.1064, obsmean:2.0978
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/



Pelican_5m run1 d2:0.50, mape:55.0, rms:4.5067
bias:1.0678, r:0.5054, obsmean:4.8842
Pelican_5m run2 d2:0.68, mape:53.9, rms:3.1339
bias:-0.5885, r:0.6005, obsmean:4.8842
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/



10. Simulated NOx assessment against AIMS Long Term Monitoring

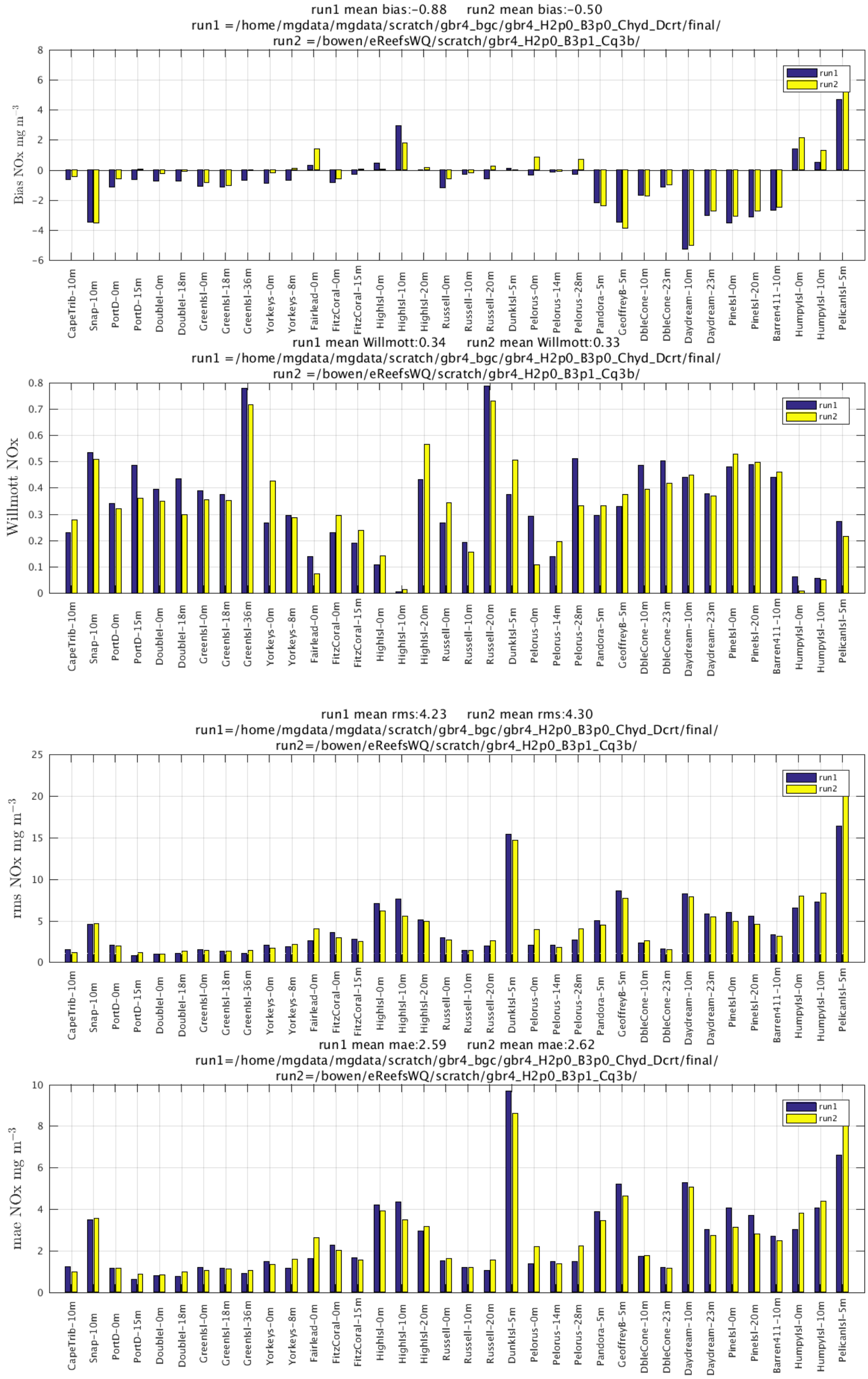
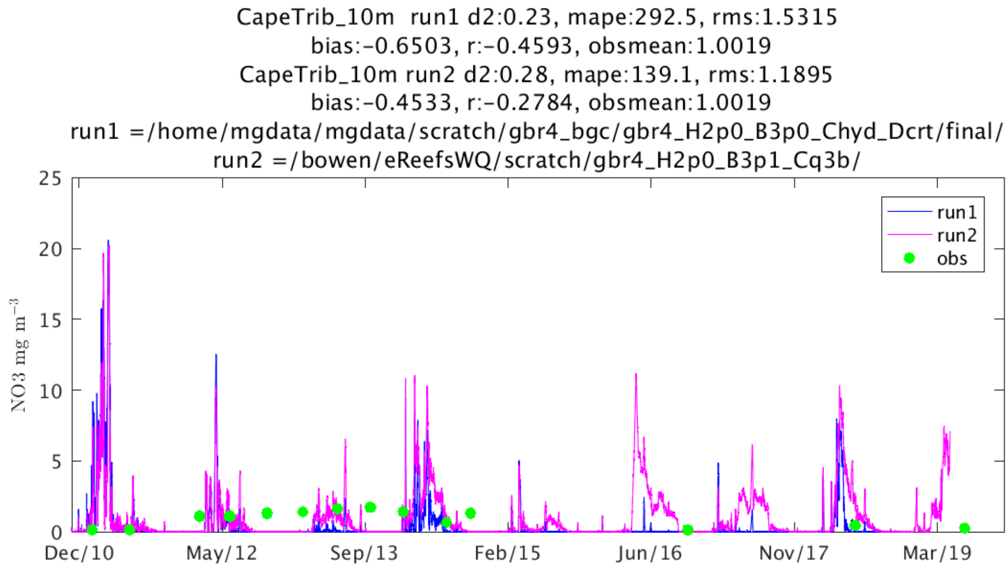
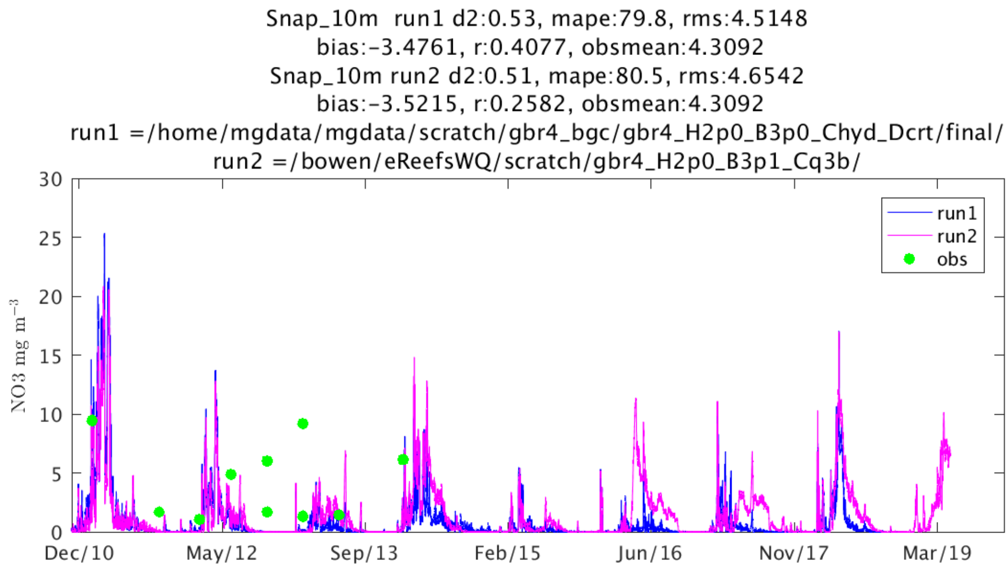
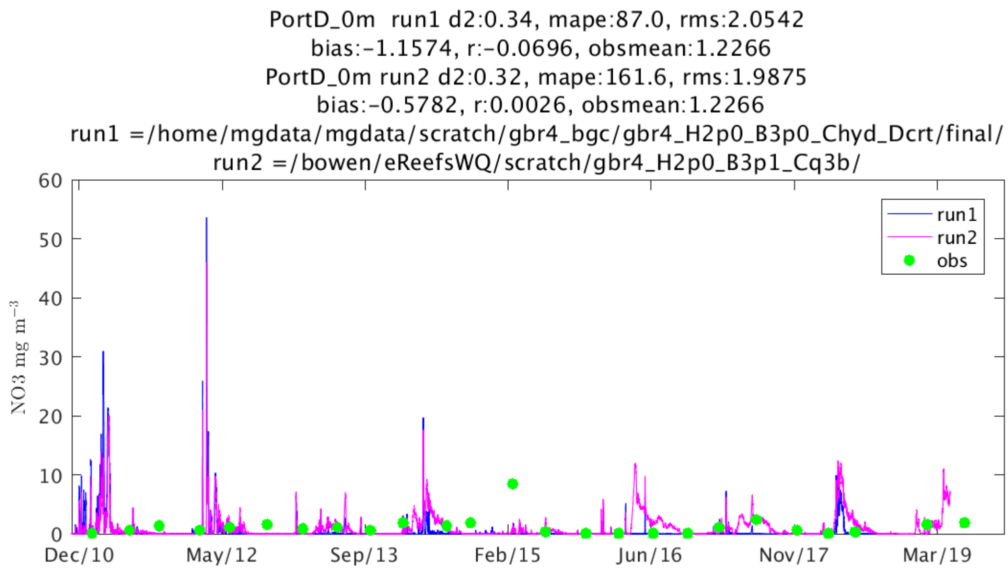
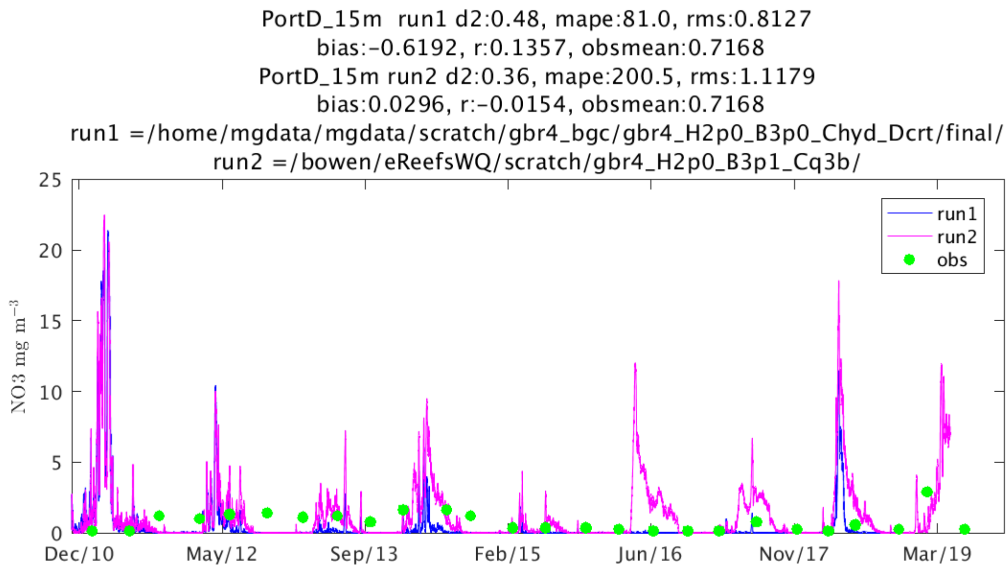


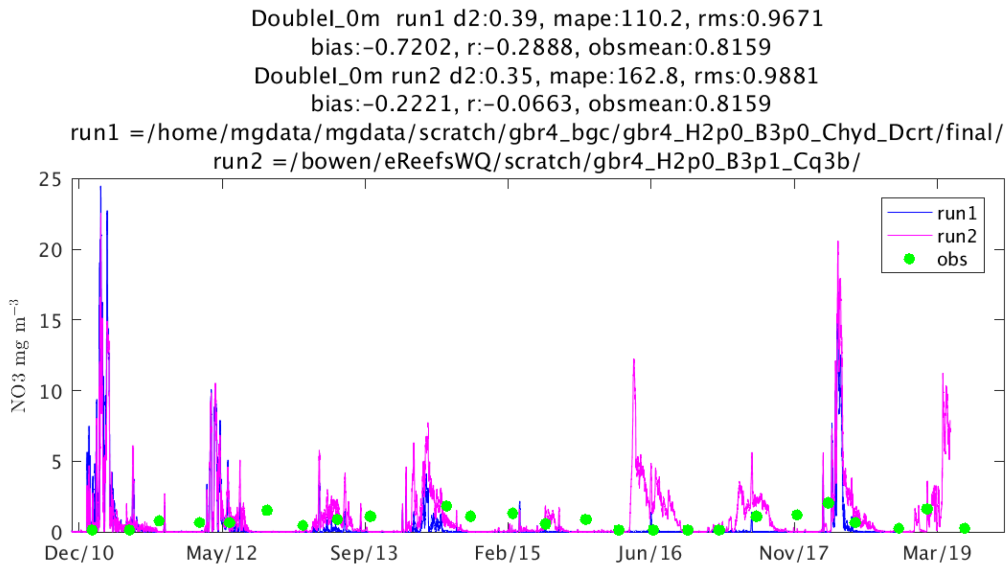
Figure 7 Metrics for Long Term Monitoring sites simulated NO3 against observations

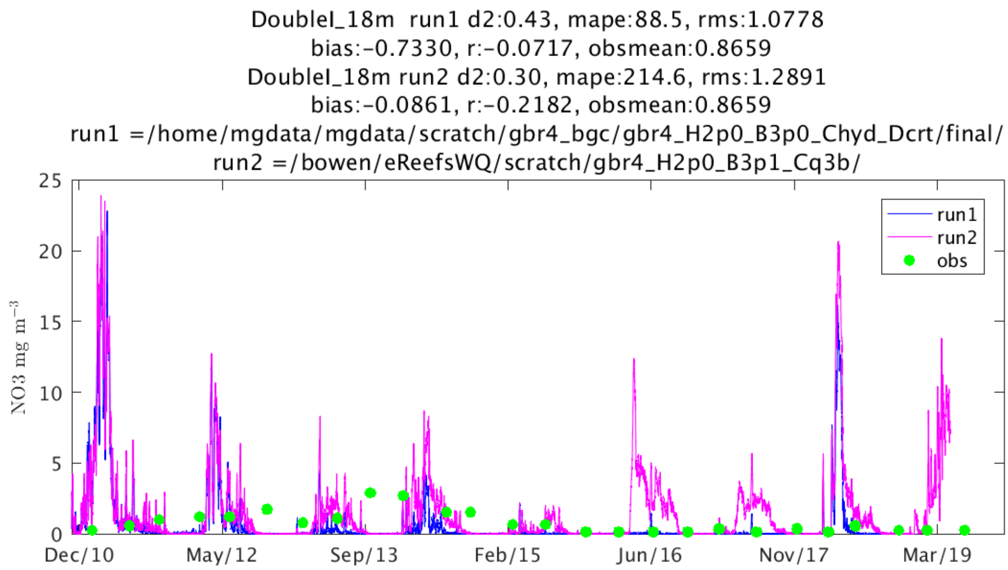

CapeTrib_10m run1 d2:0.23, mape:292.5, rms:1.5315
bias:-0.6503, r:-0.4593, obsmean:1.0019
CapeTrib_10m run2 d2:0.28, mape:139.1, rms:1.1895
bias:-0.4533, r:-0.2784, obsmean:1.0019
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
NO3 mg m^-3
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19


Snap_10m run1 d2:0.53, mape:79.8, rms:4.5148
bias:-3.4761, r:0.4077, obsmean:4.3092
Snap_10m run2 d2:0.51, mape:80.5, rms:4.6542
bias:-3.5215, r:0.2582, obsmean:4.3092
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
NO3 mg m^-3
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19

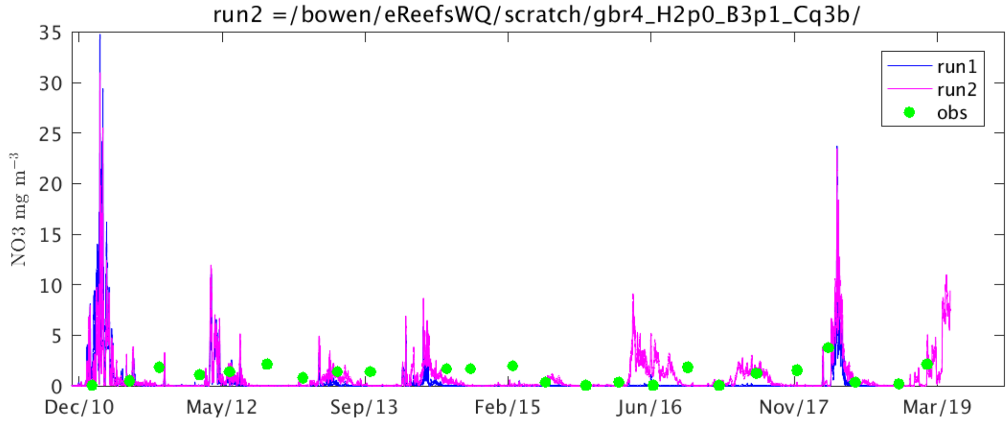

PortD_0m run1 d2:0.34, mape:87.0, rms:2.0542
bias:-1.1574, r:-0.0696, obsmean:1.2266
PortD_0m run2 d2:0.32, mape:161.6, rms:1.9875
bias:-0.5782, r:0.0026, obsmean:1.2266
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
NO3 mg m^-3
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19


PortD_15m run1 d2:0.48, mape:81.0, rms:0.8127
bias:-0.6192, r:0.1357, obsmean:0.7168
PortD_15m run2 d2:0.36, mape:200.5, rms:1.1179
bias:0.0296, r:-0.0154, obsmean:0.7168
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
NO3 mg m-3
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19

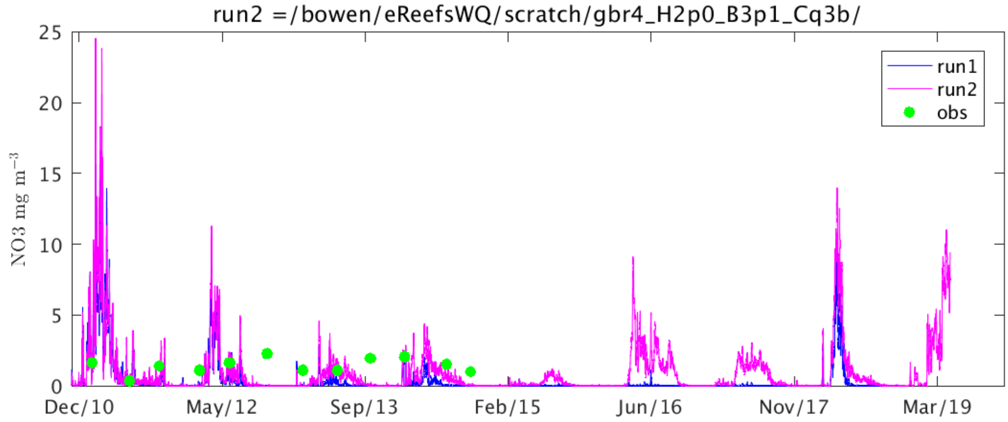

DoubleI_0m run1 d2:0.39, mape:110.2, rms:0.9671
bias:-0.7202, r:-0.2888, obsmean:0.8159
DoubleI_0m run2 d2:0.35, mape:162.8, rms:0.9881
bias:-0.2221, r:-0.0663, obsmean:0.8159
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
NO3 mg m-3
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19


DoubleI_18m run1 d2:0.43, mape:88.5, rms:1.0778
bias:-0.7330, r:-0.0717, obsmean:0.8659
DoubleI_18m run2 d2:0.30, mape:214.6, rms:1.2891
bias:-0.0861, r:-0.2182, obsmean:0.8659
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
NO3 mg m-3
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19

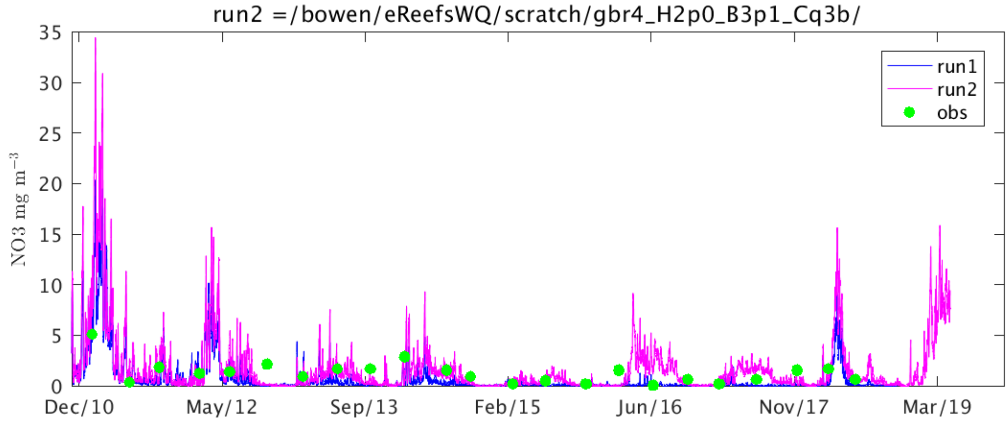
Green_0m run1 d2:0.39, mape:127.7, rms:1.4793
bias:-1.0751, r:-0.2921, obsmean:1.1929
Green_0m run2 d2:0.36, mape:121.1, rms:1.3851
bias:-0.8275, r:-0.2980, obsmean:1.1929
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/



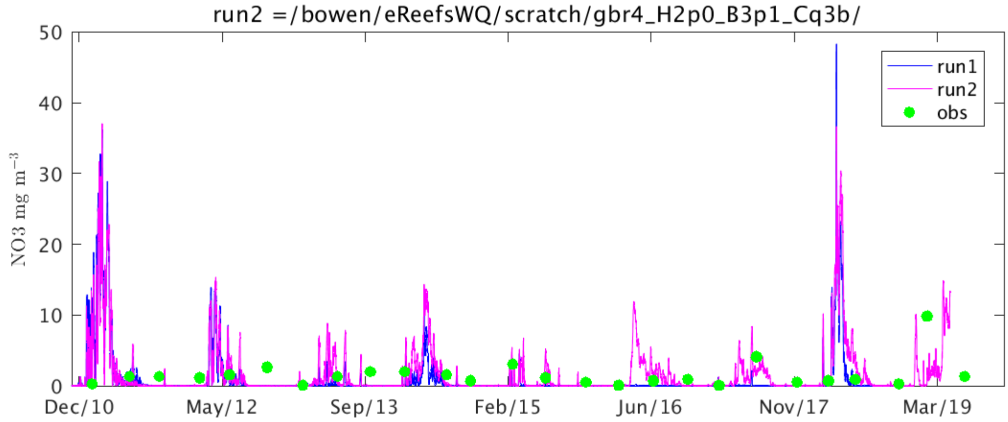
Green_18m run1 d2:0.37, mape:77.3, rms:1.3029
bias:-1.1600, r:0.1396, obsmean:1.4280
Green_18m run2 d2:0.35, mape:72.7, rms:1.2884
bias:-1.0498, r:-0.1921, obsmean:1.4280
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/



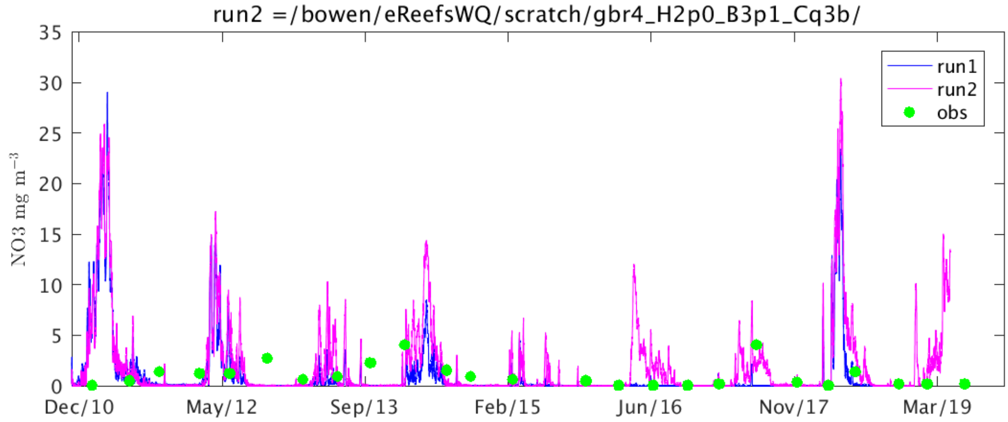
Green_36m run1 d2:0.78, mape:80.1, rms:1.0801
bias:-0.7041, r:0.7150, obsmean:1.3096
Green_36m run2 d2:0.72, mape:127.3, rms:1.4319
bias:-0.0478, r:0.5649, obsmean:1.3096
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/



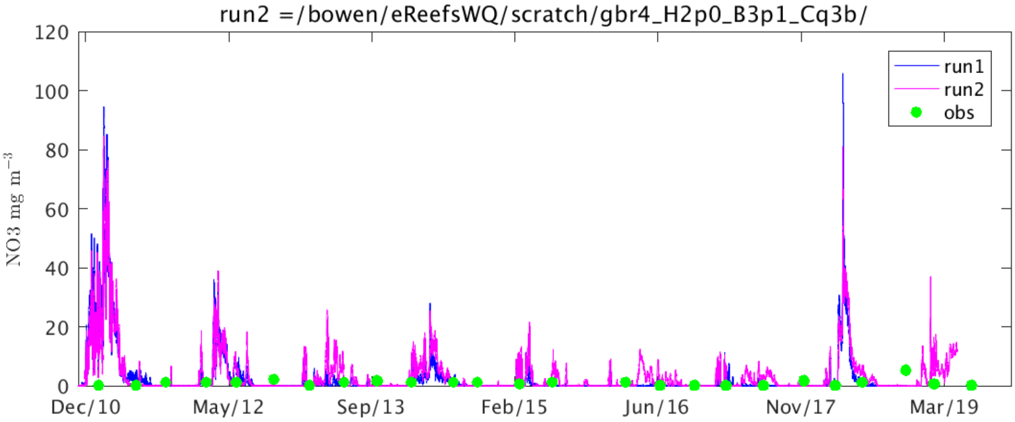
Yorkeys_0m run1 d2:0.27, mape:161.3, rms:2.0867
bias:-0.8753, r:-0.1967, obsmean:1.2884
Yorkeys_0m run2 d2:0.42, mape:163.4, rms:1.7037
bias:-0.2142, r:0.0976, obsmean:1.2884
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/



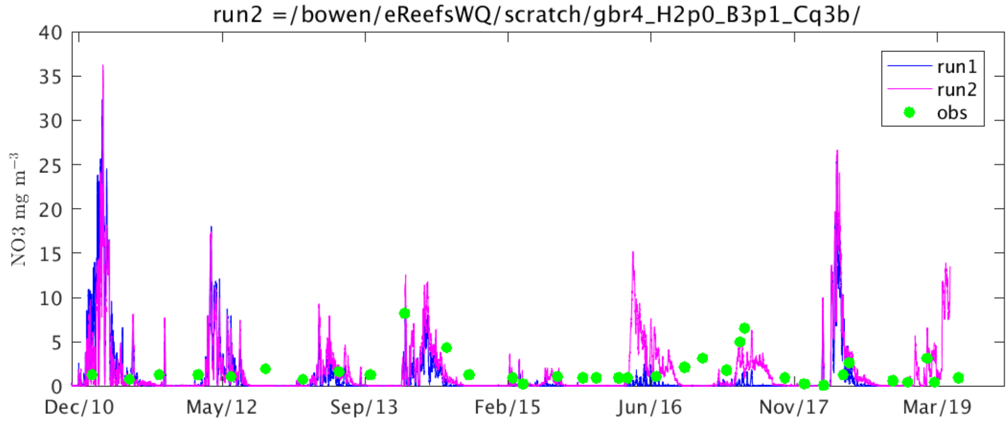
Yorkeys_8m run1 d2:0.29, mape:235.9, rms:1.8650
bias:-0.6927, r:-0.1846, obsmean:1.1148
Yorkeys_8m run2 d2:0.29, mape:360.3, rms:2.1772
bias:0.1263, r:-0.0482, obsmean:1.1148
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/



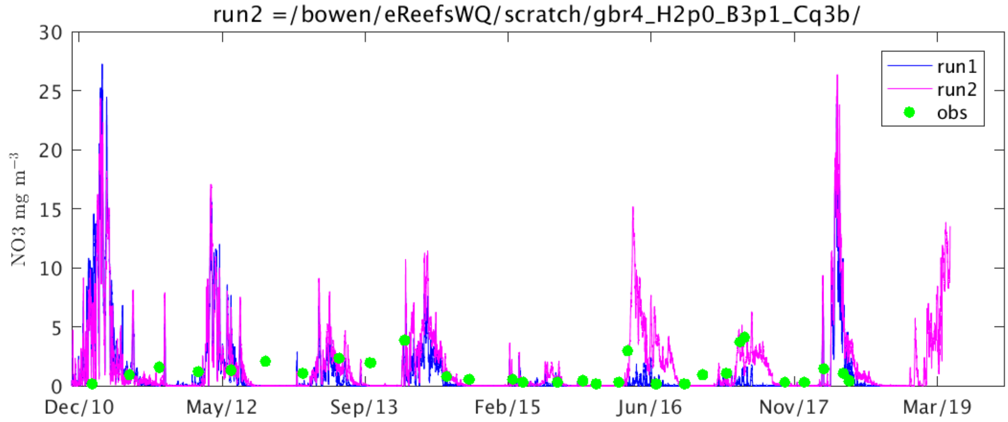
FairleadBuoy_0m run1 d2:0.14, mape:287.7, rms:2.5812
bias:0.3047, r:-0.2208, obsmean:0.9832
FairleadBuoy_0m run2 d2:0.07, mape:539.4, rms:4.0539
bias:1.3798, r:-0.2153, obsmean:0.9832
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/



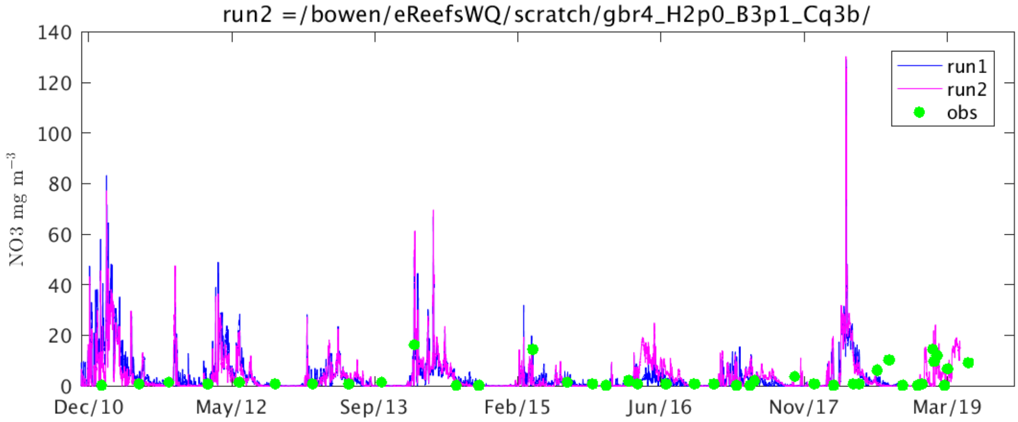
FitzCoral_0m run1 d2:0.23, mape:160.5, rms:3.5269
bias:-0.8345, r:-0.0857, obsmean:1.8203
FitzCoral_0m run2 d2:0.30, mape:148.2, rms:2.9575
bias:-0.5905, r:0.0050, obsmean:1.8203
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/



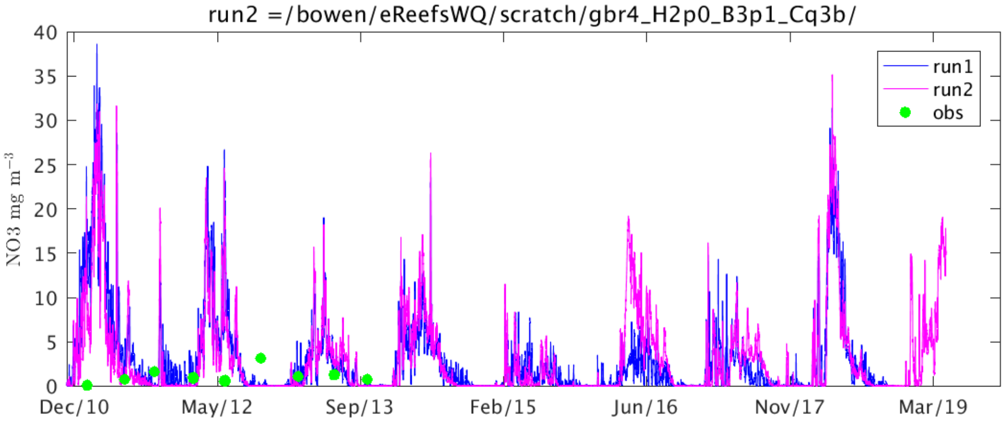
FitzCoral_15m run1 d2:0.19, mape:306.5, rms:2.7462
bias:-0.3009, r:-0.1238, obsmean:1.2313
FitzCoral_15m run2 d2:0.24, mape:351.9, rms:2.5331
bias:0.0601, r:-0.0352, obsmean:1.2313
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/



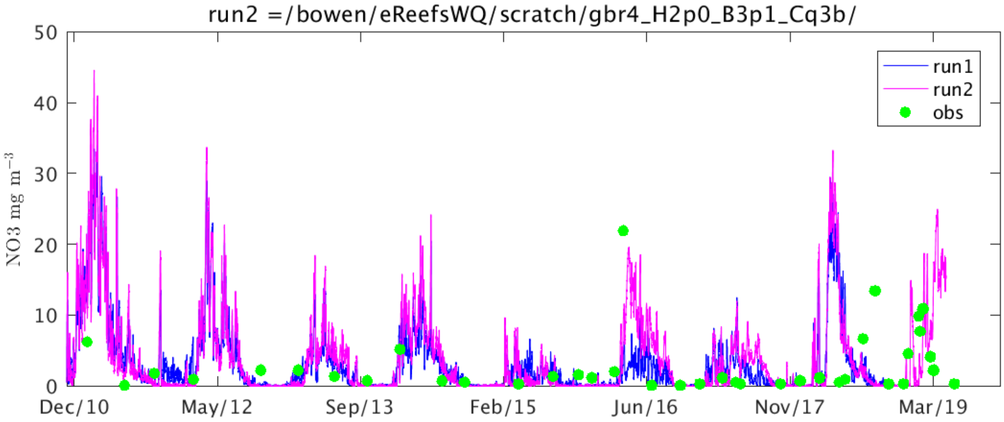
HighI_0m run1 d2:0.11, mape:716.8, rms:7.0329
bias:0.4384, r:-0.1581, obsmean:2.3392
HighI_0m run2 d2:0.14, mape:595.4, rms:6.1469
bias:0.0308, r:-0.1864, obsmean:2.3392
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/



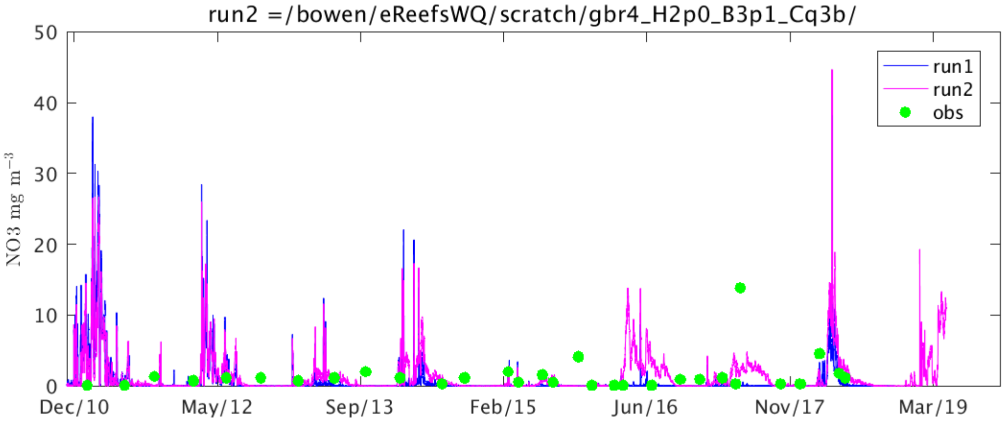
Highl_10m run1 d2:0.01, mape:1316.8, rms:7.6382
bias:2.9588, r:-0.4925, obsmean:1.1416
Highl_10m run2 d2:0.01, mape:945.2, rms:5.4936
bias:1.8146, r:-0.4764, obsmean:1.1416
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/

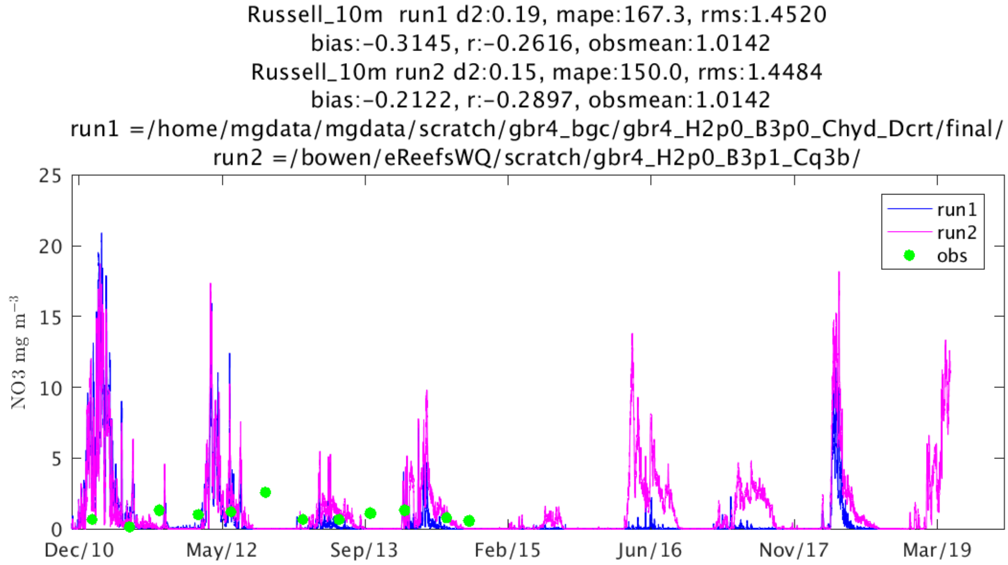


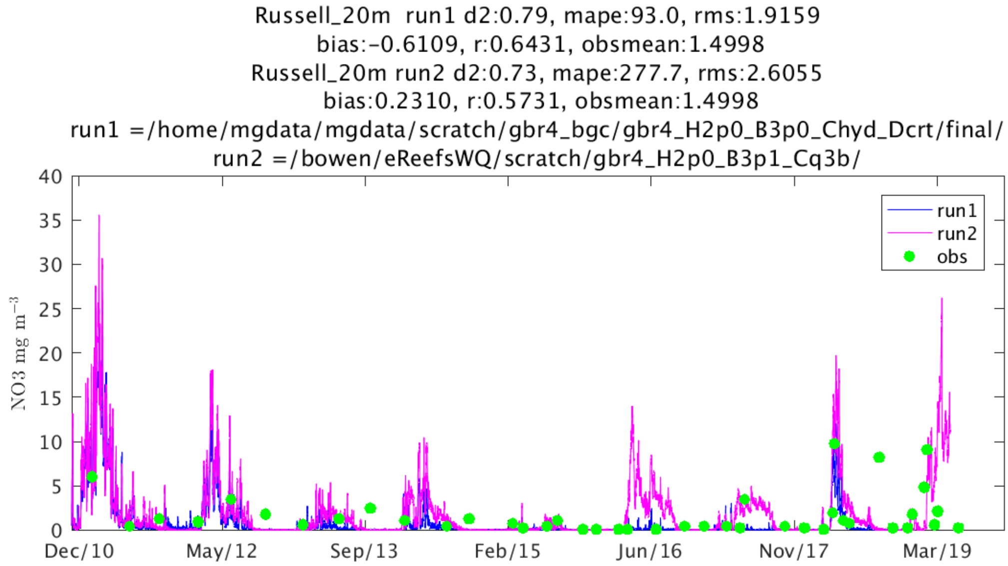
Highl_20m run1 d2:0.43, mape:326.3, rms:5.0687
bias:0.0121, r:0.1800, obsmean:2.3896
Highl_20m run2 d2:0.56, mape:460.4, rms:4.8747
bias:0.1736, r:0.2937, obsmean:2.3896
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/

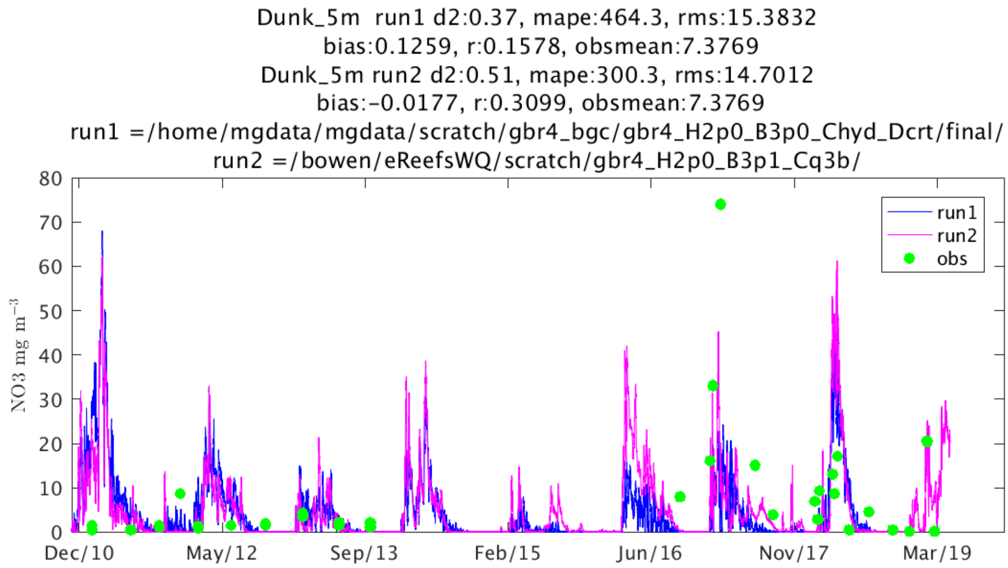


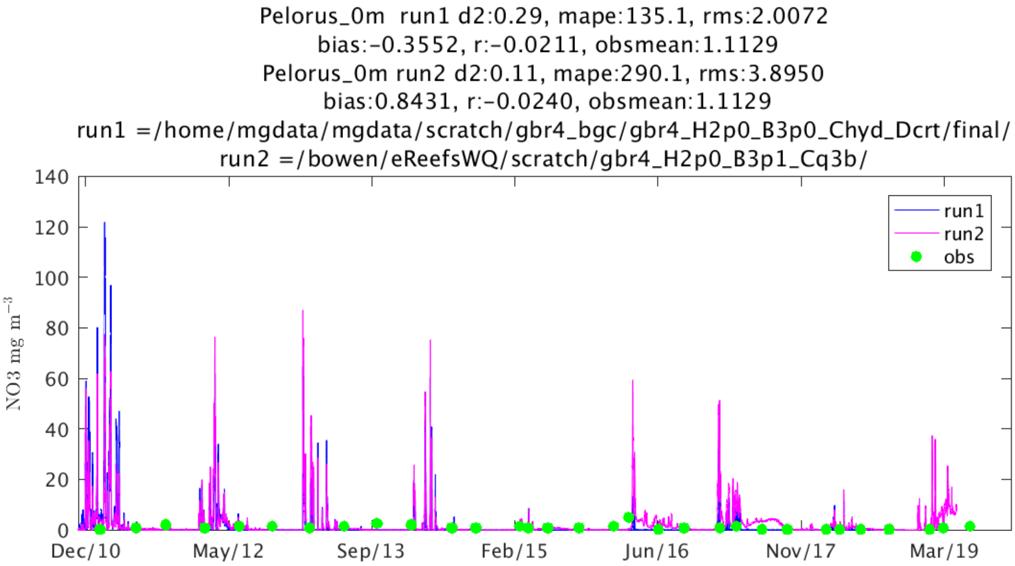
Russell_0m run1 d2:0.27, mape:174.6, rms:2.9159
bias:-1.1733, r:-0.1017, obsmean:1.4939
Russell_0m run2 d2:0.34, mape:297.5, rms:2.6573
bias:-0.5980, r:0.1435, obsmean:1.4939
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/

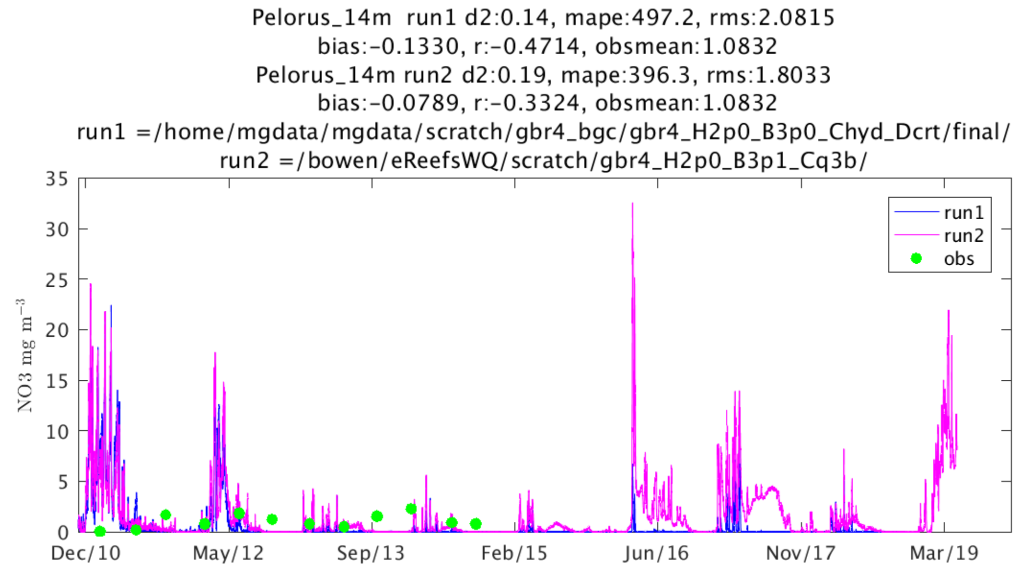


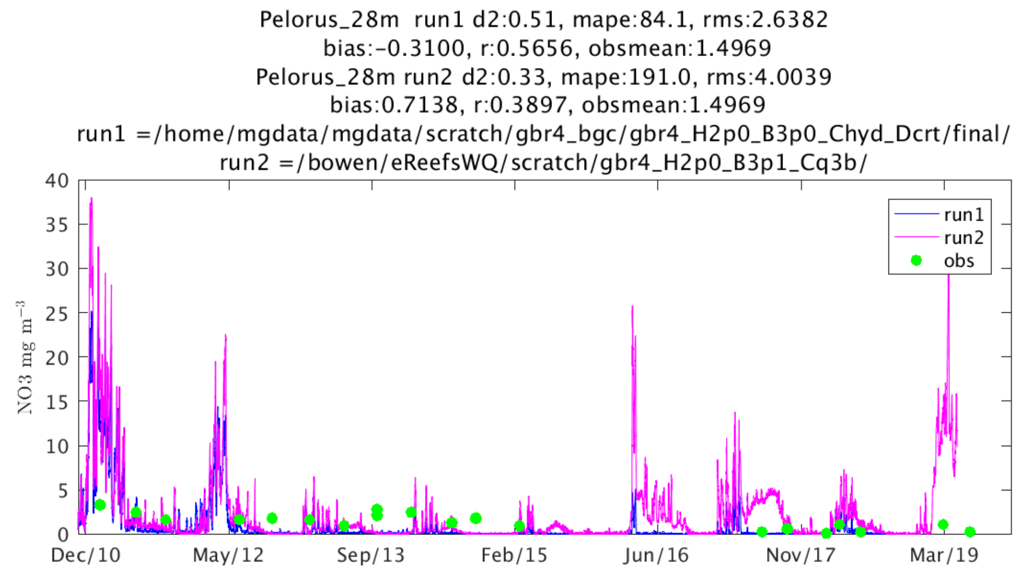

Russell_10m run1 d2:0.19, mape:167.3, rms:1.4520
bias:-0.3145, r:-0.2616, obsmean:1.0142
Russell_10m run2 d2:0.15, mape:150.0, rms:1.4484
bias:-0.2122, r:-0.2897, obsmean:1.0142
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
NO3 mg m^{-3}
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19


Russell_20m run1 d2:0.79, mape:93.0, rms:1.9159
bias:-0.6109, r:0.6431, obsmean:1.4998
Russell_20m run2 d2:0.73, mape:277.7, rms:2.6055
bias:0.2310, r:0.5731, obsmean:1.4998
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
NO3 mg m^{-3}
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19

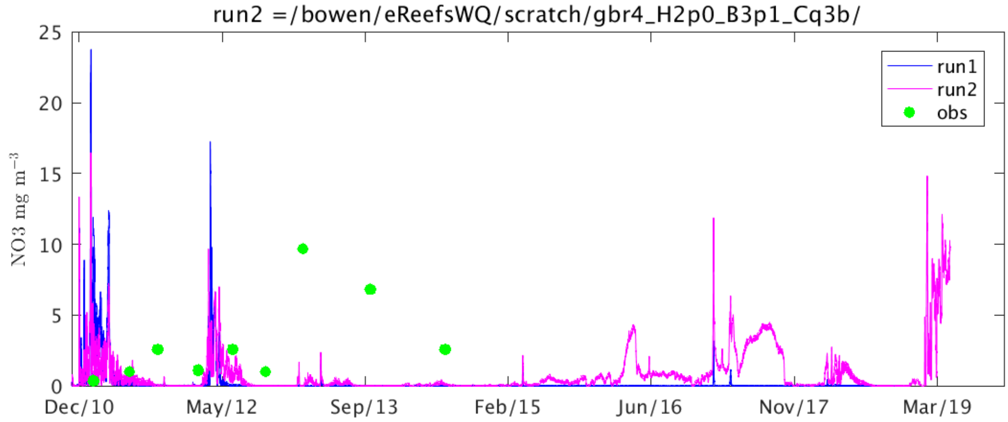

Dunk_5m run1 d2:0.37, mape:464.3, rms:15.3832
bias:0.1259, r:0.1578, obsmean:7.3769
Dunk_5m run2 d2:0.51, mape:300.3, rms:14.7012
bias:-0.0177, r:0.3099, obsmean:7.3769
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
NO3 mg m^{-3}
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19


Pelorus_0m run1 d2:0.29, mape:135.1, rms:2.0072
bias:-0.3552, r:-0.0211, obsmean:1.1129
Pelorus_0m run2 d2:0.11, mape:290.1, rms:3.8950
bias:0.8431, r:-0.0240, obsmean:1.1129
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
run1
run2
obs
NO3 mg m^{-3}
0
20
40
60
80
100
120
140
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19

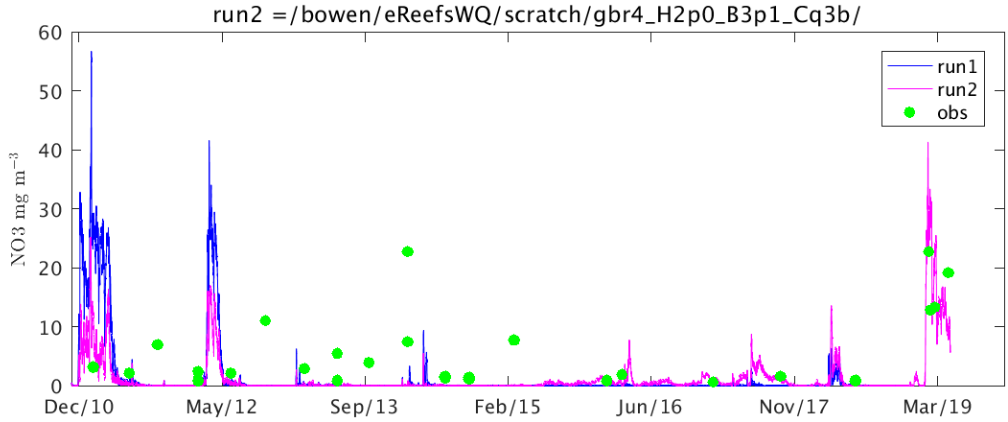

Pelorus_14m run1 d2:0.14, mape:497.2, rms:2.0815
bias:-0.1330, r:-0.4714, obsmean:1.0832
Pelorus_14m run2 d2:0.19, mape:396.3, rms:1.8033
bias:-0.0789, r:-0.3324, obsmean:1.0832
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
run1
run2
obs
NO3 mg m^{-3}
0
5
10
15
20
25
30
35
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19


Pelorus_28m run1 d2:0.51, mape:84.1, rms:2.6382
bias:-0.3100, r:0.5656, obsmean:1.4969
Pelorus_28m run2 d2:0.33, mape:191.0, rms:4.0039
bias:0.7138, r:0.3897, obsmean:1.4969
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
run1
run2
obs
NO3 mg m^{-3}
0
5
10
15
20
25
30
35
40
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19

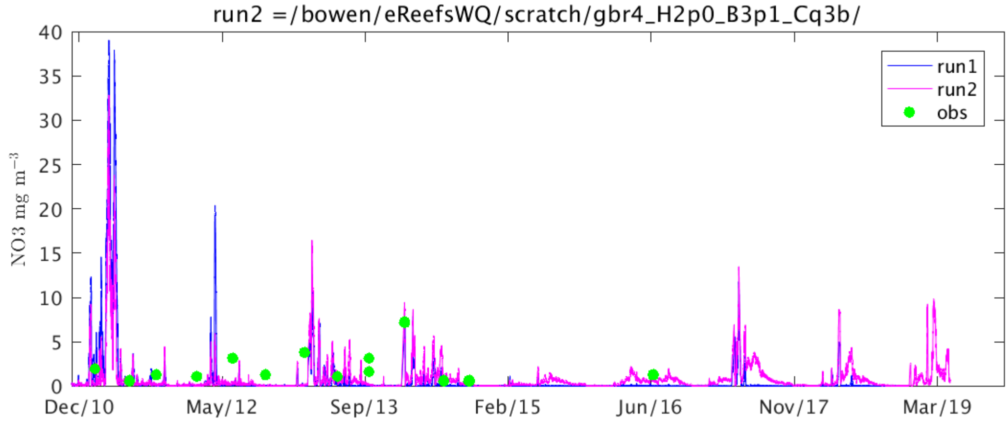
Pandora_5m run1 d2:0.30, mape:342.3, rms:4.9837
bias:-2.1842, r:-0.3308, obsmean:3.1037
Pandora_5m run2 d2:0.33, mape:238.1, rms:4.4987
bias:-2.3879, r:-0.3552, obsmean:3.1037
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/

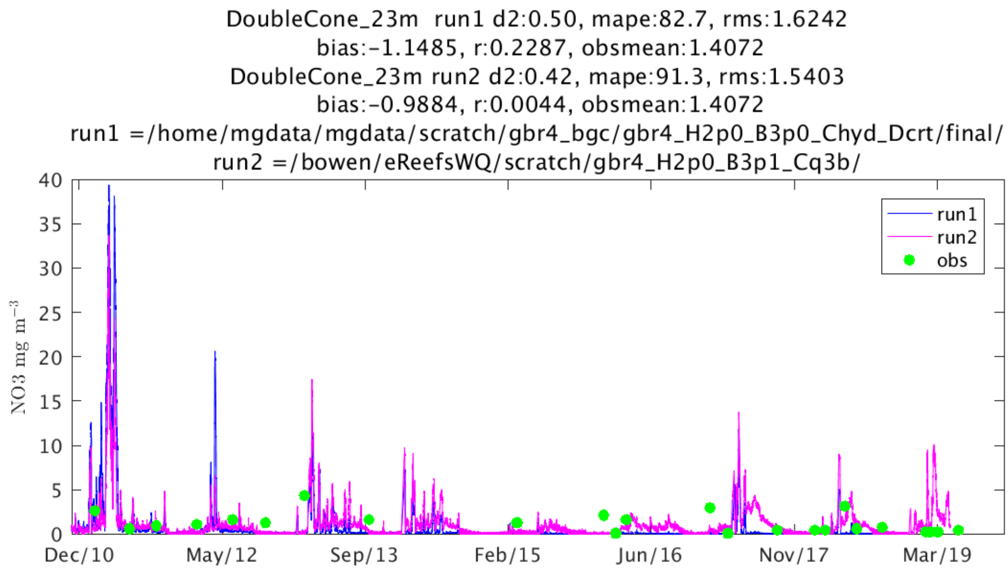


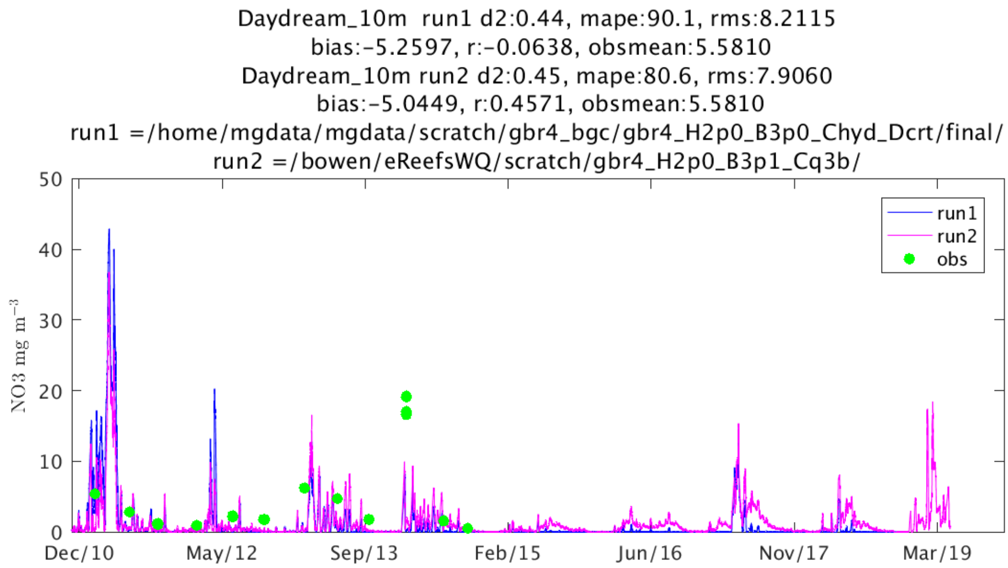
GeoffreyBay_5m run1 d2:0.33, mape:115.7, rms:8.5701
bias:-3.4666, r:-0.0448, obsmean:4.6141
GeoffreyBay_5m run2 d2:0.37, mape:93.4, rms:7.6459
bias:-3.8853, r:-0.0636, obsmean:4.6141
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/

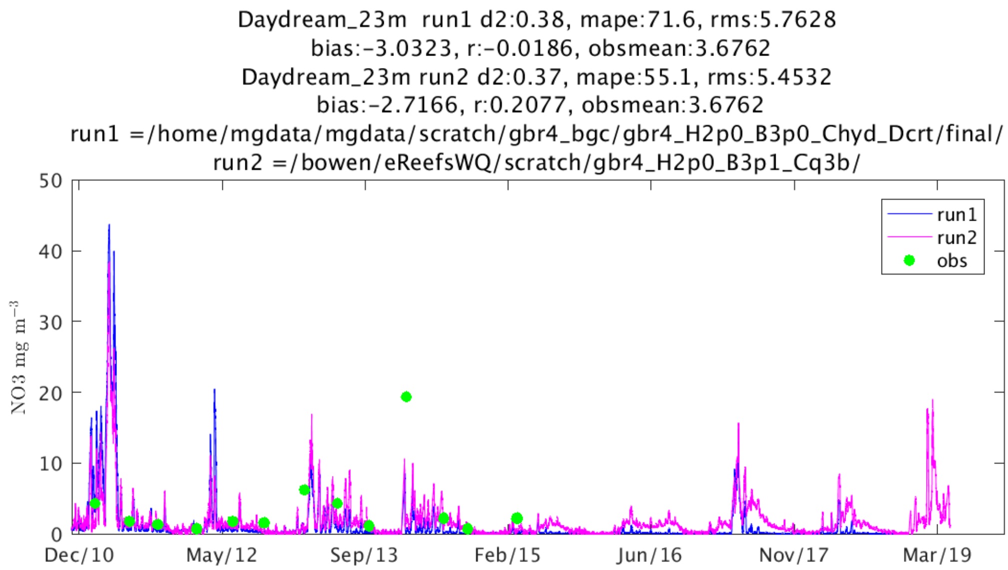


DoubleCone_10m run1 d2:0.48, mape:85.5, rms:2.3096
bias:-1.6833, r:0.4247, obsmean:2.0448
DoubleCone_10m run2 d2:0.39, mape:74.4, rms:2.5559
bias:-1.7292, r:-0.3177, obsmean:2.0448
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/

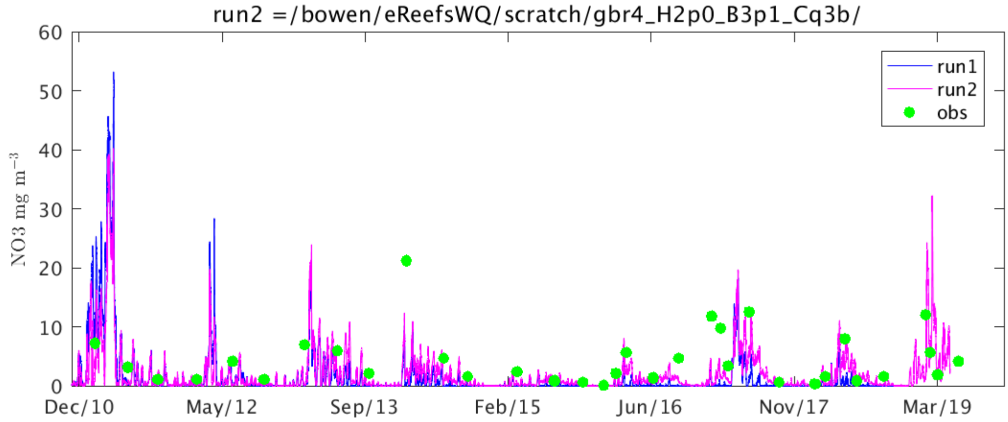



DoubleCone_23m run1 d2:0.50, mape:82.7, rms:1.6242
bias:-1.1485, r:0.2287, obsmean:1.4072
DoubleCone_23m run2 d2:0.42, mape:91.3, rms:1.5403
bias:-0.9884, r:0.0044, obsmean:1.4072
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
NO3 mg m-3
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19

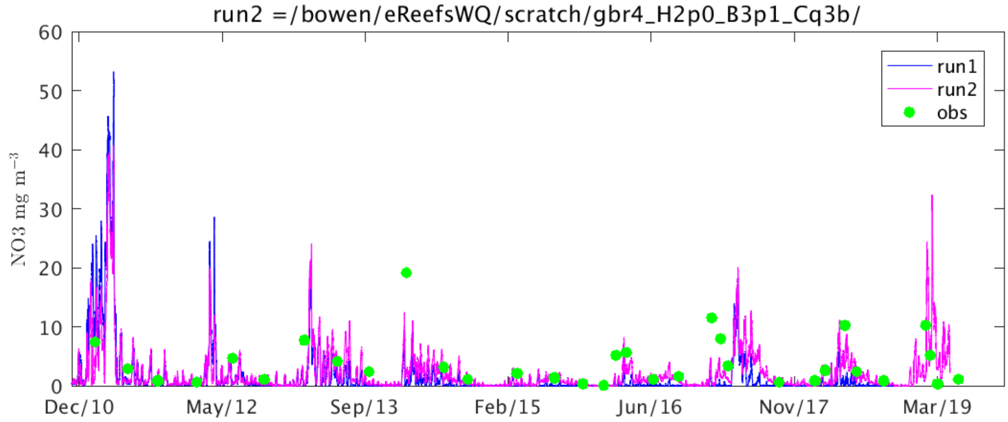

Daydream_10m run1 d2:0.44, mape:90.1, rms:8.2115
bias:-5.2597, r:-0.0638, obsmean:5.5810
Daydream_10m run2 d2:0.45, mape:80.6, rms:7.9060
bias:-5.0449, r:0.4571, obsmean:5.5810
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
NO3 mg m-3
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19


Daydream_23m run1 d2:0.38, mape:71.6, rms:5.7628
bias:-3.0323, r:-0.0186, obsmean:3.6762
Daydream_23m run2 d2:0.37, mape:55.1, rms:5.4532
bias:-2.7166, r:0.2077, obsmean:3.6762
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
NO3 mg m-3
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19

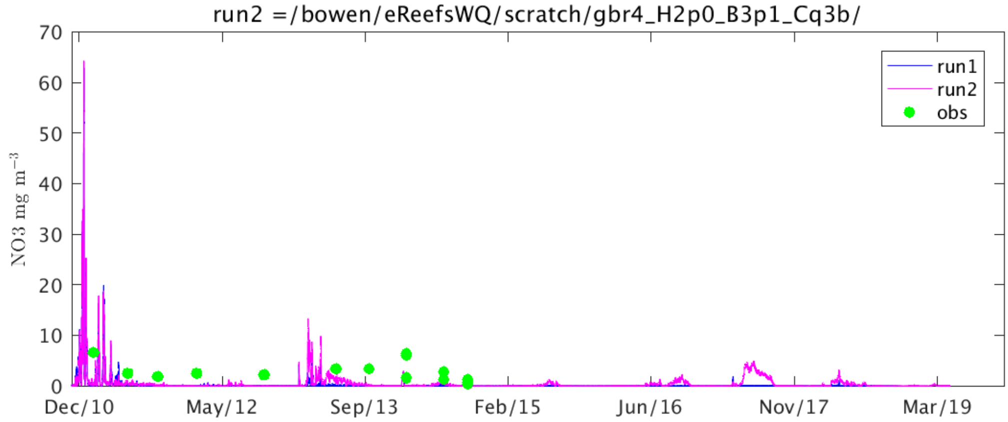
Pine_0m run1 d2:0.48, mape:91.9, rms:6.0077
bias:-3.5232, r:0.1962, obsmean:4.3241
Pine_0m run2 d2:0.53, mape:65.1, rms:4.9523
bias:-3.0676, r:0.6207, obsmean:4.3241
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/

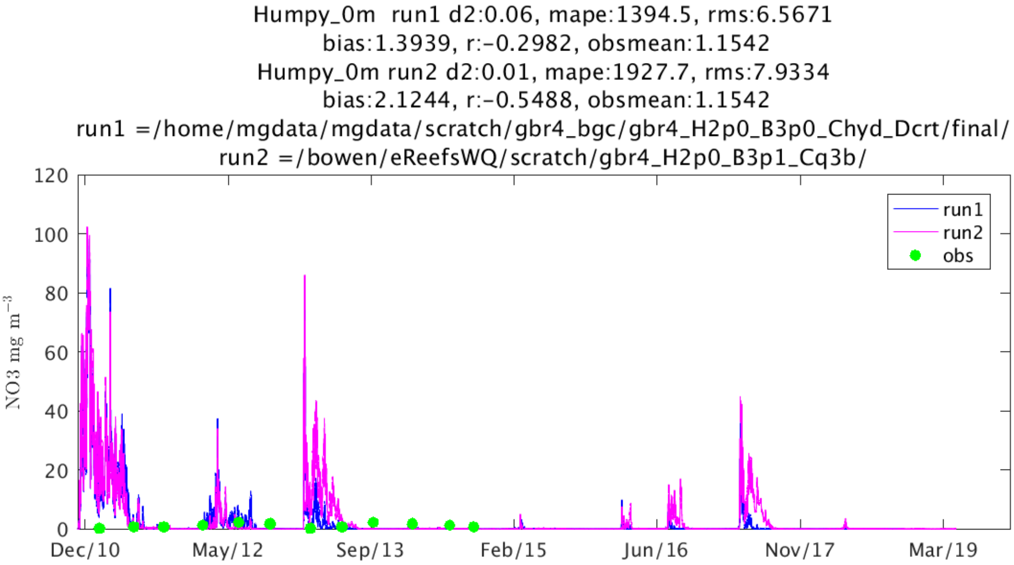


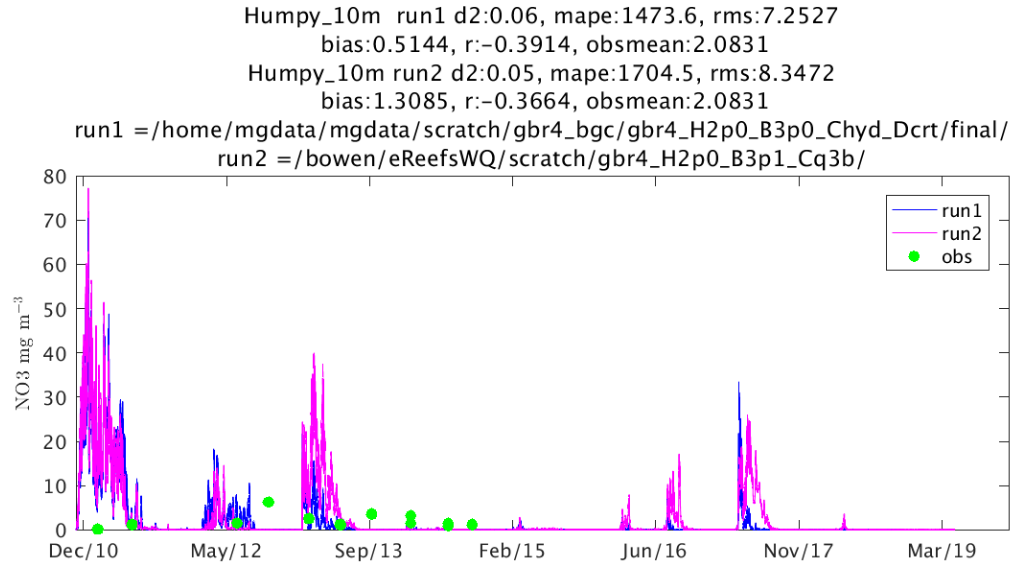
Pine_20m run1 d2:0.49, mape:87.2, rms:5.5038
bias:-3.1357, r:0.2079, obsmean:3.9768
Pine_20m run2 d2:0.50, mape:60.8, rms:4.5737
bias:-2.7537, r:0.5581, obsmean:3.9768
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/

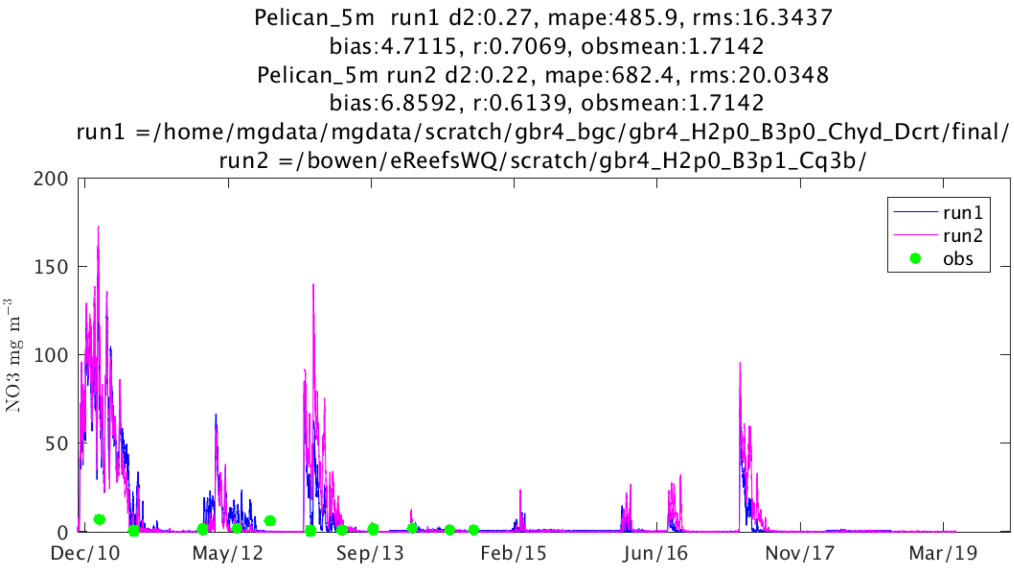


Barren_10m run1 d2:0.44, mape:97.1, rms:3.2764
bias:-2.6840, r:0.4969, obsmean:2.7678
Barren_10m run2 d2:0.46, mape:89.8, rms:3.0989
bias:-2.4794, r:0.2957, obsmean:2.7678
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/




Humpy_0m run1 d2:0.06, mape:1394.5, rms:6.5671
bias:1.3939, r:-0.2982, obsmean:1.1542
Humpy_0m run2 d2:0.01, mape:1927.7, rms:7.9334
bias:2.1244, r:-0.5488, obsmean:1.1542
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
NO3 mg m^-3
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19


Humpy_10m run1 d2:0.06, mape:1473.6, rms:7.2527
bias:0.5144, r:-0.3914, obsmean:2.0831
Humpy_10m run2 d2:0.05, mape:1704.5, rms:8.3472
bias:1.3085, r:-0.3664, obsmean:2.0831
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
NO3 mg m^-3
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19


Pelican_5m run1 d2:0.27, mape:485.9, rms:16.3437
bias:4.7115, r:0.7069, obsmean:1.7142
Pelican_5m run2 d2:0.22, mape:682.4, rms:20.0348
bias:6.8592, r:0.6139, obsmean:1.7142
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
NO3 mg m^-3
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19

11. Simulated NH4 assessment against AIMS Long Term Monitoring

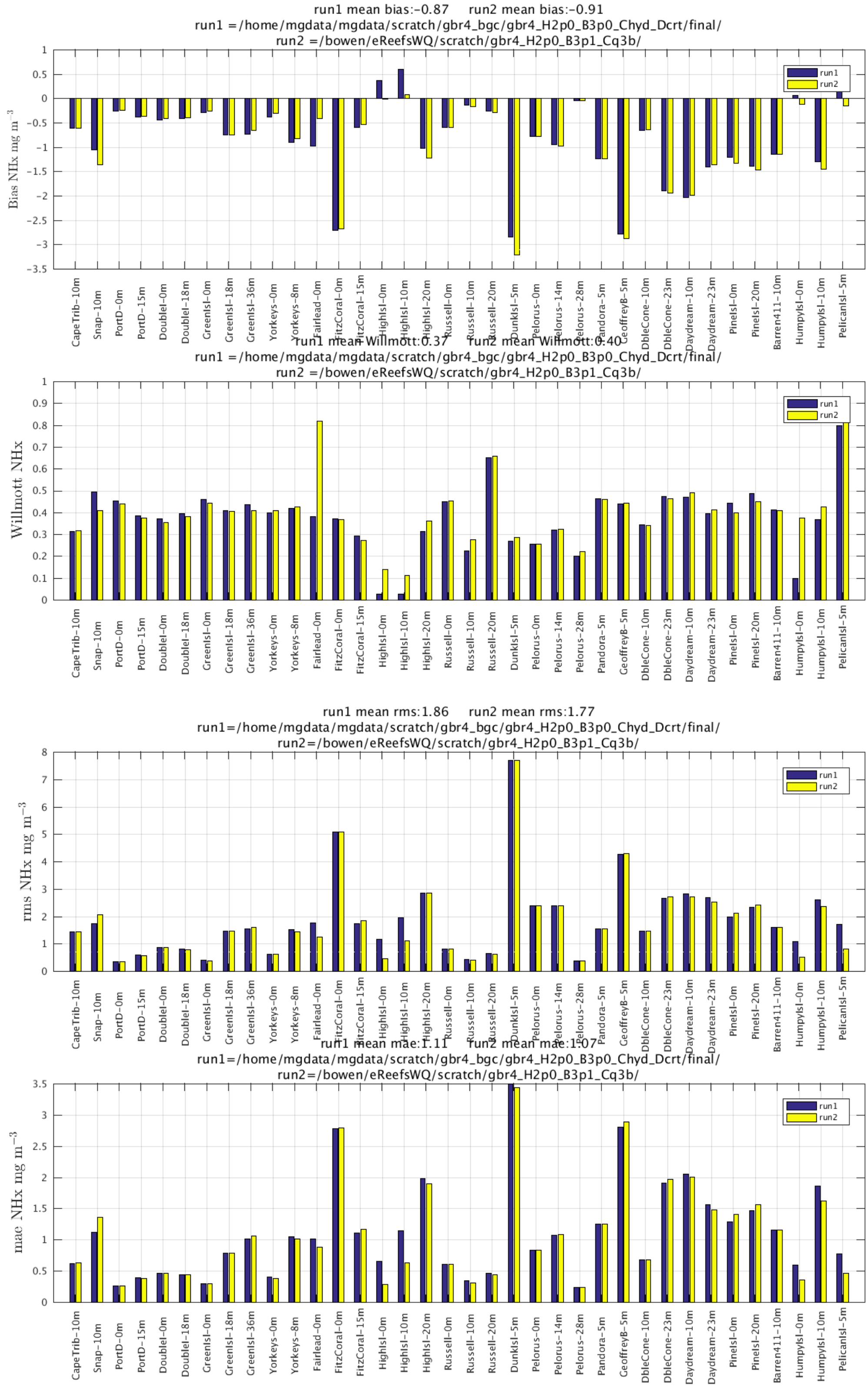
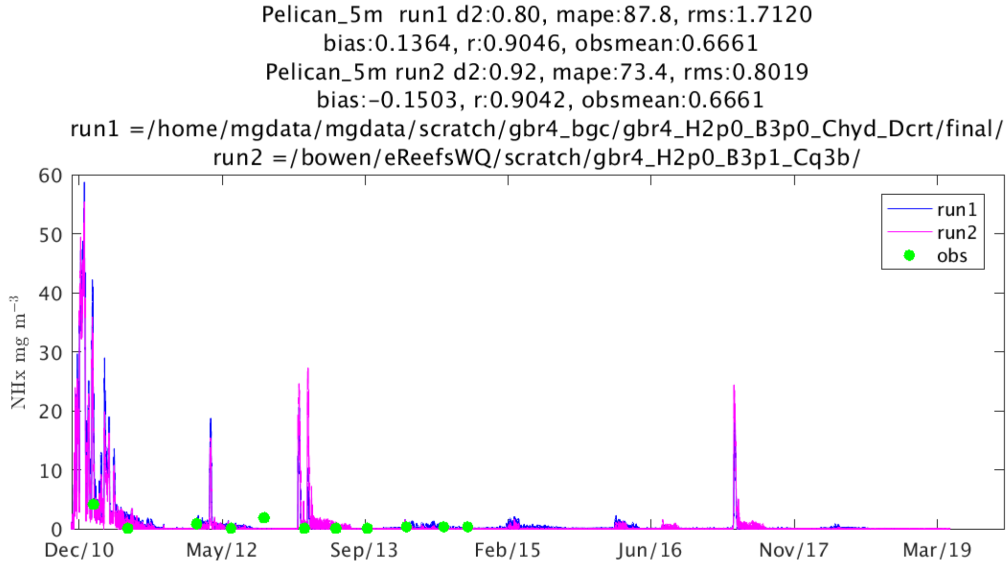
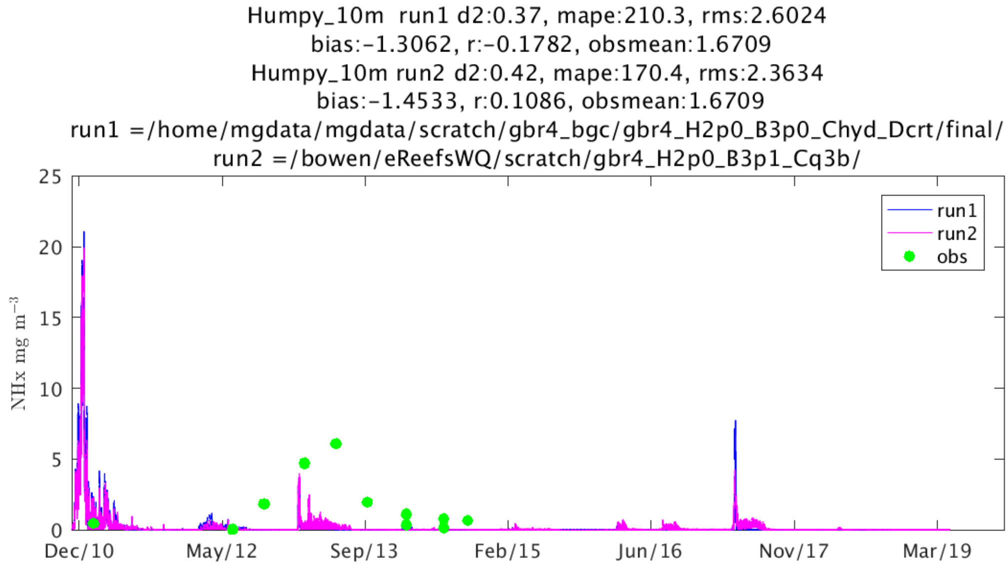
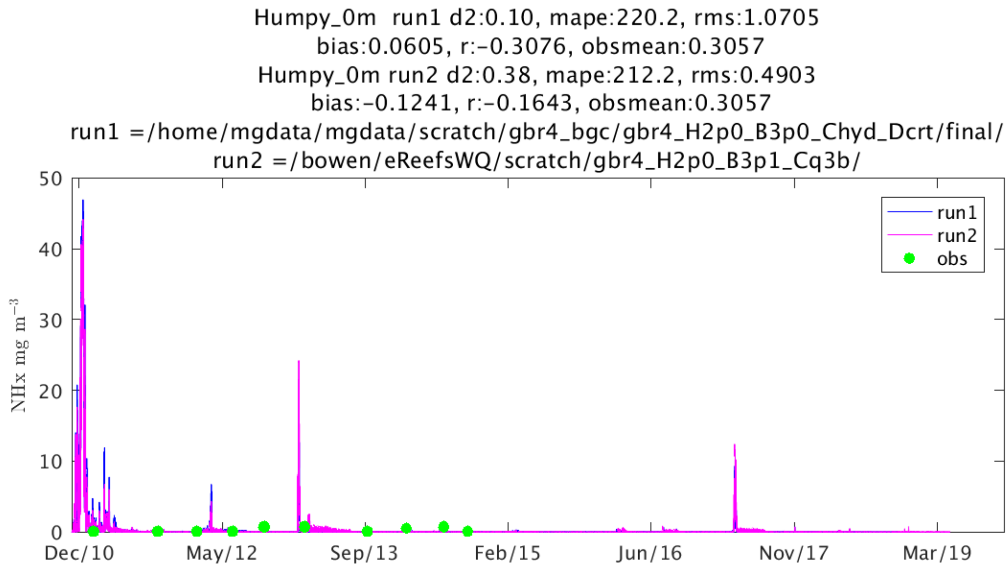
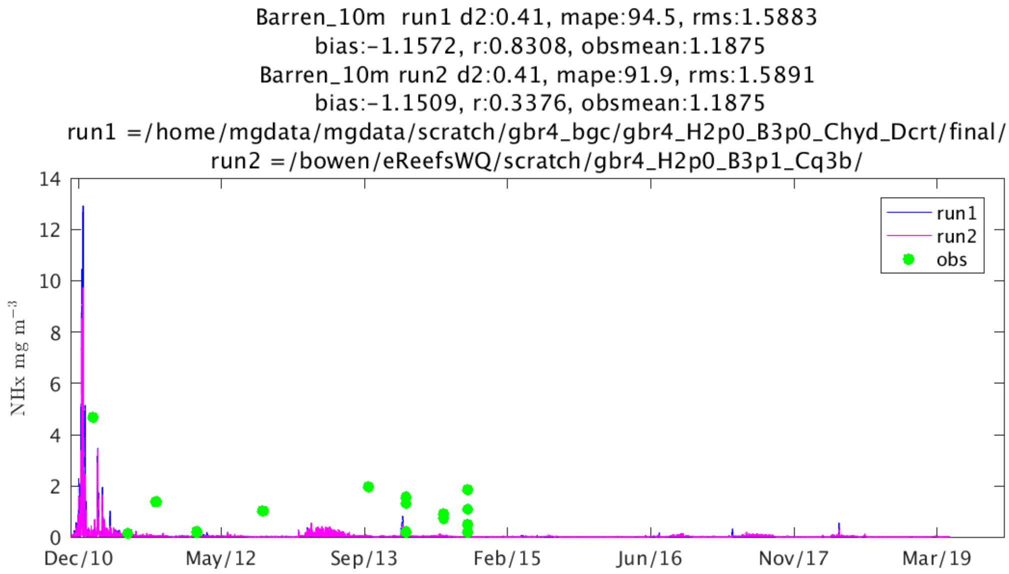


Figure 8 Metrics for Long Term Monitoring Sites simulated NHx (ammonia + ammonium) against observations

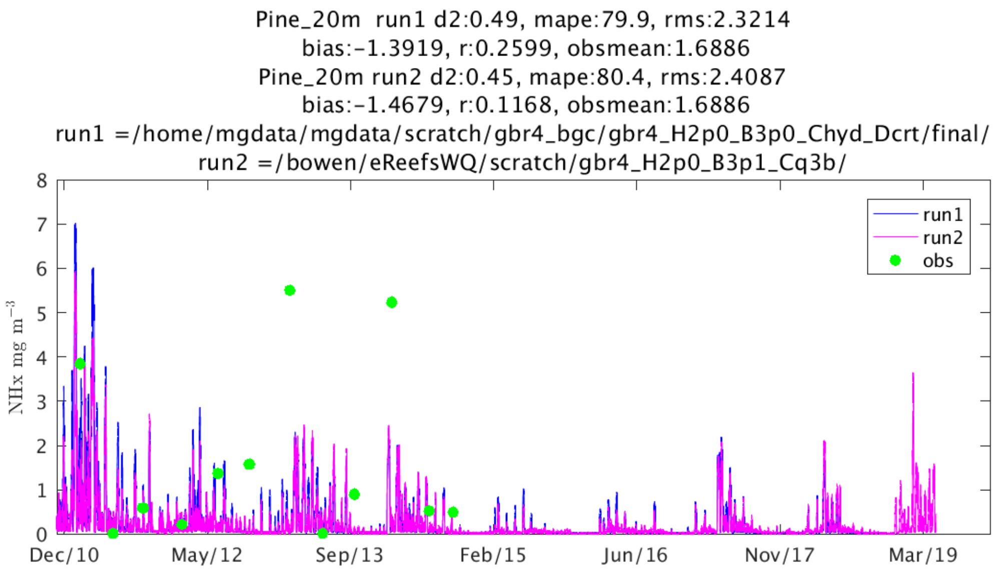

Pelican_5m run1 d2:0.80, mape:87.8, rms:1.7120
bias:0.1364, r:0.9046, obsmean:0.6661
Pelican_5m run2 d2:0.92, mape:73.4, rms:0.8019
bias:-0.1503, r:0.9042, obsmean:0.6661
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
NHx mg m^-3
0
10
20
30
40
50
60
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19
run1
run2
obs


Humpy_10m run1 d2:0.37, mape:210.3, rms:2.6024
bias:-1.3062, r:-0.1782, obsmean:1.6709
Humpy_10m run2 d2:0.42, mape:170.4, rms:2.3634
bias:-1.4533, r:0.1086, obsmean:1.6709
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
NHx mg m^-3
0
5
10
15
20
25
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19
run1
run2
obs

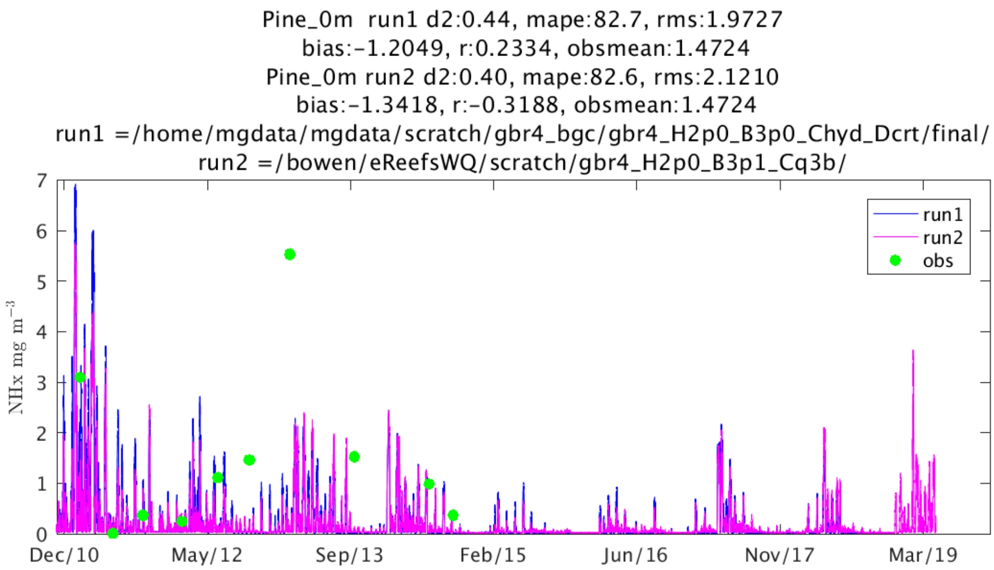

Humpy_0m run1 d2:0.10, mape:220.2, rms:1.0705
bias:0.0605, r:-0.3076, obsmean:0.3057
Humpy_0m run2 d2:0.38, mape:212.2, rms:0.4903
bias:-0.1241, r:-0.1643, obsmean:0.3057
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
NHx mg m^-3
0
10
20
30
40
50
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19
run1
run2
obs



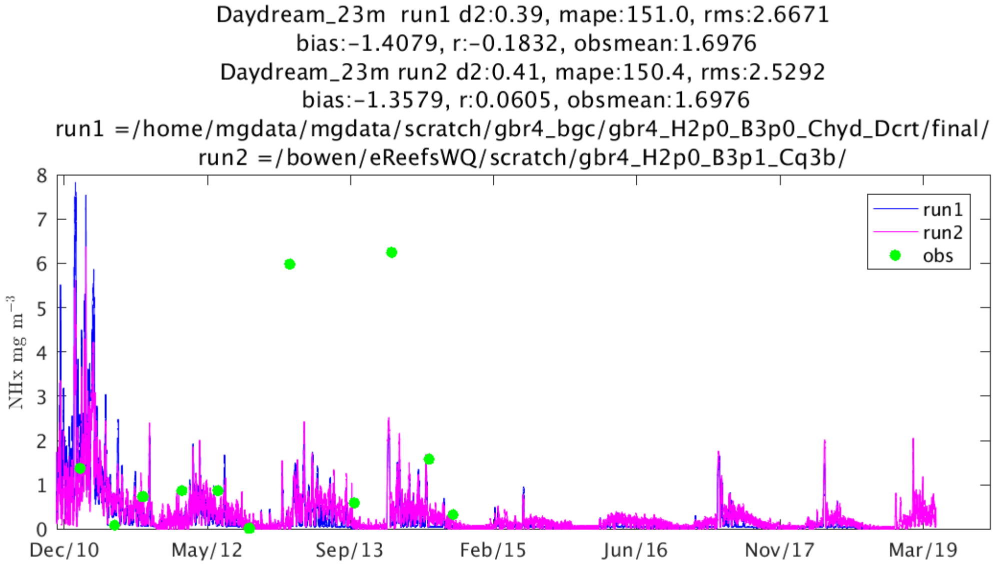
Barren_10m run1 d2:0.41, mape:94.5, rms:1.5883
bias:-1.1572, r:0.8308, obsmean:1.1875
Barren_10m run2 d2:0.41, mape:91.9, rms:1.5891
bias:-1.1509, r:0.3376, obsmean:1.1875
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
NIIx mg m^{-3}
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19

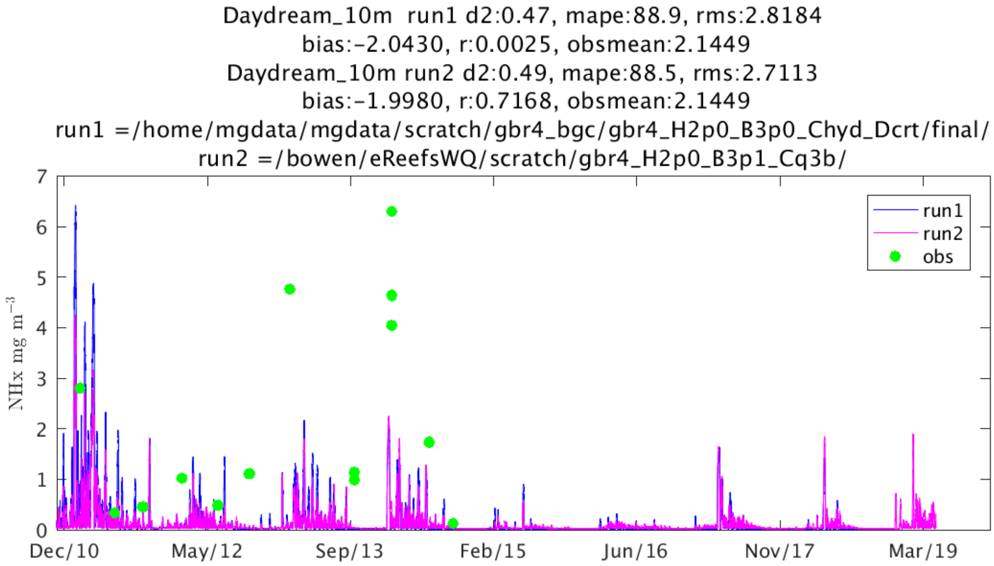


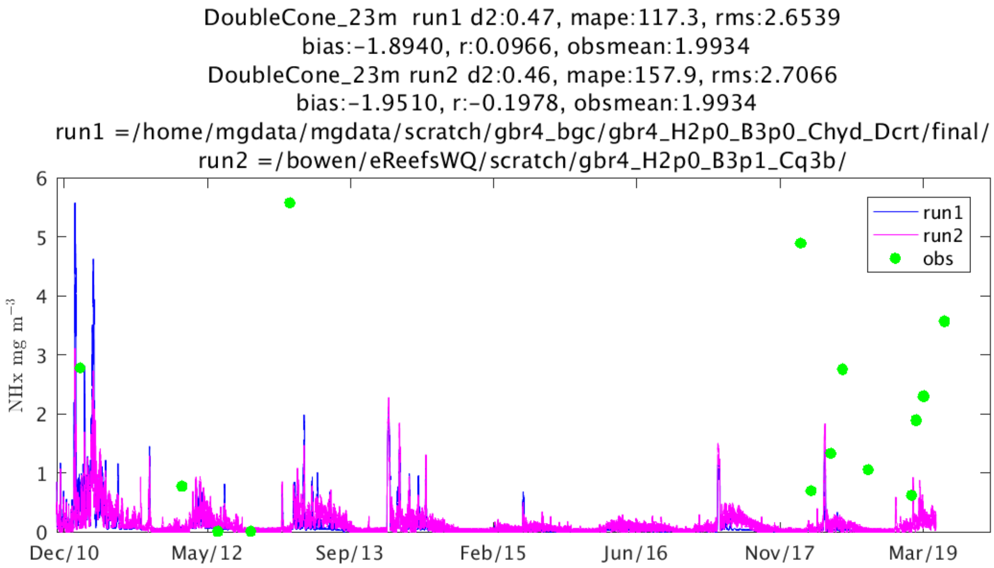
Pine_20m run1 d2:0.49, mape:79.9, rms:2.3214
bias:-1.3919, r:0.2599, obsmean:1.6886
Pine_20m run2 d2:0.45, mape:80.4, rms:2.4087
bias:-1.4679, r:0.1168, obsmean:1.6886
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
NIIx mg m^{-3}
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19

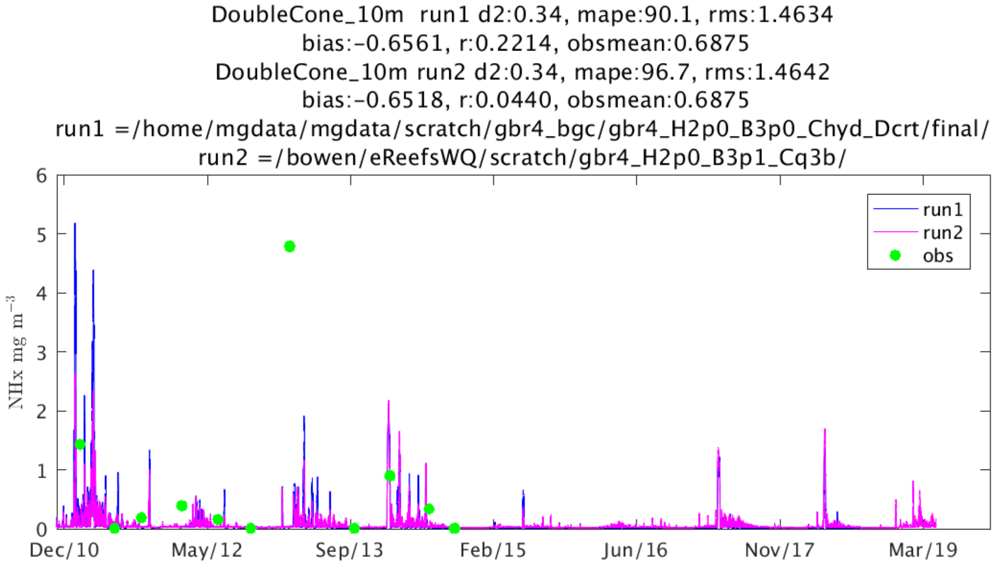


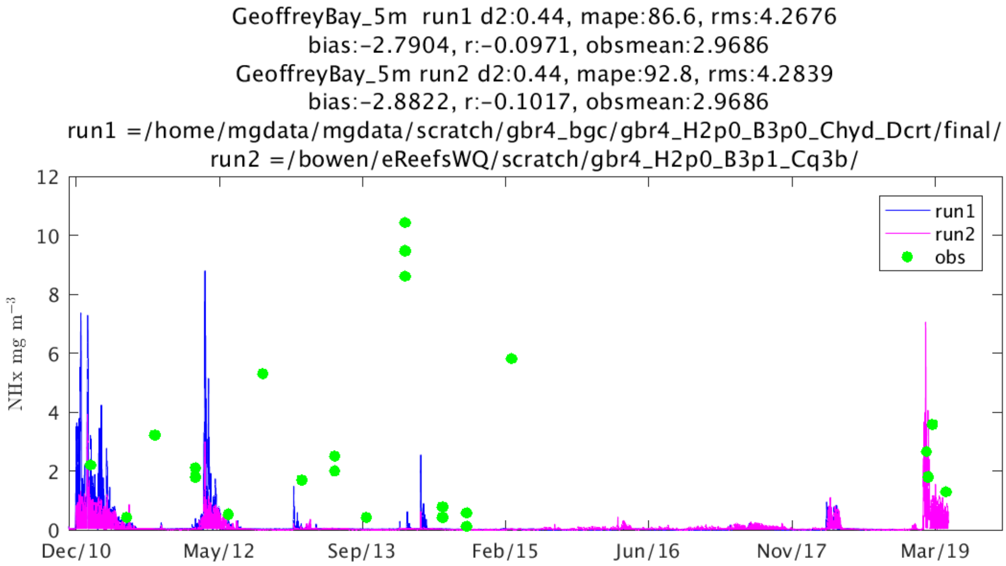
Pine_0m run1 d2:0.44, mape:82.7, rms:1.9727
bias:-1.2049, r:0.2334, obsmean:1.4724
Pine_0m run2 d2:0.40, mape:82.6, rms:2.1210
bias:-1.3418, r:-0.3188, obsmean:1.4724
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
NIIx mg m^{-3}
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19

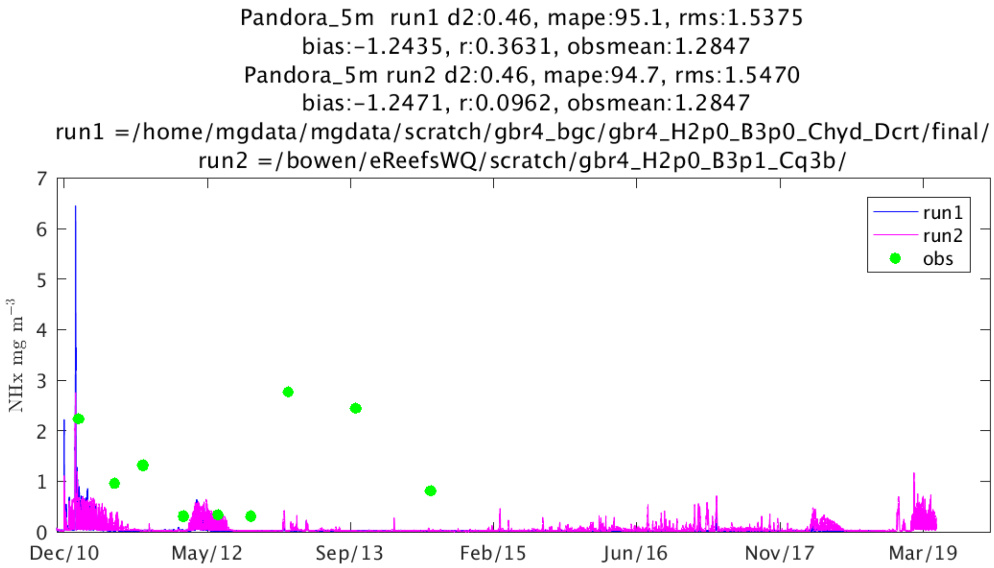

Daydream_23m run1 d2:0.39, mape:151.0, rms:2.6671
bias:-1.4079, r:-0.1832, obsmean:1.6976
Daydream_23m run2 d2:0.41, mape:150.4, rms:2.5292
bias:-1.3579, r:0.0605, obsmean:1.6976
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
NIIx mg m^{-3}
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19


Daydream_10m run1 d2:0.47, mape:88.9, rms:2.8184
bias:-2.0430, r:0.0025, obsmean:2.1449
Daydream_10m run2 d2:0.49, mape:88.5, rms:2.7113
bias:-1.9980, r:0.7168, obsmean:2.1449
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
NIIx mg m^{-3}
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19

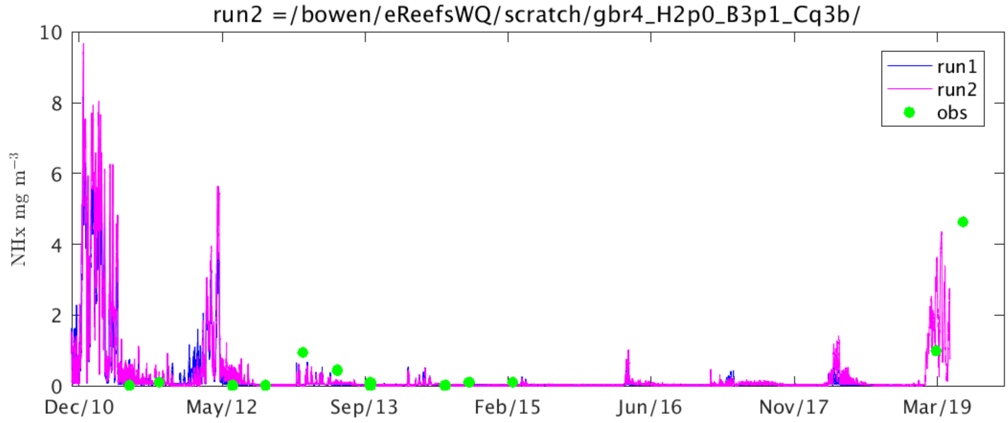

DoubleCone_23m run1 d2:0.47, mape:117.3, rms:2.6539
bias:-1.8940, r:0.0966, obsmean:1.9934
DoubleCone_23m run2 d2:0.46, mape:157.9, rms:2.7066
bias:-1.9510, r:-0.1978, obsmean:1.9934
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
NIIx mg m^{-3}
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19


DoubleCone_10m run1 d2:0.34, mape:90.1, rms:1.4634
bias:-0.6561, r:0.2214, obsmean:0.6875
DoubleCone_10m run2 d2:0.34, mape:96.7, rms:1.4642
bias:-0.6518, r:0.0440, obsmean:0.6875
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
NIIx mg m^-3
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19

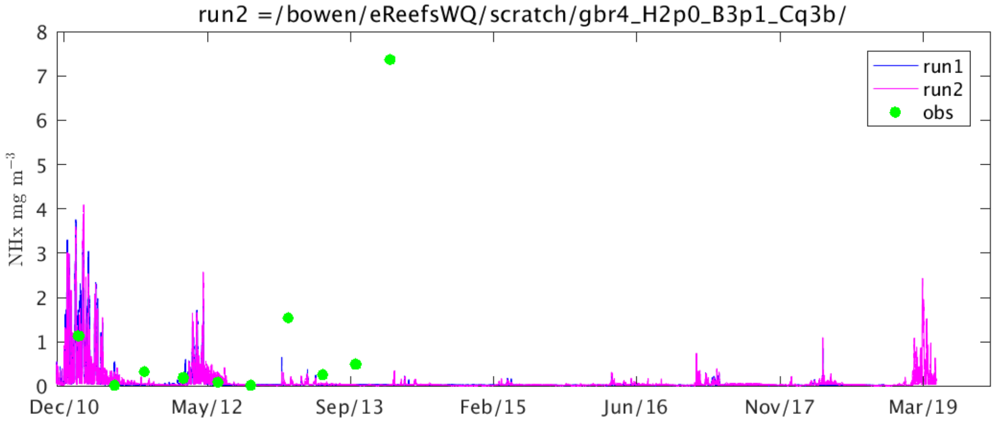

GeoffreyBay_5m run1 d2:0.44, mape:86.6, rms:4.2676
bias:-2.7904, r:-0.0971, obsmean:2.9686
GeoffreyBay_5m run2 d2:0.44, mape:92.8, rms:4.2839
bias:-2.8822, r:-0.1017, obsmean:2.9686
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
NIIx mg m^-3
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19


Pandora_5m run1 d2:0.46, mape:95.1, rms:1.5375
bias:-1.2435, r:0.3631, obsmean:1.2847
Pandora_5m run2 d2:0.46, mape:94.7, rms:1.5470
bias:-1.2471, r:0.0962, obsmean:1.2847
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
NIIx mg m^-3
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19

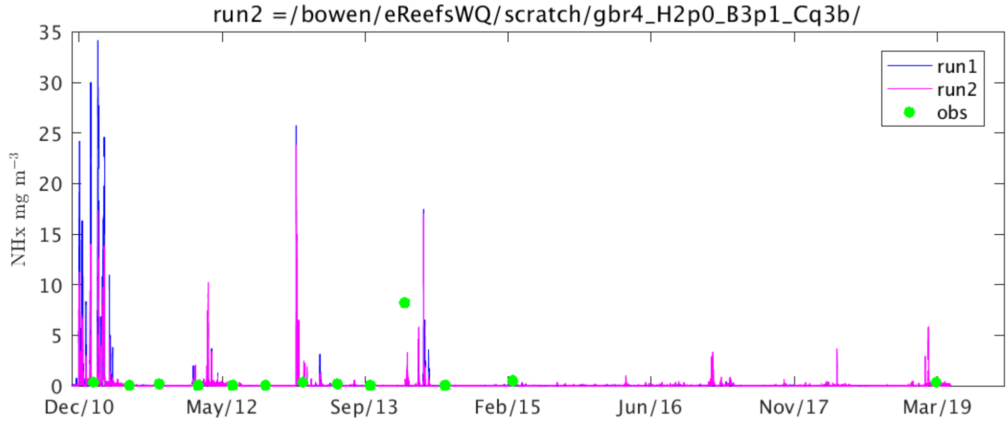
Pelorus_28m run1 d2:0.20, mape:421.8, rms:0.3639
bias:-0.0446, r:-0.2395, obsmean:0.1684
Pelorus_28m run2 d2:0.22, mape:362.2, rms:0.3736
bias:-0.0424, r:-0.2279, obsmean:0.1684
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/

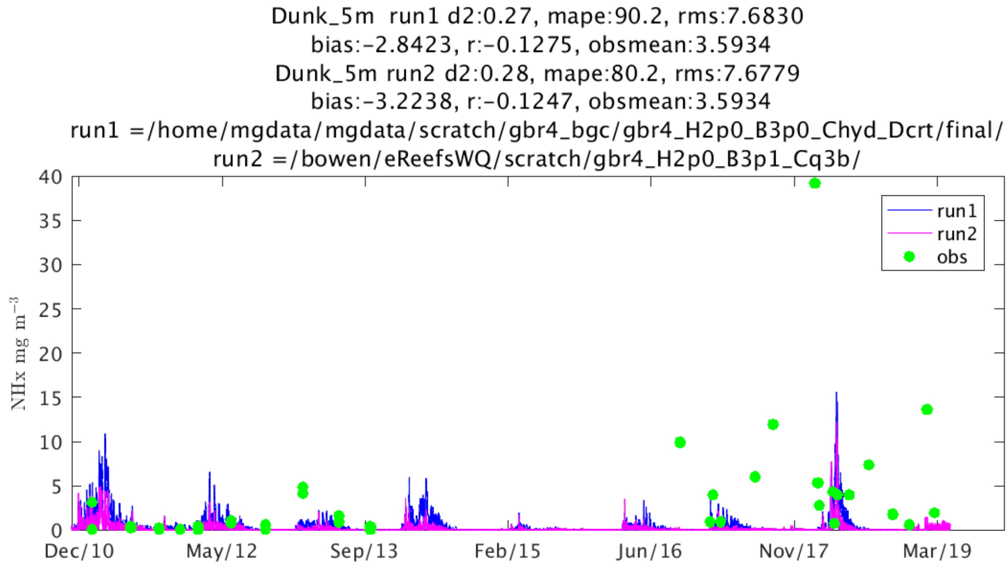


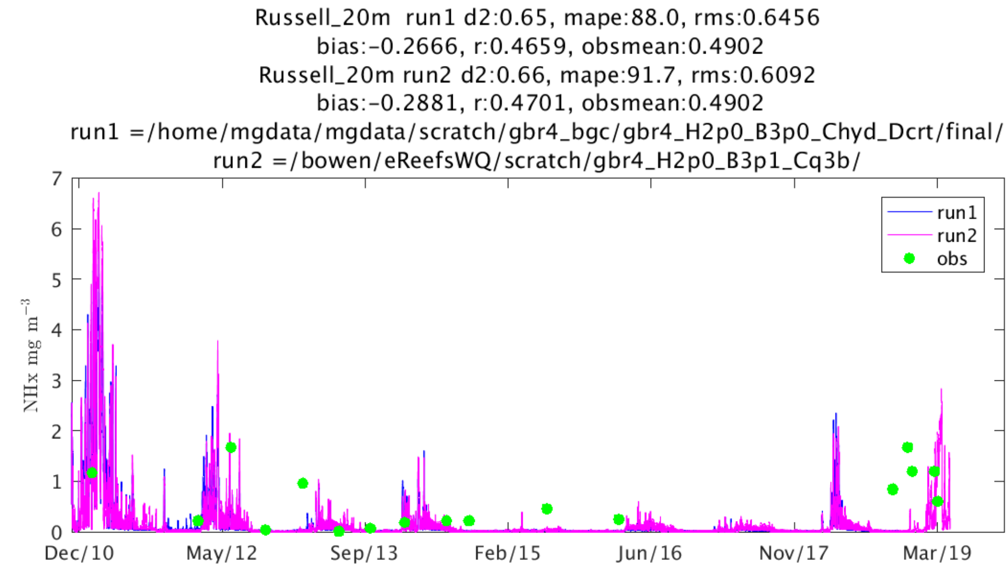
Pelorus_14m run1 d2:0.32, mape:85.8, rms:2.3807
bias:-0.9478, r:-0.1057, obsmean:1.1366
Pelorus_14m run2 d2:0.32, mape:103.4, rms:2.3811
bias:-0.9847, r:-0.1261, obsmean:1.1366
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/



Pelorus_0m run1 d2:0.25, mape:83.2, rms:2.3691
bias:-0.7831, r:-0.2108, obsmean:0.8472
Pelorus_0m run2 d2:0.25, mape:75.0, rms:2.3683
bias:-0.7822, r:-0.2417, obsmean:0.8472
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/




Dunk_5m run1 d2:0.27, mape:90.2, rms:7.6830
bias:-2.8423, r:-0.1275, obsmean:3.5934
Dunk_5m run2 d2:0.28, mape:80.2, rms:7.6779
bias:-3.2238, r:-0.1247, obsmean:3.5934
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
NIIx mg m^-3
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19


Russell_20m run1 d2:0.65, mape:88.0, rms:0.6456
bias:-0.2666, r:0.4659, obsmean:0.4902
Russell_20m run2 d2:0.66, mape:91.7, rms:0.6092
bias:-0.2881, r:0.4701, obsmean:0.4902
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
NIIx mg m^-3
run1
run2
obs
Dec/10
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Nov/17
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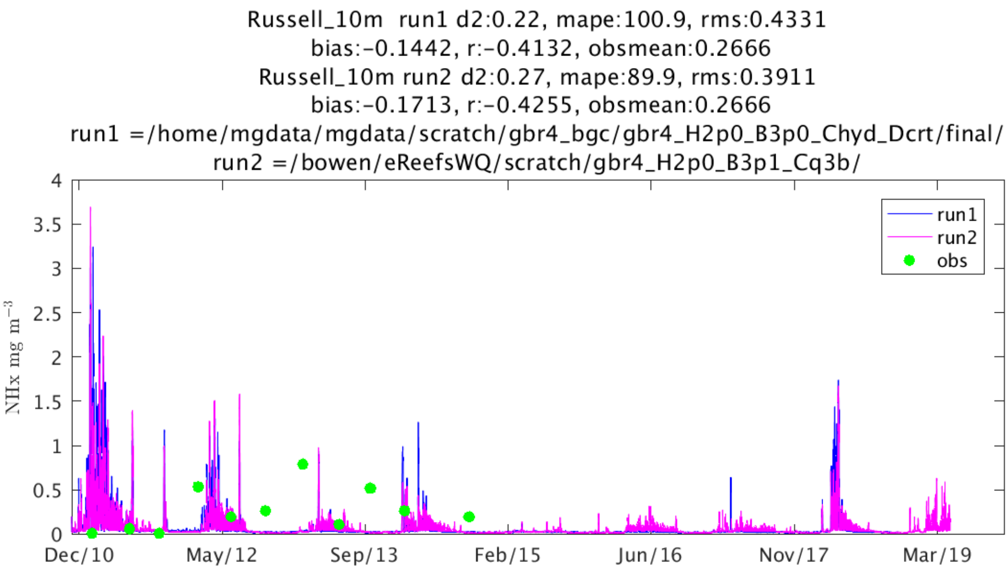
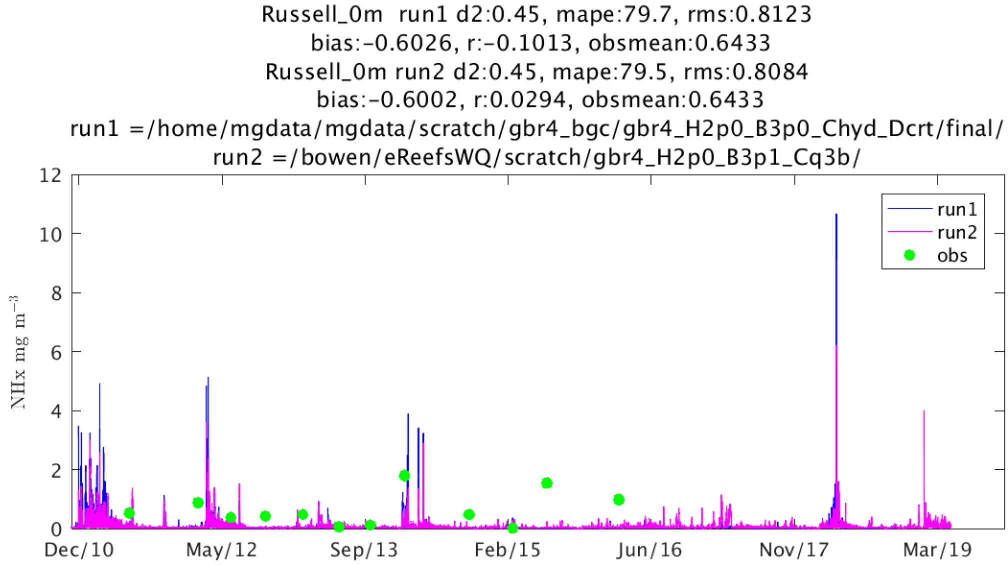
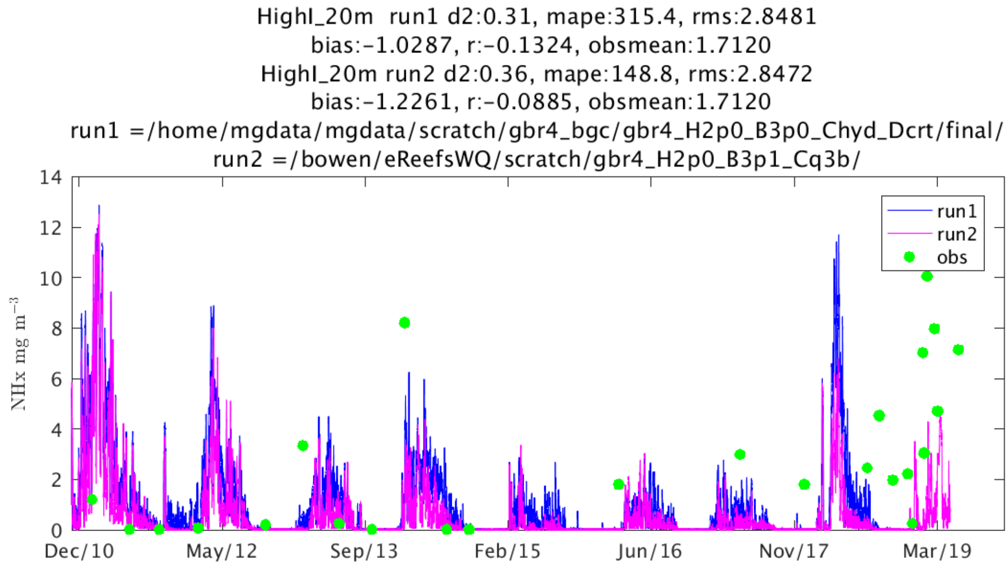
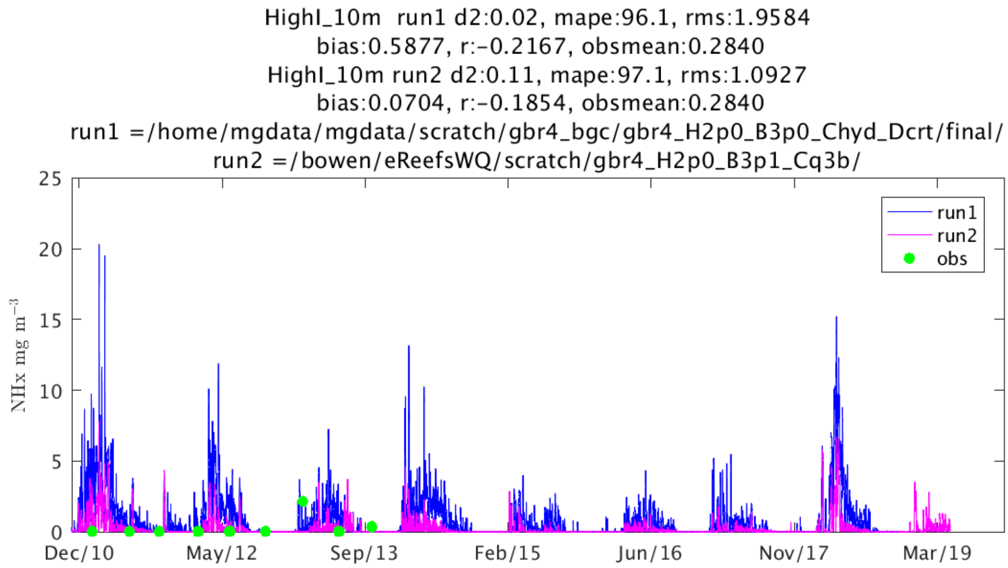
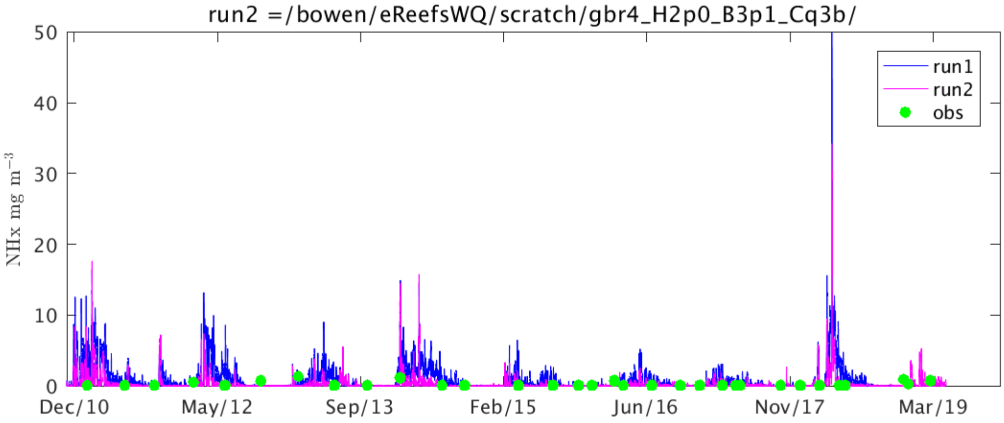

Russell_10m run1 d2:0.22, mape:100.9, rms:0.4331
bias:-0.1442, r:-0.4132, obsmean:0.2666
Russell_10m run2 d2:0.27, mape:89.9, rms:0.3911
bias:-0.1713, r:-0.4255, obsmean:0.2666
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
NIIx mg m^-3
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19


Russell_0m run1 d2:0.45, mape:79.7, rms:0.8123
bias:-0.6026, r:-0.1013, obsmean:0.6433
Russell_0m run2 d2:0.45, mape:79.5, rms:0.8084
bias:-0.6002, r:0.0294, obsmean:0.6433
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
NIIx mg m^-3
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19
run1
run2
obs

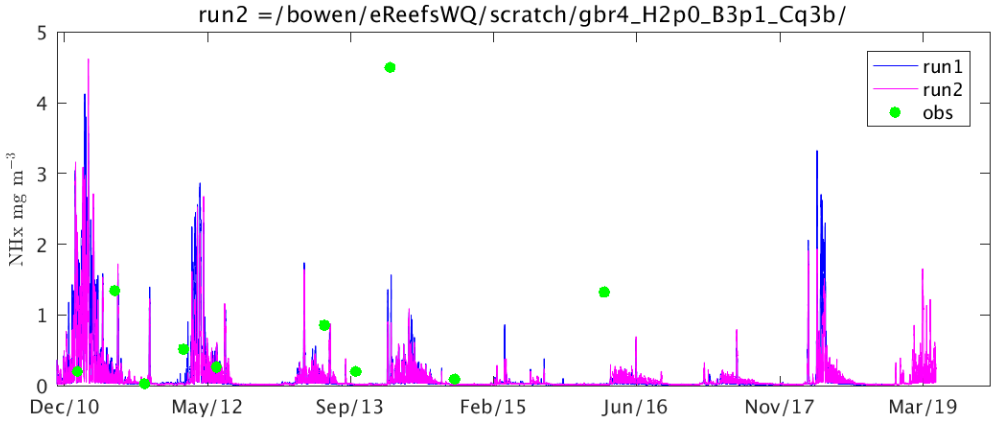

HighI_20m run1 d2:0.31, mape:315.4, rms:2.8481
bias:-1.0287, r:-0.1324, obsmean:1.7120
HighI_20m run2 d2:0.36, mape:148.8, rms:2.8472
bias:-1.2261, r:-0.0885, obsmean:1.7120
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
NIIx mg m^-3
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19
run1
run2
obs


HighI_10m run1 d2:0.02, mape:96.1, rms:1.9584
bias:0.5877, r:-0.2167, obsmean:0.2840
HighI_10m run2 d2:0.11, mape:97.1, rms:1.0927
bias:0.0704, r:-0.1854, obsmean:0.2840
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
NIIx mg m^-3
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19
run1
run2
obs

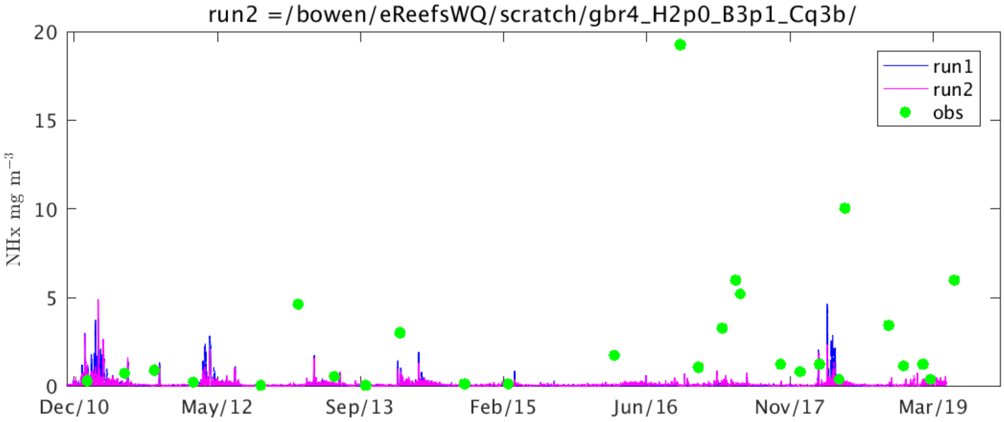
HighI_0m run1 d2:0.02, mape:96.9, rms:1.1656
bias:0.3592, r:-0.2093, obsmean:0.1607
HighI_0m run2 d2:0.14, mape:110.6, rms:0.4575
bias:-0.0195, r:-0.1783, obsmean:0.1607
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/



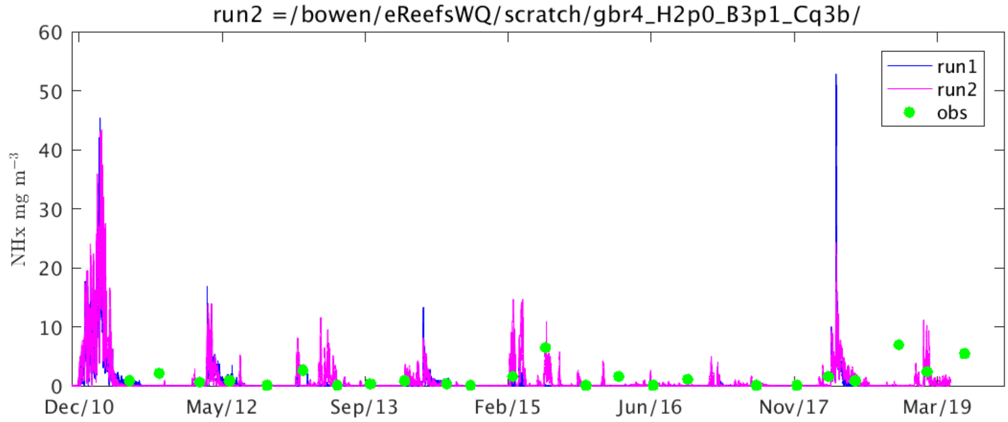
FitzCoral_15m run1 d2:0.29, mape:192.8, rms:1.7405
bias:-0.5957, r:-0.2052, obsmean:0.9324
FitzCoral_15m run2 d2:0.27, mape:225.2, rms:1.8259
bias:-0.5373, r:-0.2071, obsmean:0.9324
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/



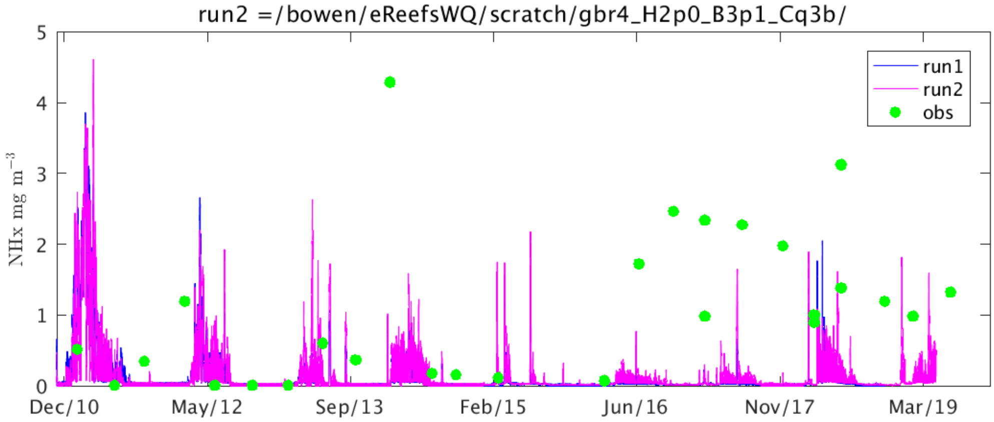
FitzCoral_0m run1 d2:0.37, mape:99.8, rms:5.0650
bias:-2.7091, r:-0.0870, obsmean:2.7958
FitzCoral_0m run2 d2:0.37, mape:105.8, rms:5.0623
bias:-2.6798, r:-0.0947, obsmean:2.7958
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/



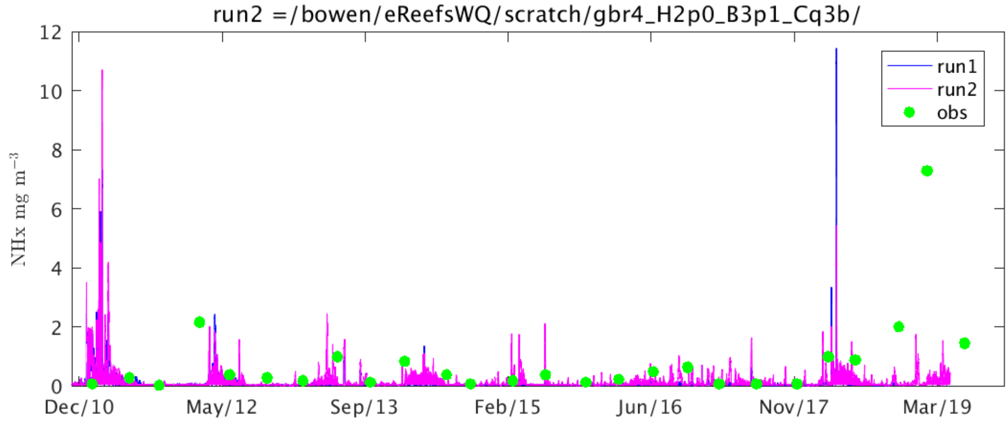
FairleadBuoy_0m run1 d2:0.38, mape:75.2, rms:1.7474
bias:-0.9843, r:-0.0786, obsmean:1.1099
FairleadBuoy_0m run2 d2:0.82, mape:90.8, rms:1.2481
bias:-0.4120, r:0.6901, obsmean:1.1099
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/

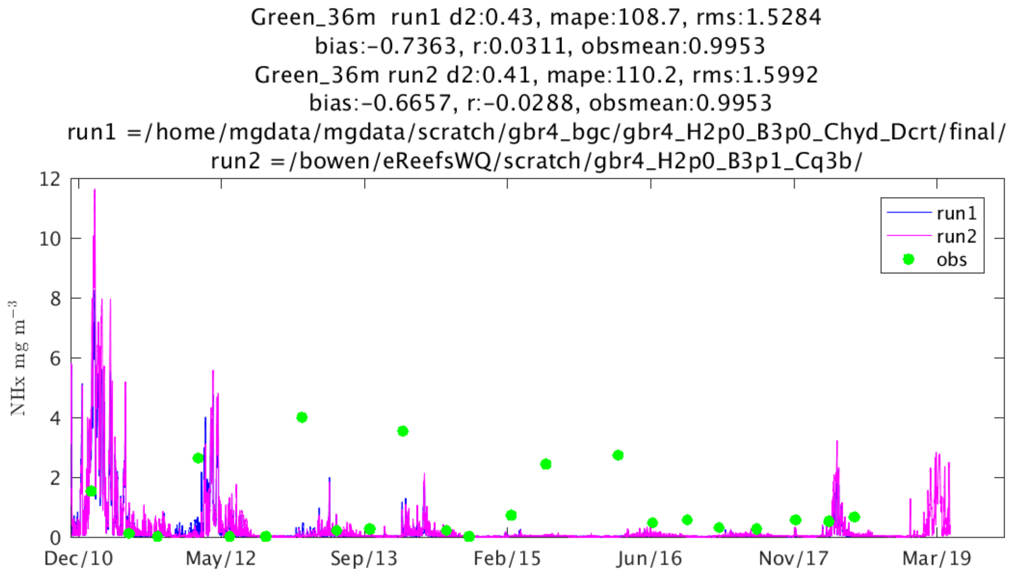


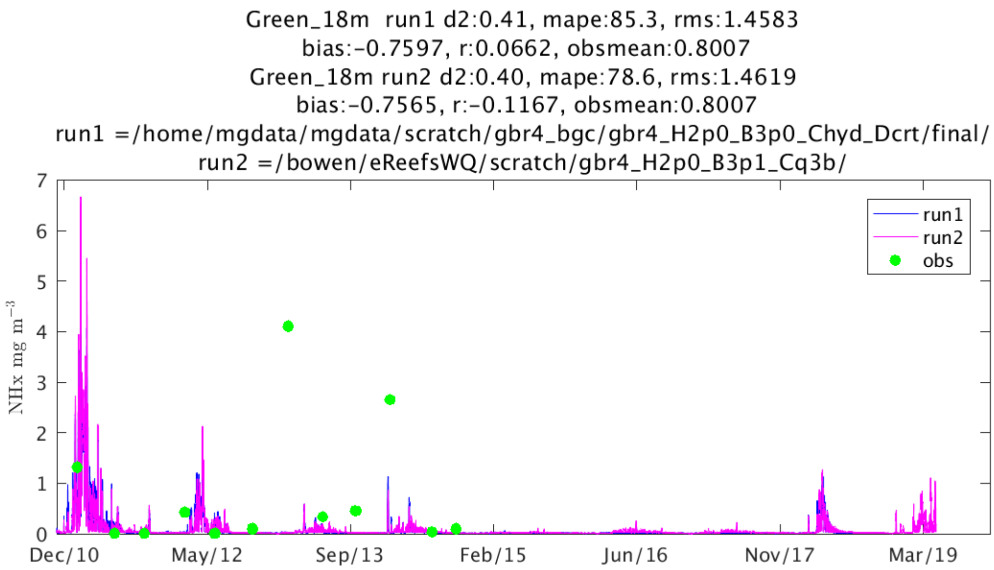
Yorkeys_8m run1 d2:0.42, mape:346.0, rms:1.5039
bias:-0.9021, r:-0.1362, obsmean:1.0181
Yorkeys_8m run2 d2:0.42, mape:536.1, rms:1.4345
bias:-0.8308, r:-0.0189, obsmean:1.0181
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/

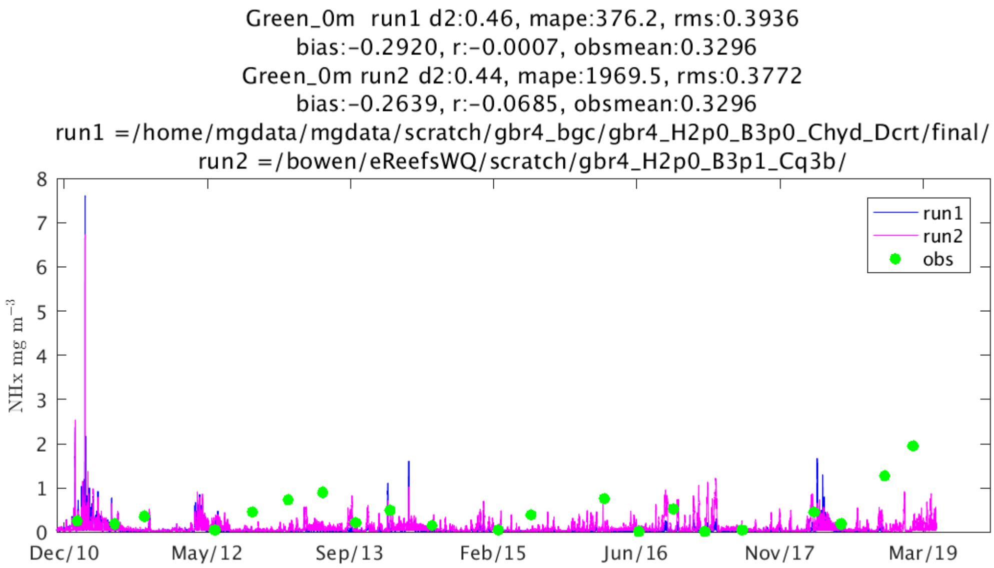


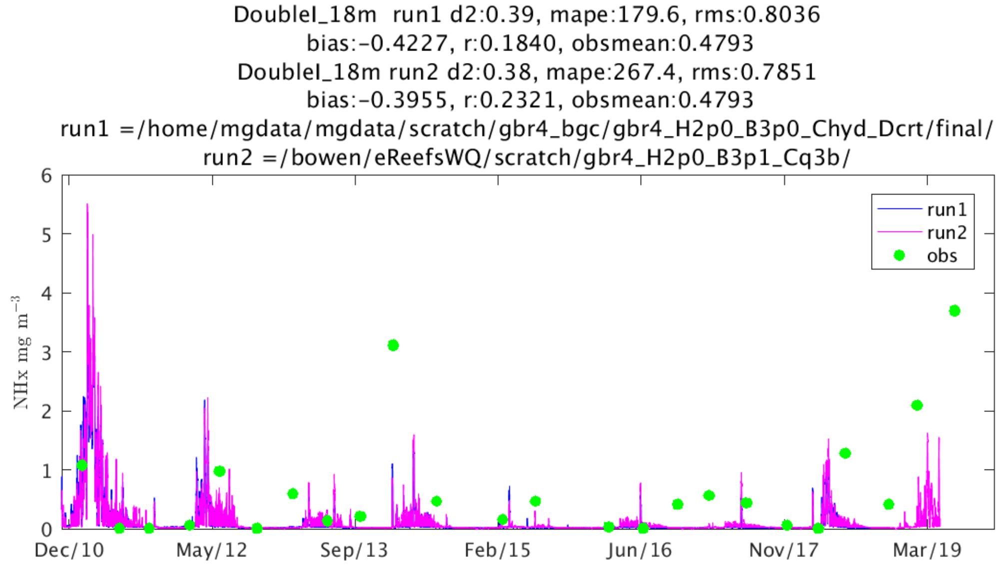
Yorkeys_0m run1 d2:0.40, mape:91.0, rms:0.6233
bias:-0.3806, r:-0.1407, obsmean:0.4320
Yorkeys_0m run2 d2:0.41, mape:104.9, rms:0.6060
bias:-0.3075, r:-0.0147, obsmean:0.4320
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/

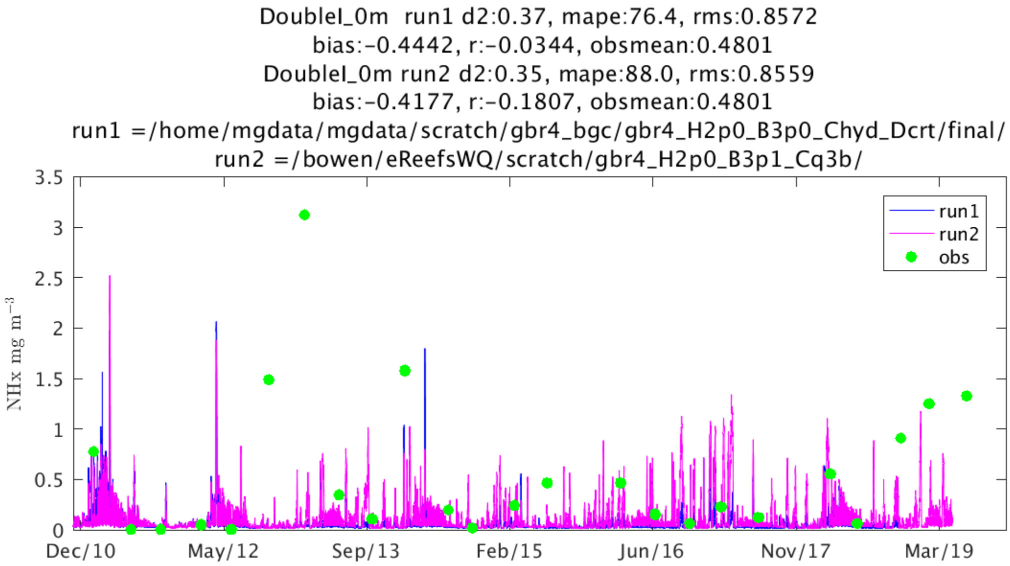


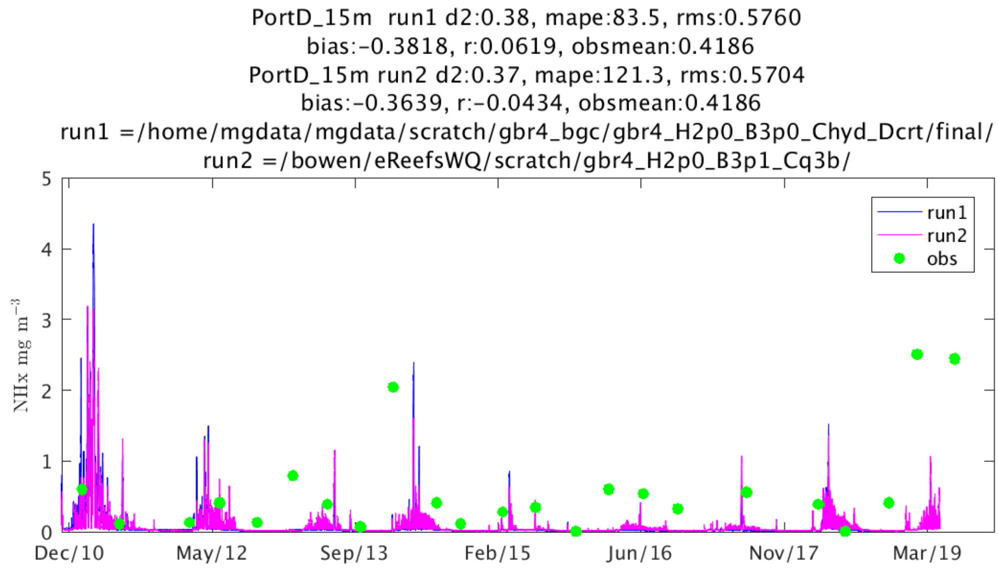

Green_36m run1 d2:0.43, mape:108.7, rms:1.5284
bias:-0.7363, r:0.0311, obsmean:0.9953
Green_36m run2 d2:0.41, mape:110.2, rms:1.5992
bias:-0.6657, r:-0.0288, obsmean:0.9953
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
NIIx mg m^{-3}
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19


Green_18m run1 d2:0.41, mape:85.3, rms:1.4583
bias:-0.7597, r:0.0662, obsmean:0.8007
Green_18m run2 d2:0.40, mape:78.6, rms:1.4619
bias:-0.7565, r:-0.1167, obsmean:0.8007
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
NIIx mg m^{-3}
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19

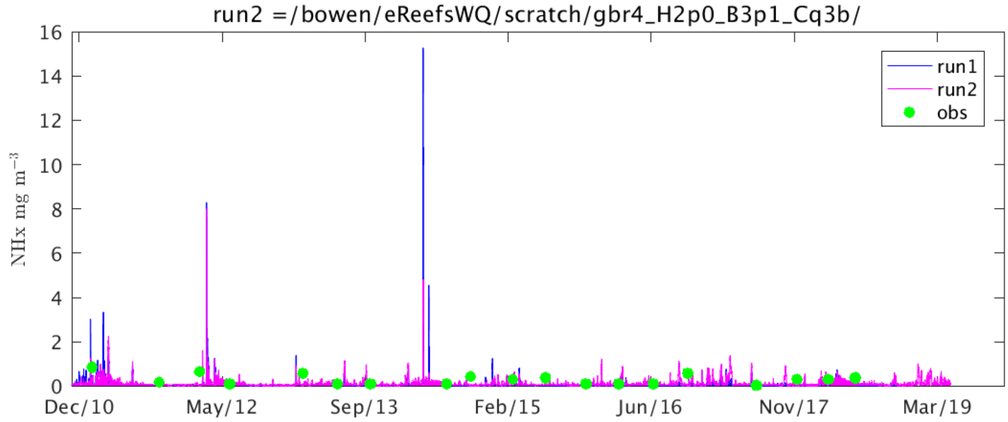

Green_0m run1 d2:0.46, mape:376.2, rms:0.3936
bias:-0.2920, r:-0.0007, obsmean:0.3296
Green_0m run2 d2:0.44, mape:1969.5, rms:0.3772
bias:-0.2639, r:-0.0685, obsmean:0.3296
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
NIIx mg m^{-3}
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19


DoubleI_18m run1 d2:0.39, mape:179.6, rms:0.8036
bias:-0.4227, r:0.1840, obsmean:0.4793
DoubleI_18m run2 d2:0.38, mape:267.4, rms:0.7851
bias:-0.3955, r:0.2321, obsmean:0.4793
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
NIIx mg m⁻³
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19

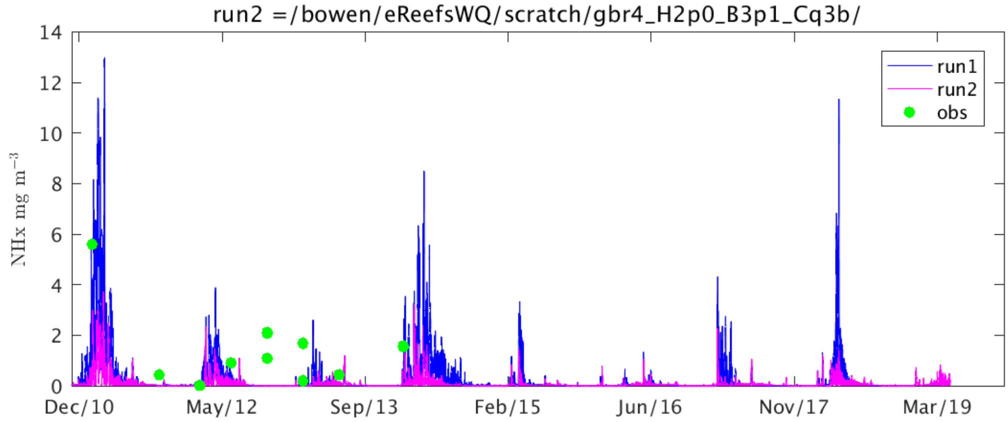

DoubleI_0m run1 d2:0.37, mape:76.4, rms:0.8572
bias:-0.4442, r:-0.0344, obsmean:0.4801
DoubleI_0m run2 d2:0.35, mape:88.0, rms:0.8559
bias:-0.4177, r:-0.1807, obsmean:0.4801
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
NIIx mg m⁻³
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19


PortD_15m run1 d2:0.38, mape:83.5, rms:0.5760
bias:-0.3818, r:0.0619, obsmean:0.4186
PortD_15m run2 d2:0.37, mape:121.3, rms:0.5704
bias:-0.3639, r:-0.0434, obsmean:0.4186
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
NIIx mg m⁻³
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19

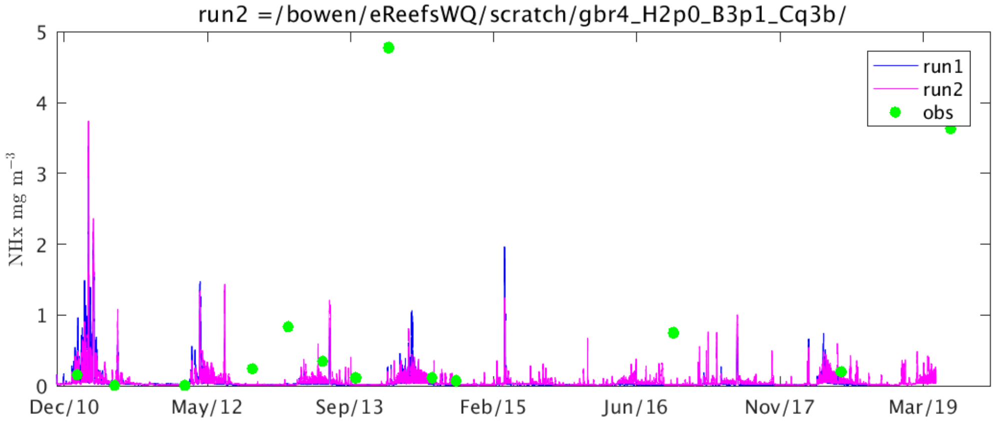
PortD_0m run1 d2:0.45, mape:77.0, rms:0.3433
bias:-0.2590, r:0.2747, obsmean:0.2956
PortD_0m run2 d2:0.44, mape:70.2, rms:0.3438
bias:-0.2534, r:-0.1776, obsmean:0.2956
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/



Snap_10m run1 d2:0.49, mape:75.0, rms:1.7219
bias:-1.0552, r:0.4765, obsmean:1.4125
Snap_10m run2 d2:0.41, mape:89.4, rms:2.0500
bias:-1.3600, r:0.1290, obsmean:1.4125
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/



CapeTrib_10m run1 d2:0.31, mape:87.4, rms:1.4152
bias:-0.6125, r:0.0822, obsmean:0.6381
CapeTrib_10m run2 d2:0.31, mape:86.9, rms:1.4173
bias:-0.6214, r:0.0912, obsmean:0.6381
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/



12. Simulated DON assessment against Long Term Monitoring

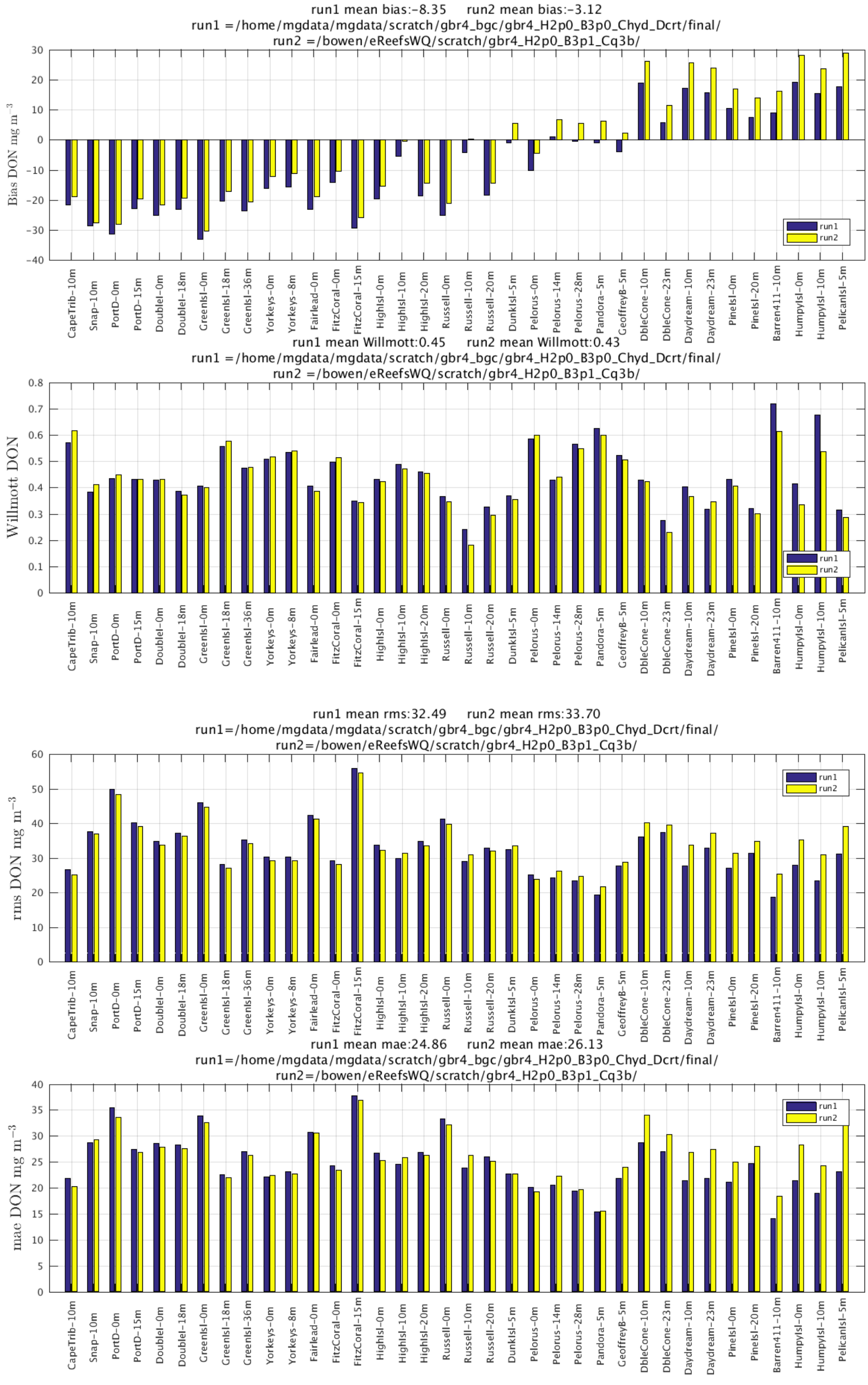
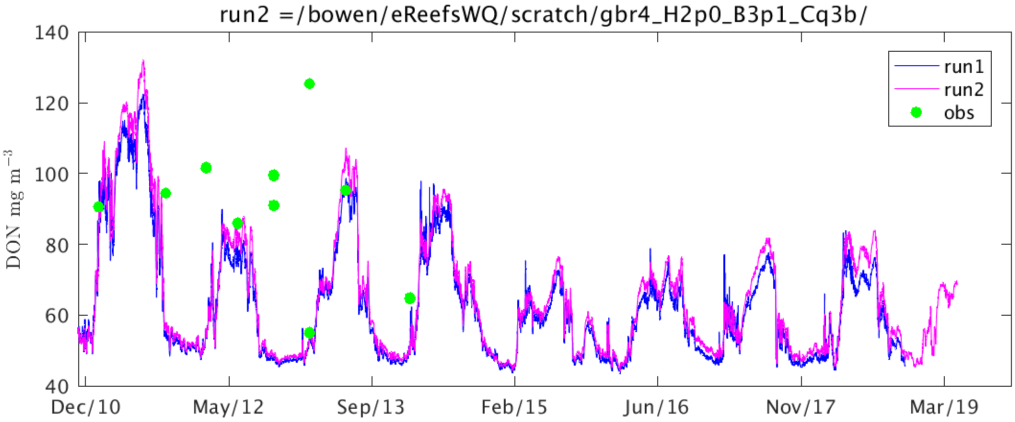
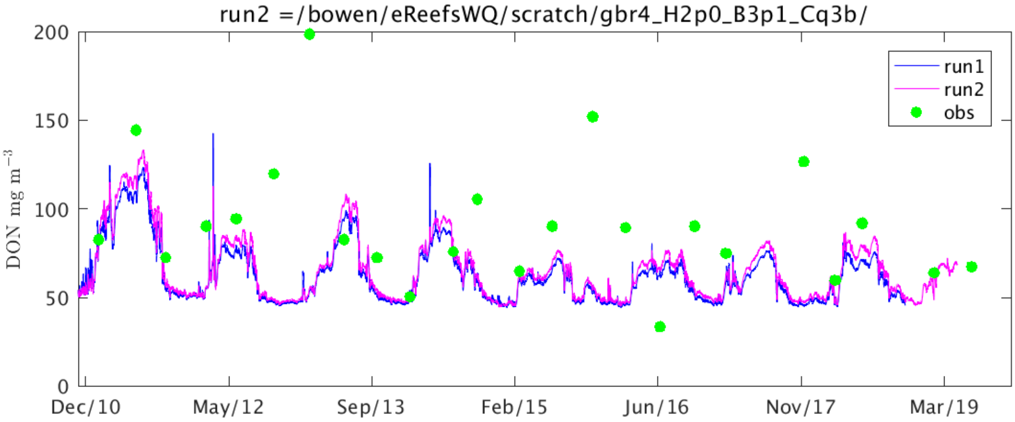


Figure 9 Metrics for Long Term Monitoring Sites simulated DON *against observations*

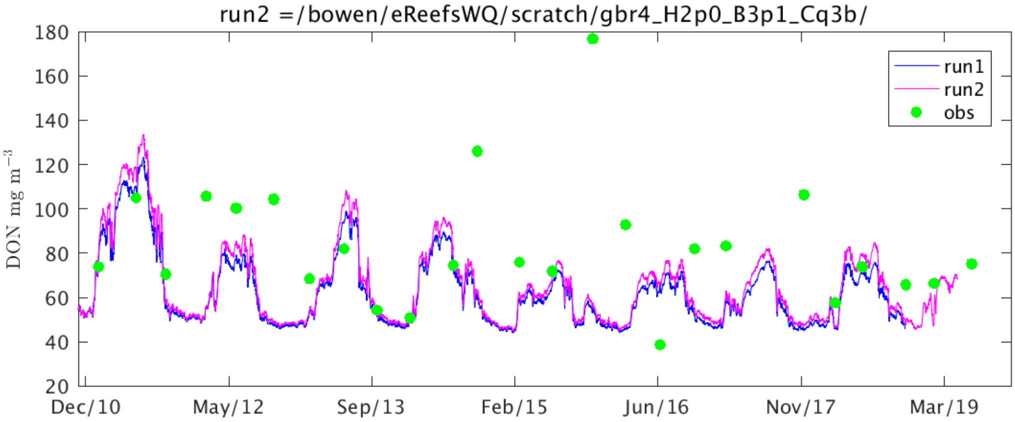
Snap_10m run1 d2:0.38, mape:28.5, rms:37.4963
bias:-28.5505, r:-0.0421, obsmean:90.4443
Snap_10m run2 d2:0.41, mape:29.5, rms:37.0019
bias:-27.7524, r:0.0558, obsmean:90.4443
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/

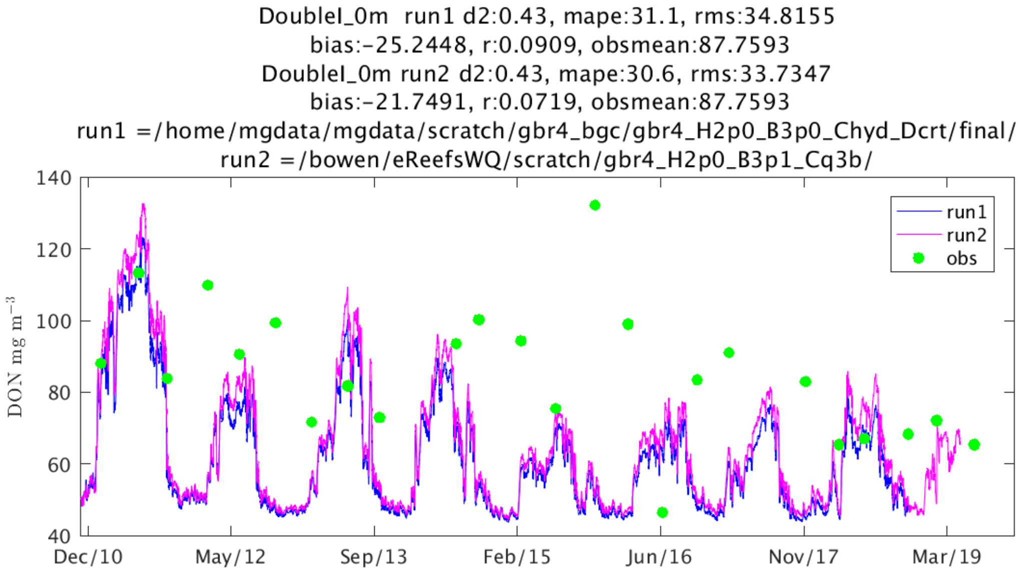


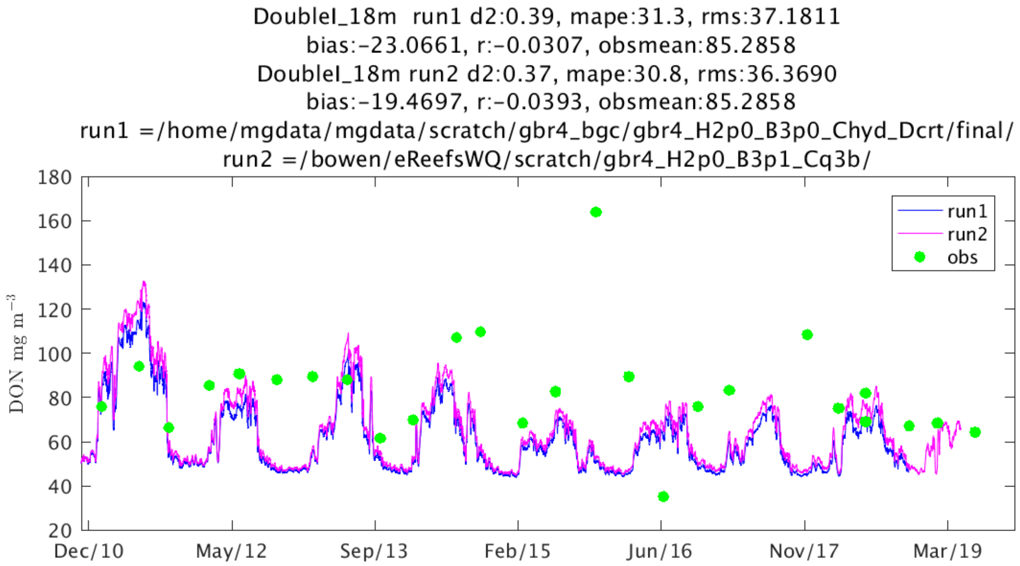
PortD_0m run1 d2:0.44, mape:33.9, rms:49.7832
bias:-31.4851, r:0.0459, obsmean:93.7947
PortD_0m run2 d2:0.45, mape:32.1, rms:48.3371
bias:-28.2536, r:0.0559, obsmean:93.7947
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/

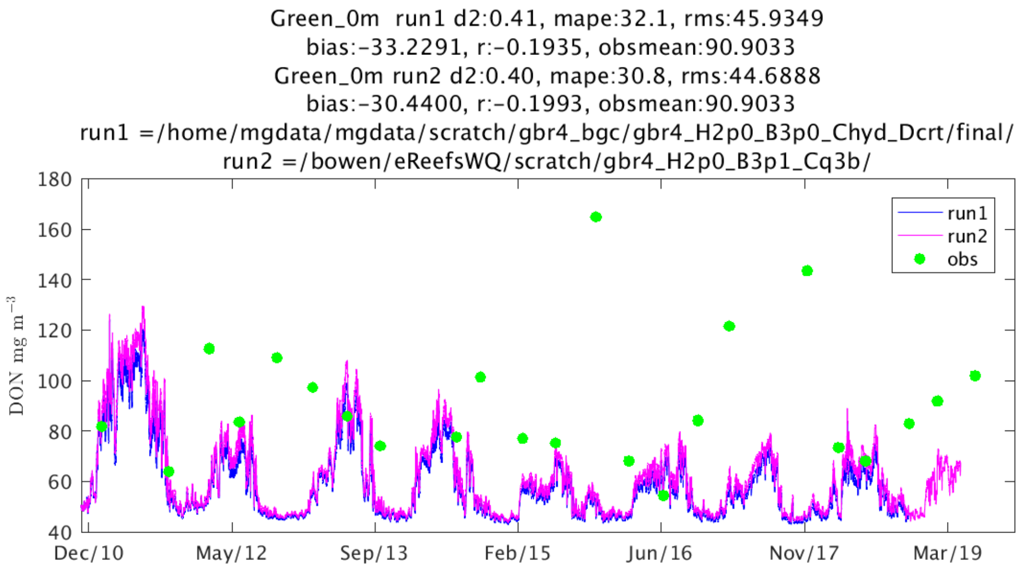


PortD_15m run1 d2:0.43, mape:28.2, rms:40.0635
bias:-22.9753, r:0.0102, obsmean:85.3265
PortD_15m run2 d2:0.43, mape:27.6, rms:39.0166
bias:-19.7153, r:0.0223, obsmean:85.3265
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/

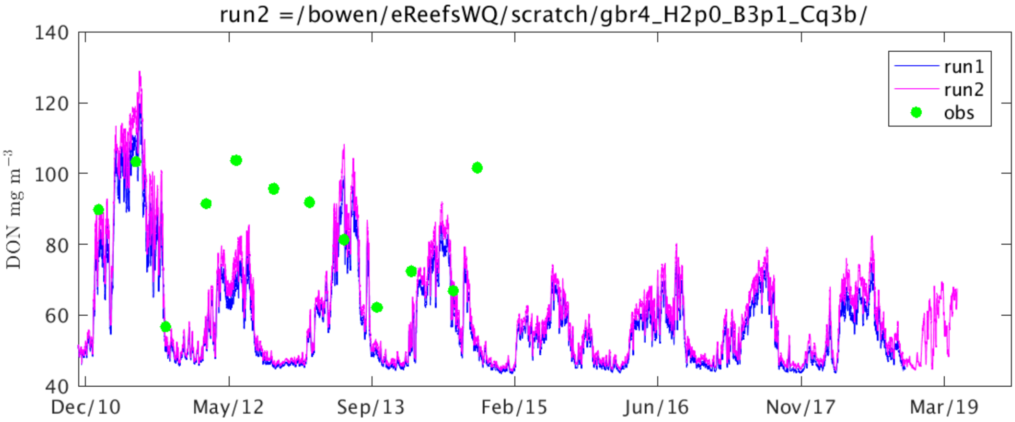



DoubleI_0m run1 d2:0.43, mape:31.1, rms:34.8155
bias:-25.2448, r:0.0909, obsmean:87.7593
DoubleI_0m run2 d2:0.43, mape:30.6, rms:33.7347
bias:-21.7491, r:0.0719, obsmean:87.7593
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
DON mg m^{-3}
140
120
100
80
60
40
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19
run1
run2
obs

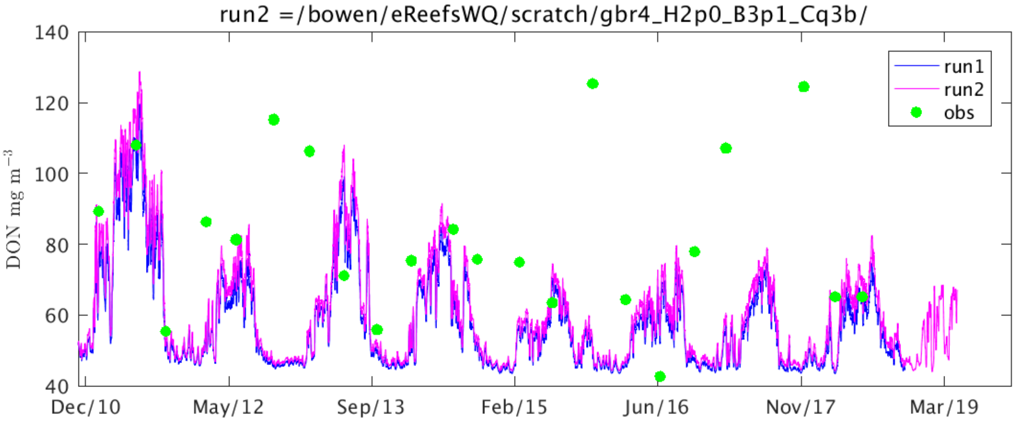

DoubleI_18m run1 d2:0.39, mape:31.3, rms:37.1811
bias:-23.0661, r:-0.0307, obsmean:85.2858
DoubleI_18m run2 d2:0.37, mape:30.8, rms:36.3690
bias:-19.4697, r:-0.0393, obsmean:85.2858
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
DON mg m^{-3}
180
160
140
120
100
80
60
40
20
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19
run1
run2
obs


Green_0m run1 d2:0.41, mape:32.1, rms:45.9349
bias:-33.2291, r:-0.1935, obsmean:90.9033
Green_0m run2 d2:0.40, mape:30.8, rms:44.6888
bias:-30.4400, r:-0.1993, obsmean:90.9033
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
DON mg m^{-3}
180
160
140
120
100
80
60
40
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19
run1
run2
obs

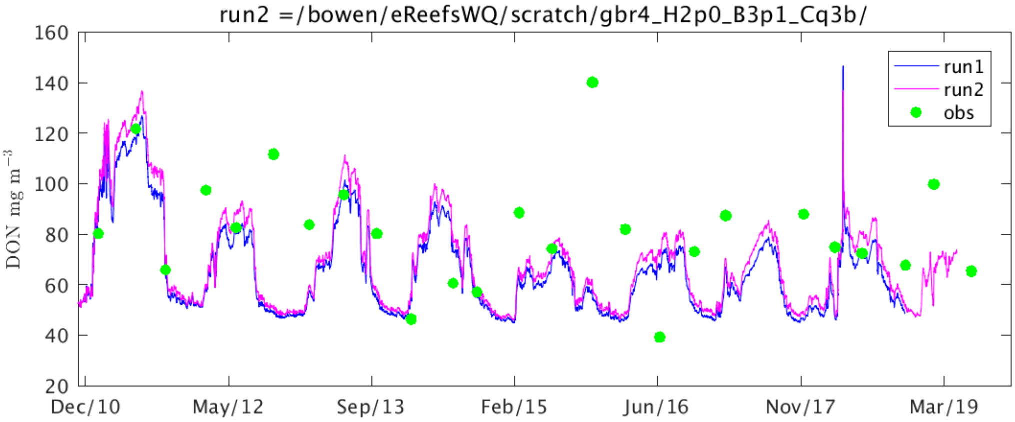
Green_18m run1 d2:0.56, mape:25.3, rms:28.0720
bias:-20.5235, r:0.3623, obsmean:84.7497
Green_18m run2 d2:0.58, mape:24.5, rms:26.9695
bias:-17.2675, r:0.3637, obsmean:84.7497
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/

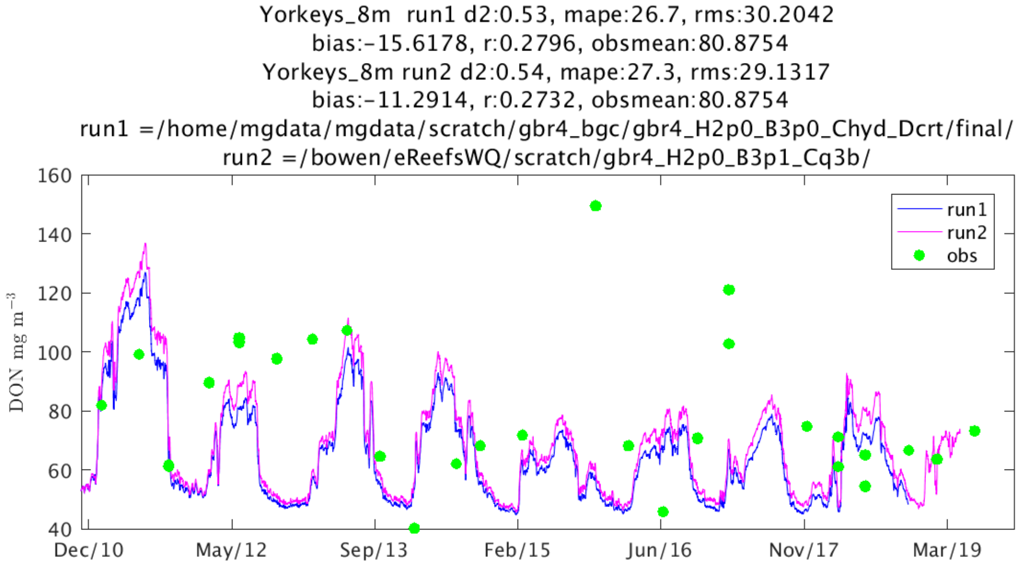


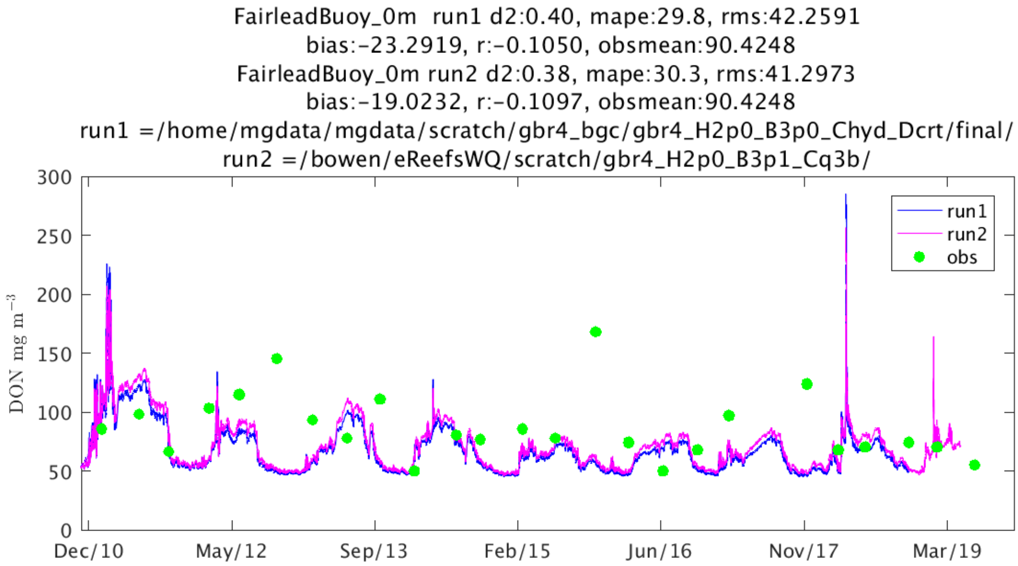
Green_36m run1 d2:0.47, mape:29.4, rms:35.1923
bias:-23.6051, r:0.0640, obsmean:82.4714
Green_36m run2 d2:0.48, mape:28.8, rms:34.2189
bias:-20.7300, r:0.0563, obsmean:82.4714
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/

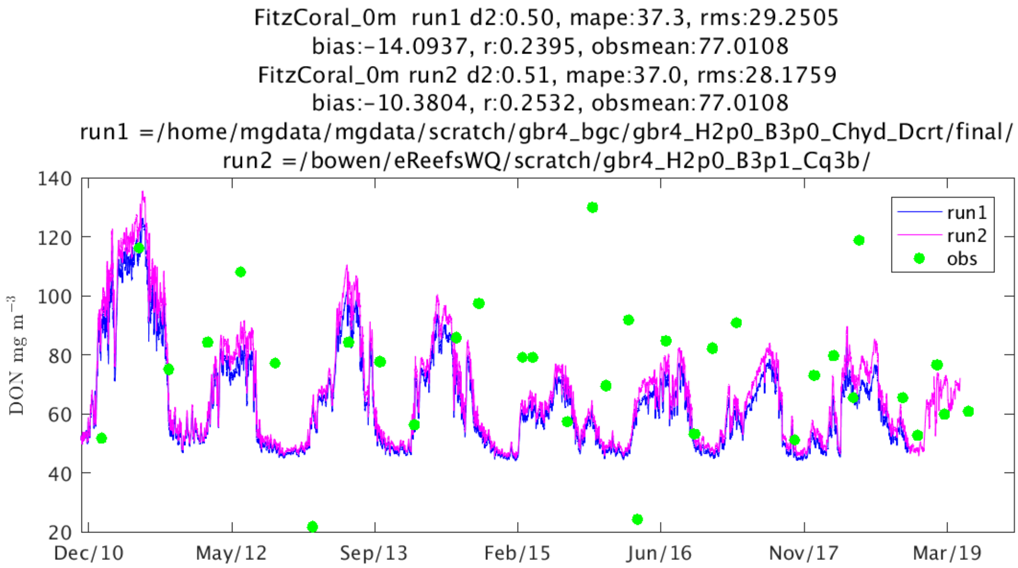


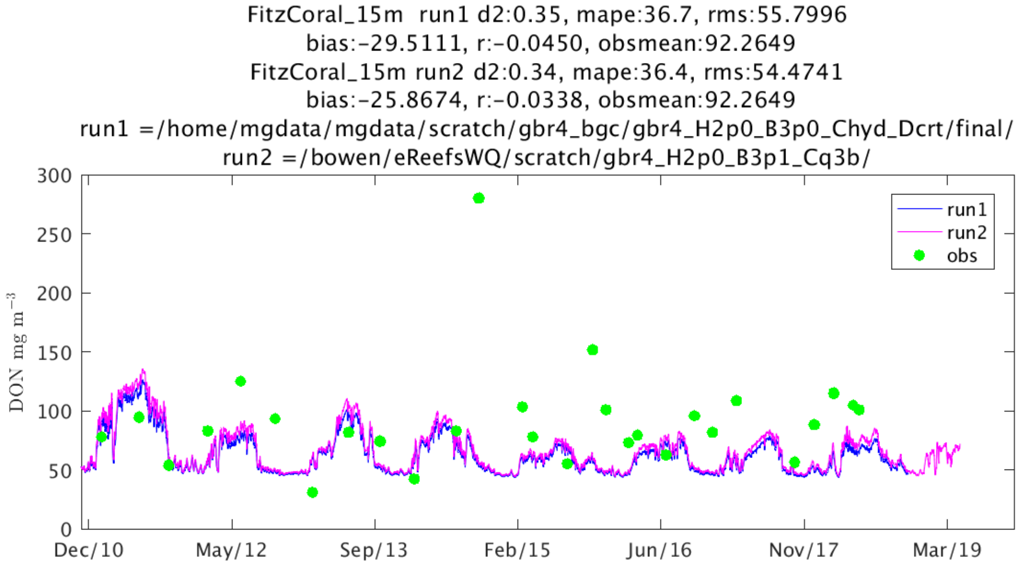
Yorkeys_0m run1 d2:0.51, mape:25.8, rms:30.1804
bias:-16.3264, r:0.2219, obsmean:82.0153
Yorkeys_0m run2 d2:0.52, mape:26.8, rms:29.1851
bias:-12.2064, r:0.2195, obsmean:82.0153
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/

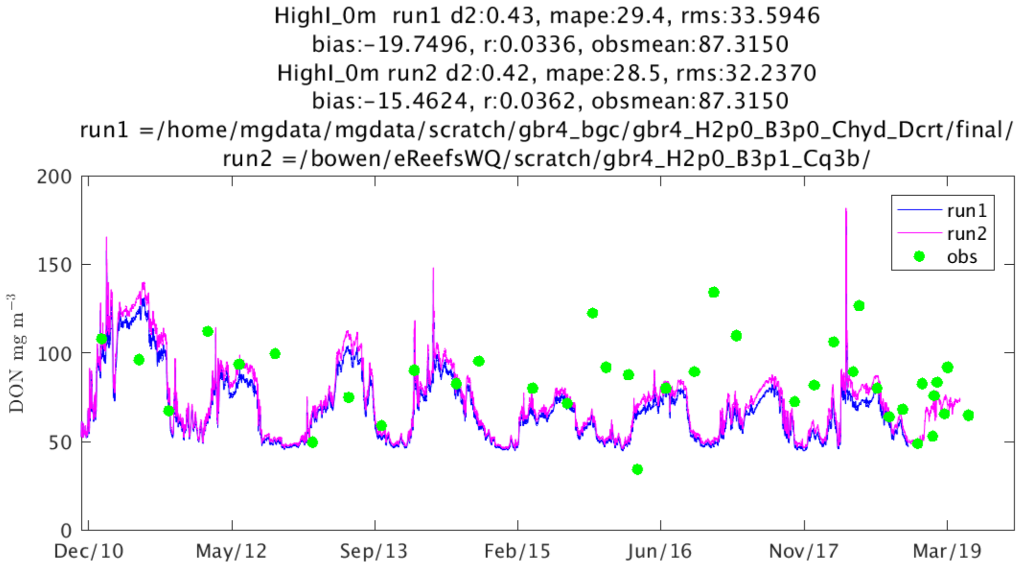


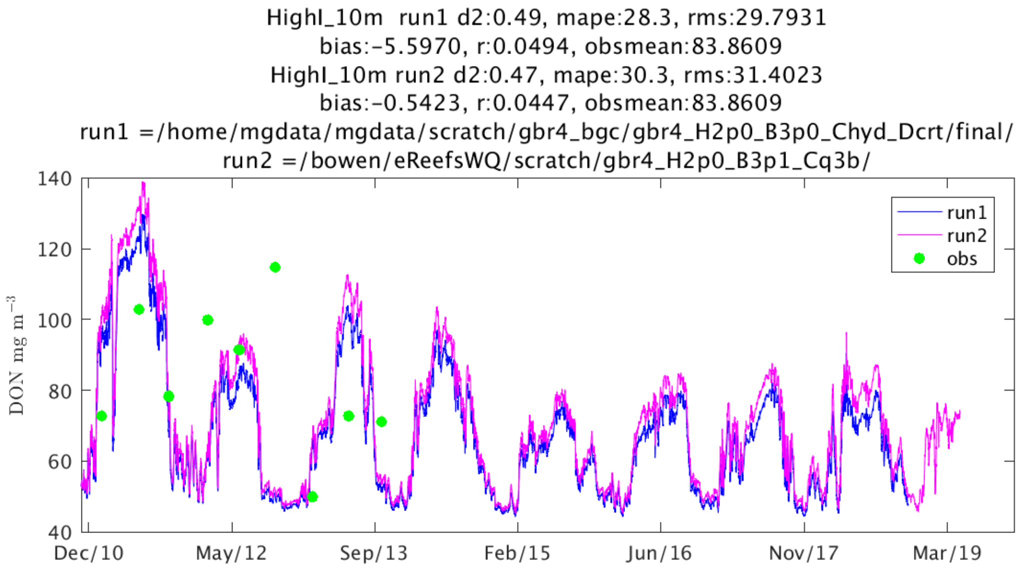

Yorkeys_8m run1 d2:0.53, mape:26.7, rms:30.2042
bias:-15.6178, r:0.2796, obsmean:80.8754
Yorkeys_8m run2 d2:0.54, mape:27.3, rms:29.1317
bias:-11.2914, r:0.2732, obsmean:80.8754
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
DON mg m⁻³
160
140
120
100
80
60
40
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19
run1
run2
obs


FairleadBuoy_0m run1 d2:0.40, mape:29.8, rms:42.2591
bias:-23.2919, r:-0.1050, obsmean:90.4248
FairleadBuoy_0m run2 d2:0.38, mape:30.3, rms:41.2973
bias:-19.0232, r:-0.1097, obsmean:90.4248
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
DON mg m⁻³
300
250
200
150
100
50
0
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19
run1
run2
obs

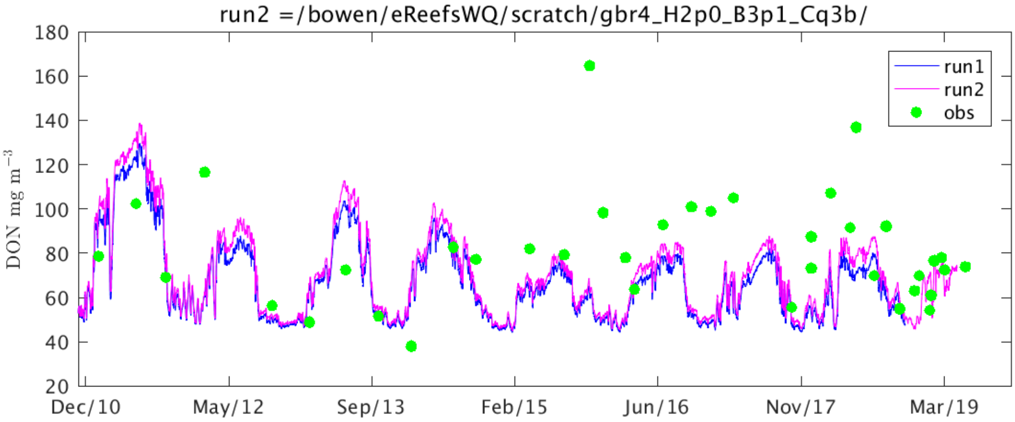

FitzCoral_0m run1 d2:0.50, mape:37.3, rms:29.2505
bias:-14.0937, r:0.2395, obsmean:77.0108
FitzCoral_0m run2 d2:0.51, mape:37.0, rms:28.1759
bias:-10.3804, r:0.2532, obsmean:77.0108
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
DON mg m⁻³
140
120
100
80
60
40
20
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19
run1
run2
obs


FitzCoral_15m run1 d2:0.35, mape:36.7, rms:55.7996
bias:-29.5111, r:-0.0450, obsmean:92.2649
FitzCoral_15m run2 d2:0.34, mape:36.4, rms:54.4741
bias:-25.8674, r:-0.0338, obsmean:92.2649
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
DON mg m⁻³
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19

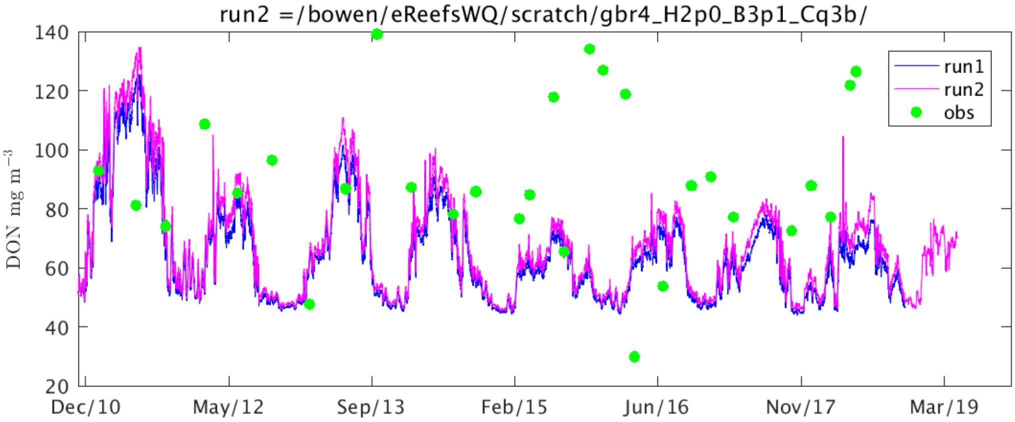

HighI_0m run1 d2:0.43, mape:29.4, rms:33.5946
bias:-19.7496, r:0.0336, obsmean:87.3150
HighI_0m run2 d2:0.42, mape:28.5, rms:32.2370
bias:-15.4624, r:0.0362, obsmean:87.3150
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
DON mg m⁻³
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19


HighI_10m run1 d2:0.49, mape:28.3, rms:29.7931
bias:-5.5970, r:0.0494, obsmean:83.8609
HighI_10m run2 d2:0.47, mape:30.3, rms:31.4023
bias:-0.5423, r:0.0447, obsmean:83.8609
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
DON mg m⁻³
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19

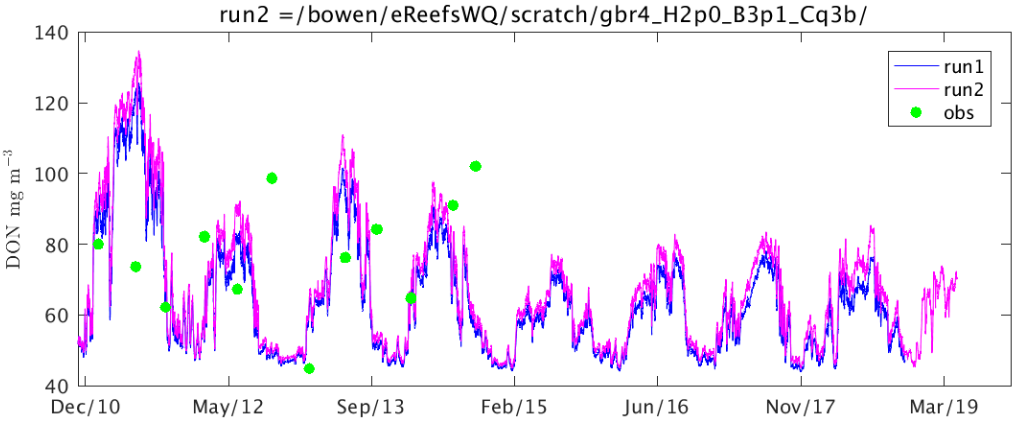
HighI_20m run1 d2:0.46, mape:29.0, rms:34.8163
bias:-18.6207, r:0.1143, obsmean:84.3077
HighI_20m run2 d2:0.46, mape:29.1, rms:33.4403
bias:-14.4811, r:0.1235, obsmean:84.3077
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/



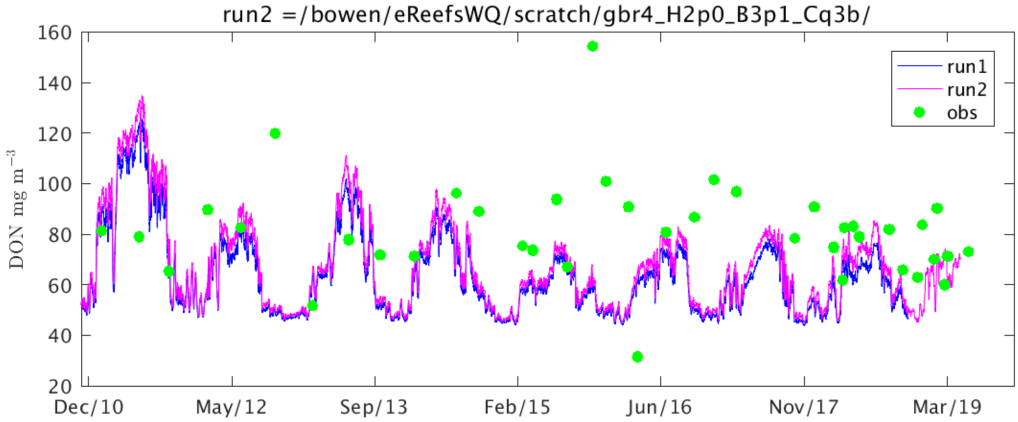
Russell_0m run1 d2:0.37, mape:35.8, rms:41.1454
bias:-25.2284, r:-0.1848, obsmean:90.1470
Russell_0m run2 d2:0.34, mape:35.1, rms:39.7766
bias:-21.2373, r:-0.1798, obsmean:90.1470
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/



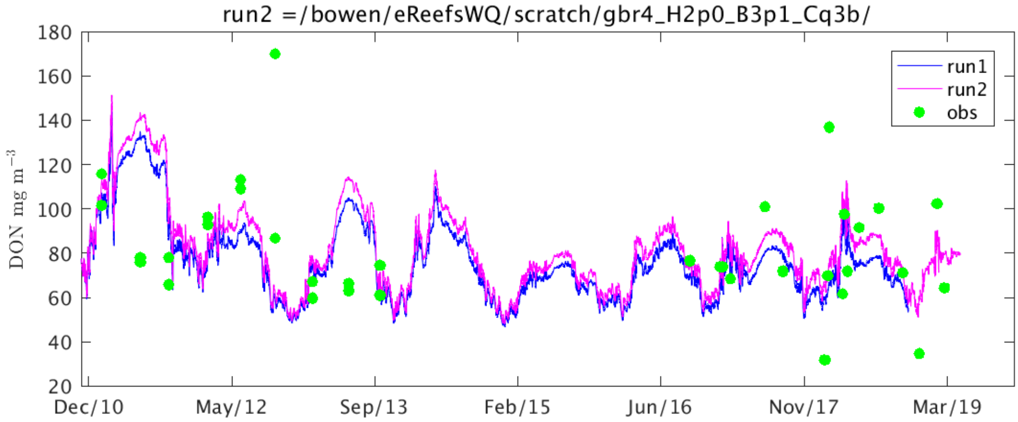
Russell_10m run1 d2:0.24, mape:29.8, rms:29.0528
bias:-4.3740, r:-0.2558, obsmean:77.3134
Russell_10m run2 d2:0.18, mape:33.5, rms:30.8742
bias:0.1448, r:-0.2616, obsmean:77.3134
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/



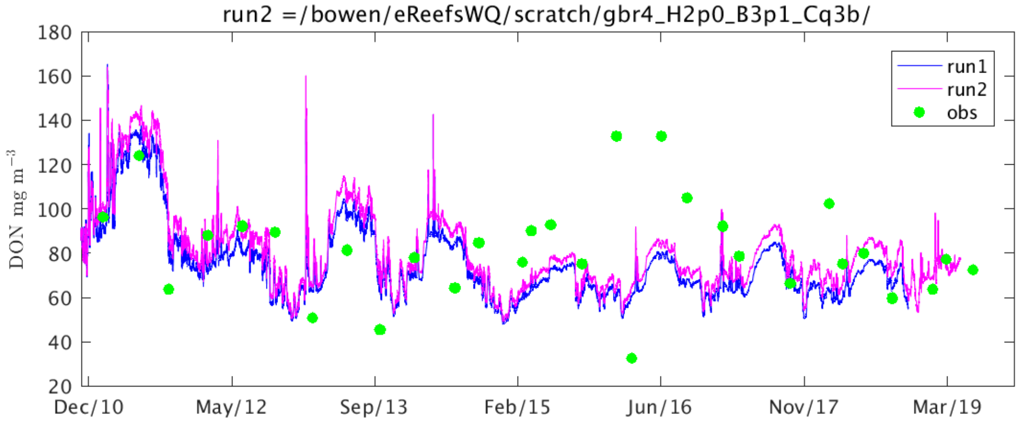
Russell_20m run1 d2:0.33, mape:30.3, rms:32.8245
bias:-18.5566, r:-0.1486, obsmean:82.6912
Russell_20m run2 d2:0.29, mape:29.7, rms:31.9343
bias:-14.5037, r:-0.1597, obsmean:82.6912
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/



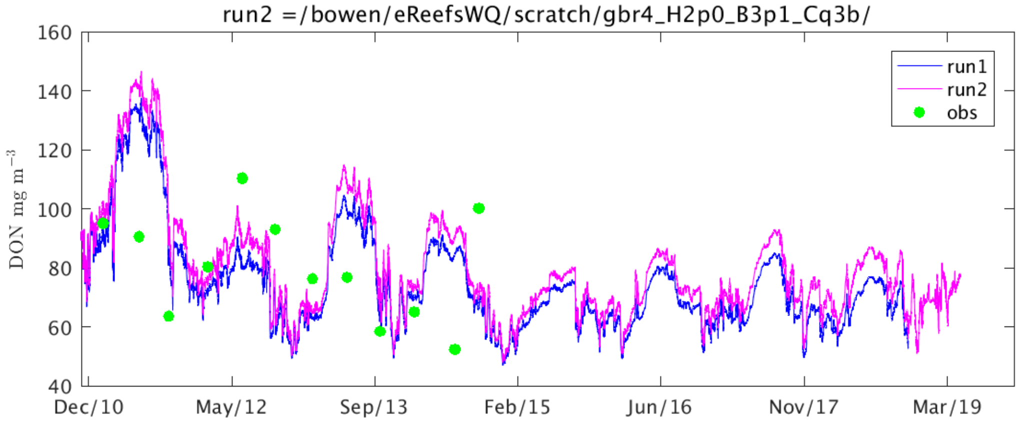
Dunk_5m run1 d2:0.37, mape:27.3, rms:32.3560
bias:-1.0941, r:-0.0315, obsmean:84.0508
Dunk_5m run2 d2:0.35, mape:28.9, rms:33.5328
bias:5.4769, r:-0.0290, obsmean:84.0508
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/



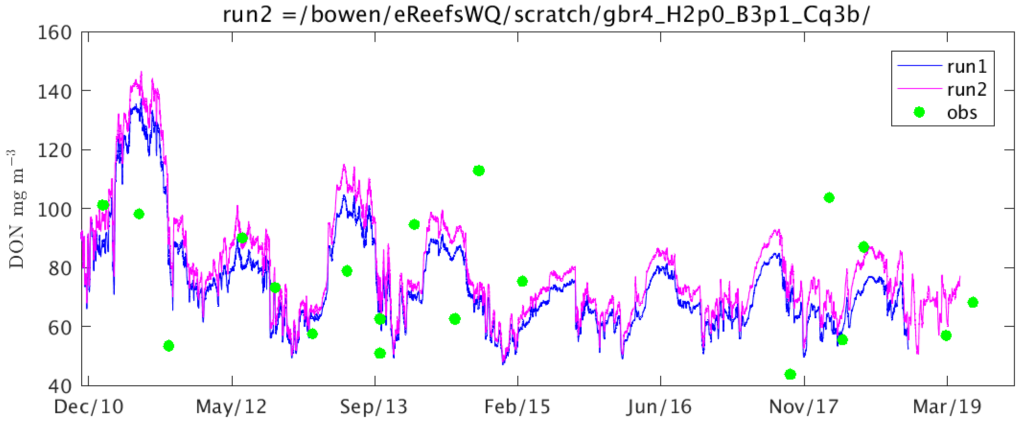
Pelorus_0m run1 d2:0.59, mape:24.8, rms:25.1728
bias:-10.1458, r:0.3529, obsmean:83.3456
Pelorus_0m run2 d2:0.60, mape:24.6, rms:23.9107
bias:-4.5372, r:0.3506, obsmean:83.3456
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/



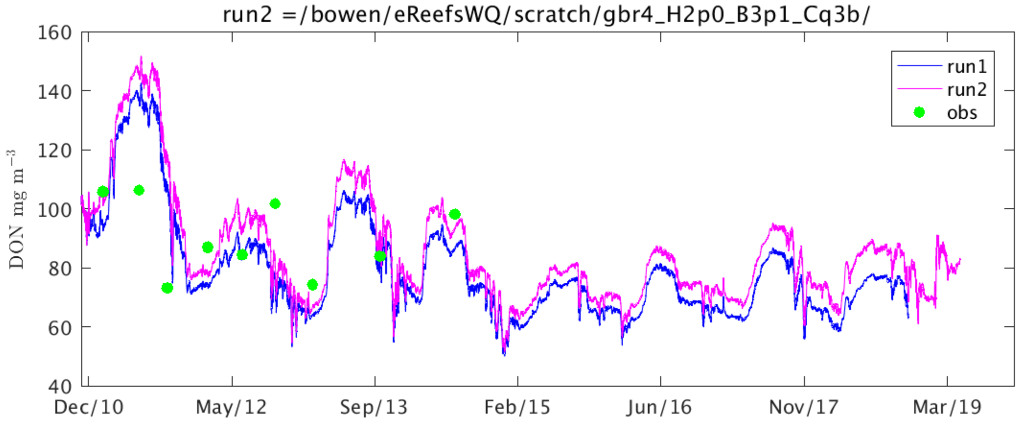
Pelorus_14m run1 d2:0.43, mape:26.0, rms:24.2424
bias:1.0027, r:0.1361, obsmean:80.1800
Pelorus_14m run2 d2:0.44, mape:29.1, rms:26.2505
bias:6.6921, r:0.1511, obsmean:80.1800
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/

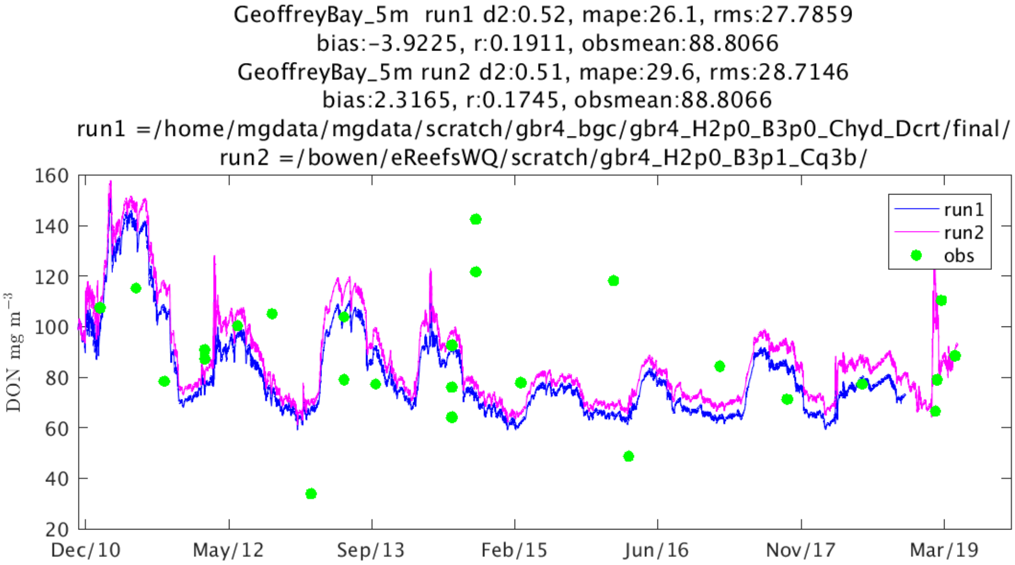


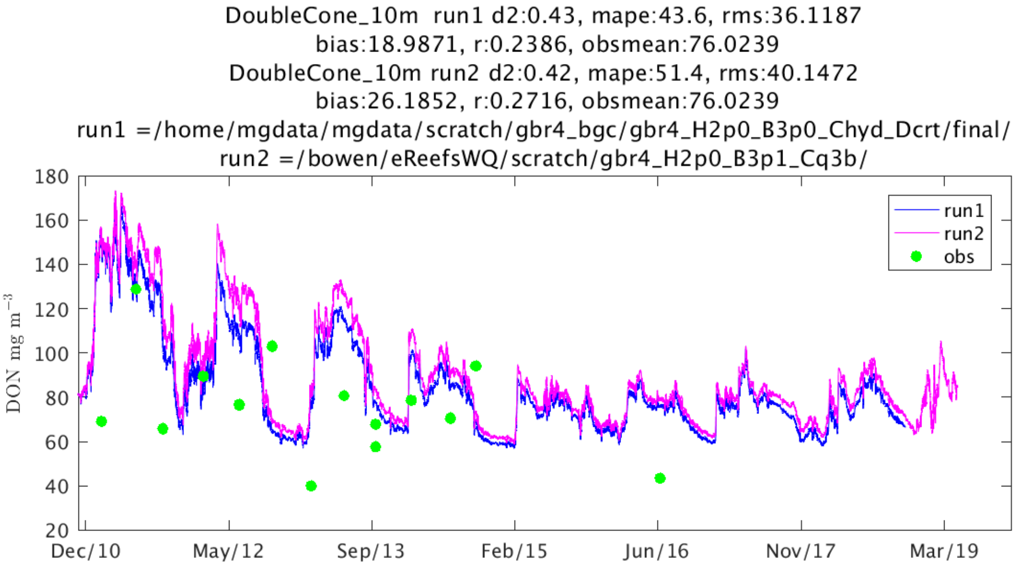
Pelorus_28m run1 d2:0.57, mape:25.8, rms:23.4436
bias:-0.5981, r:0.2816, obsmean:76.5044
Pelorus_28m run2 d2:0.55, mape:27.7, rms:24.7256
bias:5.4743, r:0.2895, obsmean:76.5044
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/

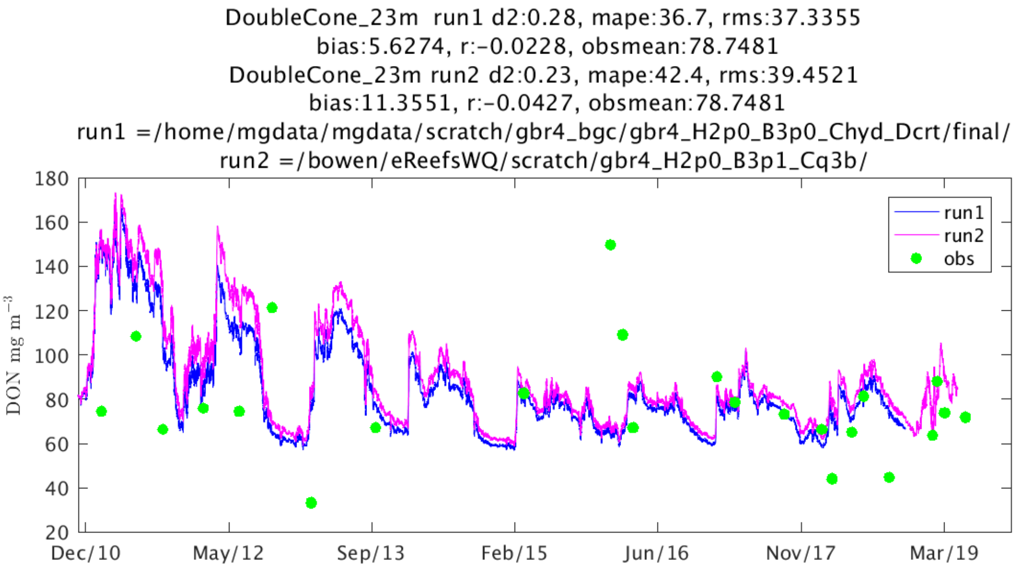


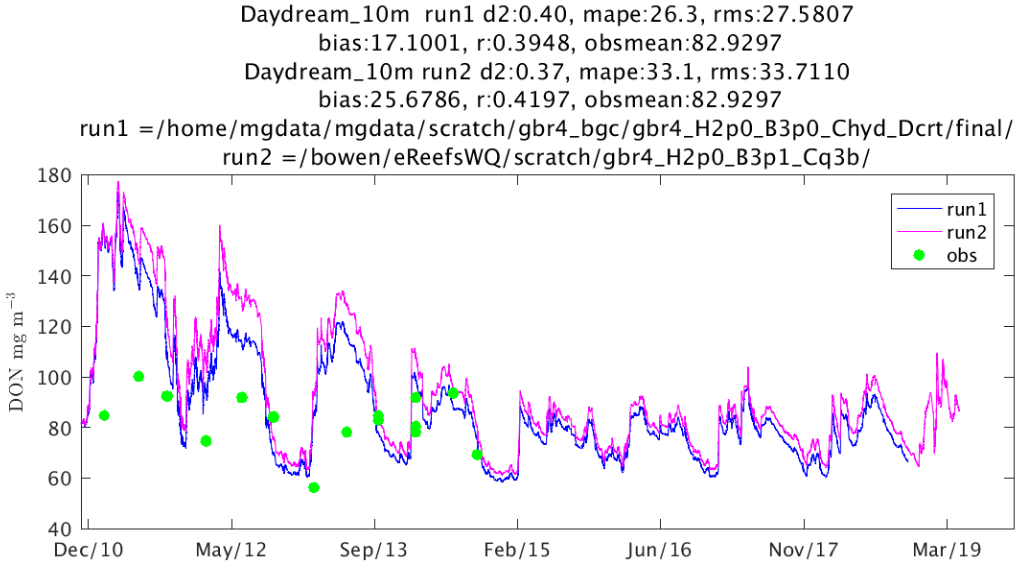
Pandora_5m run1 d2:0.63, mape:17.0, rms:19.3045
bias:-0.9444, r:0.4029, obsmean:90.6197
Pandora_5m run2 d2:0.60, mape:17.7, rms:21.6555
bias:6.2779, r:0.4002, obsmean:90.6197
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/

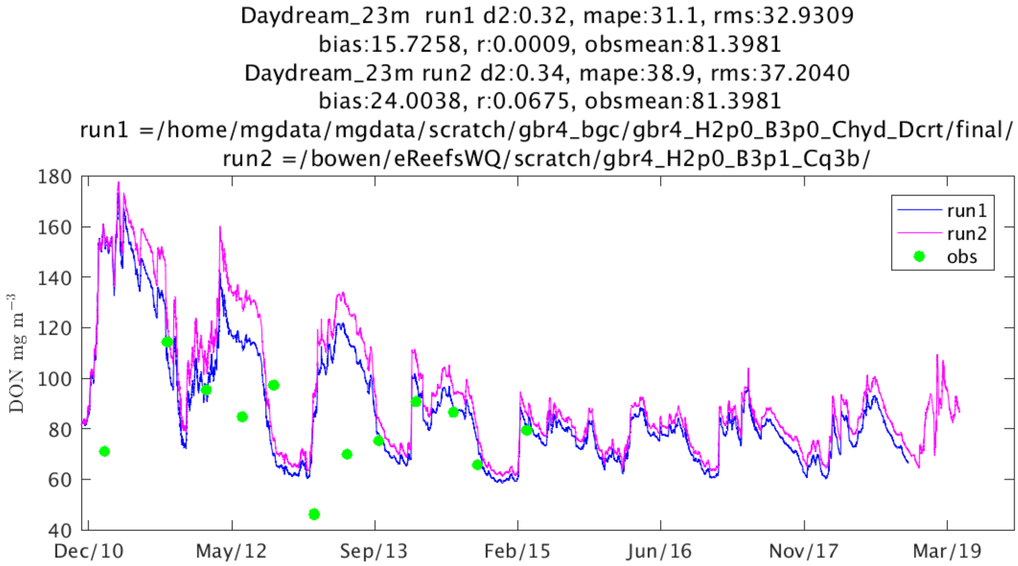


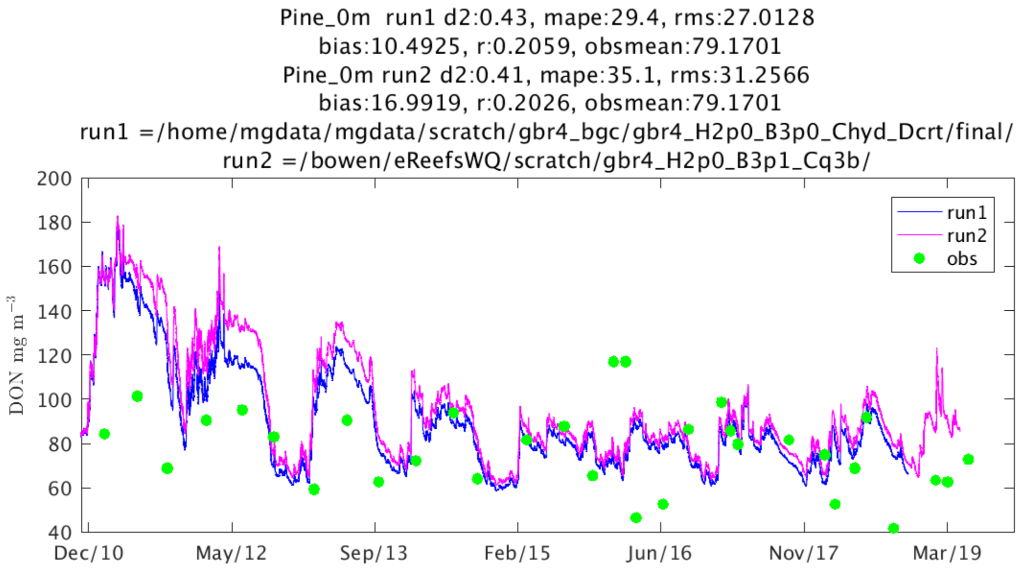

GeoffreyBay_5m run1 d2:0.52, mape:26.1, rms:27.7859
bias:-3.9225, r:0.1911, obsmean:88.8066
GeoffreyBay_5m run2 d2:0.51, mape:29.6, rms:28.7146
bias:2.3165, r:0.1745, obsmean:88.8066
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
DON mg m⁻³
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19


DoubleCone_10m run1 d2:0.43, mape:43.6, rms:36.1187
bias:18.9871, r:0.2386, obsmean:76.0239
DoubleCone_10m run2 d2:0.42, mape:51.4, rms:40.1472
bias:26.1852, r:0.2716, obsmean:76.0239
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
DON mg m⁻³
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19

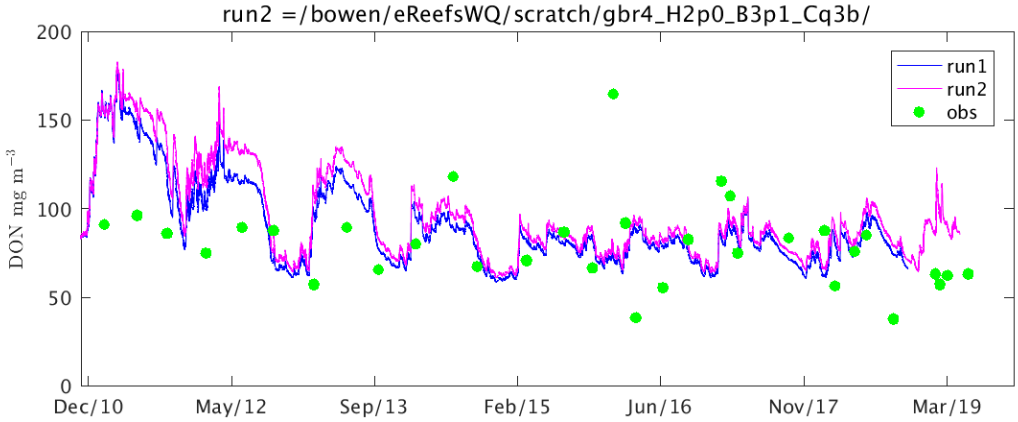

DoubleCone_23m run1 d2:0.28, mape:36.7, rms:37.3355
bias:5.6274, r:-0.0228, obsmean:78.7481
DoubleCone_23m run2 d2:0.23, mape:42.4, rms:39.4521
bias:11.3551, r:-0.0427, obsmean:78.7481
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
DON mg m⁻³
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19


Daydream_10m run1 d2:0.40, mape:26.3, rms:27.5807
bias:17.1001, r:0.3948, obsmean:82.9297
Daydream_10m run2 d2:0.37, mape:33.1, rms:33.7110
bias:25.6786, r:0.4197, obsmean:82.9297
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
DON mg m−3
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19

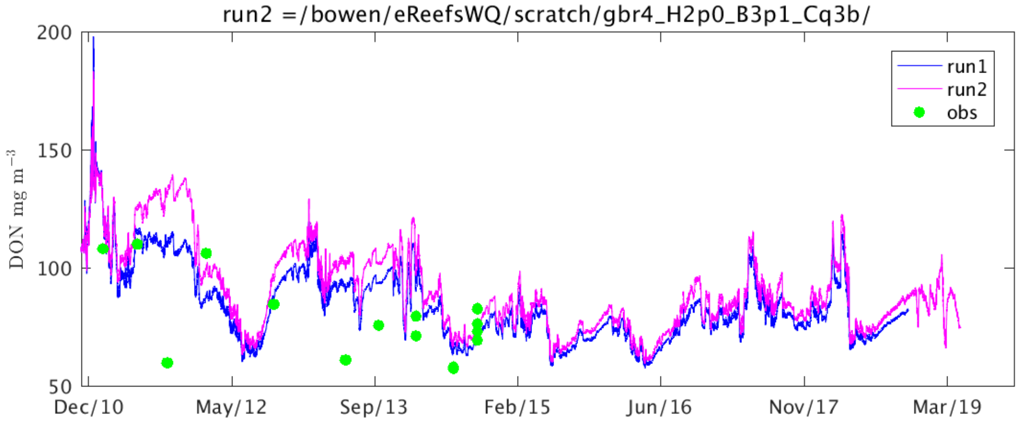

Daydream_23m run1 d2:0.32, mape:31.1, rms:32.9309
bias:15.7258, r:0.0009, obsmean:81.3981
Daydream_23m run2 d2:0.34, mape:38.9, rms:37.2040
bias:24.0038, r:0.0675, obsmean:81.3981
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
DON mg m−3
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19


Pine_0m run1 d2:0.43, mape:29.4, rms:27.0128
bias:10.4925, r:0.2059, obsmean:79.1701
Pine_0m run2 d2:0.41, mape:35.1, rms:31.2566
bias:16.9919, r:0.2026, obsmean:79.1701
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
DON mg m−3
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19

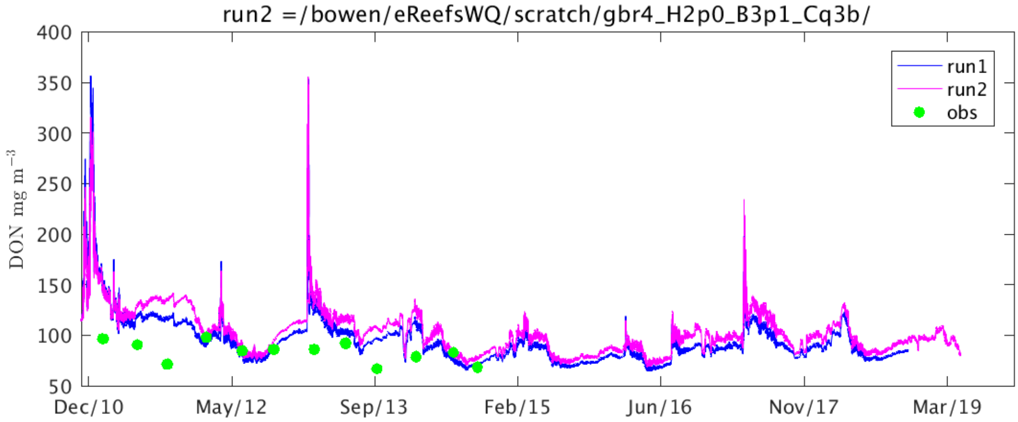
Pine_20m run1 d2:0.32, mape:32.7, rms:31.3777
bias:7.5237, r:0.0958, obsmean:82.1609
Pine_20m run2 d2:0.30, mape:38.0, rms:34.7735
bias:14.0282, r:0.0841, obsmean:82.1609
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/

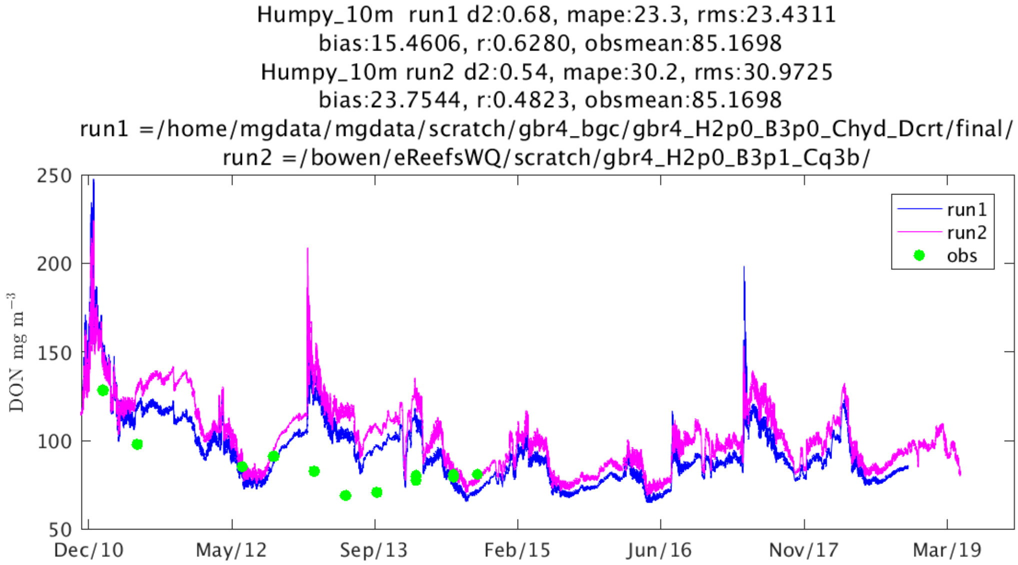


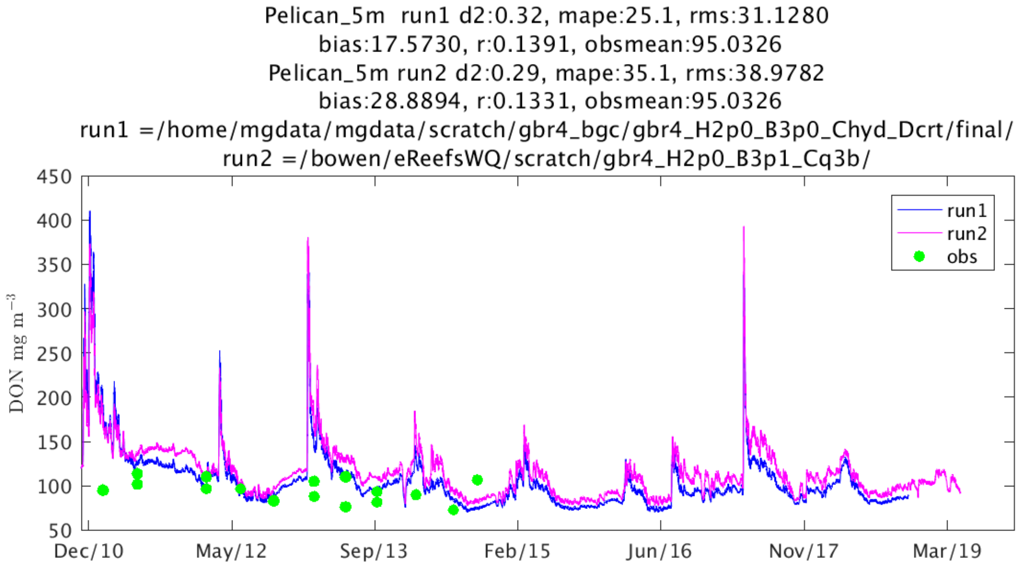
Barren_10m run1 d2:0.72, mape:19.7, rms:18.6516
bias:8.9334, r:0.5410, obsmean:78.2563
Barren_10m run2 d2:0.61, mape:26.2, rms:25.2373
bias:16.2935, r:0.4550, obsmean:78.2563
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/



Humpy_0m run1 d2:0.41, mape:26.1, rms:27.8750
bias:19.1122, r:0.3458, obsmean:83.7441
Humpy_0m run2 d2:0.34, mape:35.0, rms:35.2241
bias:28.2373, r:0.2585, obsmean:83.7441
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/




Humpy_10m run1 d2:0.68, mape:23.3, rms:23.4311
bias:15.4606, r:0.6280, obsmean:85.1698
Humpy_10m run2 d2:0.54, mape:30.2, rms:30.9725
bias:23.7544, r:0.4823, obsmean:85.1698
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
DON mg m−3
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19


Pelican_5m run1 d2:0.32, mape:25.1, rms:31.1280
bias:17.5730, r:0.1391, obsmean:95.0326
Pelican_5m run2 d2:0.29, mape:35.1, rms:38.9782
bias:28.8894, r:0.1331, obsmean:95.0326
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
DON mg m−3
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19

13. Simulated DOP assessment against Long Term Monitoring

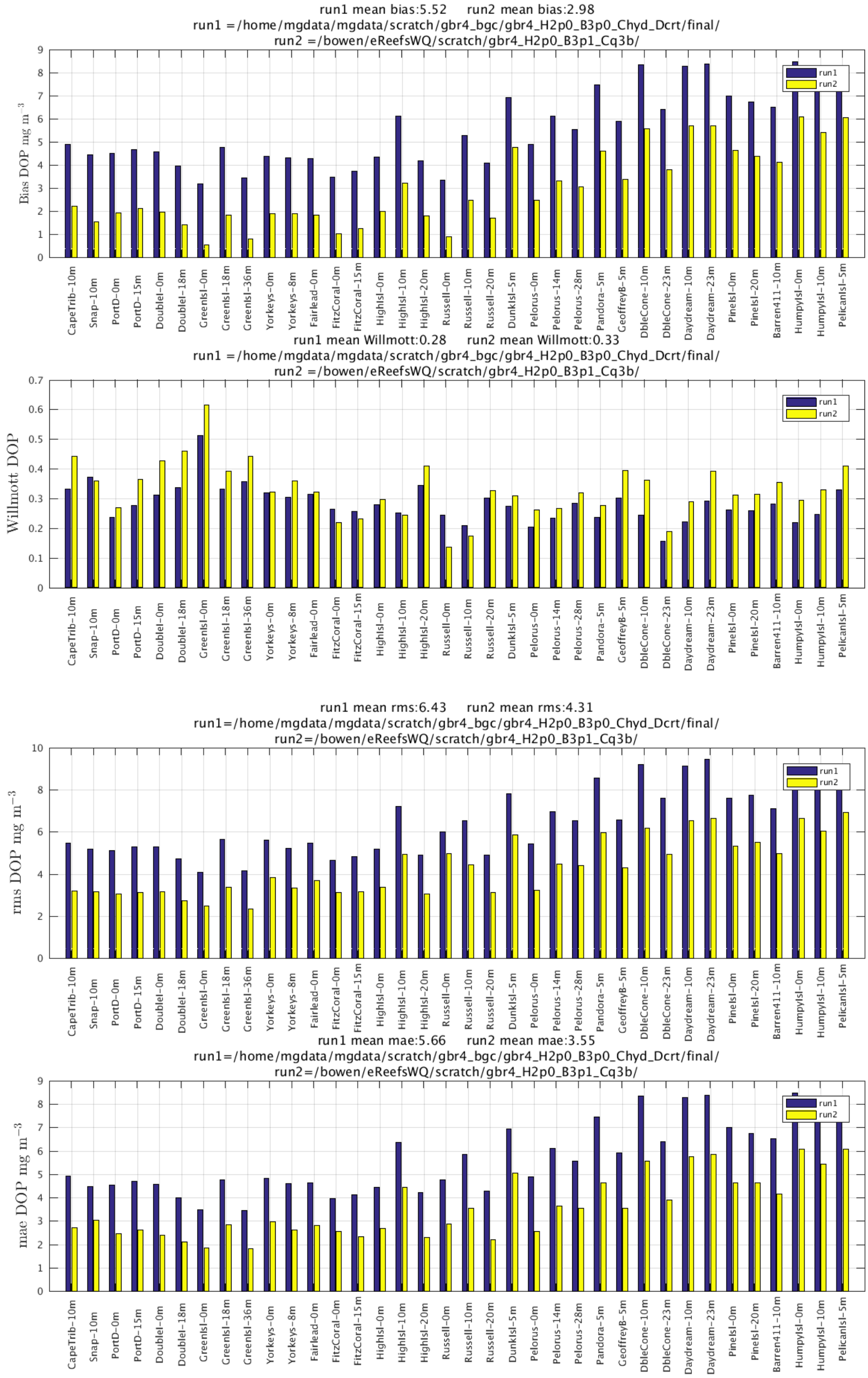
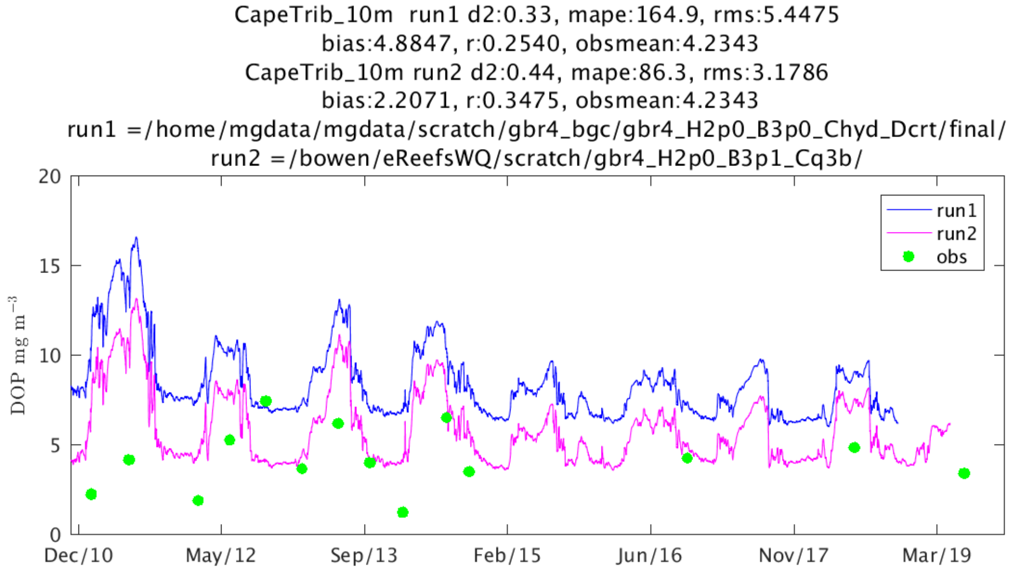
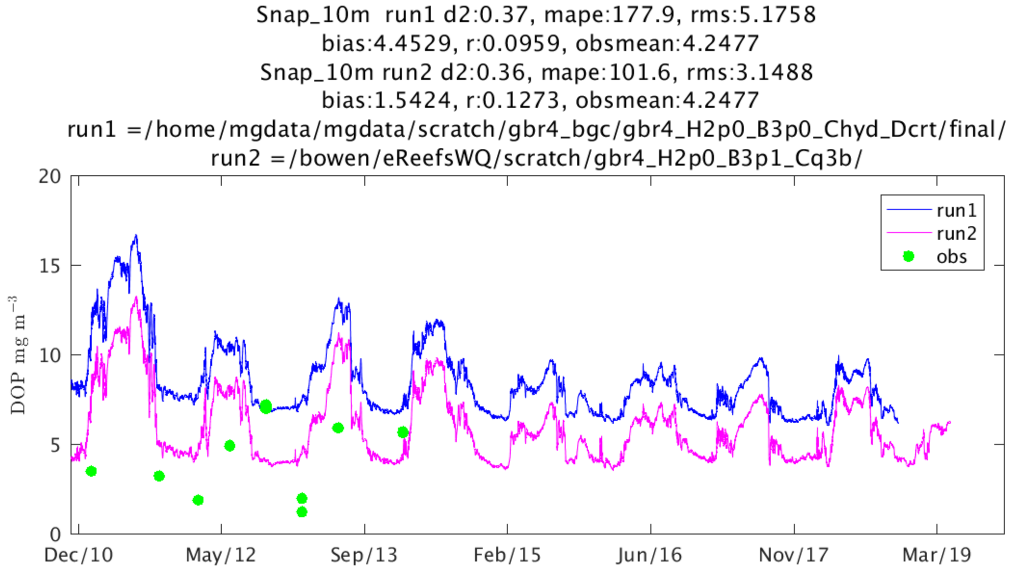
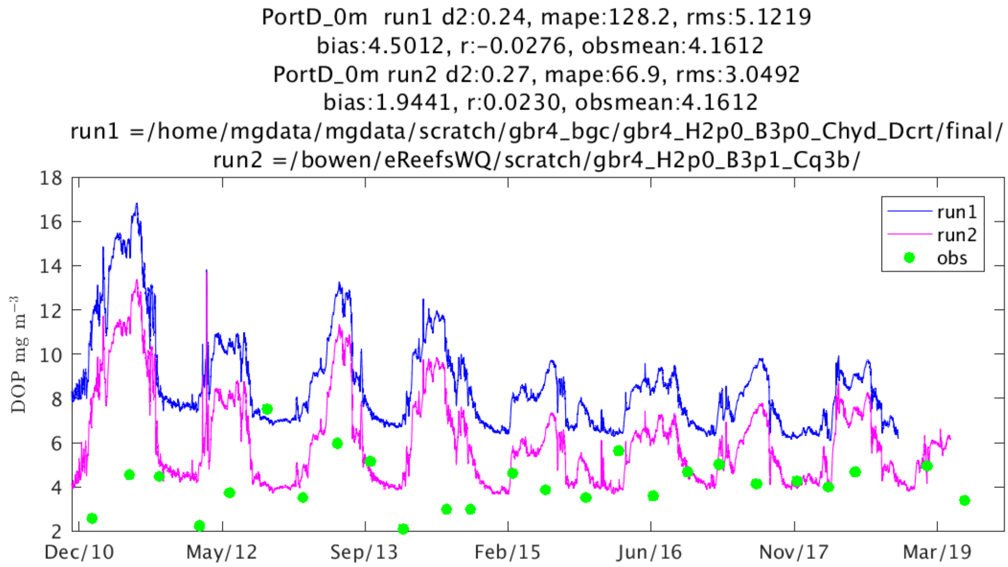
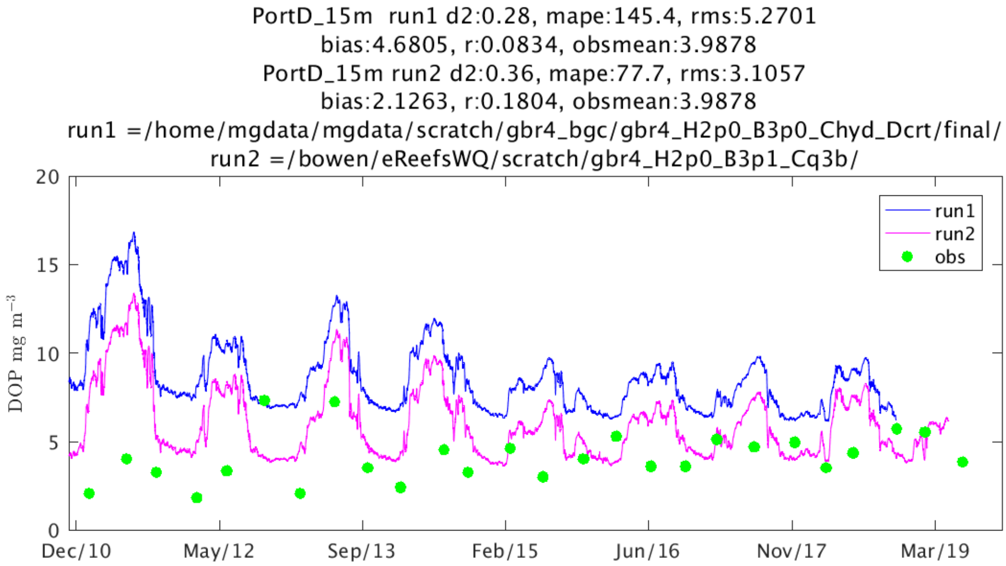


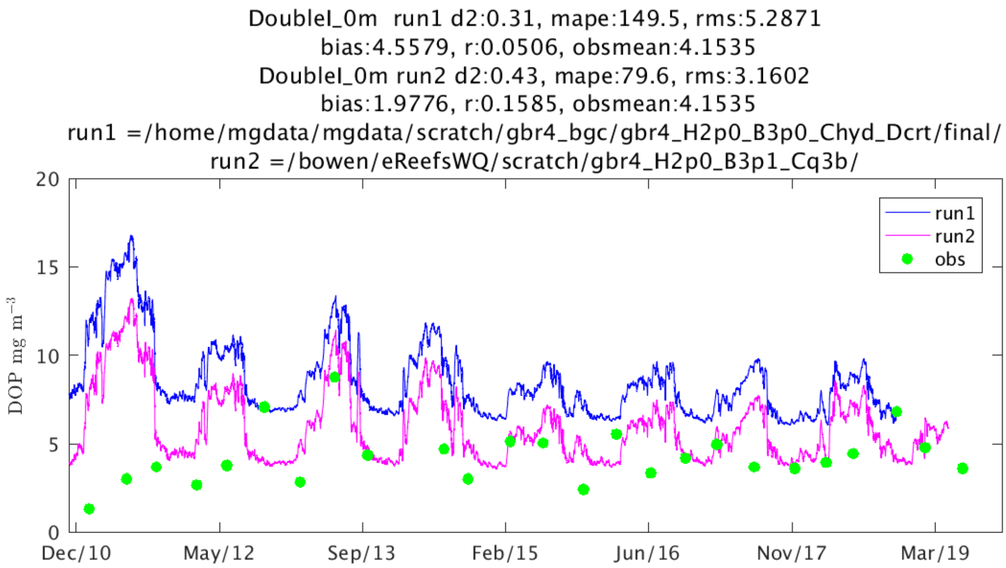
Figure 10 Metrics for Long Term Monitoring Sites simulated DOP *against observations*

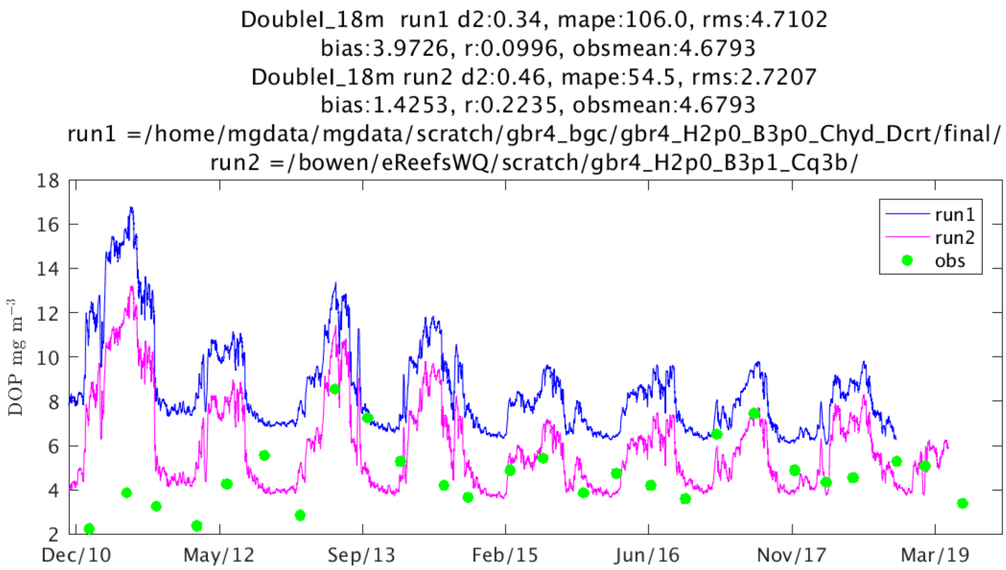

CapeTrib_10m run1 d2:0.33, mape:164.9, rms:5.4475
bias:4.8847, r:0.2540, obsmean:4.2343
CapeTrib_10m run2 d2:0.44, mape:86.3, rms:3.1786
bias:2.2071, r:0.3475, obsmean:4.2343
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
DOP mg m^{-3}
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19


Snap_10m run1 d2:0.37, mape:177.9, rms:5.1758
bias:4.4529, r:0.0959, obsmean:4.2477
Snap_10m run2 d2:0.36, mape:101.6, rms:3.1488
bias:1.5424, r:0.1273, obsmean:4.2477
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
DOP mg m^{-3}
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19

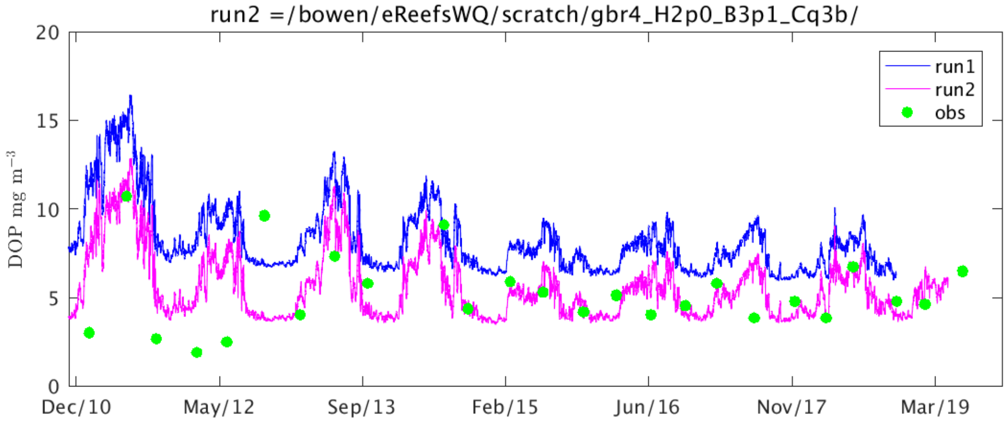

PortD_0m run1 d2:0.24, mape:128.2, rms:5.1219
bias:4.5012, r:-0.0276, obsmean:4.1612
PortD_0m run2 d2:0.27, mape:66.9, rms:3.0492
bias:1.9441, r:0.0230, obsmean:4.1612
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
DOP mg m^{-3}
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19


PortD_15m run1 d2:0.28, mape:145.4, rms:5.2701
bias:4.6805, r:0.0834, obsmean:3.9878
PortD_15m run2 d2:0.36, mape:77.7, rms:3.1057
bias:2.1263, r:0.1804, obsmean:3.9878
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
DOP mg m^{-3}
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19

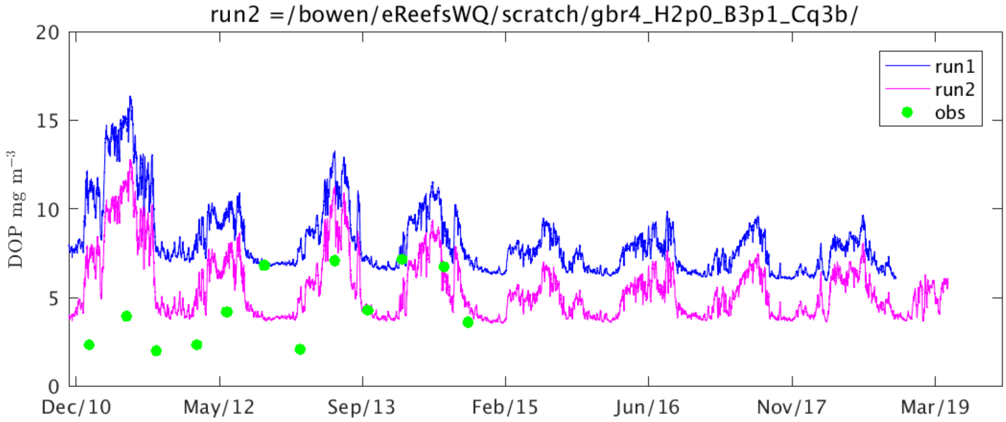

DoubleI_0m run1 d2:0.31, mape:149.5, rms:5.2871
bias:4.5579, r:0.0506, obsmean:4.1535
DoubleI_0m run2 d2:0.43, mape:79.6, rms:3.1602
bias:1.9776, r:0.1585, obsmean:4.1535
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
DOP mg m^{-3}
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19


DoubleI_18m run1 d2:0.34, mape:106.0, rms:4.7102
bias:3.9726, r:0.0996, obsmean:4.6793
DoubleI_18m run2 d2:0.46, mape:54.5, rms:2.7207
bias:1.4253, r:0.2235, obsmean:4.6793
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
DOP mg m^{-3}
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19

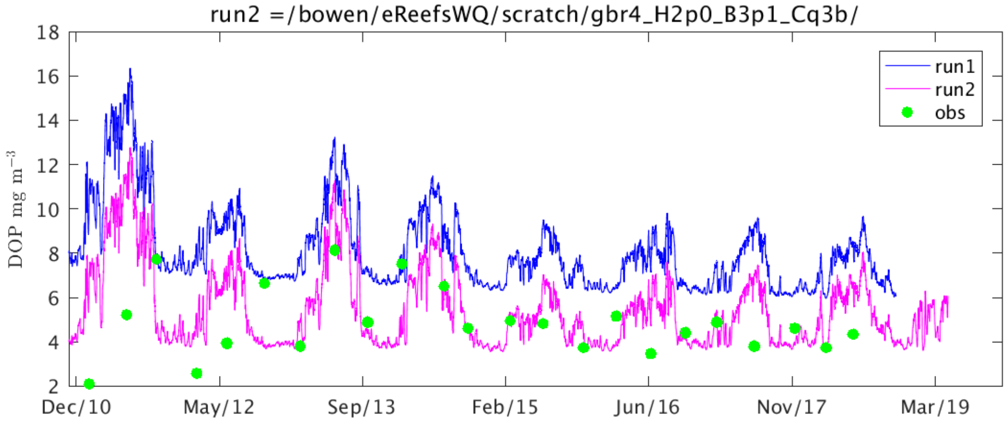
Green_0m run1 d2:0.51, mape:94.4, rms:4.0591
bias:3.1865, r:0.3188, obsmean:5.2263
Green_0m run2 d2:0.61, mape:47.2, rms:2.4717
bias:0.5444, r:0.3399, obsmean:5.2263
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/

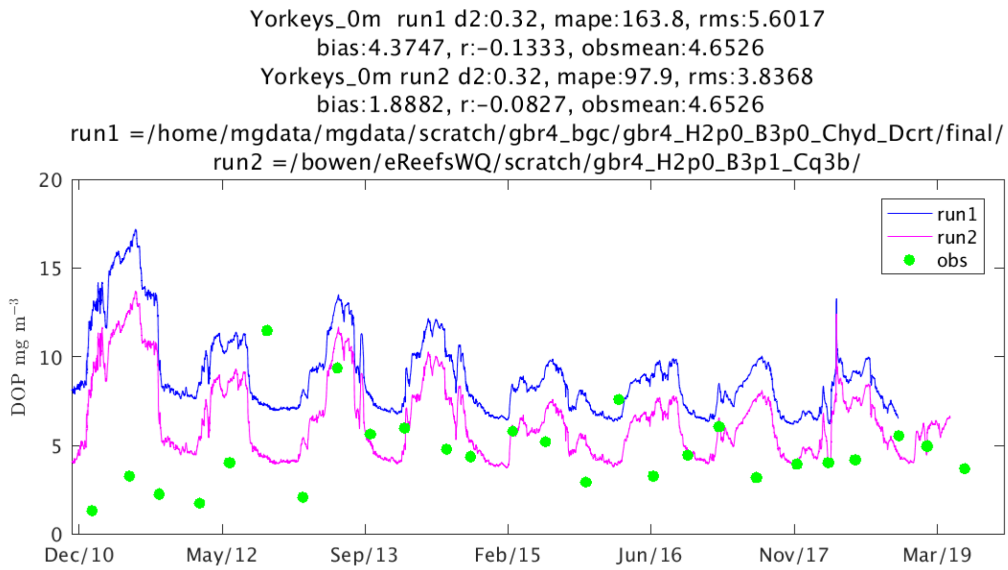


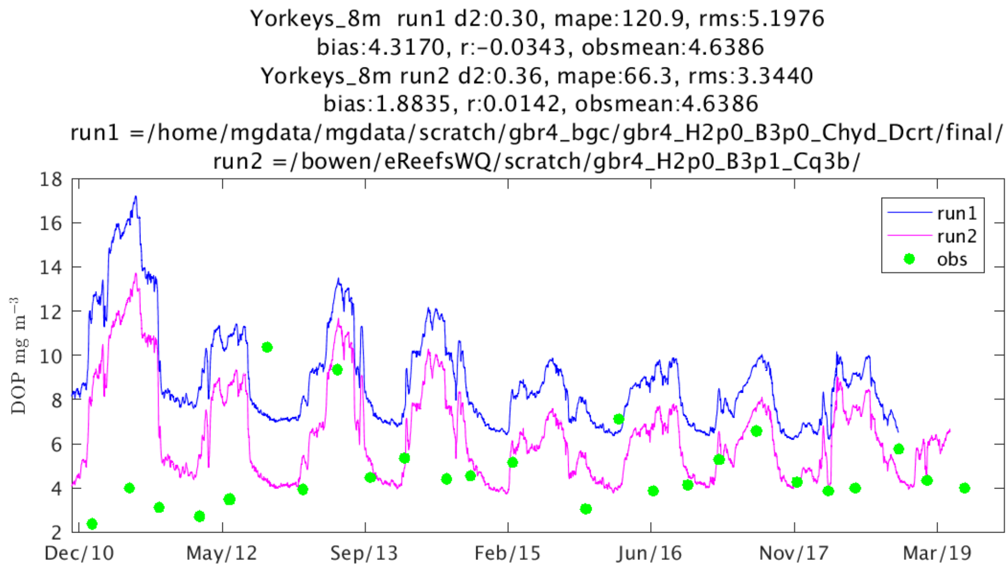
Green_18m run1 d2:0.33, mape:157.3, rms:5.6328
bias:4.7597, r:0.0177, obsmean:4.3904
Green_18m run2 d2:0.39, mape:85.1, rms:3.3543
bias:1.8433, r:0.1309, obsmean:4.3904
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/

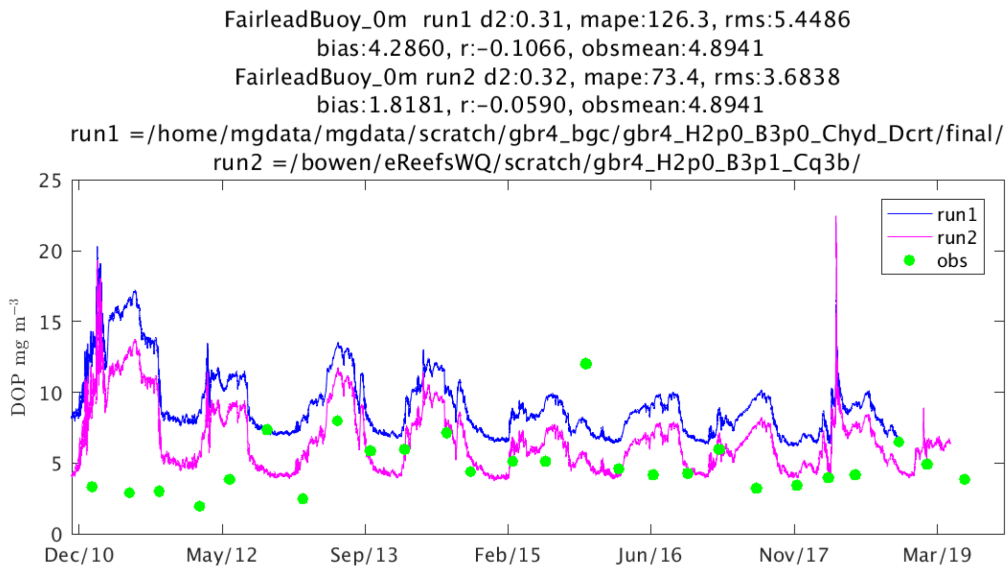


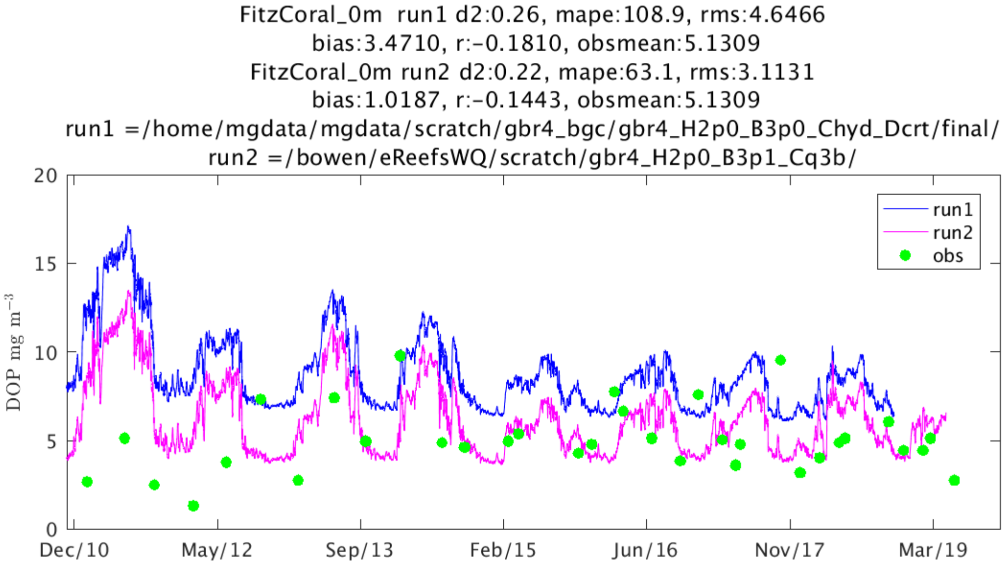
Green_36m run1 d2:0.36, mape:90.2, rms:4.1507
bias:3.4506, r:0.1208, obsmean:4.8524
Green_36m run2 d2:0.44, mape:43.8, rms:2.3370
bias:0.7989, r:0.1549, obsmean:4.8524
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/

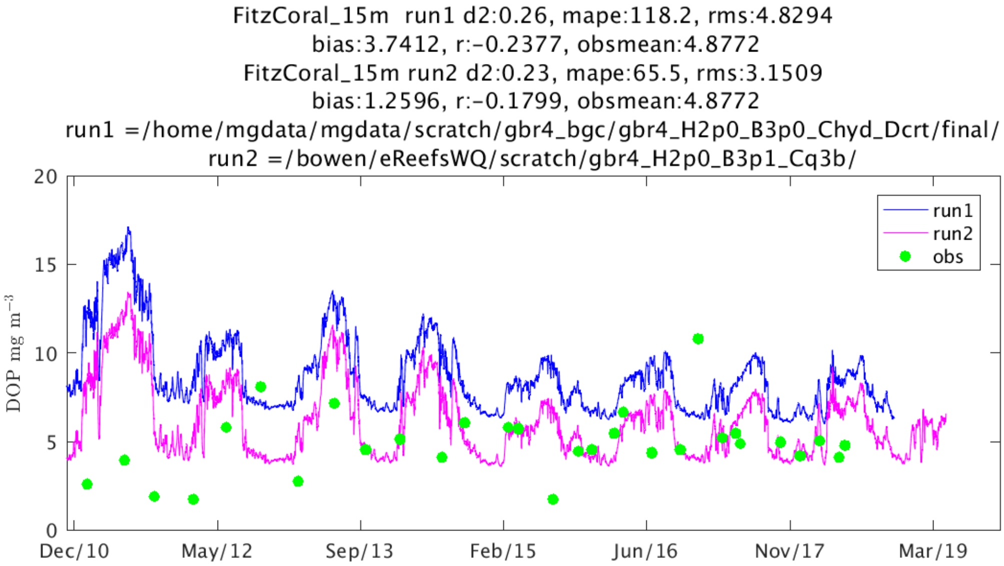


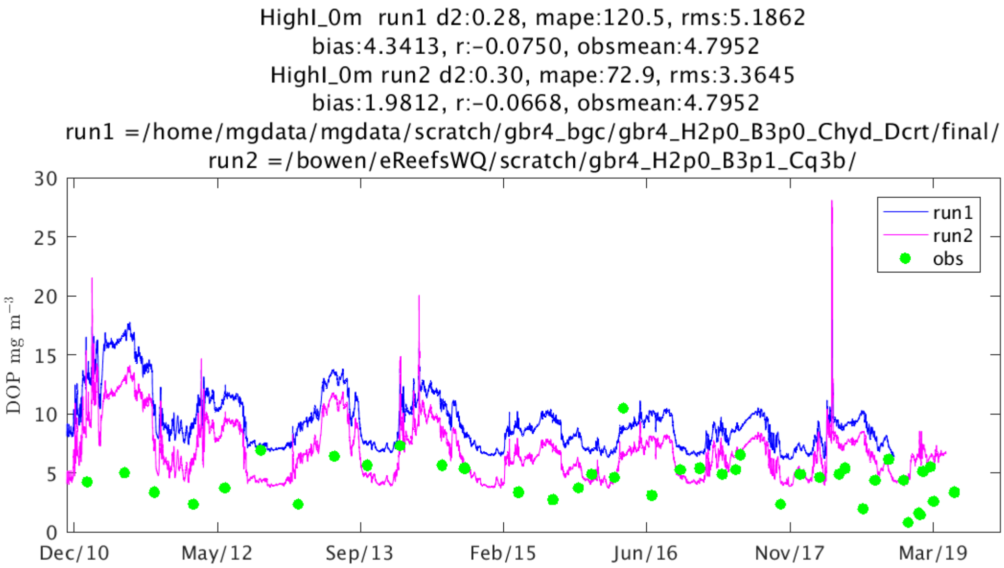

Yorkeys_0m run1 d2:0.32, mape:163.8, rms:5.6017
bias:4.3747, r:−0.1333, obsmean:4.6526
Yorkeys_0m run2 d2:0.32, mape:97.9, rms:3.8368
bias:1.8882, r:−0.0827, obsmean:4.6526
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
DOP mg m−3
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19


Yorkeys_8m run1 d2:0.30, mape:120.9, rms:5.1976
bias:4.3170, r:−0.0343, obsmean:4.6386
Yorkeys_8m run2 d2:0.36, mape:66.3, rms:3.3440
bias:1.8835, r:0.0142, obsmean:4.6386
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
DOP mg m−3
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19

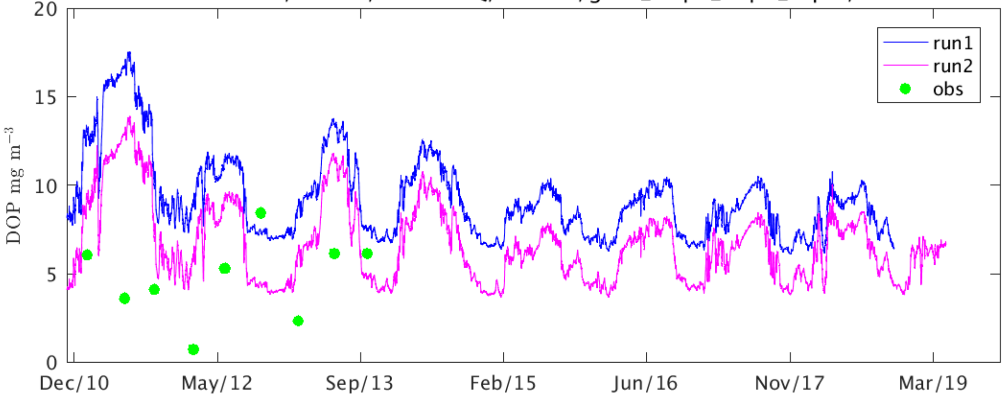

FairleadBuoy_0m run1 d2:0.31, mape:126.3, rms:5.4486
bias:4.2860, r:−0.1066, obsmean:4.8941
FairleadBuoy_0m run2 d2:0.32, mape:73.4, rms:3.6838
bias:1.8181, r:−0.0590, obsmean:4.8941
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
DOP mg m−3
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19


FitzCoral_0m run1 d2:0.26, mape:108.9, rms:4.6466
bias:3.4710, r:-0.1810, obsmean:5.1309
FitzCoral_0m run2 d2:0.22, mape:63.1, rms:3.1131
bias:1.0187, r:-0.1443, obsmean:5.1309
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
DOP mg m^-3
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19

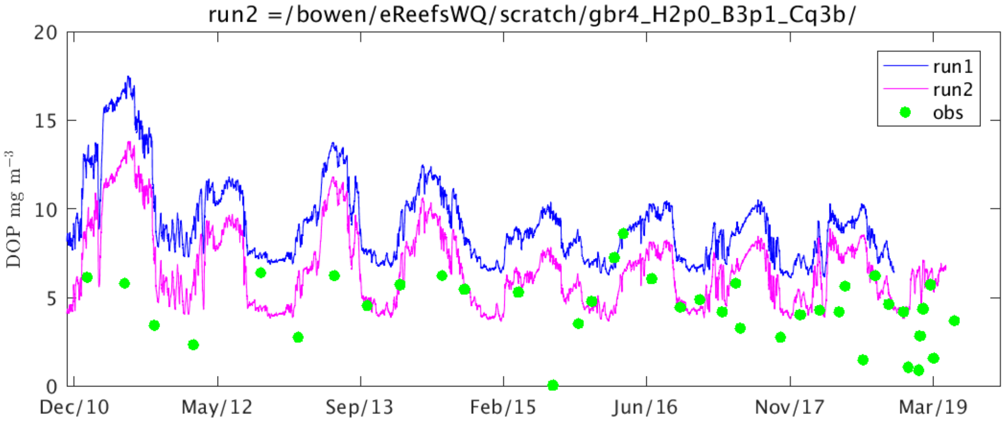

FitzCoral_15m run1 d2:0.26, mape:118.2, rms:4.8294
bias:3.7412, r:-0.2377, obsmean:4.8772
FitzCoral_15m run2 d2:0.23, mape:65.5, rms:3.1509
bias:1.2596, r:-0.1799, obsmean:4.8772
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
DOP mg m^-3
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19


HighI_0m run1 d2:0.28, mape:120.5, rms:5.1862
bias:4.3413, r:-0.0750, obsmean:4.7952
HighI_0m run2 d2:0.30, mape:72.9, rms:3.3645
bias:1.9812, r:-0.0668, obsmean:4.7952
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
DOP mg m^-3
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19

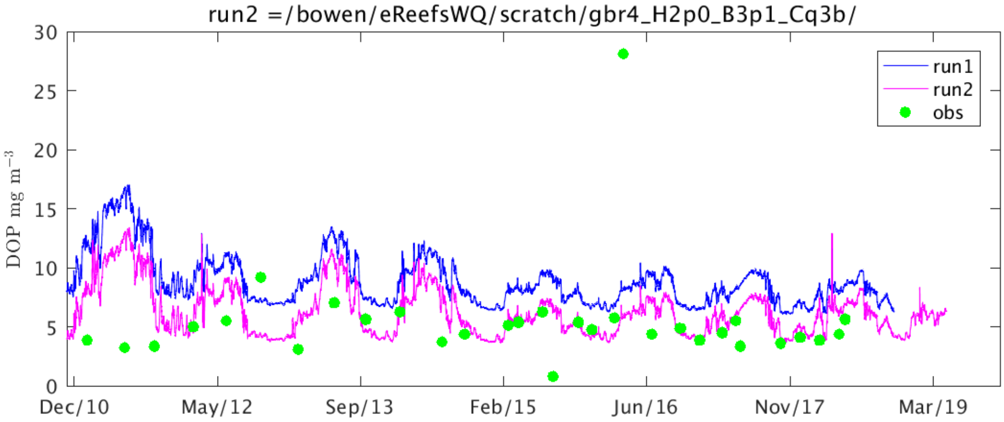
HighI_10m run1 d2:0.25, mape:264.5, rms:7.2241
bias:6.1104, r:-0.1129, obsmean:4.7615
HighI_10m run2 d2:0.24, mape:174.4, rms:4.9305
bias:3.2270, r:-0.0899, obsmean:4.7615
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/



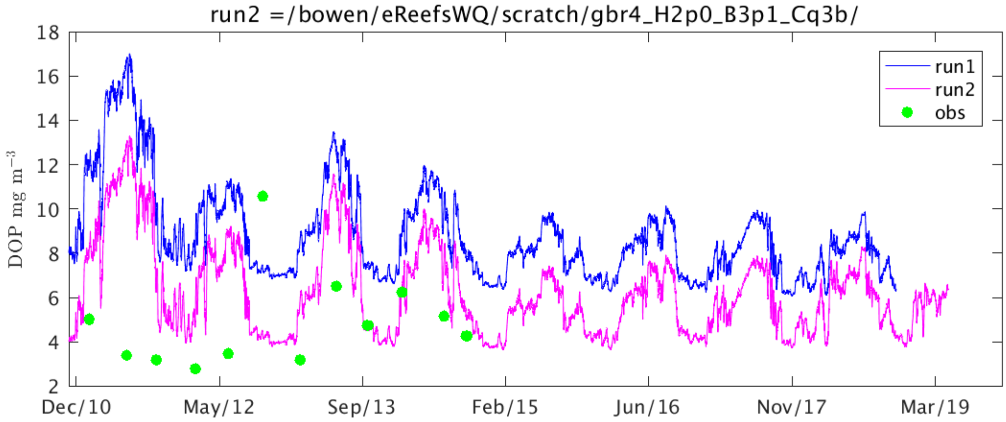
HighI_20m run1 d2:0.35, mape:769.4, rms:4.8831
bias:4.1814, r:0.1088, obsmean:4.7290
HighI_20m run2 d2:0.41, mape:548.2, rms:3.0362
bias:1.8113, r:0.0913, obsmean:4.7290
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/



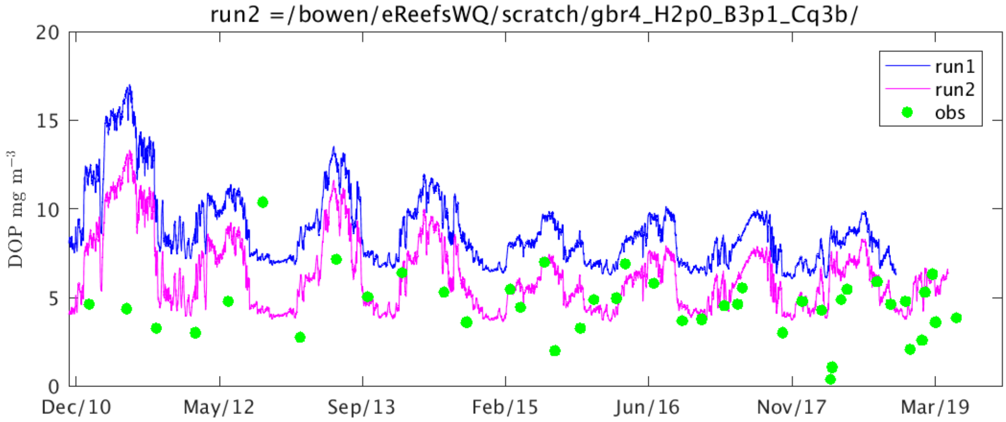
Russell_0m run1 d2:0.24, mape:125.1, rms:6.0132
bias:3.3565, r:-0.0848, obsmean:5.4984
Russell_0m run2 d2:0.14, mape:71.0, rms:4.9697
bias:0.9031, r:-0.0727, obsmean:5.4984
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/



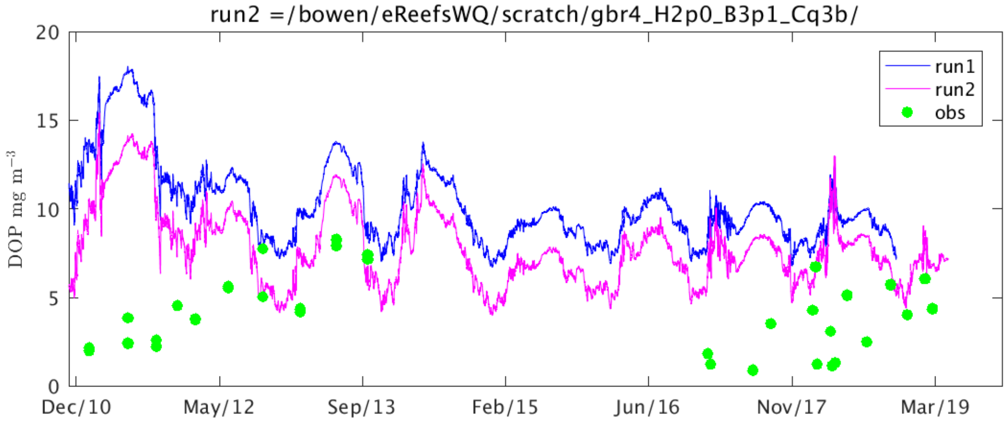
Russell_10m run1 d2:0.21, mape:148.8, rms:6.5221
bias:5.2921, r:-0.3120, obsmean:4.8821
Russell_10m run2 d2:0.17, mape:86.8, rms:4.4300
bias:2.4728, r:-0.3125, obsmean:4.8821
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/

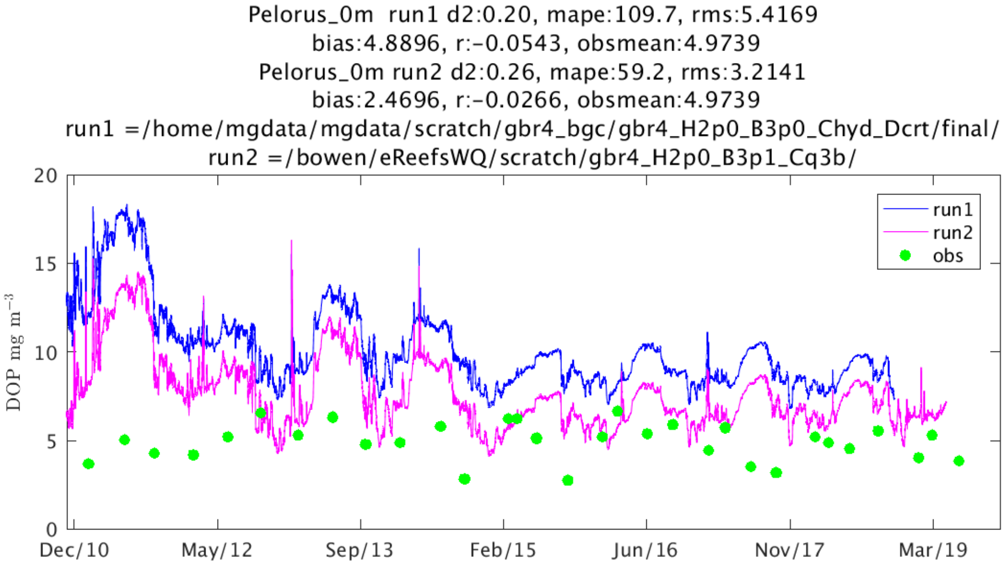


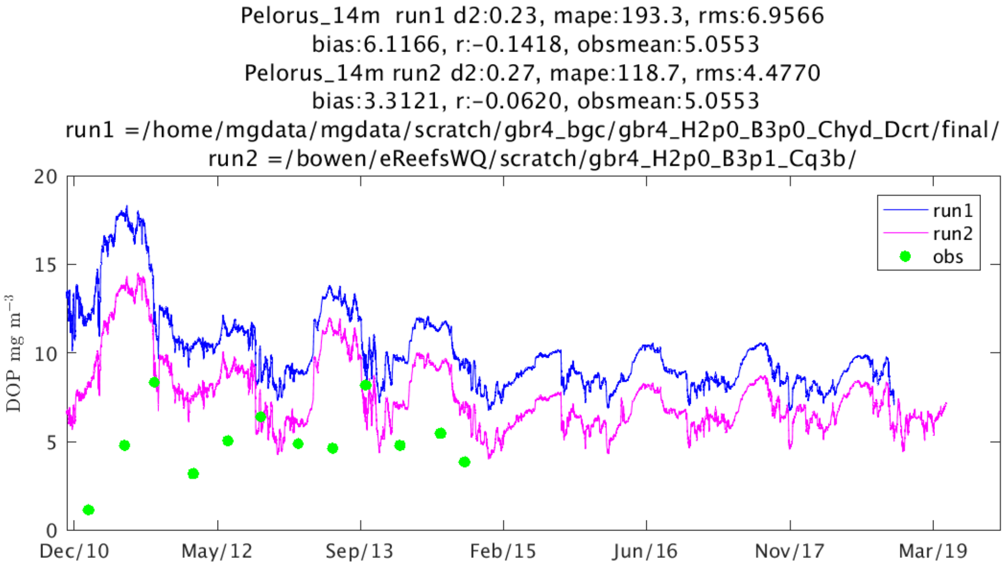
Russell_20m run1 d2:0.30, mape:169.5, rms:4.8798
bias:4.0932, r:0.0210, obsmean:4.6290
Russell_20m run2 d2:0.33, mape:106.9, rms:3.0976
bias:1.6951, r:-0.0253, obsmean:4.6290
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/

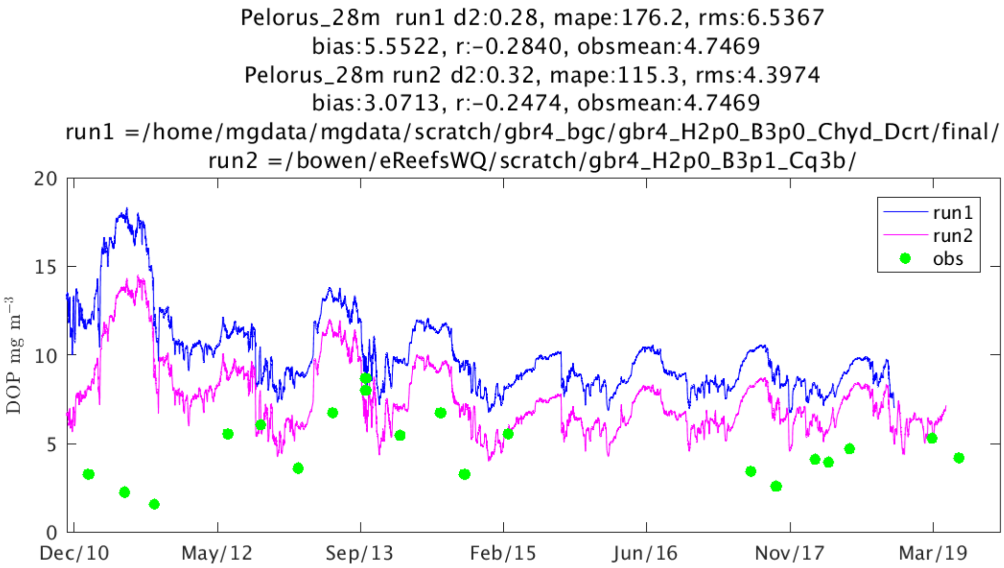


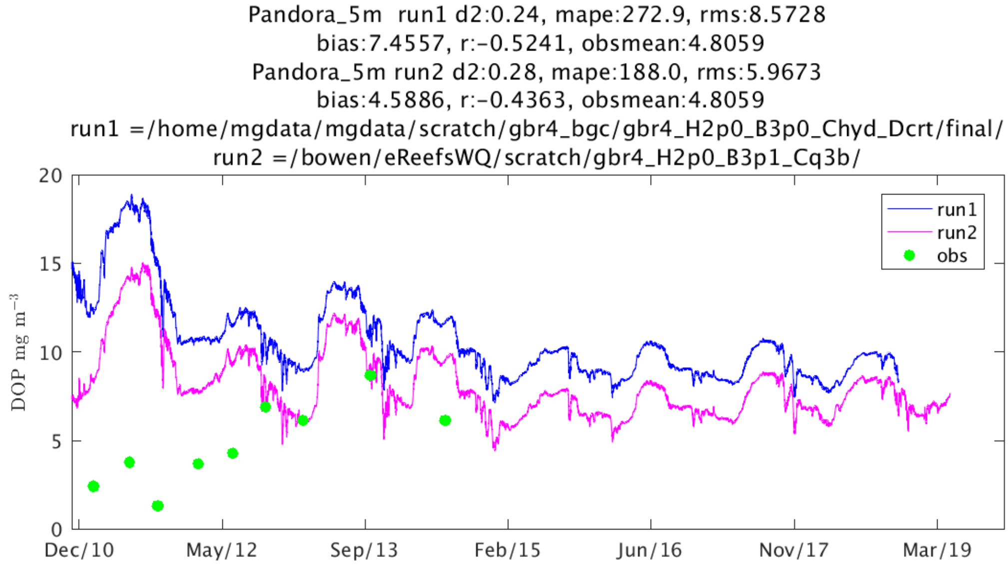
Dunk_5m run1 d2:0.27, mape:296.3, rms:7.8134
bias:6.9268, r:-0.1467, obsmean:4.0374
Dunk_5m run2 d2:0.31, mape:227.1, rms:5.8581
bias:4.7542, r:-0.2023, obsmean:4.0374
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/

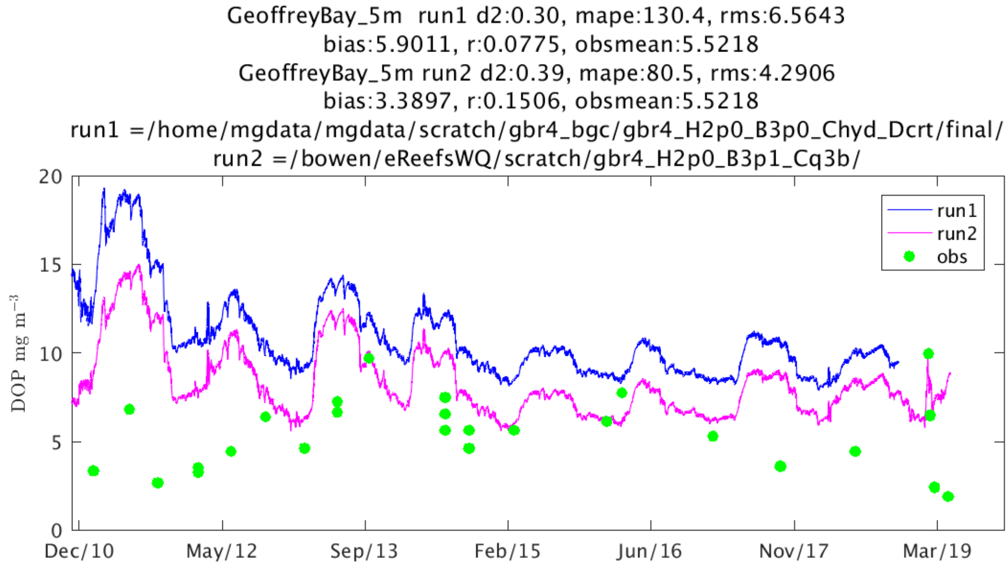


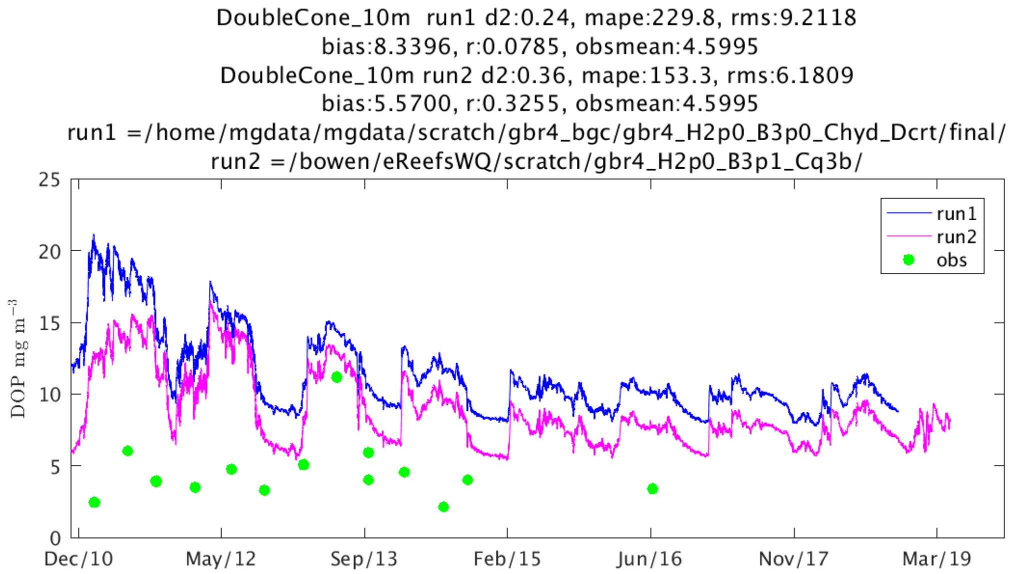

Pelorus_0m run1 d2:0.20, mape:109.7, rms:5.4169
bias:4.8896, r:-0.0543, obsmean:4.9739
Pelorus_0m run2 d2:0.26, mape:59.2, rms:3.2141
bias:2.4696, r:-0.0266, obsmean:4.9739
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
DOP mg m-3
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19

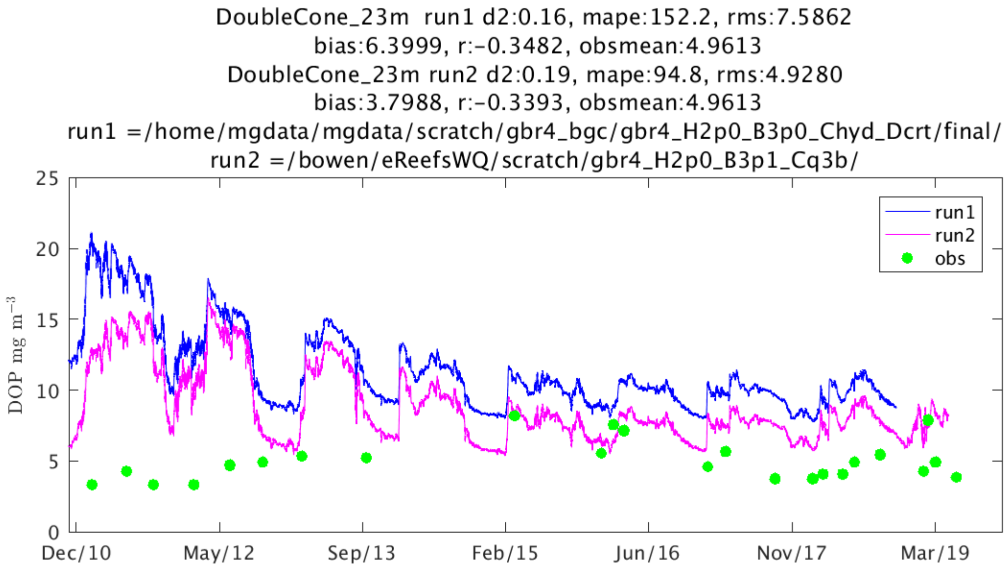

Pelorus_14m run1 d2:0.23, mape:193.3, rms:6.9566
bias:6.1166, r:-0.1418, obsmean:5.0553
Pelorus_14m run2 d2:0.27, mape:118.7, rms:4.4770
bias:3.3121, r:-0.0620, obsmean:5.0553
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
DOP mg m-3
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19

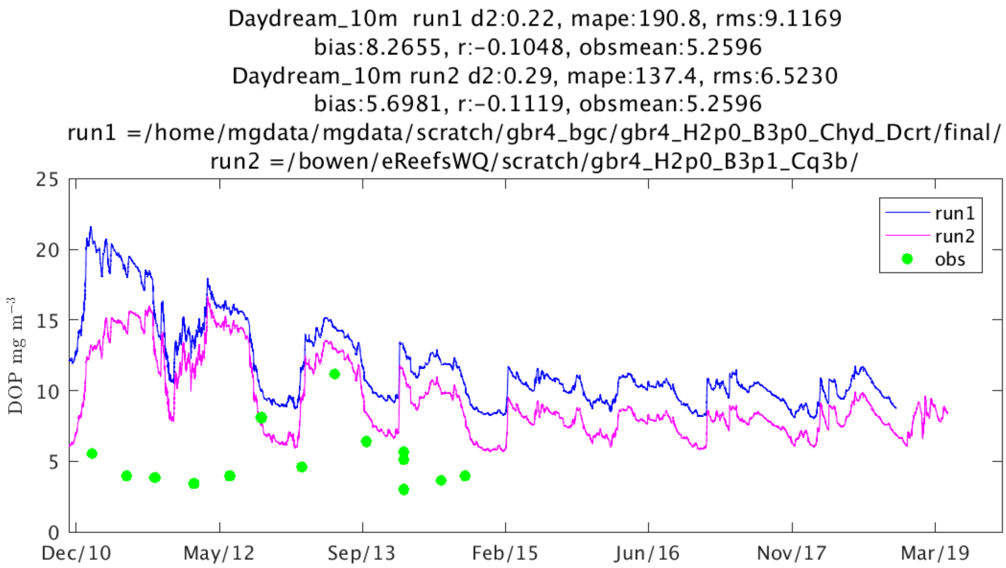

Pelorus_28m run1 d2:0.28, mape:176.2, rms:6.5367
bias:5.5522, r:-0.2840, obsmean:4.7469
Pelorus_28m run2 d2:0.32, mape:115.3, rms:4.3974
bias:3.0713, r:-0.2474, obsmean:4.7469
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
DOP mg m-3
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19

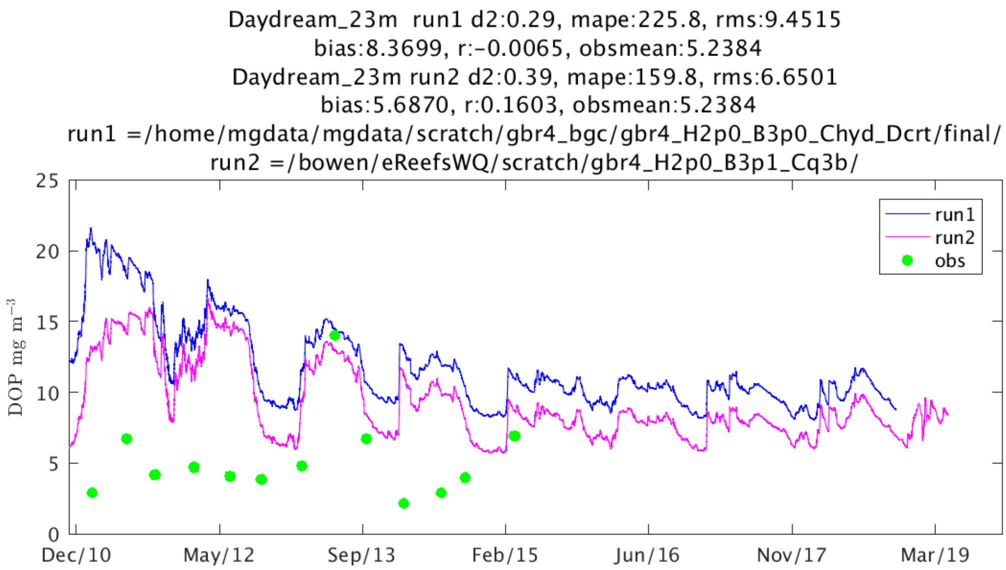

Pandora_5m run1 d2:0.24, mape:272.9, rms:8.5728
bias:7.4557, r:-0.5241, obsmean:4.8059
Pandora_5m run2 d2:0.28, mape:188.0, rms:5.9673
bias:4.5886, r:-0.4363, obsmean:4.8059
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
DOP mg m^{-3}
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19
run1
run2
obs


GeoffreyBay_5m run1 d2:0.30, mape:130.4, rms:6.5643
bias:5.9011, r:0.0775, obsmean:5.5218
GeoffreyBay_5m run2 d2:0.39, mape:80.5, rms:4.2906
bias:3.3897, r:0.1506, obsmean:5.5218
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
DOP mg m^{-3}
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19
run1
run2
obs

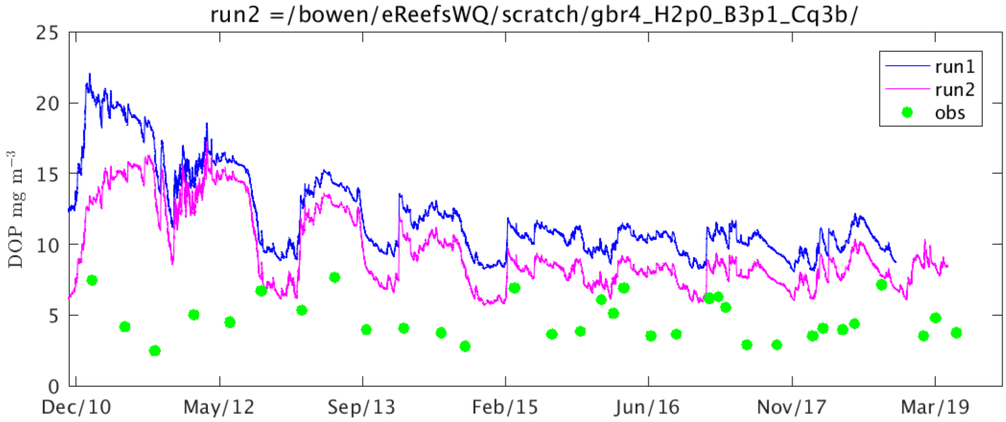

DoubleCone_10m run1 d2:0.24, mape:229.8, rms:9.2118
bias:8.3396, r:0.0785, obsmean:4.5995
DoubleCone_10m run2 d2:0.36, mape:153.3, rms:6.1809
bias:5.5700, r:0.3255, obsmean:4.5995
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
DOP mg m^{-3}
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19
run1
run2
obs


DoubleCone_23m run1 d2:0.16, mape:152.2, rms:7.5862
bias:6.3999, r:-0.3482, obsmean:4.9613
DoubleCone_23m run2 d2:0.19, mape:94.8, rms:4.9280
bias:3.7988, r:-0.3393, obsmean:4.9613
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
DOP mg m^{-3}
run1
run2
obs
0
5
10
15
20
25
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19

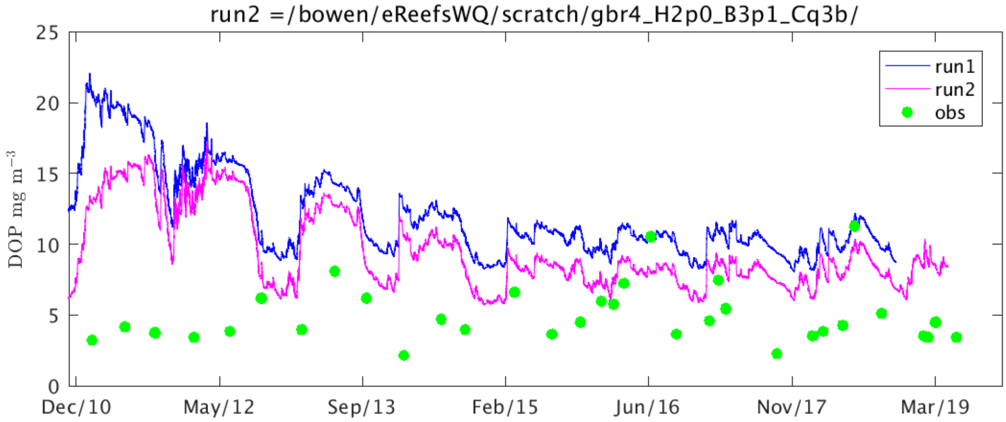

Daydream_10m run1 d2:0.22, mape:190.8, rms:9.1169
bias:8.2655, r:-0.1048, obsmean:5.2596
Daydream_10m run2 d2:0.29, mape:137.4, rms:6.5230
bias:5.6981, r:-0.1119, obsmean:5.2596
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
DOP mg m^{-3}
run1
run2
obs
0
5
10
15
20
25
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19


Daydream_23m run1 d2:0.29, mape:225.8, rms:9.4515
bias:8.3699, r:-0.0065, obsmean:5.2384
Daydream_23m run2 d2:0.39, mape:159.8, rms:6.6501
bias:5.6870, r:0.1603, obsmean:5.2384
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
DOP mg m^{-3}
run1
run2
obs
0
5
10
15
20
25
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19

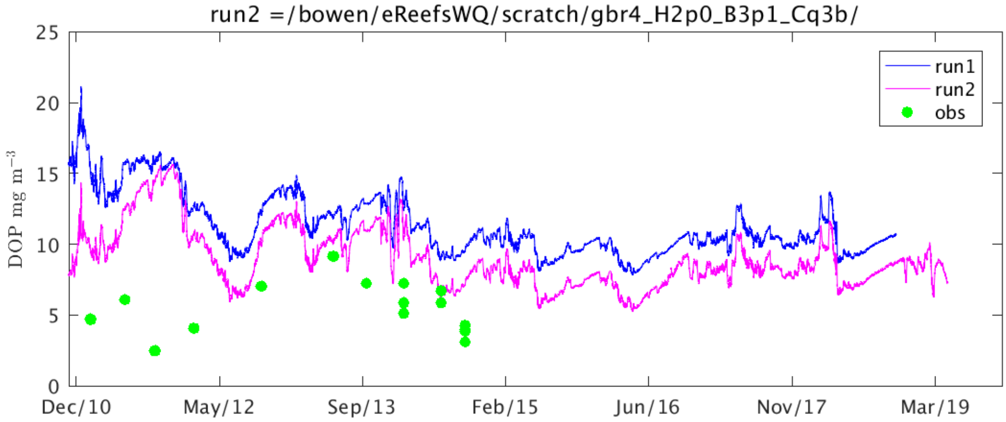
Pine_0m run1 d2:0.26, mape:167.7, rms:7.5810
bias:7.0005, r:0.1777, obsmean:4.8258
Pine_0m run2 d2:0.31, mape:114.9, rms:5.3178
bias:4.6323, r:0.1043, obsmean:4.8258
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/

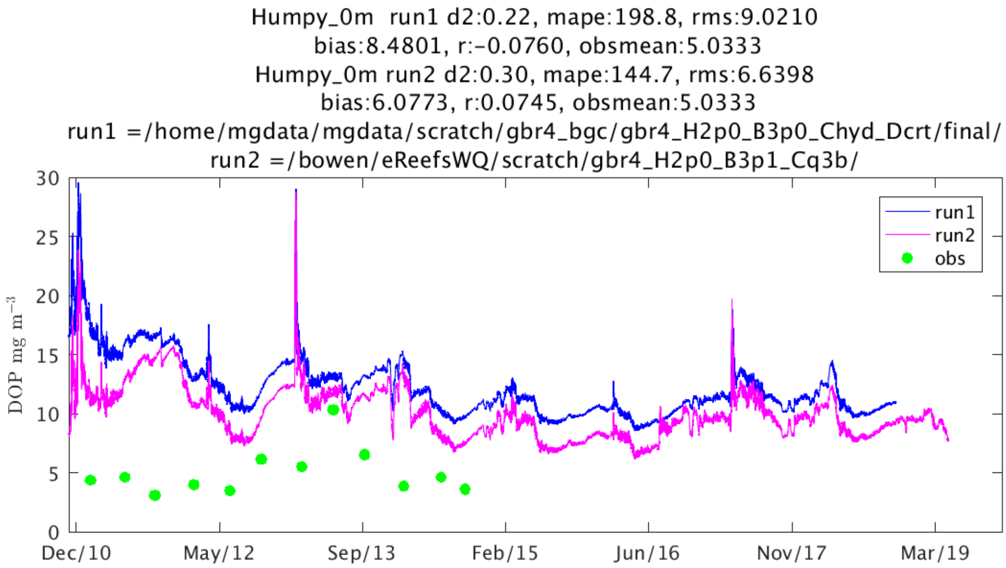


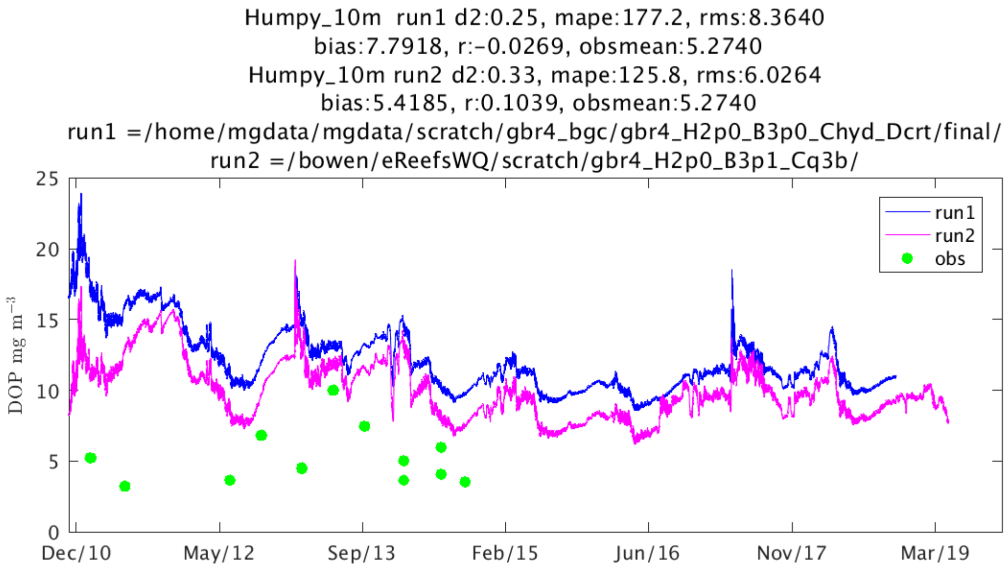
Pine_20m run1 d2:0.26, mape:172.1, rms:7.7325
bias:6.7410, r:-0.1662, obsmean:5.1526
Pine_20m run2 d2:0.31, mape:119.5, rms:5.4985
bias:4.3721, r:-0.1246, obsmean:5.1526
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/

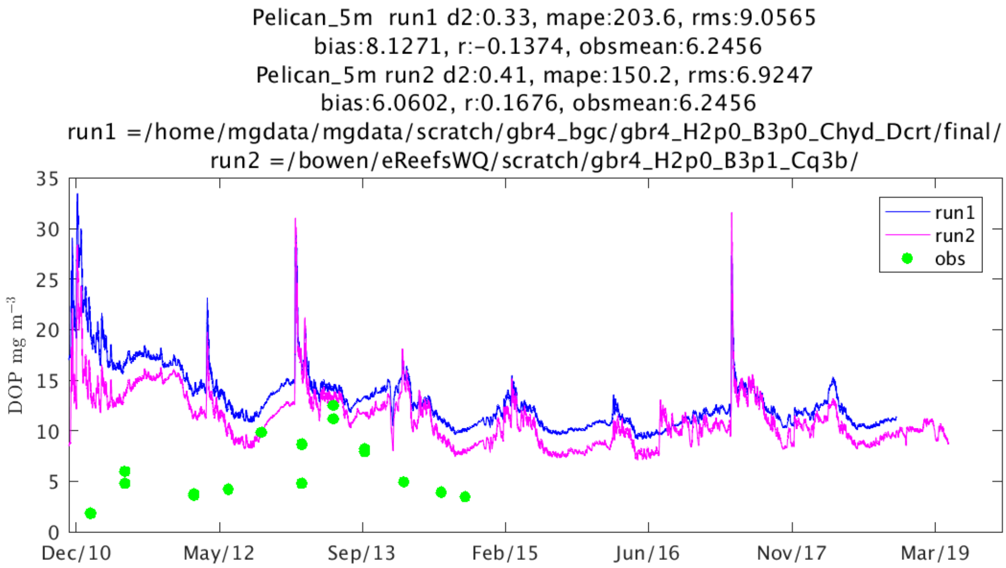


Barren_10m run1 d2:0.28, mape:148.0, rms:7.0916
bias:6.5205, r:0.0138, obsmean:5.4360
Barren_10m run2 d2:0.35, mape:99.4, rms:4.9506
bias:4.1211, r:0.0486, obsmean:5.4360
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/




Humpy_0m run1 d2:0.22, mape:198.8, rms:9.0210
bias:8.4801, r:-0.0760, obsmean:5.0333
Humpy_0m run2 d2:0.30, mape:144.7, rms:6.6398
bias:6.0773, r:0.0745, obsmean:5.0333
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
run1
run2
obs
DOP mg m⁻³
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19


Humpy_10m run1 d2:0.25, mape:177.2, rms:8.3640
bias:7.7918, r:-0.0269, obsmean:5.2740
Humpy_10m run2 d2:0.33, mape:125.8, rms:6.0264
bias:5.4185, r:0.1039, obsmean:5.2740
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
run1
run2
obs
DOP mg m⁻³
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19


Pelican_5m run1 d2:0.33, mape:203.6, rms:9.0565
bias:8.1271, r:-0.1374, obsmean:6.2456
Pelican_5m run2 d2:0.41, mape:150.2, rms:6.9247
bias:6.0602, r:0.1676, obsmean:6.2456
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
run1
run2
obs
DOP mg m⁻³
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19

14. Simulated TSS assessment against Long Term Monitoring

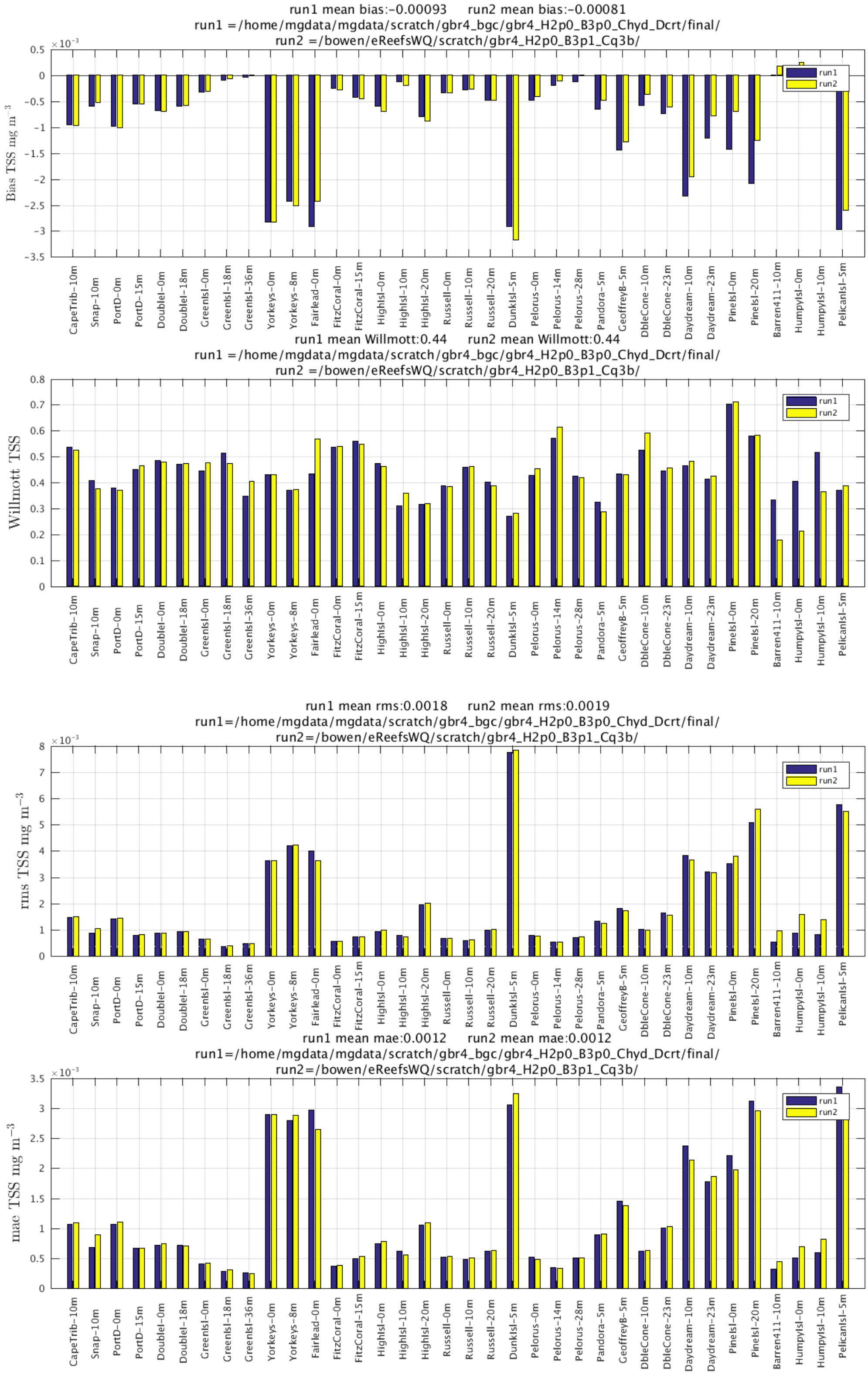
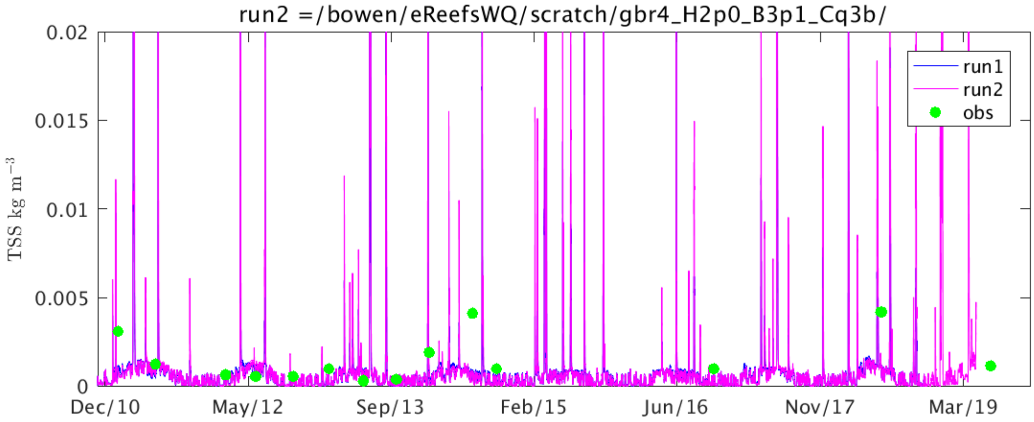
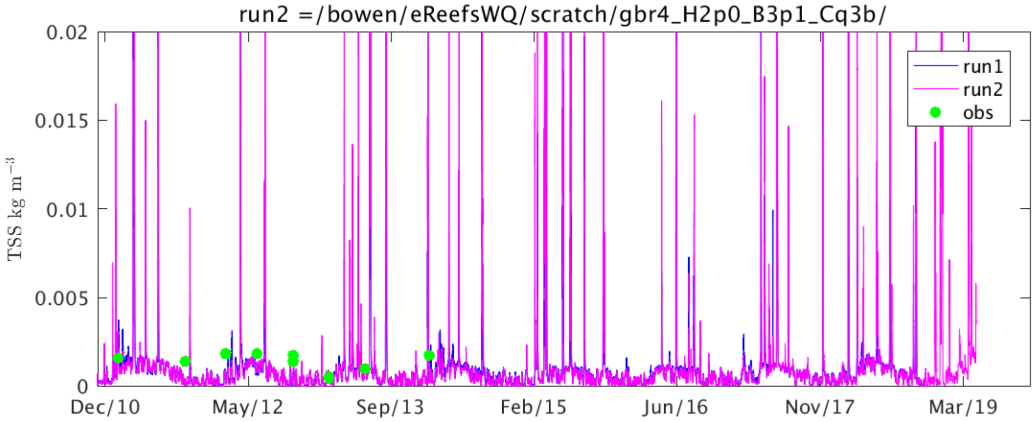


Figure 11 Metrics for Long Term Monitoring Sites simulated TSS against observations

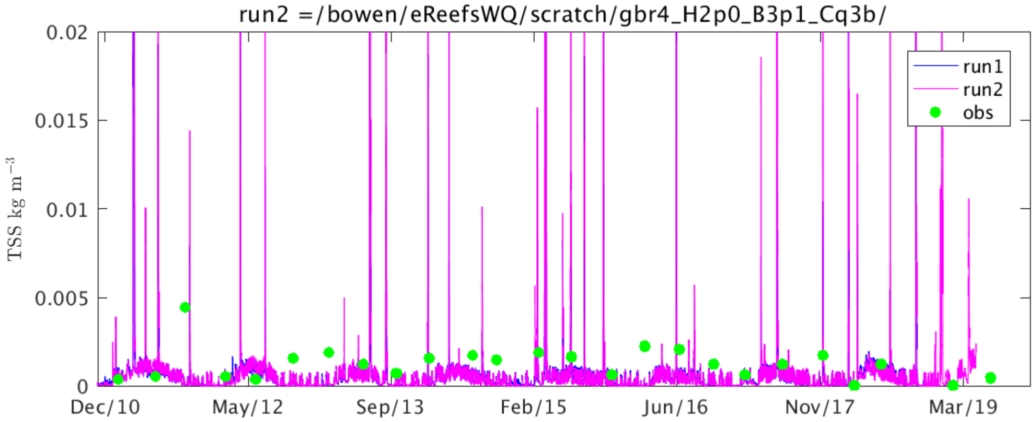
CapeTrib_10m run1 d2:0.54, mape:70.1, rms:0.0015
bias:-0.0009, r:0.6544, obsmean:0.0015
CapeTrib_10m run2 d2:0.52, mape:72.1, rms:0.0015
bias:-0.0010, r:0.5471, obsmean:0.0015
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/

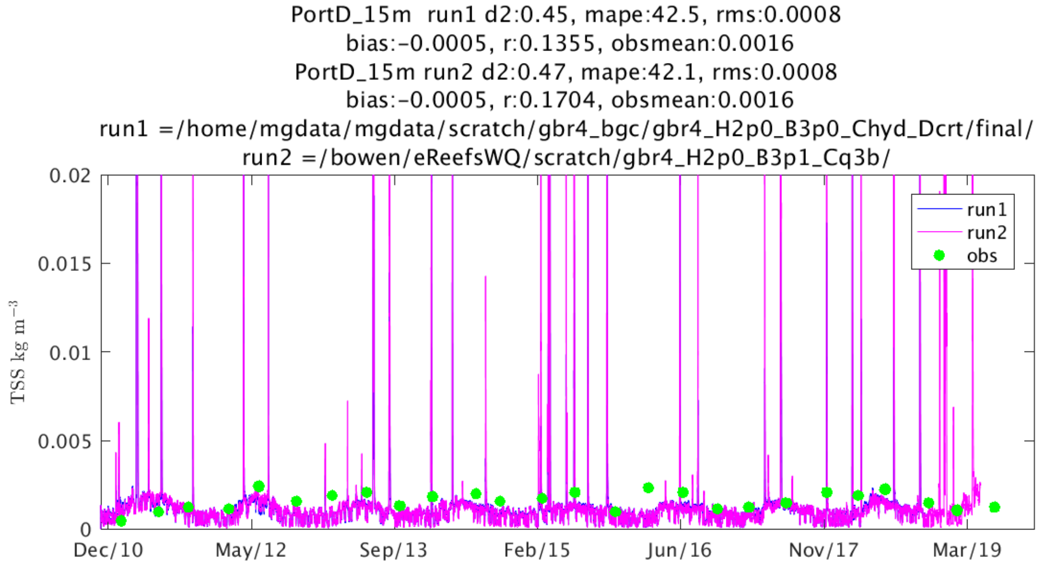


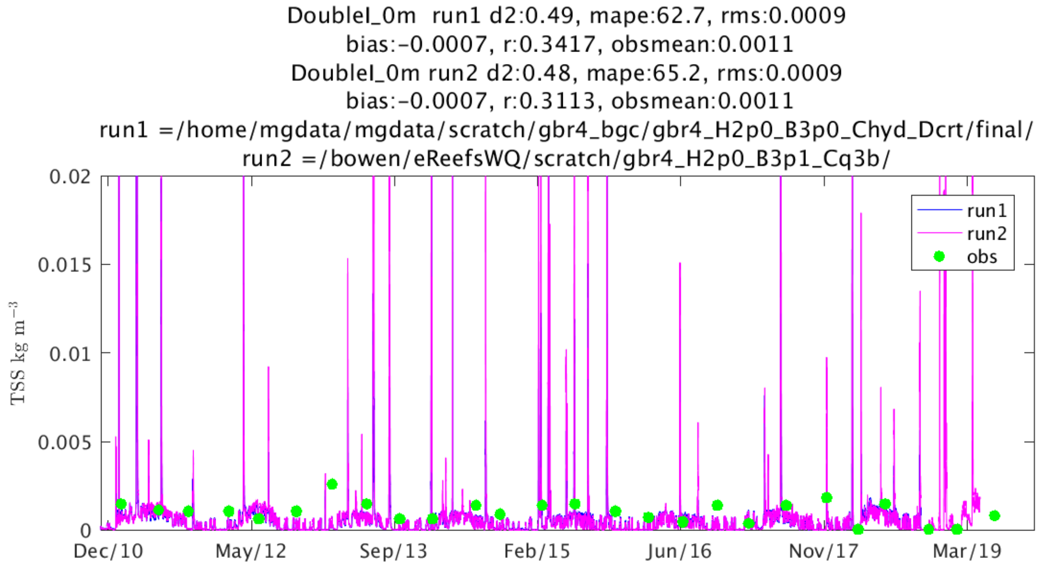
Snap_10m run1 d2:0.41, mape:49.6, rms:0.0009
bias:-0.0006, r:0.1563, obsmean:0.0014
Snap_10m run2 d2:0.38, mape:62.6, rms:0.0010
bias:-0.0005, r:0.1272, obsmean:0.0014
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/

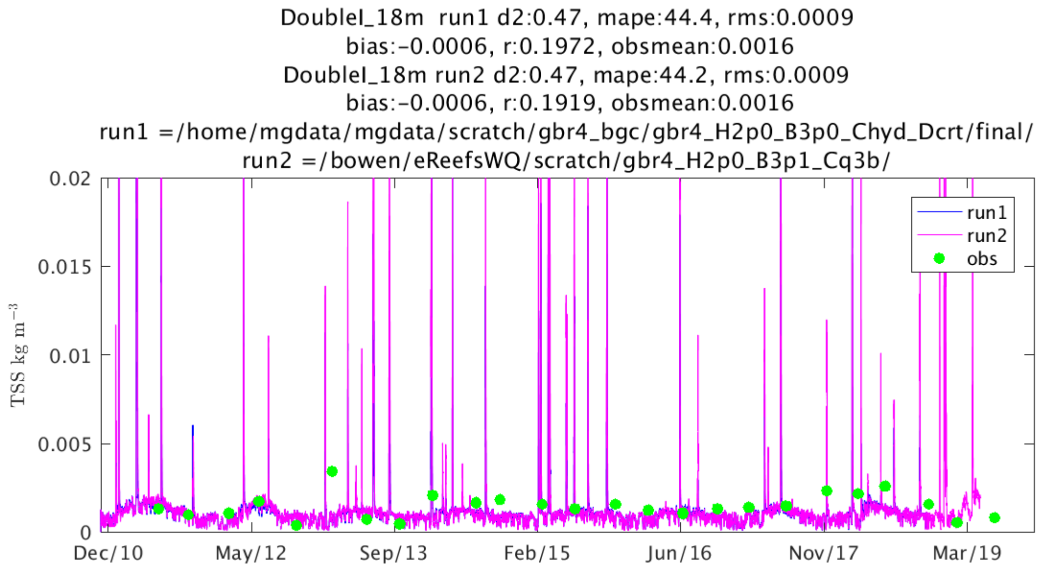


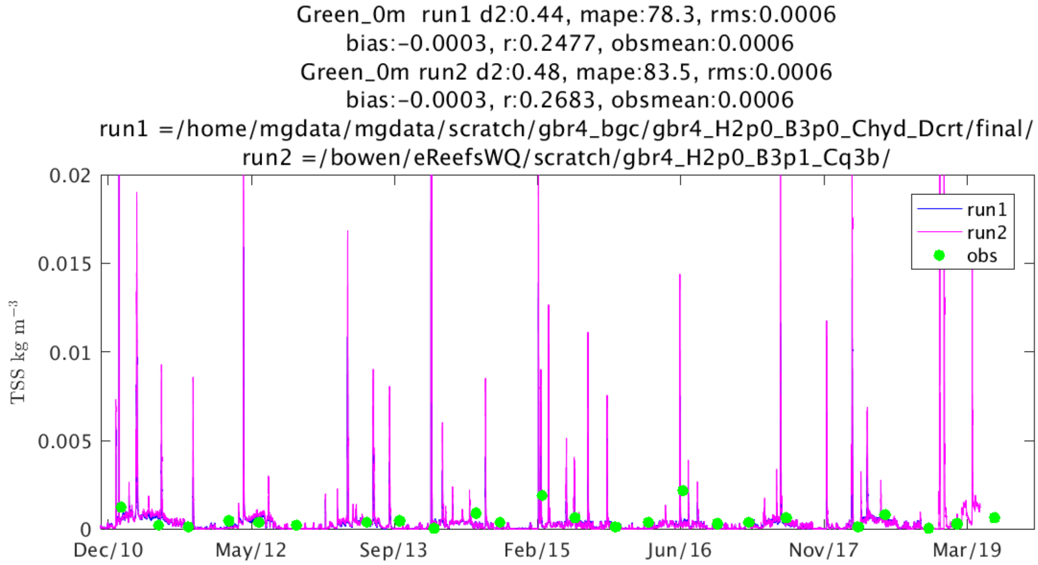
PortD_0m run1 d2:0.38, mape:75.6, rms:0.0014
bias:-0.0010, r:-0.2986, obsmean:0.0014
PortD_0m run2 d2:0.37, mape:76.7, rms:0.0014
bias:-0.0010, r:-0.3135, obsmean:0.0014
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/

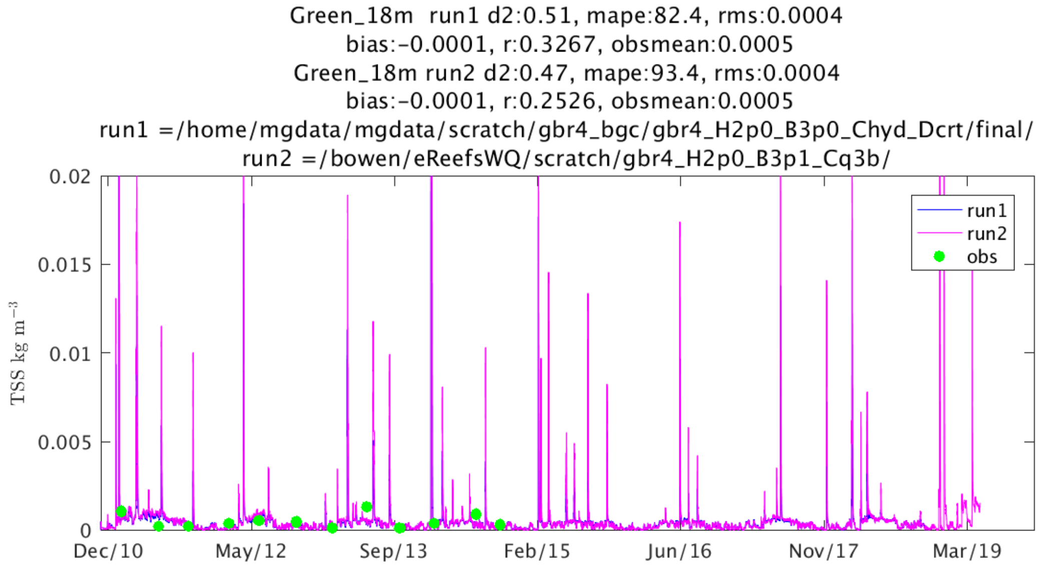


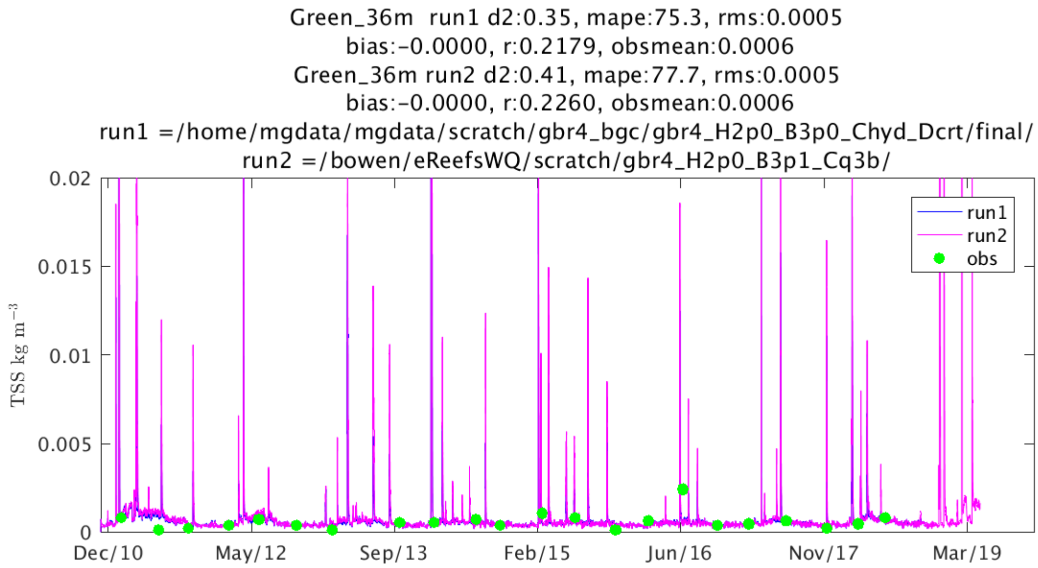

PortD_15m run1 d2:0.45, mape:42.5, rms:0.0008
bias:-0.0005, r:0.1355, obsmean:0.0016
PortD_15m run2 d2:0.47, mape:42.1, rms:0.0008
bias:-0.0005, r:0.1704, obsmean:0.0016
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
TSS kg m^{-3}
0.02
0.015
0.01
0.005
0
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19
run1
run2
obs

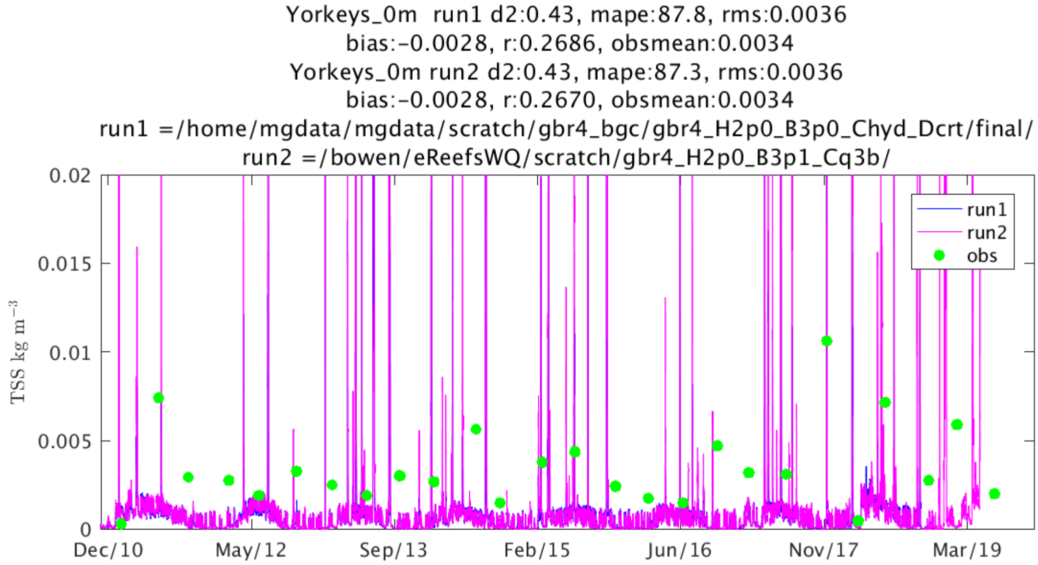

DoubleI_0m run1 d2:0.49, mape:62.7, rms:0.0009
bias:-0.0007, r:0.3417, obsmean:0.0011
DoubleI_0m run2 d2:0.48, mape:65.2, rms:0.0009
bias:-0.0007, r:0.3113, obsmean:0.0011
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
TSS kg m^{-3}
0.02
0.015
0.01
0.005
0
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19
run1
run2
obs

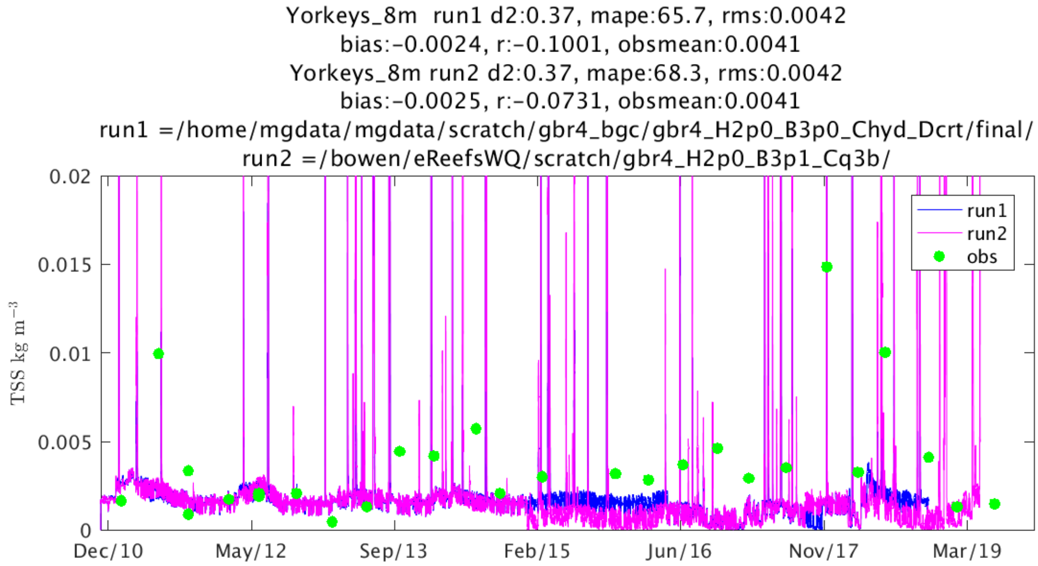

DoubleI_18m run1 d2:0.47, mape:44.4, rms:0.0009
bias:-0.0006, r:0.1972, obsmean:0.0016
DoubleI_18m run2 d2:0.47, mape:44.2, rms:0.0009
bias:-0.0006, r:0.1919, obsmean:0.0016
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
TSS kg m^{-3}
0.02
0.015
0.01
0.005
0
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19
run1
run2
obs

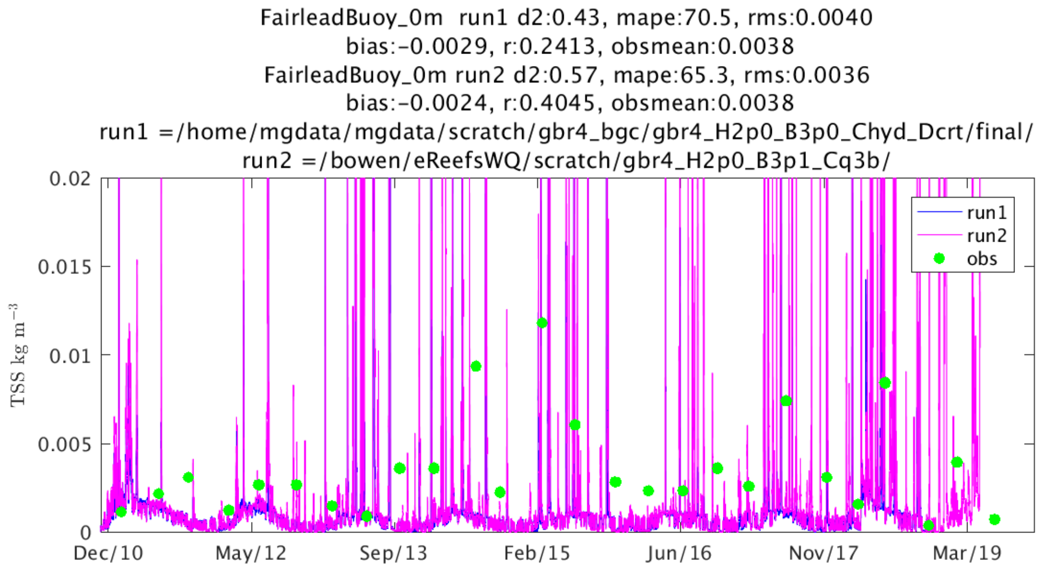

Green_0m run1 d2:0.44, mape:78.3, rms:0.0006
bias:-0.0003, r:0.2477, obsmean:0.0006
Green_0m run2 d2:0.48, mape:83.5, rms:0.0006
bias:-0.0003, r:0.2683, obsmean:0.0006
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
TSS kg m^{-3}
0.02
0.015
0.01
0.005
0
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19
run1
run2
obs


Green_18m run1 d2:0.51, mape:82.4, rms:0.0004
bias:-0.0001, r:0.3267, obsmean:0.0005
Green_18m run2 d2:0.47, mape:93.4, rms:0.0004
bias:-0.0001, r:0.2526, obsmean:0.0005
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
TSS kg m^{-3}
0.02
0.015
0.01
0.005
0
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19
run1
run2
obs

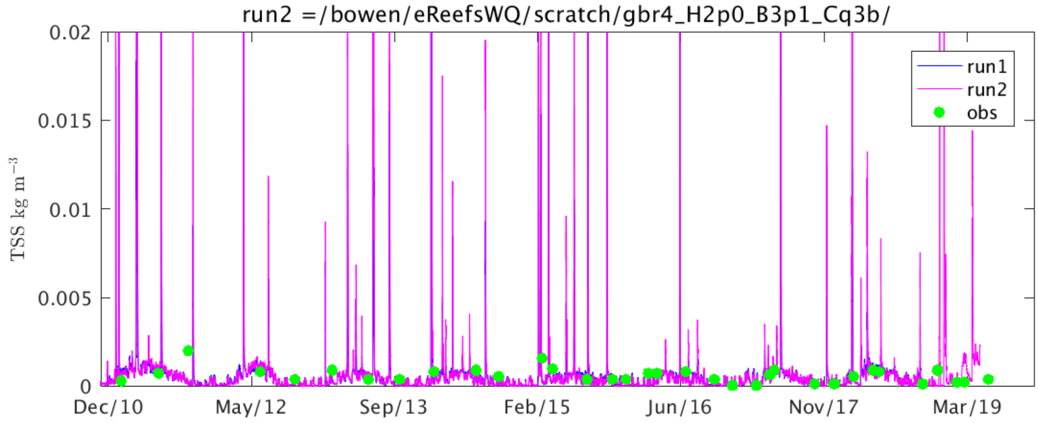

Green_36m run1 d2:0.35, mape:75.3, rms:0.0005
bias:-0.0000, r:0.2179, obsmean:0.0006
Green_36m run2 d2:0.41, mape:77.7, rms:0.0005
bias:-0.0000, r:0.2260, obsmean:0.0006
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
TSS kg m^{-3}
0.02
0.015
0.01
0.005
0
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19
run1
run2
obs


Yorkeys_0m run1 d2:0.43, mape:87.8, rms:0.0036
bias:-0.0028, r:0.2686, obsmean:0.0034
Yorkeys_0m run2 d2:0.43, mape:87.3, rms:0.0036
bias:-0.0028, r:0.2670, obsmean:0.0034
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
TSS kg m-3
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19

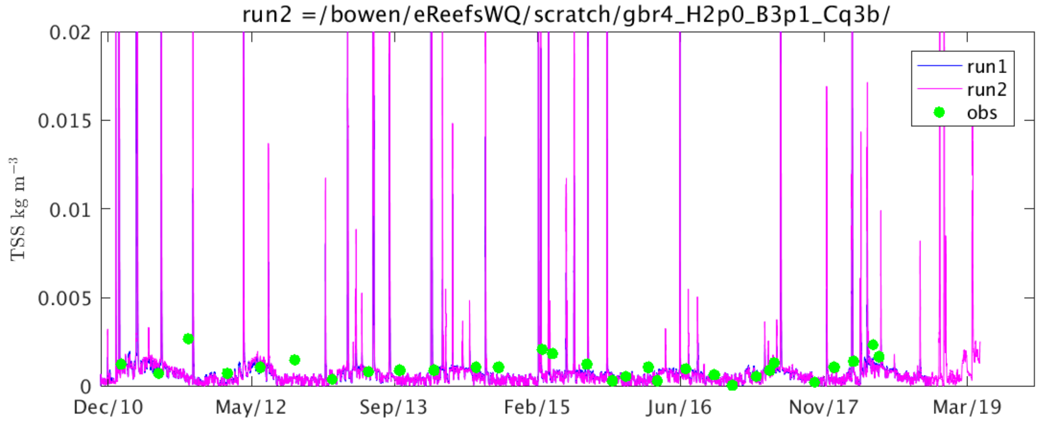

Yorkeys_8m run1 d2:0.37, mape:65.7, rms:0.0042
bias:-0.0024, r:-0.1001, obsmean:0.0041
Yorkeys_8m run2 d2:0.37, mape:68.3, rms:0.0042
bias:-0.0025, r:-0.0731, obsmean:0.0041
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
TSS kg m-3
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19


FairleadBuoy_0m run1 d2:0.43, mape:70.5, rms:0.0040
bias:-0.0029, r:0.2413, obsmean:0.0038
FairleadBuoy_0m run2 d2:0.57, mape:65.3, rms:0.0036
bias:-0.0024, r:0.4045, obsmean:0.0038
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
TSS kg m-3
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19

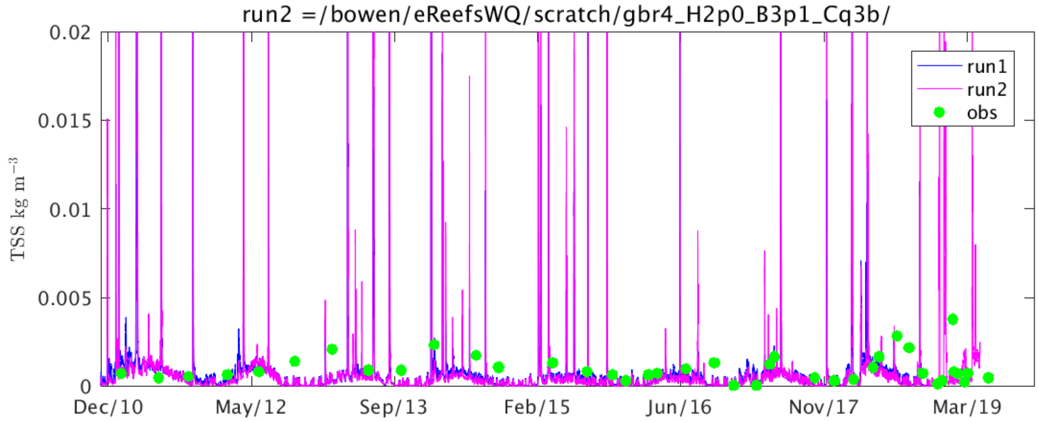
FitzCoral_0m run1 d2:0.54, mape:76.7, rms:0.0005
bias:-0.0003, r:0.2175, obsmean:0.0006
FitzCoral_0m run2 d2:0.54, mape:73.4, rms:0.0006
bias:-0.0003, r:0.2479, obsmean:0.0006
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/



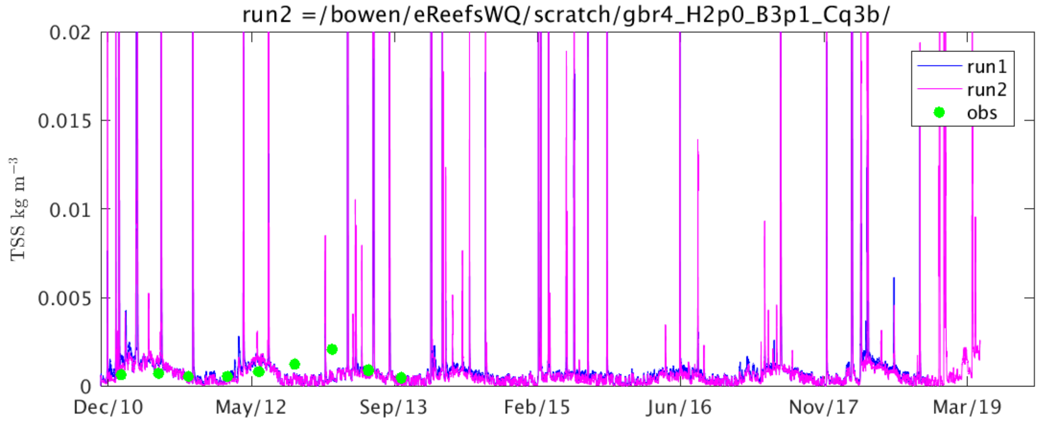
FitzCoral_15m run1 d2:0.56, mape:132.3, rms:0.0007
bias:-0.0004, r:0.3638, obsmean:0.0010
FitzCoral_15m run2 d2:0.55, mape:137.5, rms:0.0007
bias:-0.0005, r:0.3582, obsmean:0.0010
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/



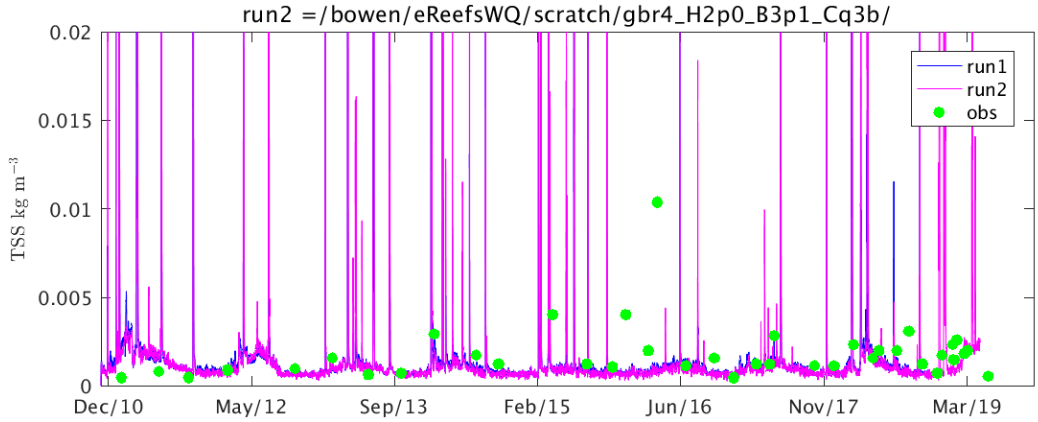
HighI_0m run1 d2:0.47, mape:150.7, rms:0.0009
bias:-0.0006, r:0.1690, obsmean:0.0010
HighI_0m run2 d2:0.46, mape:119.2, rms:0.0010
bias:-0.0007, r:0.1304, obsmean:0.0010
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/



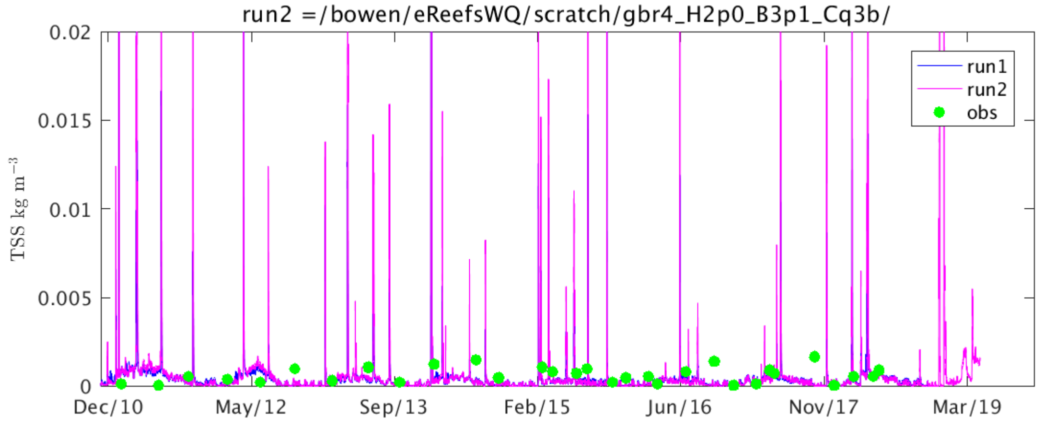
HighI_10m run1 d2:0.31, mape:69.4, rms:0.0008
bias:-0.0001, r:-0.1983, obsmean:0.0009
HighI_10m run2 d2:0.36, mape:60.1, rms:0.0007
bias:-0.0002, r:-0.1312, obsmean:0.0009
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/

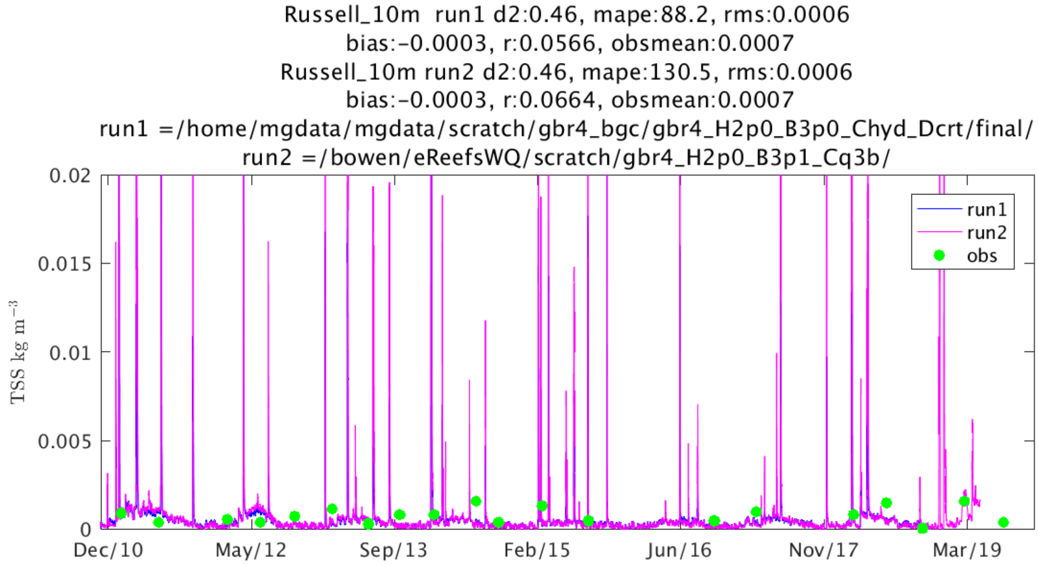


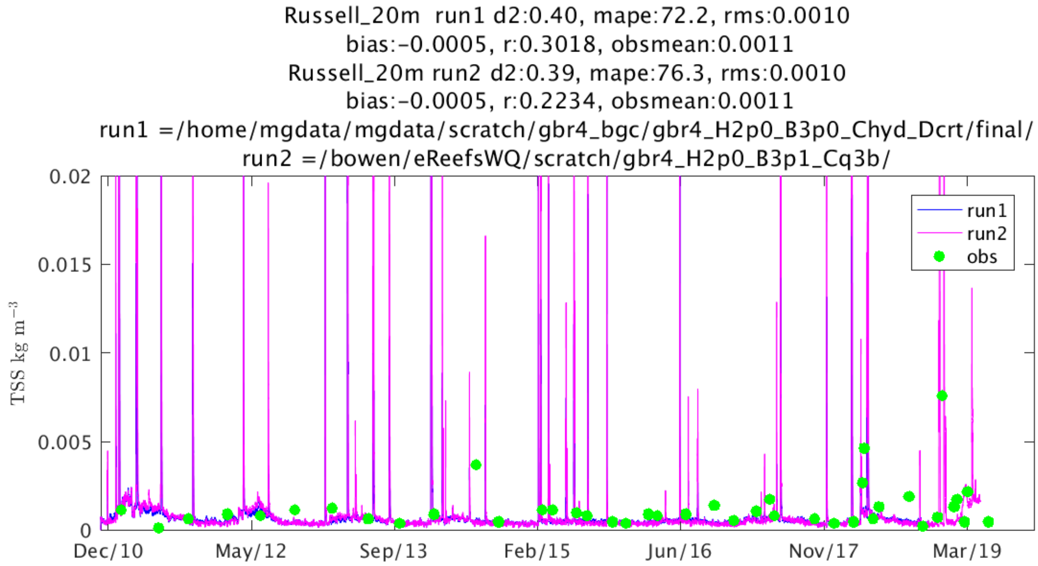
HighI_20m run1 d2:0.32, mape:55.4, rms:0.0020
bias:-0.0008, r:0.0431, obsmean:0.0018
HighI_20m run2 d2:0.32, mape:55.6, rms:0.0020
bias:-0.0009, r:0.0031, obsmean:0.0018
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/

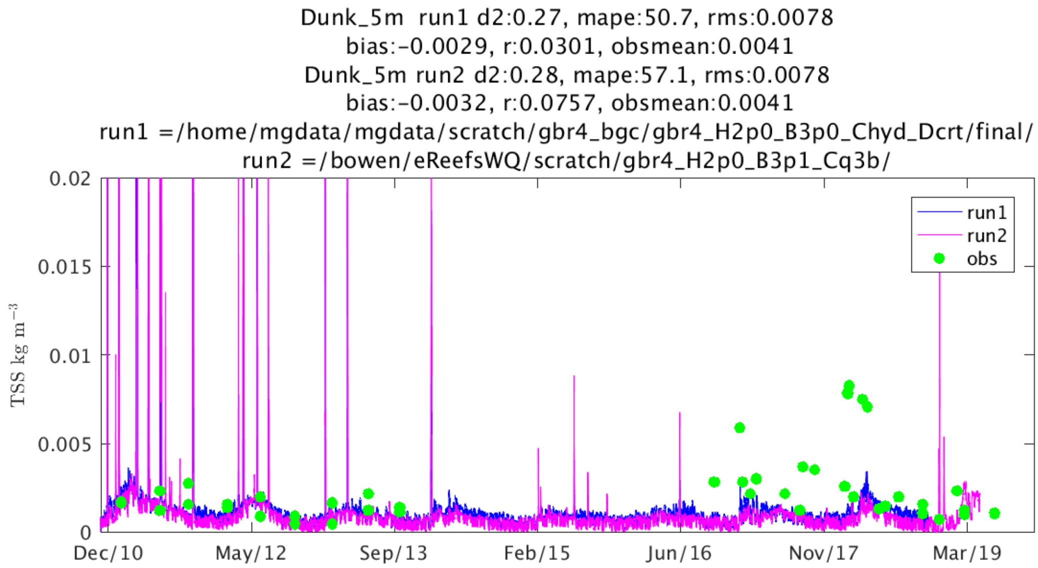


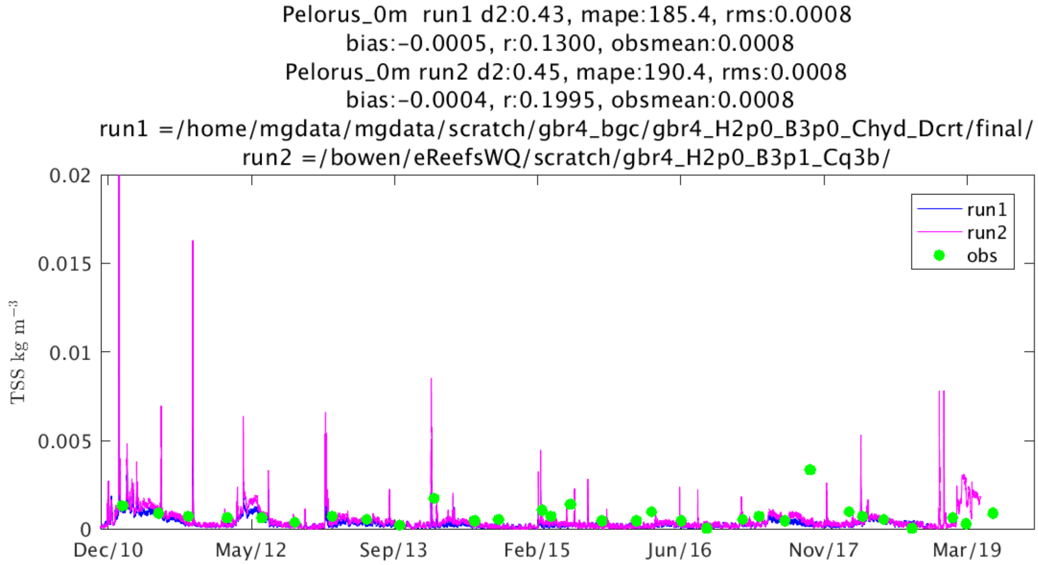
Russell_0m run1 d2:0.39, mape:256.9, rms:0.0007
bias:-0.0003, r:-0.1807, obsmean:0.0006
Russell_0m run2 d2:0.39, mape:270.5, rms:0.0007
bias:-0.0003, r:-0.1676, obsmean:0.0006
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/

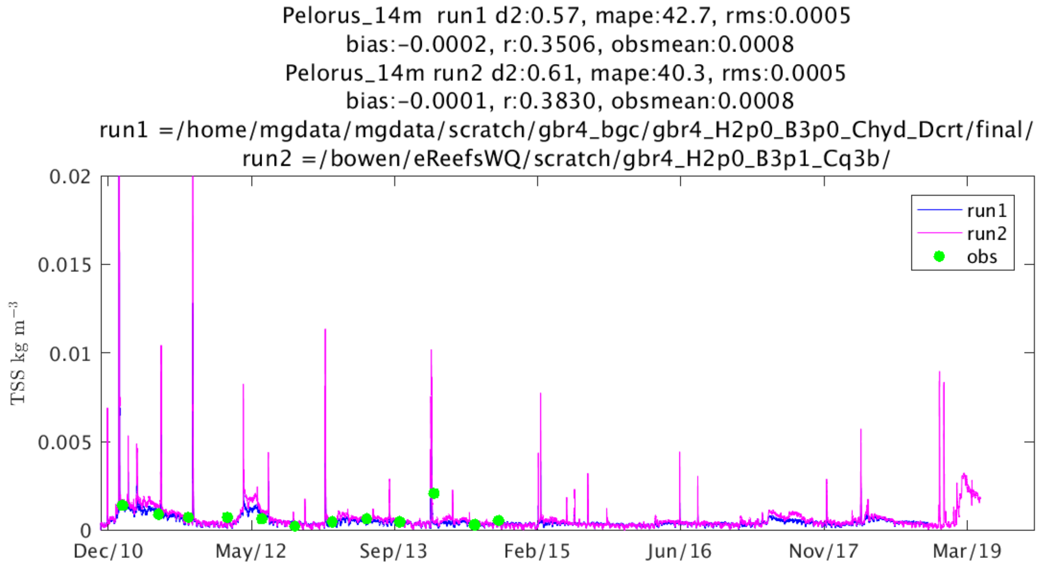


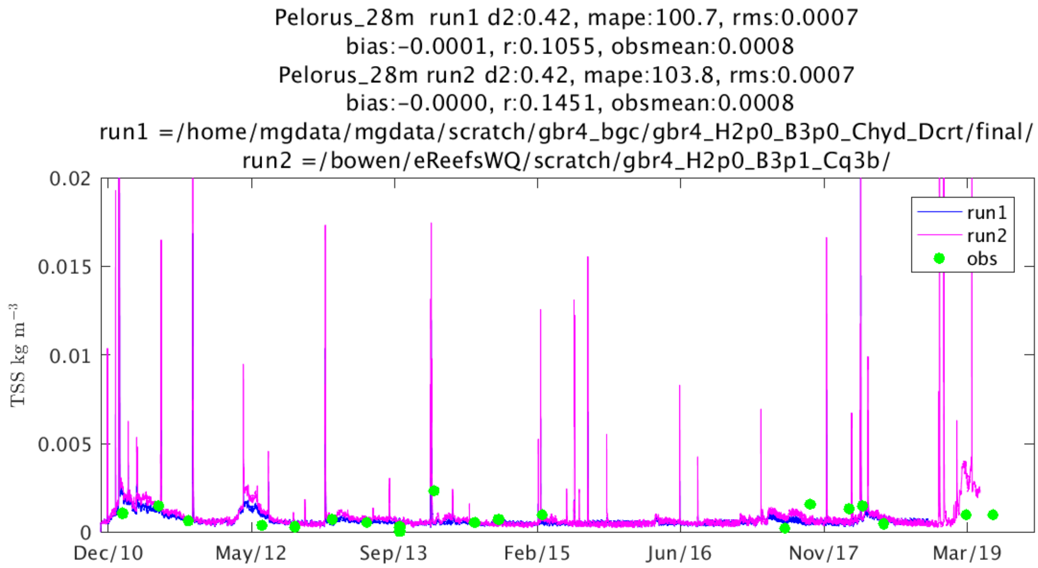

Russell_10m run1 d2:0.46, mape:88.2, rms:0.0006
bias:-0.0003, r:0.0566, obsmean:0.0007
Russell_10m run2 d2:0.46, mape:130.5, rms:0.0006
bias:-0.0003, r:0.0664, obsmean:0.0007
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
TSS kg m^-3
0.02
0.015
0.01
0.005
0
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19
run1
run2
obs

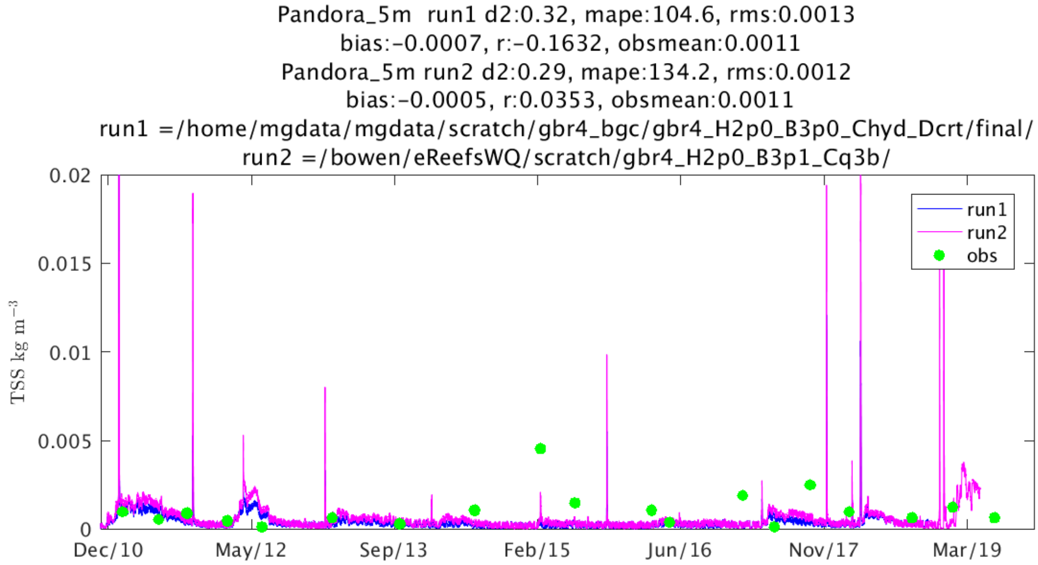

Russell_20m run1 d2:0.40, mape:72.2, rms:0.0010
bias:-0.0005, r:0.3018, obsmean:0.0011
Russell_20m run2 d2:0.39, mape:76.3, rms:0.0010
bias:-0.0005, r:0.2234, obsmean:0.0011
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
TSS kg m^-3
0.02
0.015
0.01
0.005
0
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19
run1
run2
obs

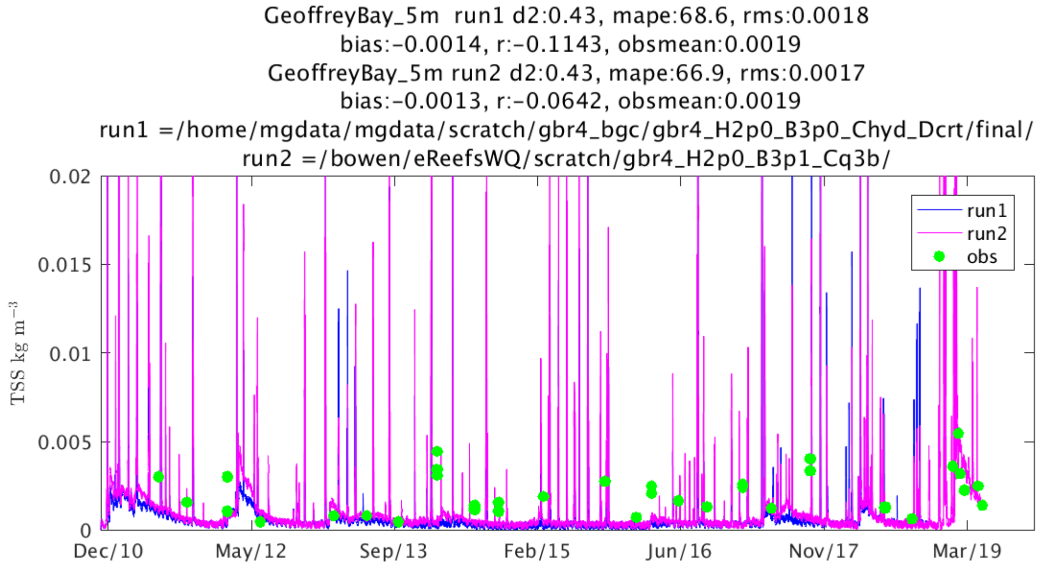

Dunk_5m run1 d2:0.27, mape:50.7, rms:0.0078
bias:-0.0029, r:0.0301, obsmean:0.0041
Dunk_5m run2 d2:0.28, mape:57.1, rms:0.0078
bias:-0.0032, r:0.0757, obsmean:0.0041
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
TSS kg m^-3
0.02
0.015
0.01
0.005
0
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19
run1
run2
obs

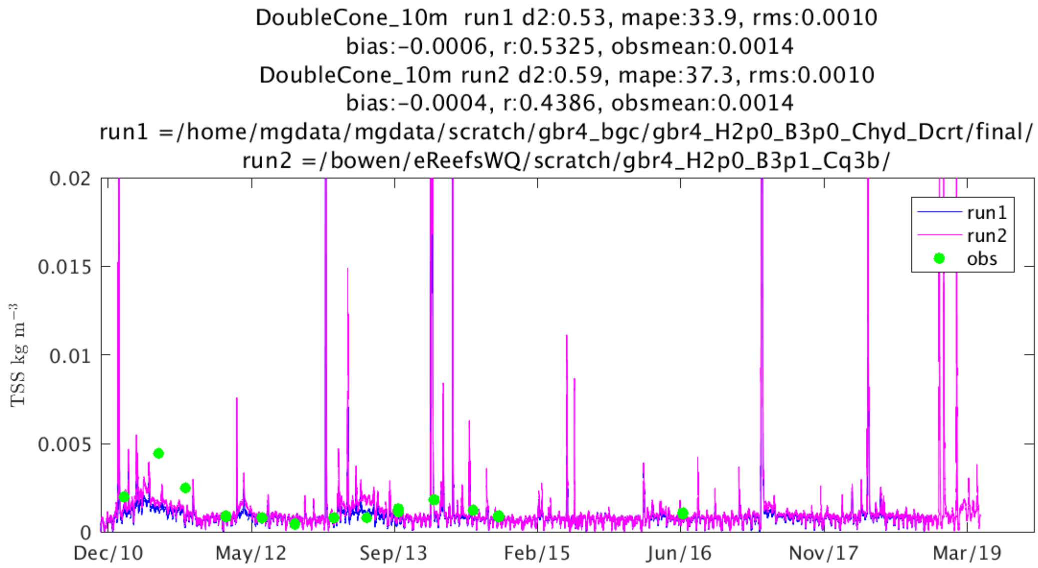

Pelorus_0m run1 d2:0.43, mape:185.4, rms:0.0008
bias:-0.0005, r:0.1300, obsmean:0.0008
Pelorus_0m run2 d2:0.45, mape:190.4, rms:0.0008
bias:-0.0004, r:0.1995, obsmean:0.0008
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
TSS kg m-3
0.02
0.015
0.01
0.005
0
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19
run1
run2
obs

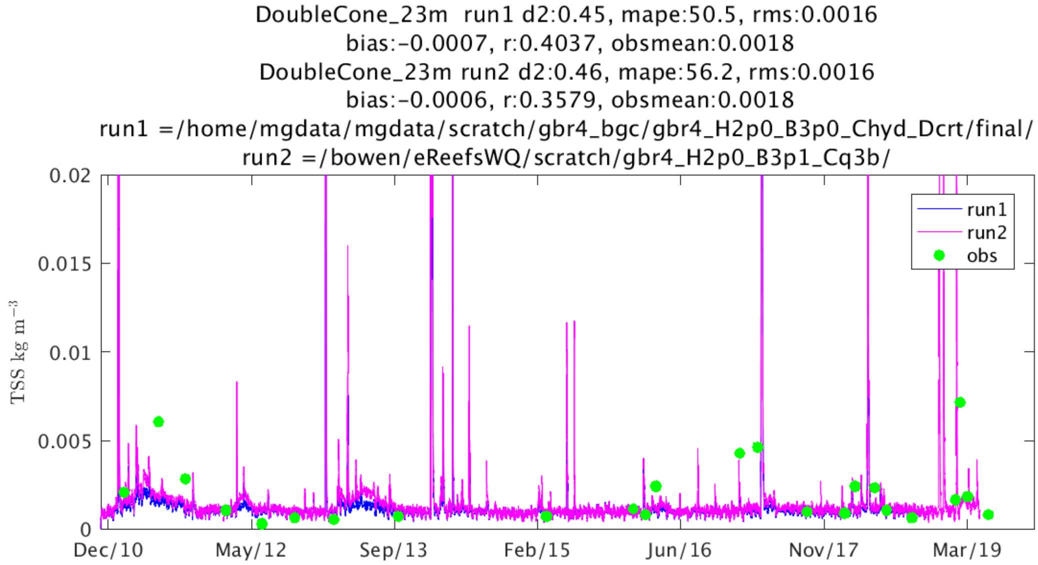

Pelorus_14m run1 d2:0.57, mape:42.7, rms:0.0005
bias:-0.0002, r:0.3506, obsmean:0.0008
Pelorus_14m run2 d2:0.61, mape:40.3, rms:0.0005
bias:-0.0001, r:0.3830, obsmean:0.0008
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
TSS kg m-3
0.02
0.015
0.01
0.005
0
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19
run1
run2
obs

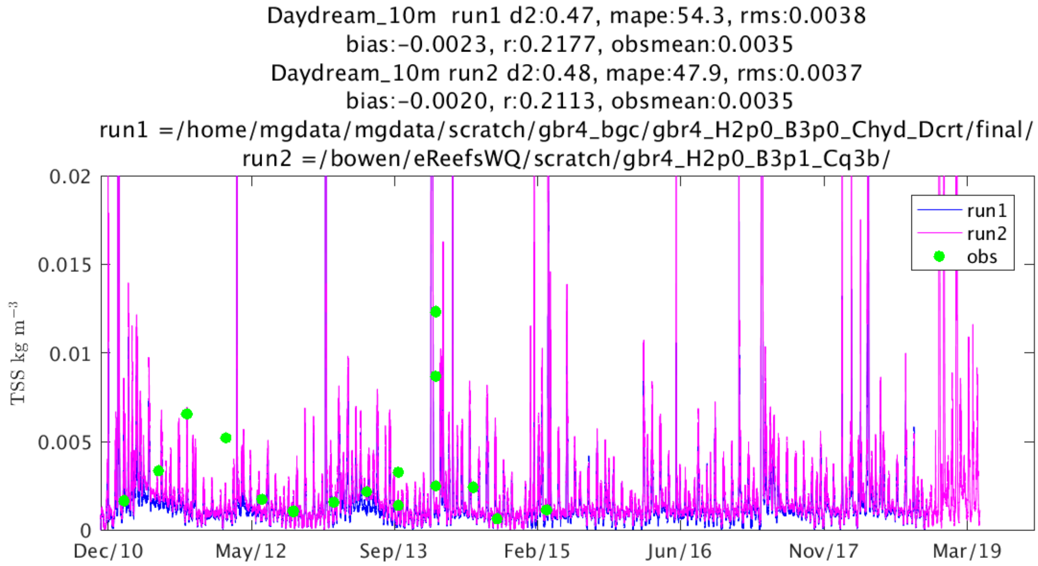

Pelorus_28m run1 d2:0.42, mape:100.7, rms:0.0007
bias:-0.0001, r:0.1055, obsmean:0.0008
Pelorus_28m run2 d2:0.42, mape:103.8, rms:0.0007
bias:-0.0000, r:0.1451, obsmean:0.0008
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
TSS kg m-3
0.02
0.015
0.01
0.005
0
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19
run1
run2
obs

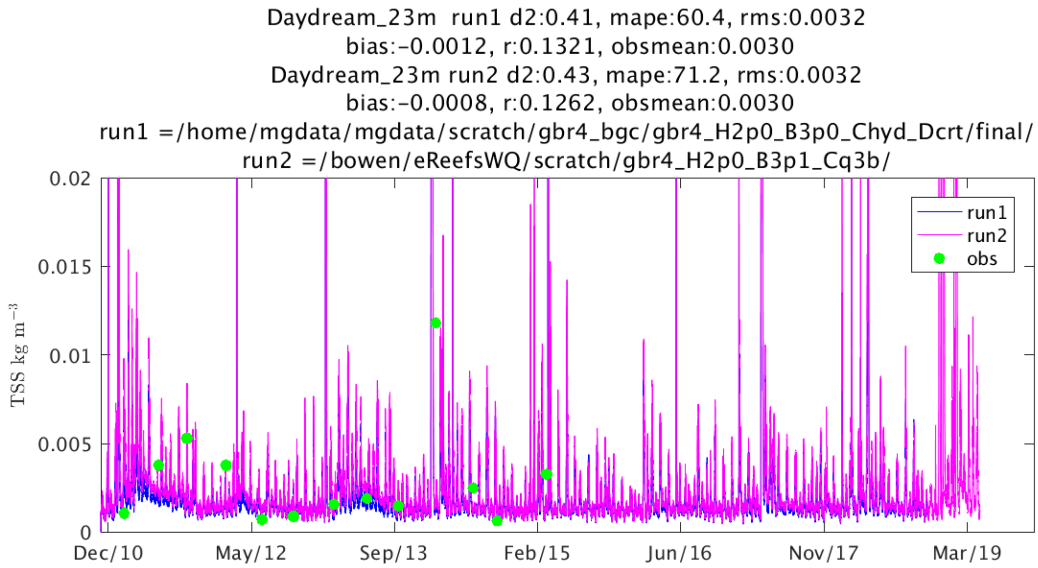

Pandora_5m run1 d2:0.32, mape:104.6, rms:0.0013
bias:-0.0007, r:-0.1632, obsmean:0.0011
Pandora_5m run2 d2:0.29, mape:134.2, rms:0.0012
bias:-0.0005, r:0.0353, obsmean:0.0011
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
TSS kg m^{-3}
0.02
0.015
0.01
0.005
0
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19
run1
run2
obs


GeoffreyBay_5m run1 d2:0.43, mape:68.6, rms:0.0018
bias:-0.0014, r:-0.1143, obsmean:0.0019
GeoffreyBay_5m run2 d2:0.43, mape:66.9, rms:0.0017
bias:-0.0013, r:-0.0642, obsmean:0.0019
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
TSS kg m^{-3}
0.02
0.015
0.01
0.005
0
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19
run1
run2
obs

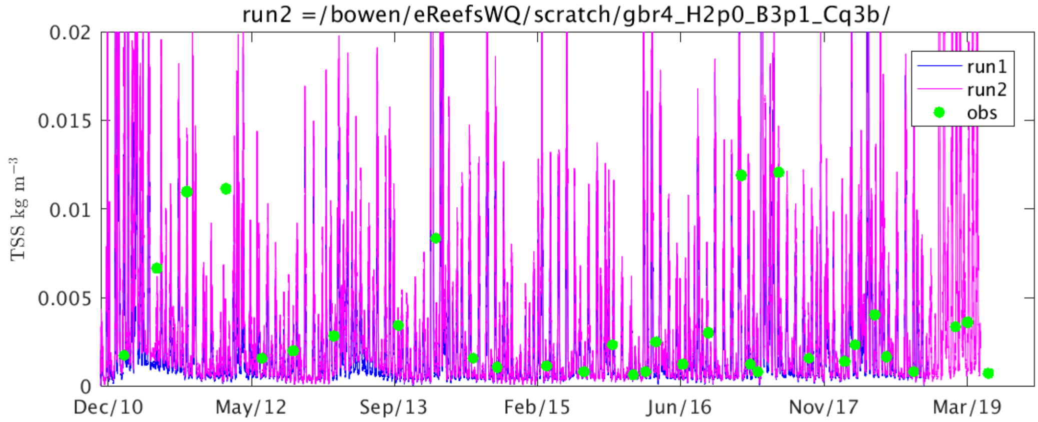

DoubleCone_10m run1 d2:0.53, mape:33.9, rms:0.0010
bias:-0.0006, r:0.5325, obsmean:0.0014
DoubleCone_10m run2 d2:0.59, mape:37.3, rms:0.0010
bias:-0.0004, r:0.4386, obsmean:0.0014
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
TSS kg m^{-3}
0.02
0.015
0.01
0.005
0
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19
run1
run2
obs


DoubleCone_23m run1 d2:0.45, mape:50.5, rms:0.0016
bias:-0.0007, r:0.4037, obsmean:0.0018
DoubleCone_23m run2 d2:0.46, mape:56.2, rms:0.0016
bias:-0.0006, r:0.3579, obsmean:0.0018
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
TSS kg m^-3
0.02
0.015
0.01
0.005
0
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19
run1
run2
obs

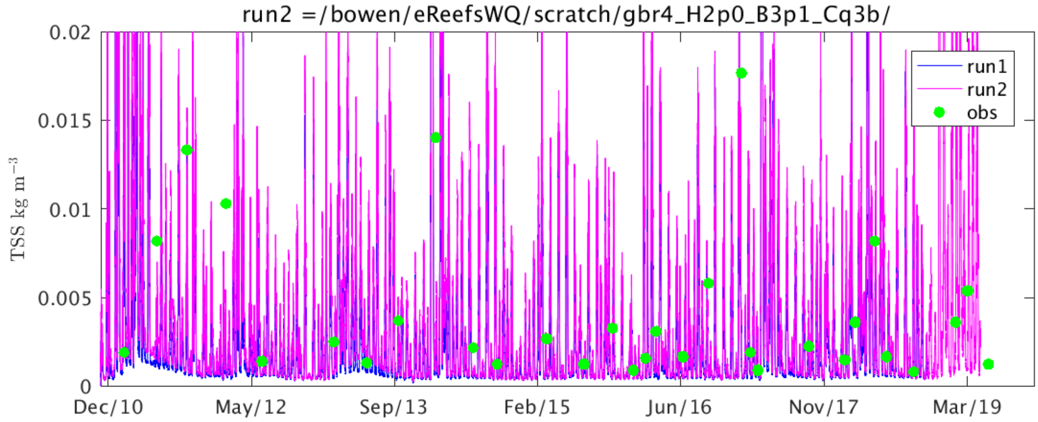

Daydream_10m run1 d2:0.47, mape:54.3, rms:0.0038
bias:-0.0023, r:0.2177, obsmean:0.0035
Daydream_10m run2 d2:0.48, mape:47.9, rms:0.0037
bias:-0.0020, r:0.2113, obsmean:0.0035
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
TSS kg m^-3
0.02
0.015
0.01
0.005
0
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19
run1
run2
obs


Daydream_23m run1 d2:0.41, mape:60.4, rms:0.0032
bias:-0.0012, r:0.1321, obsmean:0.0030
Daydream_23m run2 d2:0.43, mape:71.2, rms:0.0032
bias:-0.0008, r:0.1262, obsmean:0.0030
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
TSS kg m^-3
0.02
0.015
0.01
0.005
0
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19
run1
run2
obs

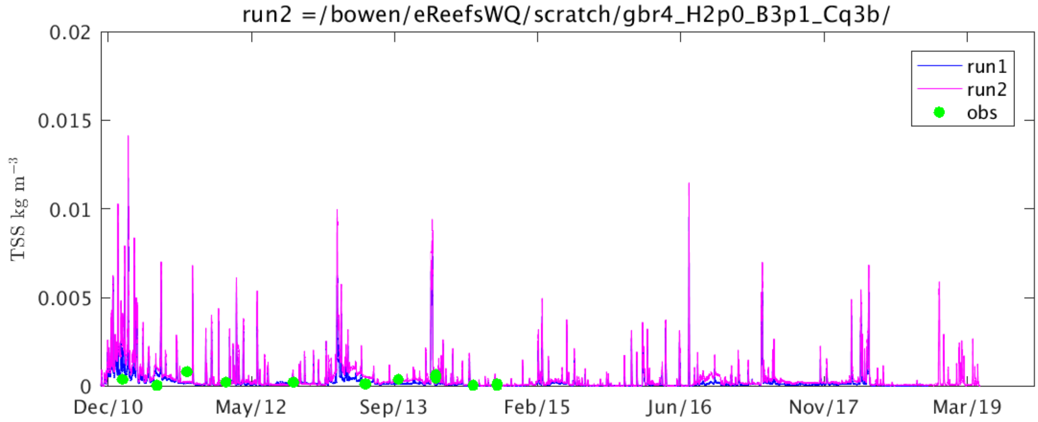
Pine_0m run1 d2:0.70, mape:67.7, rms:0.0035
bias:-0.0014, r:0.5243, obsmean:0.0035
Pine_0m run2 d2:0.71, mape:72.9, rms:0.0038
bias:-0.0007, r:0.5006, obsmean:0.0035
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/

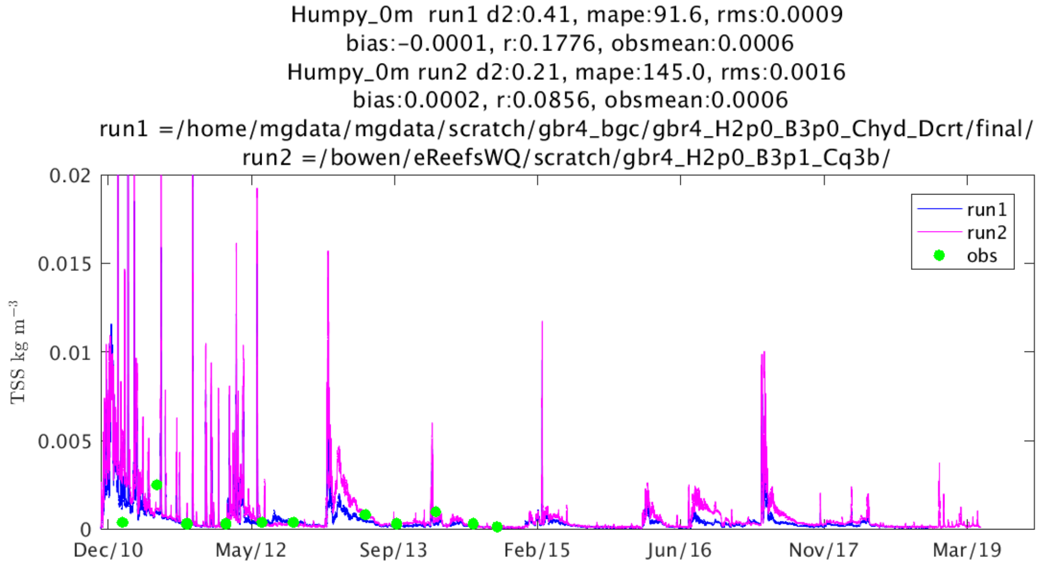


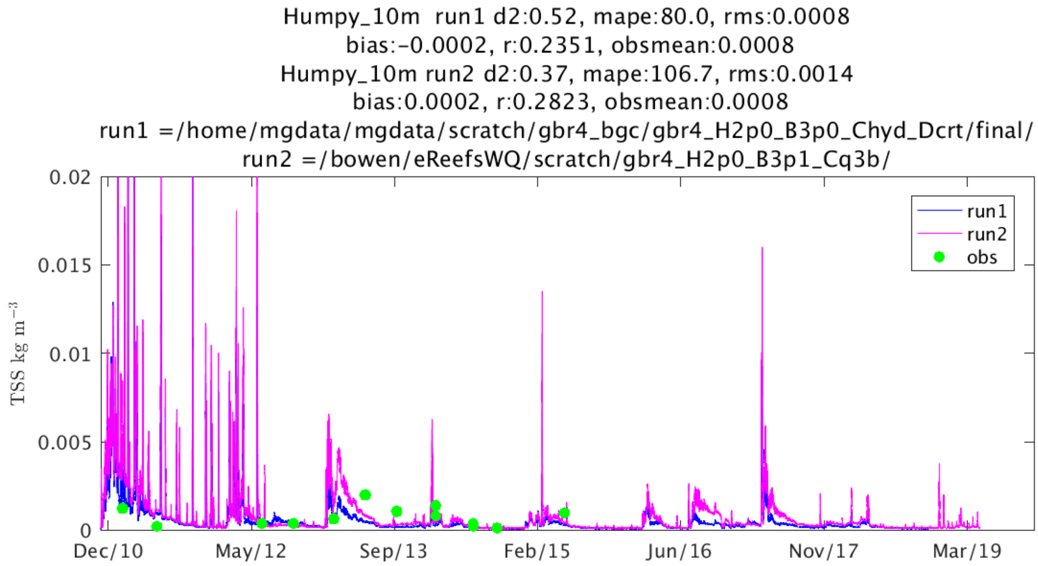
Pine_20m run1 d2:0.58, mape:80.0, rms:0.0051
bias:-0.0021, r:0.3297, obsmean:0.0042
Pine_20m run2 d2:0.58, mape:87.4, rms:0.0056
bias:-0.0013, r:0.3185, obsmean:0.0042
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/

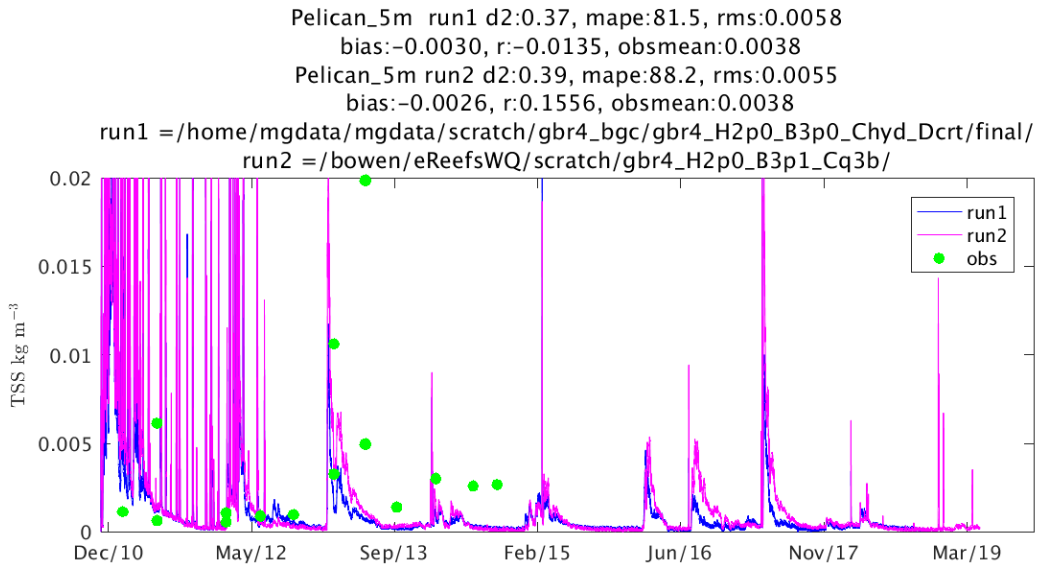


Barren_10m run1 d2:0.33, mape:144.6, rms:0.0005
bias:-0.0000, r:0.1437, obsmean:0.0003
Barren_10m run2 d2:0.18, mape:224.9, rms:0.0010
bias:0.0002, r:0.1454, obsmean:0.0003
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/




Humpy_0m run1 d2:0.41, mape:91.6, rms:0.0009
bias:-0.0001, r:0.1776, obsmean:0.0006
Humpy_0m run2 d2:0.21, mape:145.0, rms:0.0016
bias:0.0002, r:0.0856, obsmean:0.0006
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
TSS kg m^-3
0.02
0.015
0.01
0.005
0
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19
run1
run2
obs


Humpy_10m run1 d2:0.52, mape:80.0, rms:0.0008
bias:-0.0002, r:0.2351, obsmean:0.0008
Humpy_10m run2 d2:0.37, mape:106.7, rms:0.0014
bias:0.0002, r:0.2823, obsmean:0.0008
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
TSS kg m^-3
0.02
0.015
0.01
0.005
0
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19
run1
run2
obs


Pelican_5m run1 d2:0.37, mape:81.5, rms:0.0058
bias:-0.0030, r:-0.0135, obsmean:0.0038
Pelican_5m run2 d2:0.39, mape:88.2, rms:0.0055
bias:-0.0026, r:0.1556, obsmean:0.0038
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
TSS kg m^-3
0.02
0.015
0.01
0.005
0
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19
run1
run2
obs

15. Simulated Chl *a* assessment against National Reference Stations

Figure 12 Metrics for IMOS NRS sites simulated Chlorophyll a against observation

16. Simulated Chl *a* assessment against National Reference Stations

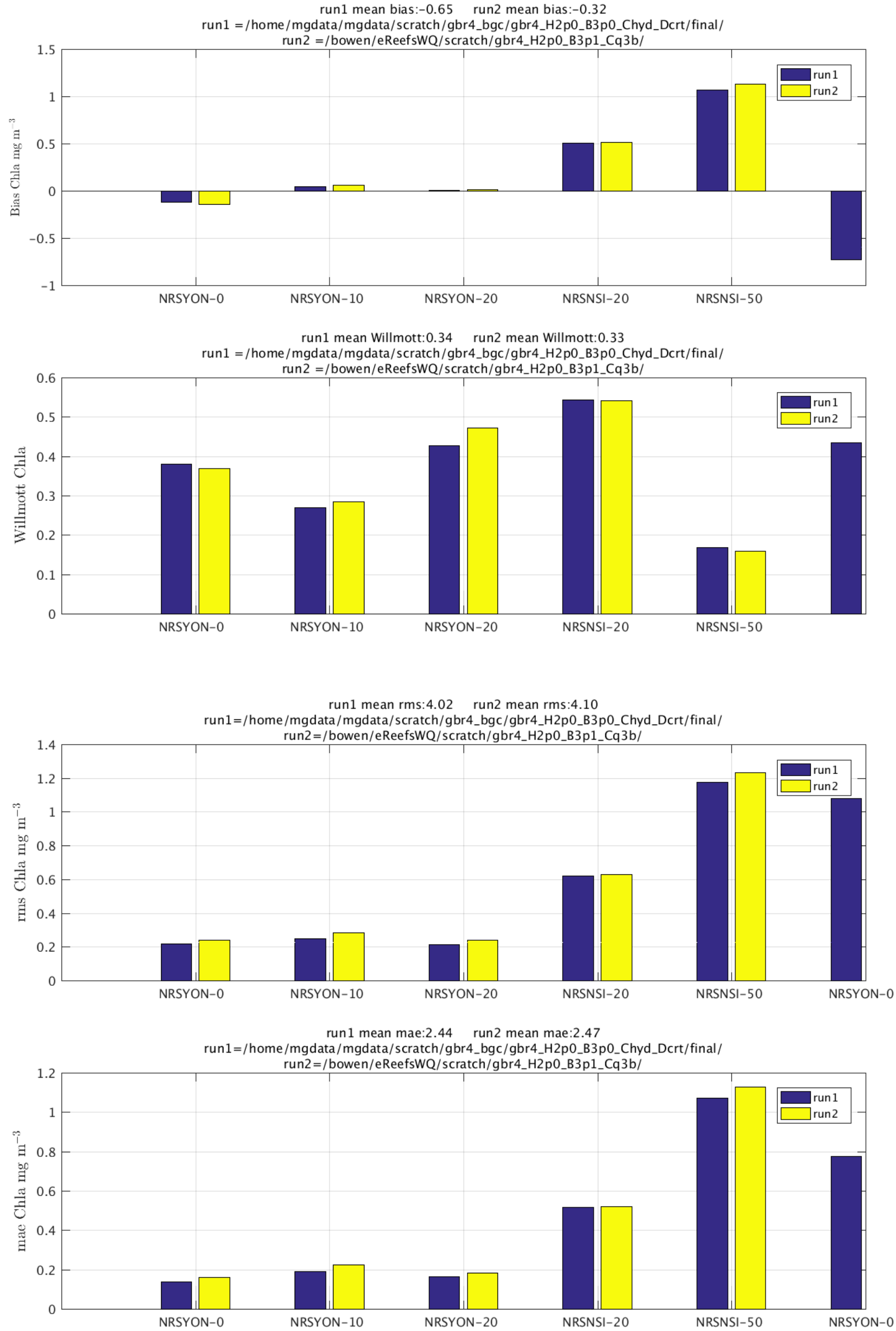
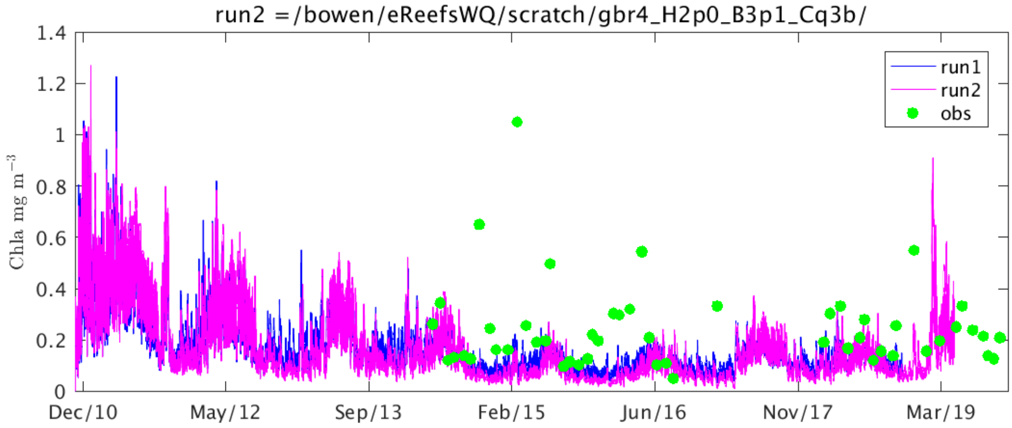
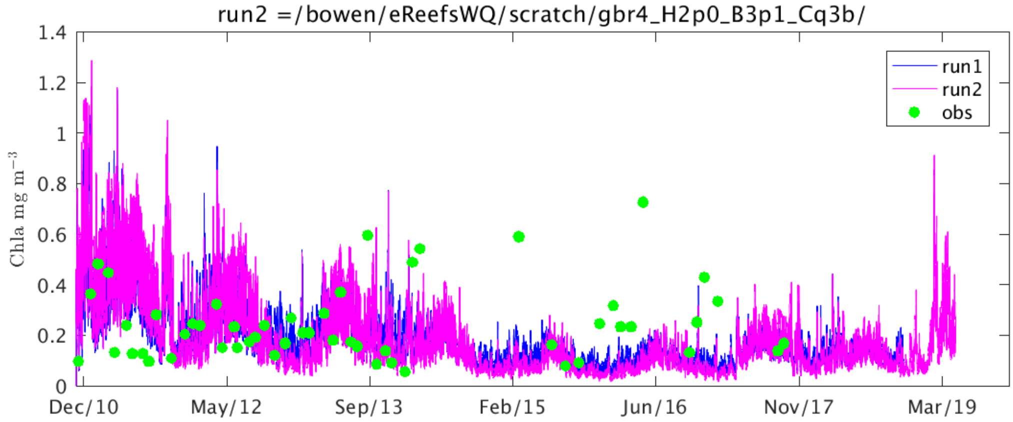


Figure 13 Metrics for IMOS NRS sites simulated Chlorophyll a against observation

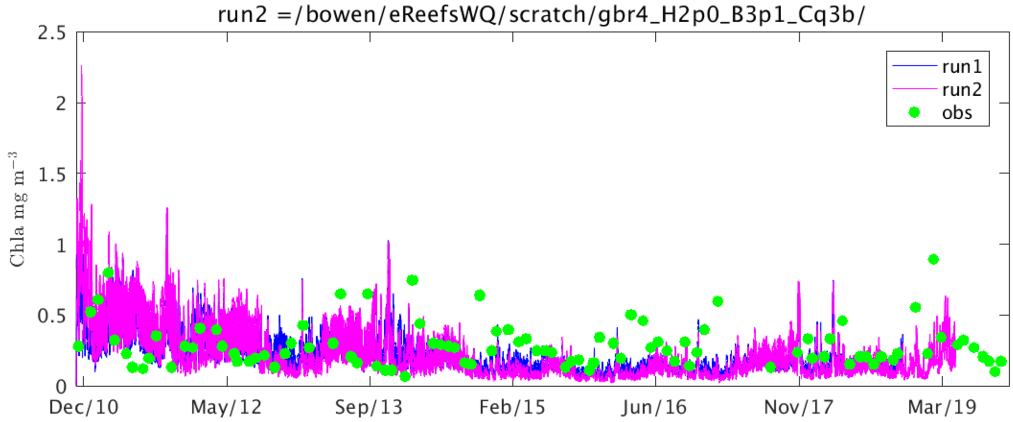
Yongala_0 run1 d2:0.38, mape:46.6, rms:0.2185
bias:-0.1224, r:0.0356, obsmean:0.2454
Yongala_0 run2 d2:0.37, mape:55.2, rms:0.2393
bias:-0.1449, r:-0.0997, obsmean:0.2454
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/

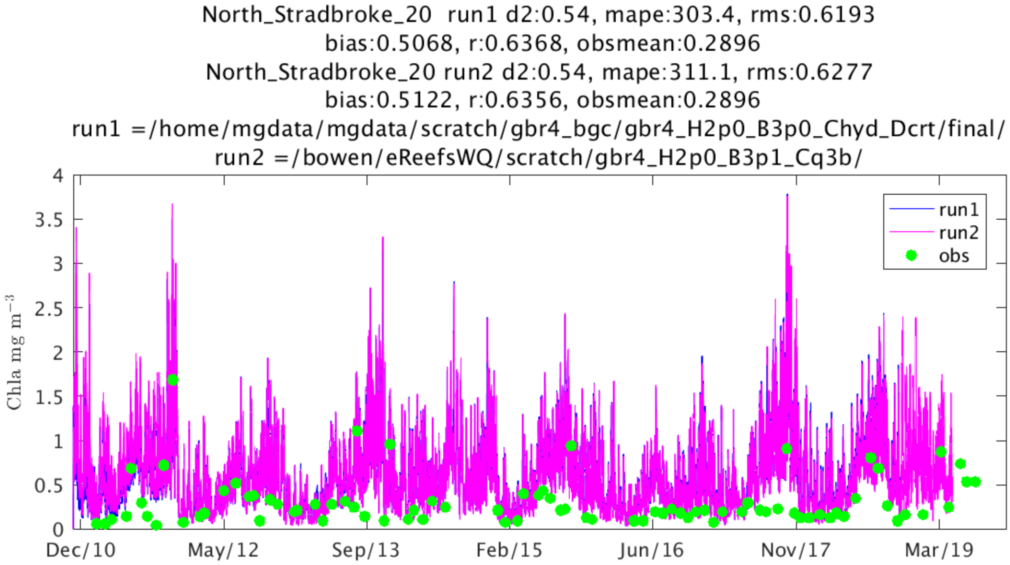


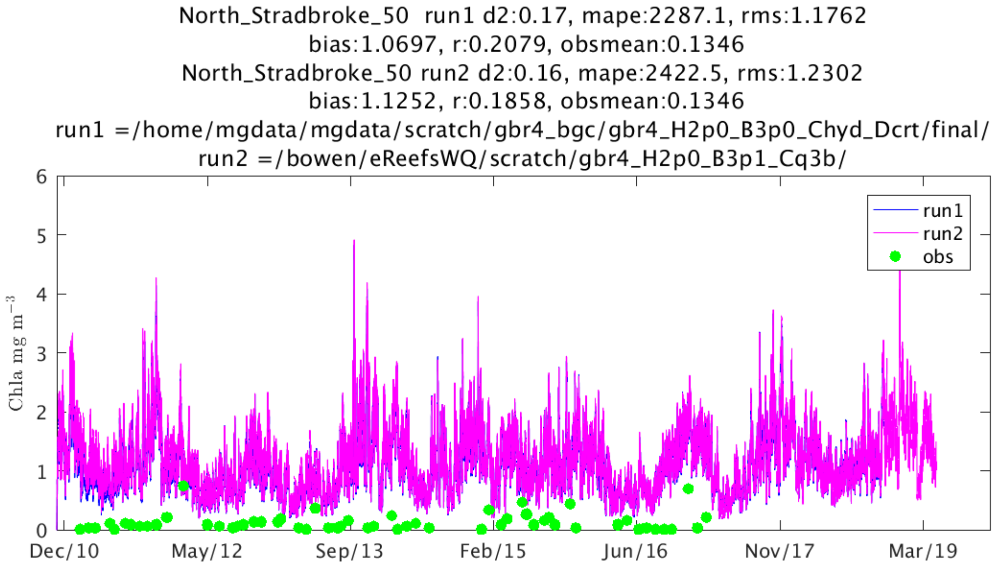
Yongala_10 run1 d2:0.27, mape:102.8, rms:0.2473
bias:0.0439, r:-0.1568, obsmean:0.2450
Yongala_10 run2 d2:0.28, mape:120.2, rms:0.2803
bias:0.0559, r:-0.1407, obsmean:0.2450
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/



Yongala_20 run1 d2:0.43, mape:70.9, rms:0.2129
bias:0.0073, r:0.0829, obsmean:0.2860
Yongala_20 run2 d2:0.47, mape:79.0, rms:0.2372
bias:0.0118, r:0.1472, obsmean:0.2860
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/




North_Stradbroke_20 run1 d2:0.54, mape:303.4, rms:0.6193
bias:0.5068, r:0.6368, obsmean:0.2896
North_Stradbroke_20 run2 d2:0.54, mape:311.1, rms:0.6277
bias:0.5122, r:0.6356, obsmean:0.2896
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
Chla mg m^{-3}
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19


North_Stradbroke_50 run1 d2:0.17, mape:2287.1, rms:1.1762
bias:1.0697, r:0.2079, obsmean:0.1346
North_Stradbroke_50 run2 d2:0.16, mape:2422.5, rms:1.2302
bias:1.1252, r:0.1858, obsmean:0.1346
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
Chla mg m^{-3}
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19

17. Simulated Chl *a* and Fluorescence assessment against AIMS MMP fluorescence (includes scatter plots)

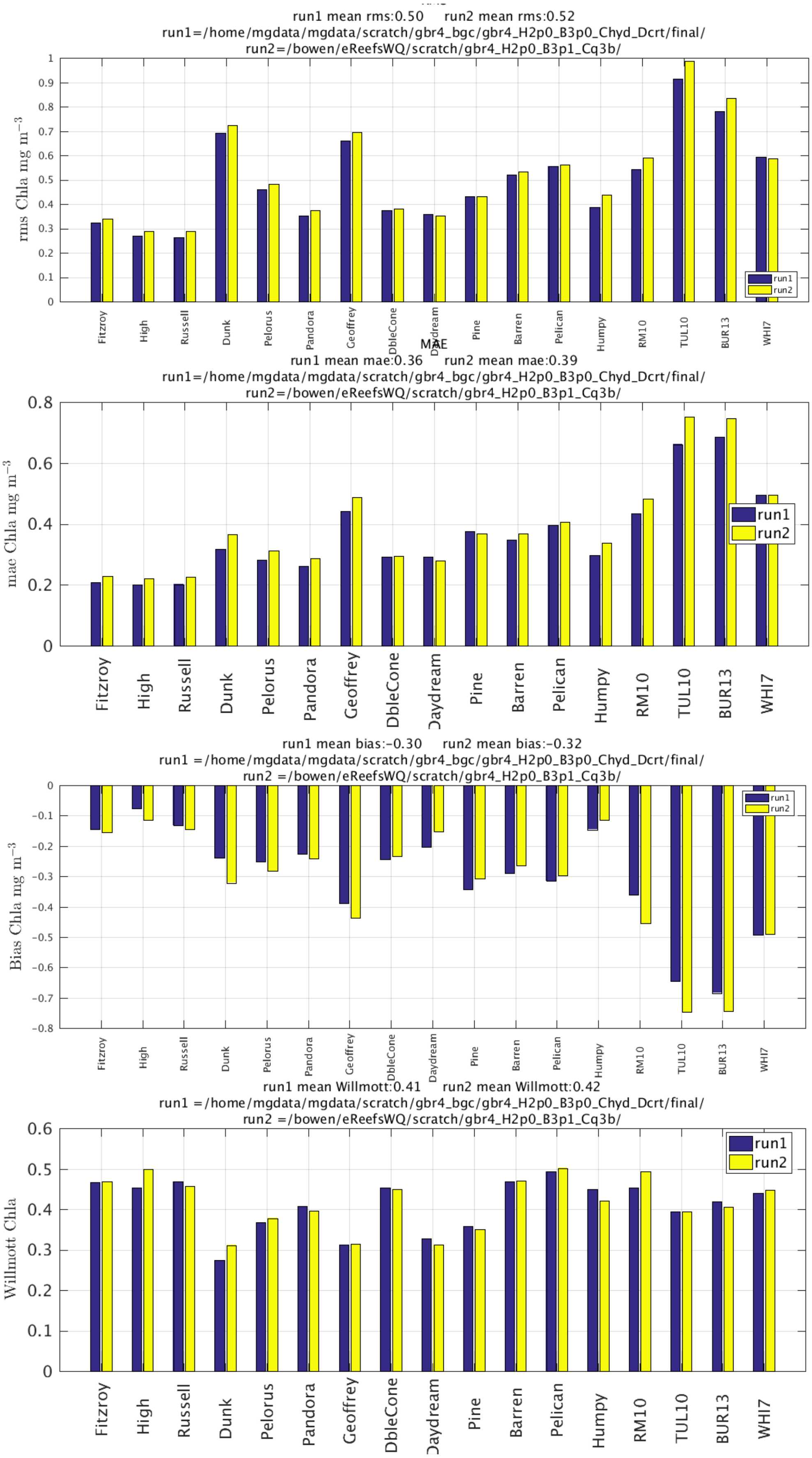
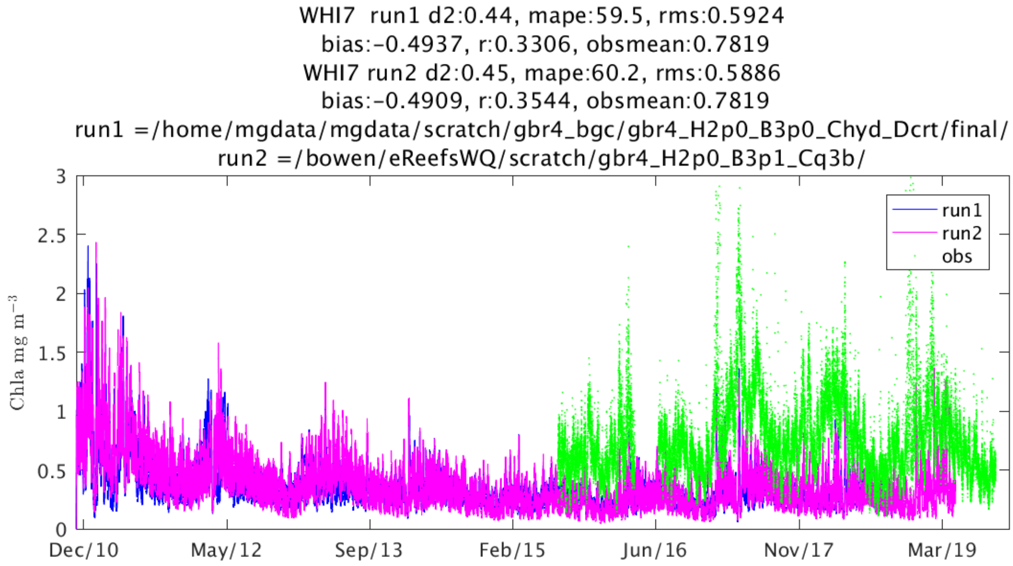
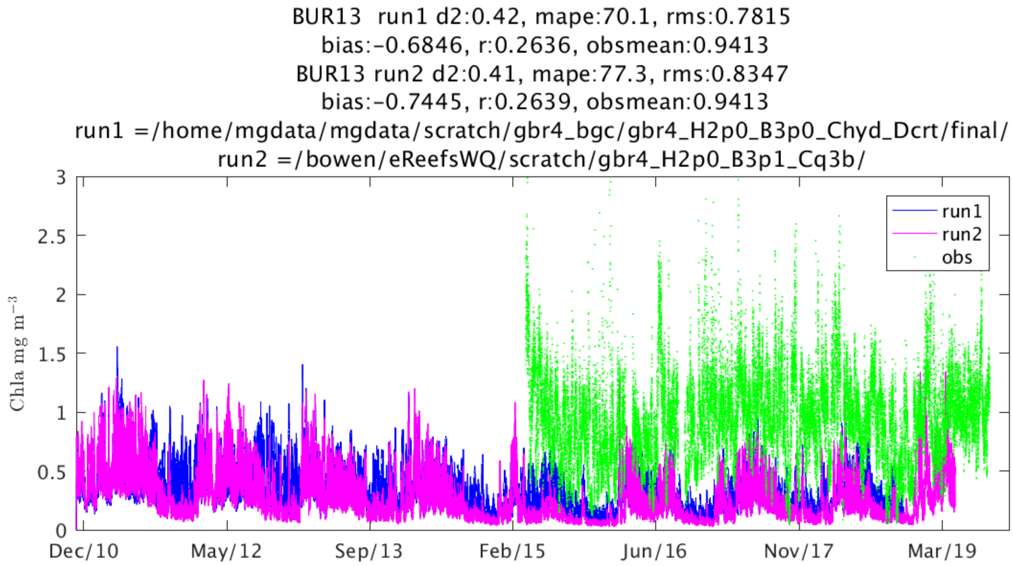
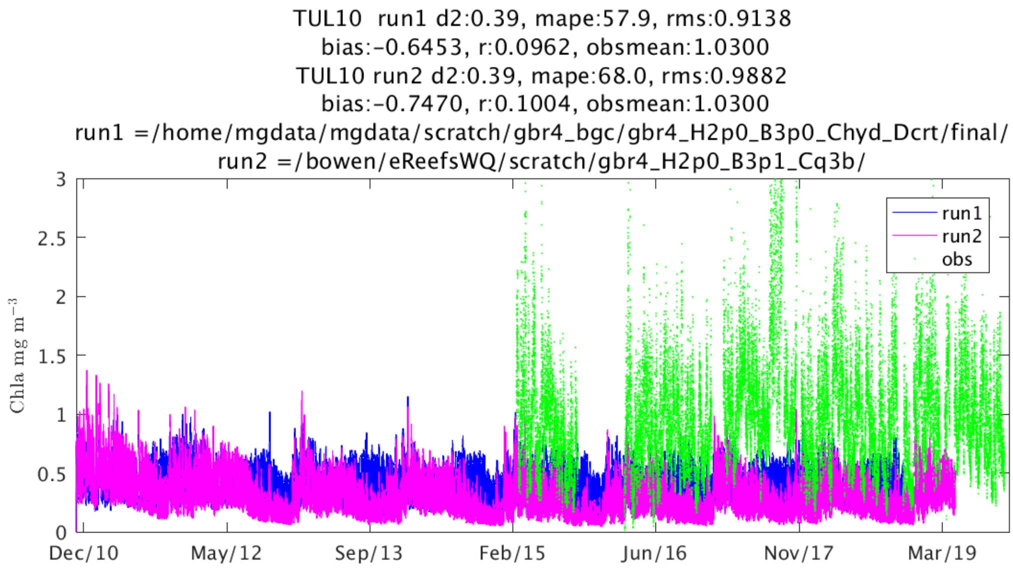
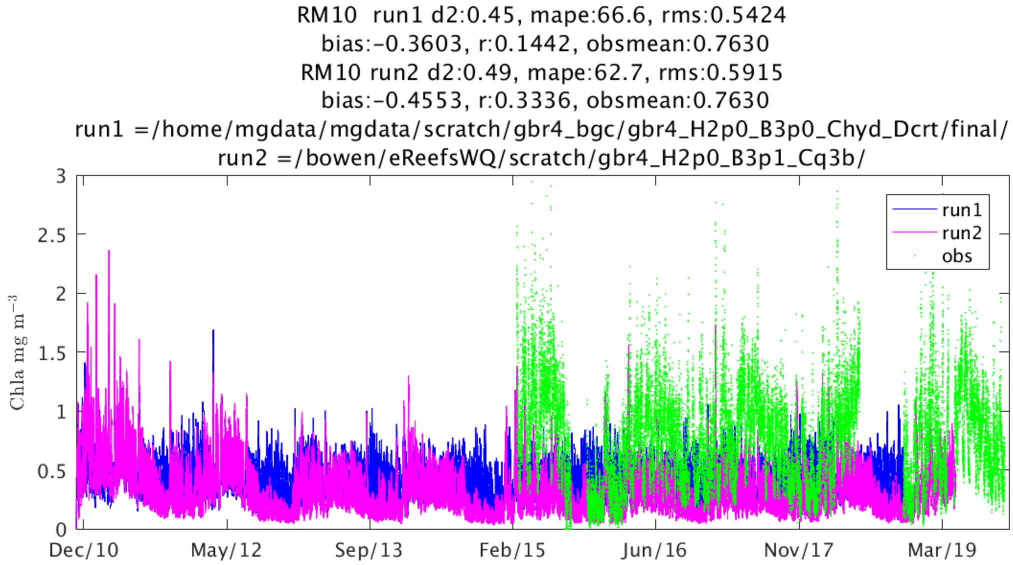


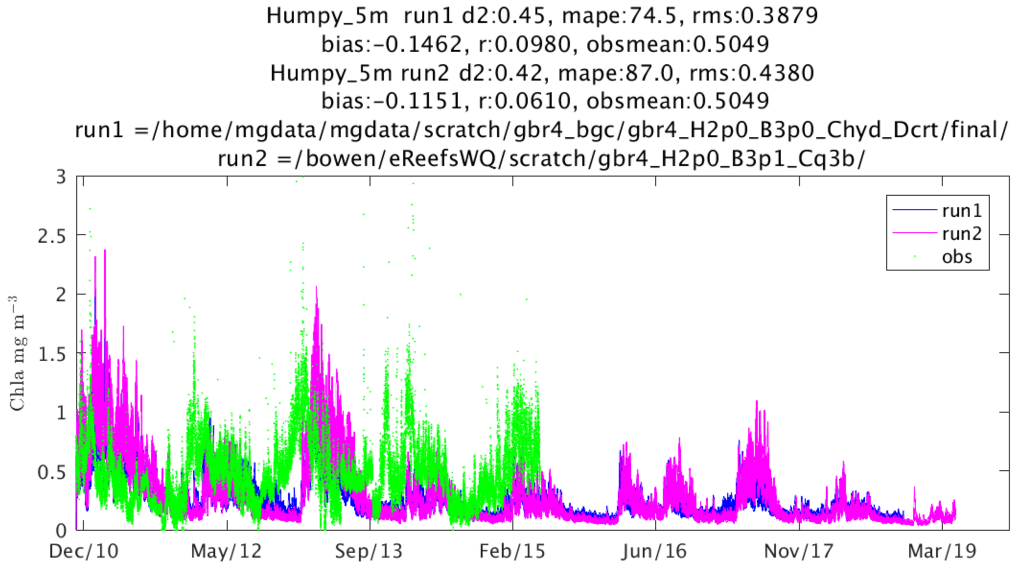
Figure 14 Metrics for AIMS MMP fluorescence against simulated Chl a

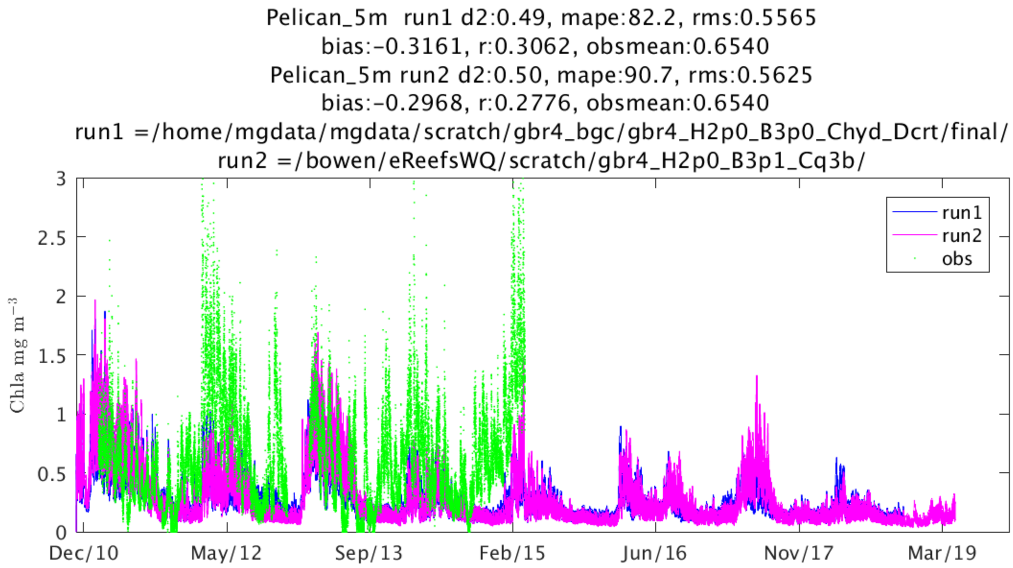


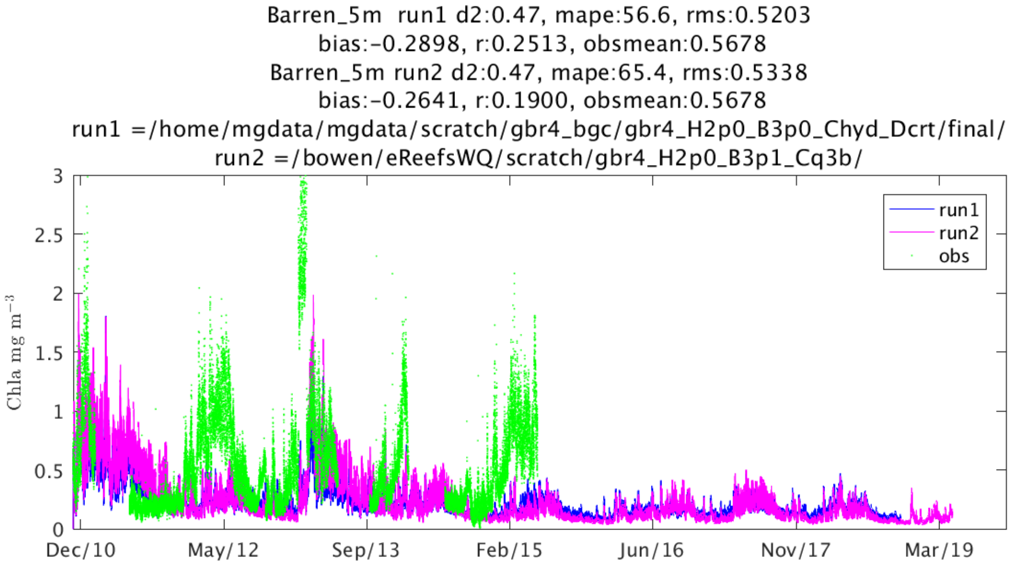




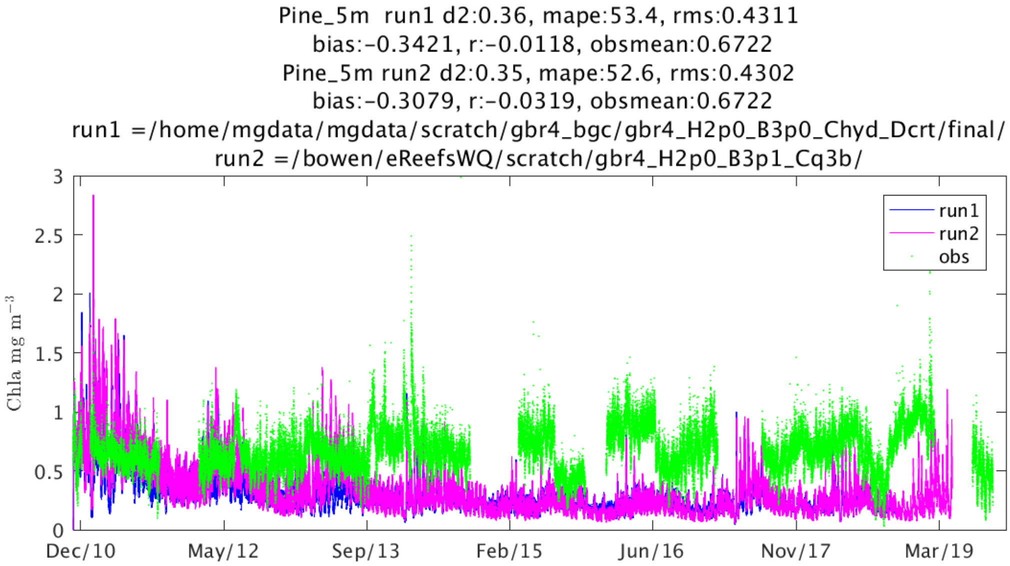

RM10 run1 d2:0.45, mape:66.6, rms:0.5424
bias:-0.3603, r:0.1442, obsmean:0.7630
RM10 run2 d2:0.49, mape:62.7, rms:0.5915
bias:-0.4553, r:0.3336, obsmean:0.7630
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
Chla mg m^-3
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19


Humpy_5m run1 d2:0.45, mape:74.5, rms:0.3879
bias:-0.1462, r:0.0980, obsmean:0.5049
Humpy_5m run2 d2:0.42, mape:87.0, rms:0.4380
bias:-0.1151, r:0.0610, obsmean:0.5049
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
Chla mg m^-3
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19

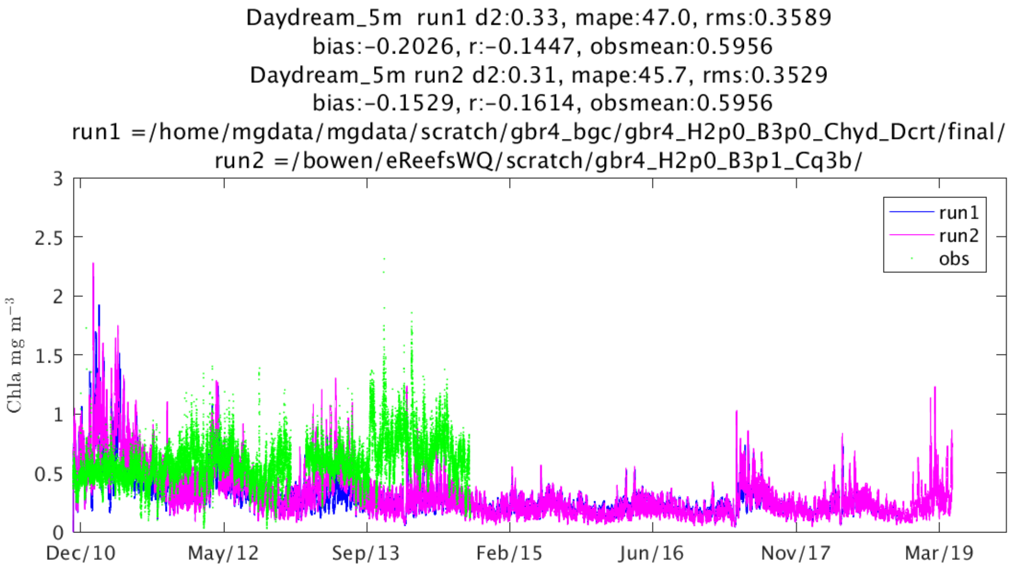

Pelican_5m run1 d2:0.49, mape:82.2, rms:0.5565
bias:-0.3161, r:0.3062, obsmean:0.6540
Pelican_5m run2 d2:0.50, mape:90.7, rms:0.5625
bias:-0.2968, r:0.2776, obsmean:0.6540
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
Chla mg m^-3
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19



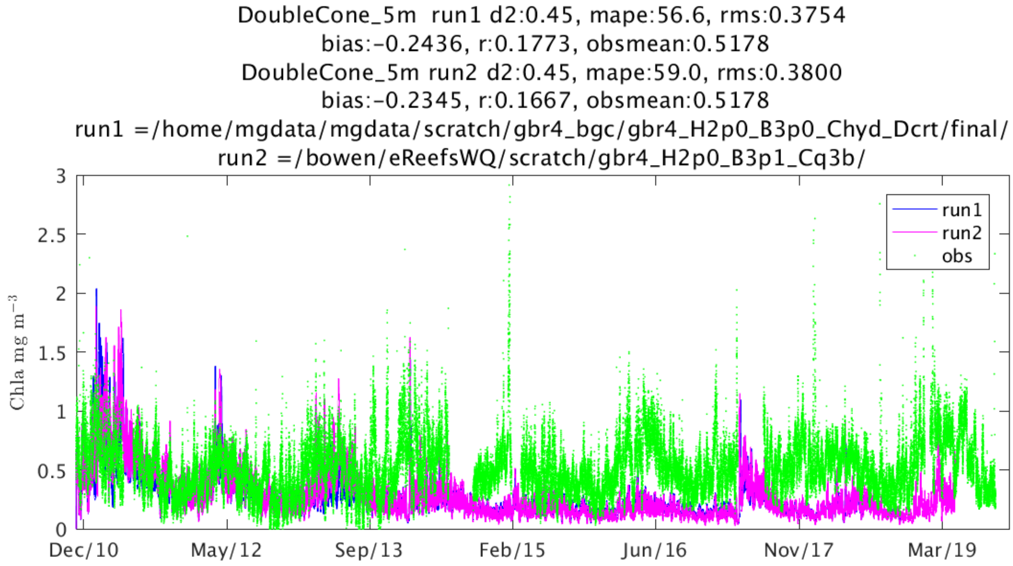
Barren_5m run1 d2:0.47, mape:56.6, rms:0.5203
bias:-0.2898, r:0.2513, obsmean:0.5678
Barren_5m run2 d2:0.47, mape:65.4, rms:0.5338
bias:-0.2641, r:0.1900, obsmean:0.5678
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
Chla mg m^{-3}
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19

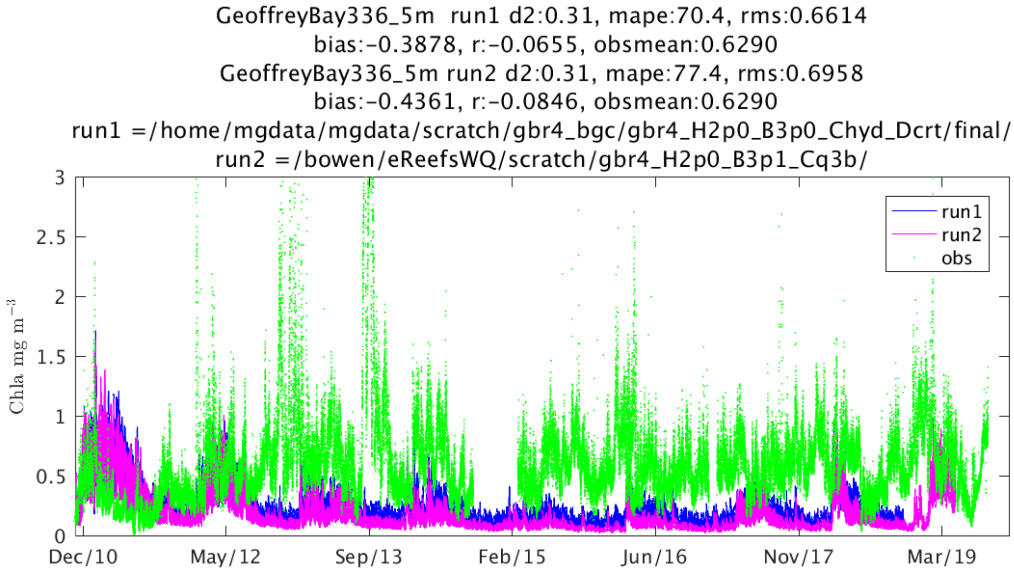


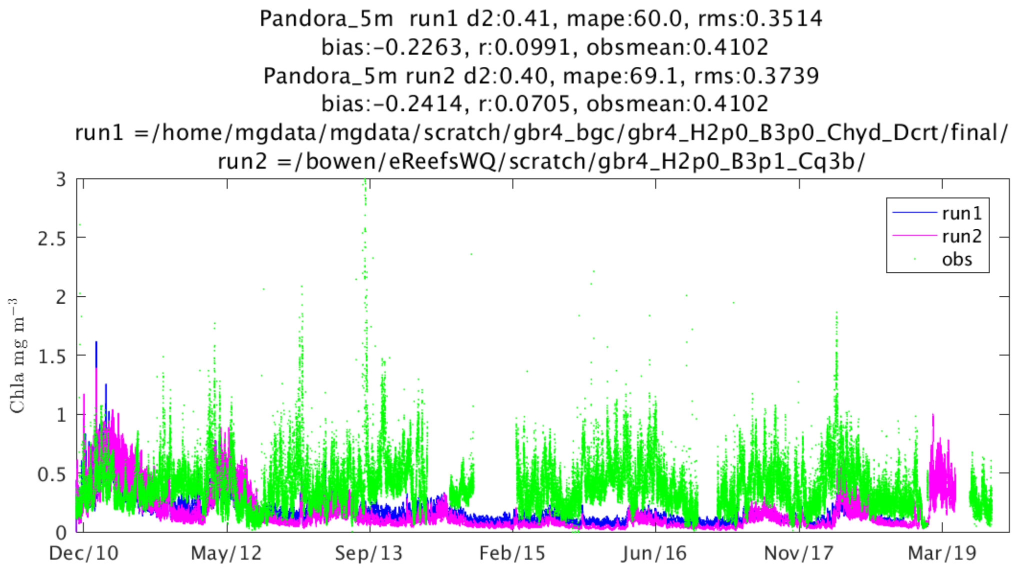
Pine_5m run1 d2:0.36, mape:53.4, rms:0.4311
bias:-0.3421, r:-0.0118, obsmean:0.6722
Pine_5m run2 d2:0.35, mape:52.6, rms:0.4302
bias:-0.3079, r:-0.0319, obsmean:0.6722
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
Chla mg m^{-3}
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19

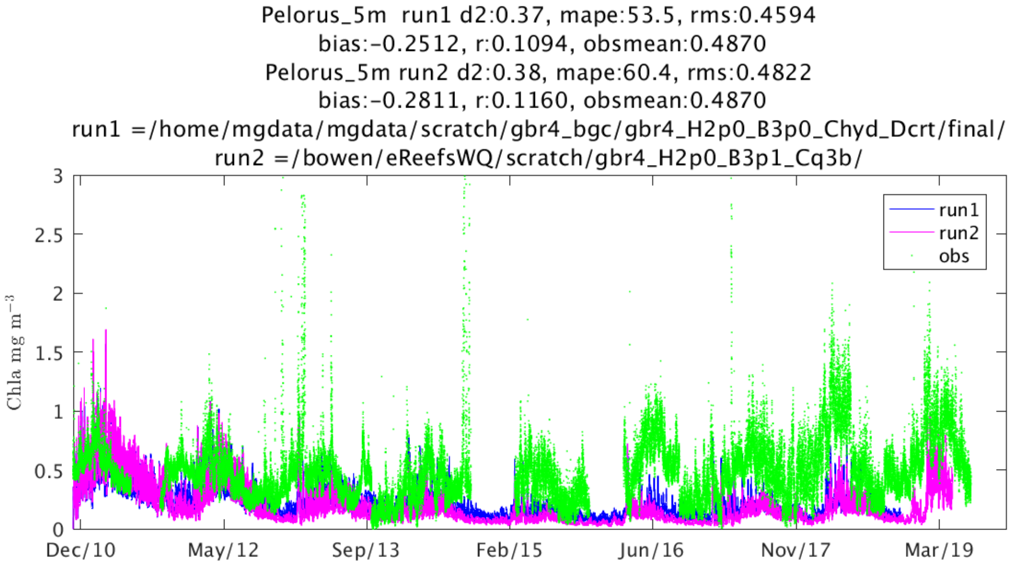


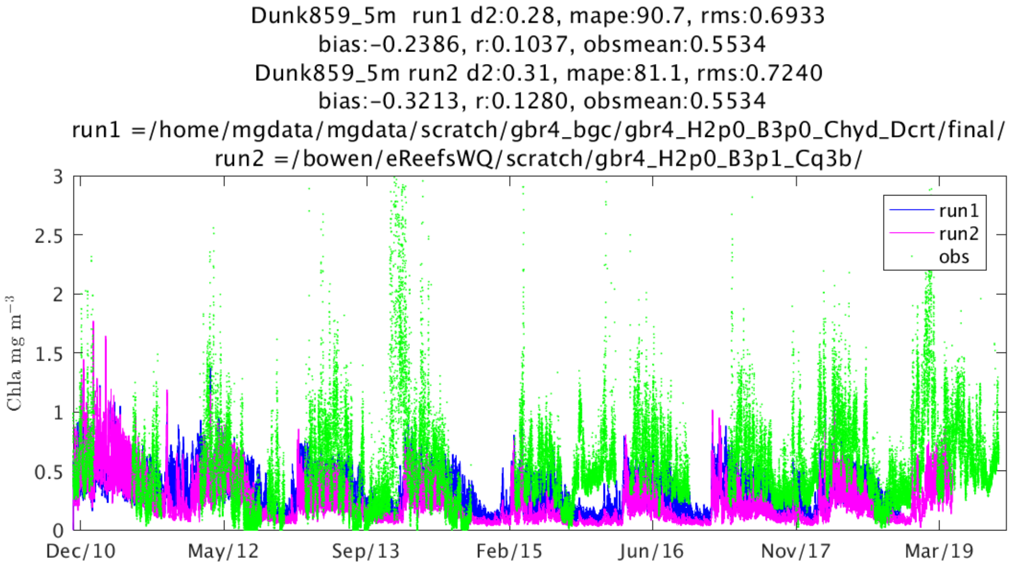
Daydream_5m run1 d2:0.33, mape:47.0, rms:0.3589
bias:-0.2026, r:-0.1447, obsmean:0.5956
Daydream_5m run2 d2:0.31, mape:45.7, rms:0.3529
bias:-0.1529, r:-0.1614, obsmean:0.5956
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
Chla mg m^{-3}
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19

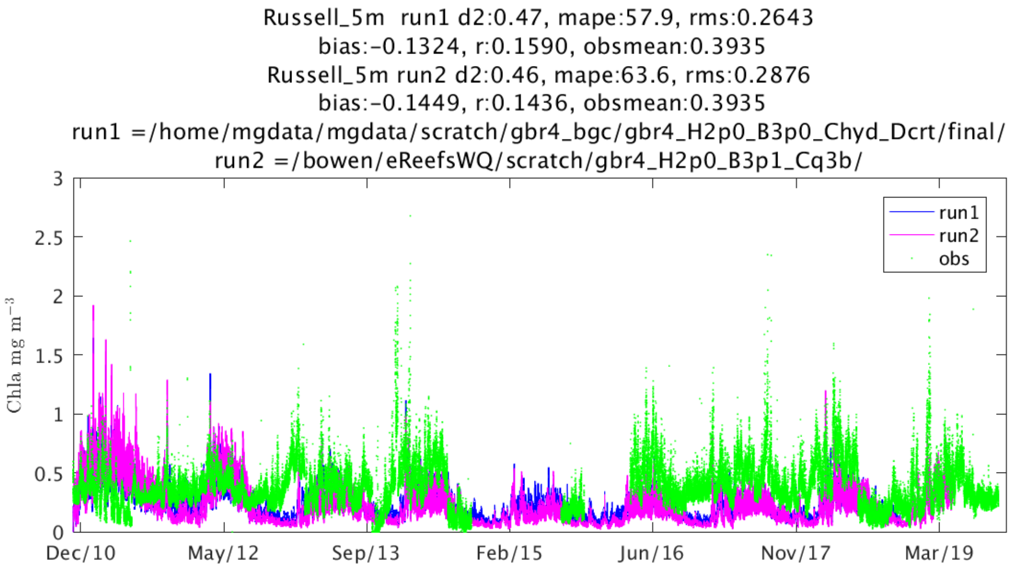

DoubleCone_5m run1 d2:0.45, mape:56.6, rms:0.3754
bias:-0.2436, r:0.1773, obsmean:0.5178
DoubleCone_5m run2 d2:0.45, mape:59.0, rms:0.3800
bias:-0.2345, r:0.1667, obsmean:0.5178
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
Chla mg m-3
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19

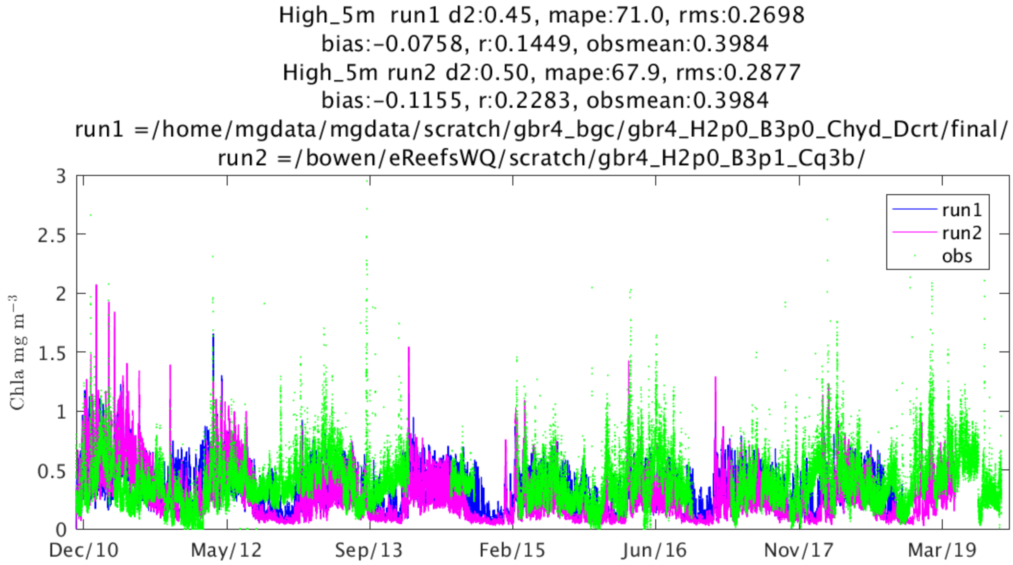

GeoffreyBay336_5m run1 d2:0.31, mape:70.4, rms:0.6614
bias:-0.3878, r:-0.0655, obsmean:0.6290
GeoffreyBay336_5m run2 d2:0.31, mape:77.4, rms:0.6958
bias:-0.4361, r:-0.0846, obsmean:0.6290
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
Chla mg m-3
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19

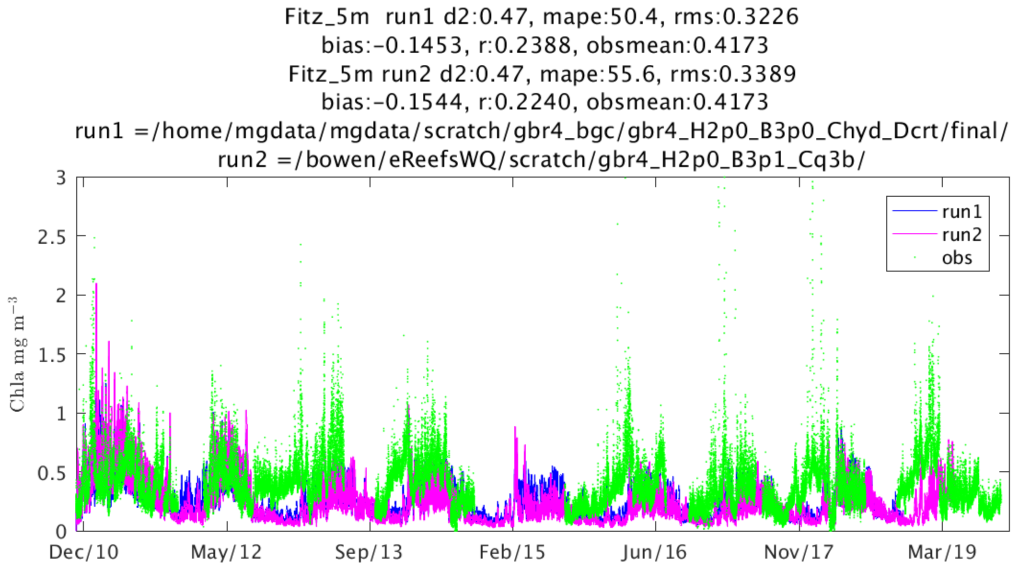

Pandora_5m run1 d2:0.41, mape:60.0, rms:0.3514
bias:-0.2263, r:0.0991, obsmean:0.4102
Pandora_5m run2 d2:0.40, mape:69.1, rms:0.3739
bias:-0.2414, r:0.0705, obsmean:0.4102
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
Chla mg m-3
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19

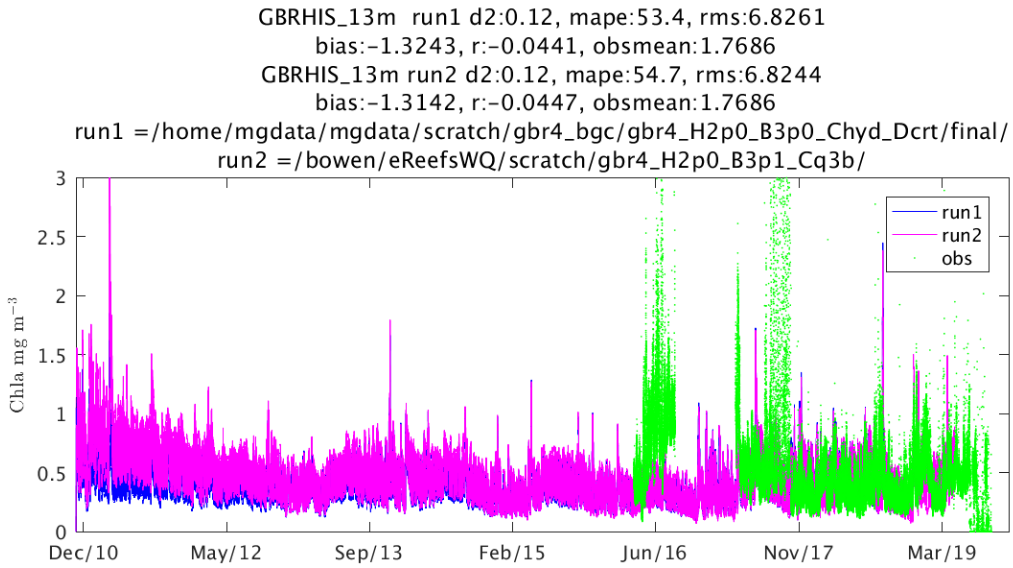

Pelorus_5m run1 d2:0.37, mape:53.5, rms:0.4594
bias:-0.2512, r:0.1094, obsmean:0.4870
Pelorus_5m run2 d2:0.38, mape:60.4, rms:0.4822
bias:-0.2811, r:0.1160, obsmean:0.4870
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
Chla mg m−3
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19

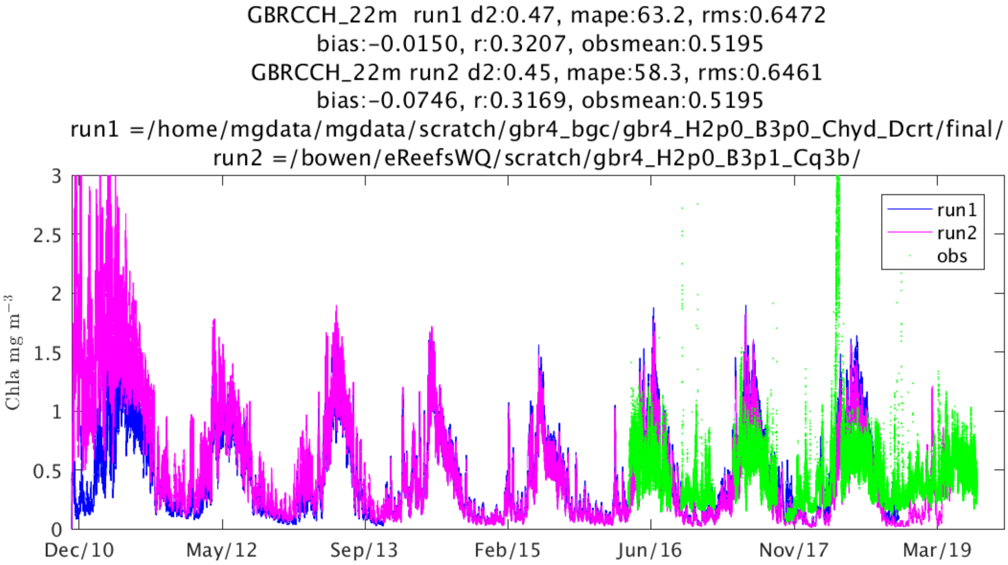

Dunk859_5m run1 d2:0.28, mape:90.7, rms:0.6933
bias:-0.2386, r:0.1037, obsmean:0.5534
Dunk859_5m run2 d2:0.31, mape:81.1, rms:0.7240
bias:-0.3213, r:0.1280, obsmean:0.5534
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
Chla mg m−3
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19

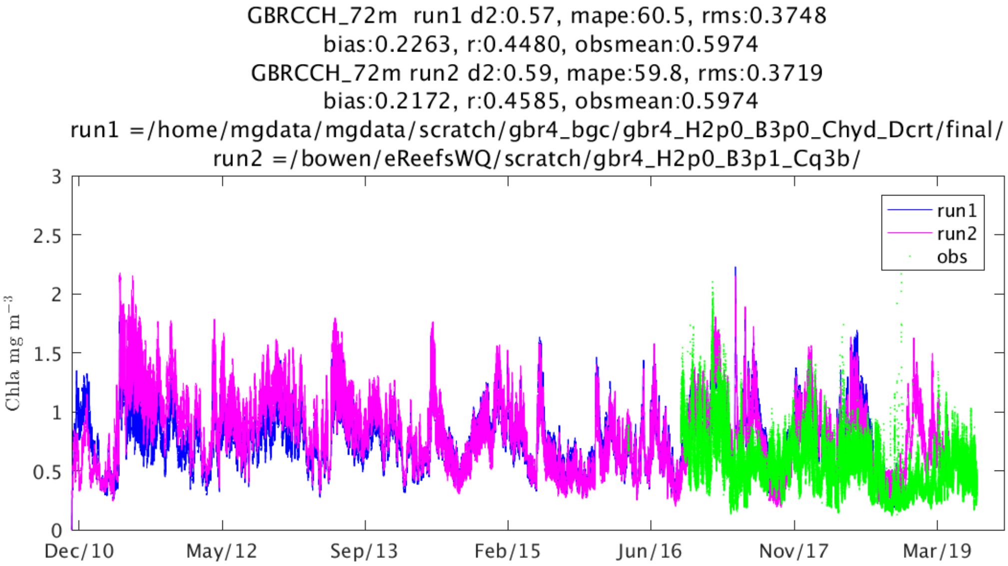

Russell_5m run1 d2:0.47, mape:57.9, rms:0.2643
bias:-0.1324, r:0.1590, obsmean:0.3935
Russell_5m run2 d2:0.46, mape:63.6, rms:0.2876
bias:-0.1449, r:0.1436, obsmean:0.3935
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
Chla mg m−3
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19


High_5m run1 d2:0.45, mape:71.0, rms:0.2698
bias:-0.0758, r:0.1449, obsmean:0.3984
High_5m run2 d2:0.50, mape:67.9, rms:0.2877
bias:-0.1155, r:0.2283, obsmean:0.3984
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
Chla mg m-3
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19

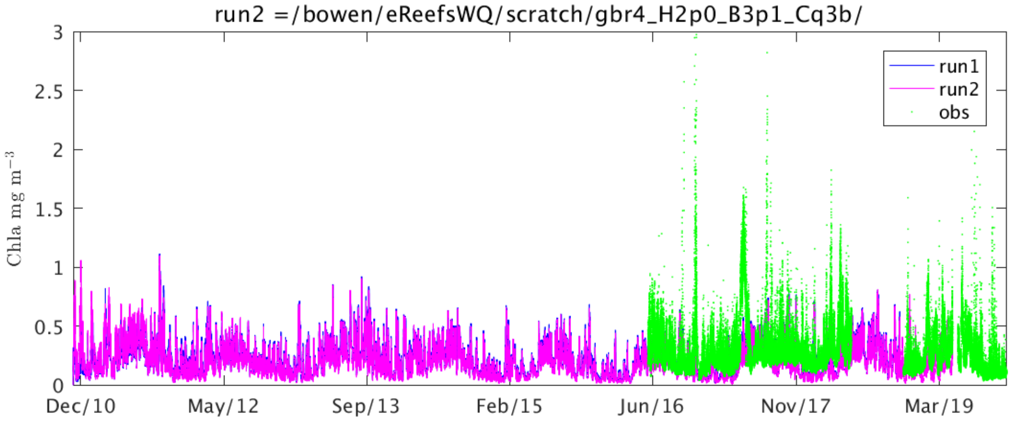

Fitz_5m run1 d2:0.47, mape:50.4, rms:0.3226
bias:-0.1453, r:0.2388, obsmean:0.4173
Fitz_5m run2 d2:0.47, mape:55.6, rms:0.3389
bias:-0.1544, r:0.2240, obsmean:0.4173
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
Chla mg m-3
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19


GBRHIS_13m run1 d2:0.12, mape:53.4, rms:6.8261
bias:-1.3243, r:-0.0441, obsmean:1.7686
GBRHIS_13m run2 d2:0.12, mape:54.7, rms:6.8244
bias:-1.3142, r:-0.0447, obsmean:1.7686
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
Chla mg m-3
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19

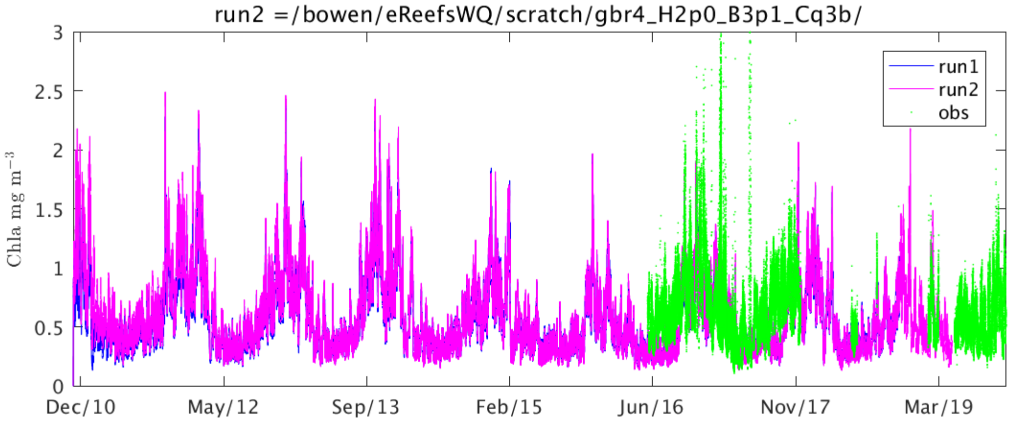

GBRCCH_22m run1 d2:0.47, mape:63.2, rms:0.6472
bias:-0.0150, r:0.3207, obsmean:0.5195
GBRCCH_22m run2 d2:0.45, mape:58.3, rms:0.6461
bias:-0.0746, r:0.3169, obsmean:0.5195
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
Chla mg m^{-3}
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19


GBRCCH_72m run1 d2:0.57, mape:60.5, rms:0.3748
bias:0.2263, r:0.4480, obsmean:0.5974
GBRCCH_72m run2 d2:0.59, mape:59.8, rms:0.3719
bias:0.2172, r:0.4585, obsmean:0.5974
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
Chla mg m^{-3}
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19

palm_passage_15 run1 d2:0.45, mape:51.2, rms:0.2571
bias:-0.1158, r:0.2580, obsmean:0.3190
palm_passage_15 run2 d2:0.44, mape:52.8, rms:0.2631
bias:-0.1296, r:0.2584, obsmean:0.3190
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/



palm_passage_60 run1 d2:0.32, mape:41.9, rms:0.5500
bias:0.0229, r:0.1867, obsmean:0.5965
palm_passage_60 run2 d2:0.32, mape:44.3, rms:0.5542
bias:0.0361, r:0.1828, obsmean:0.5965
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/



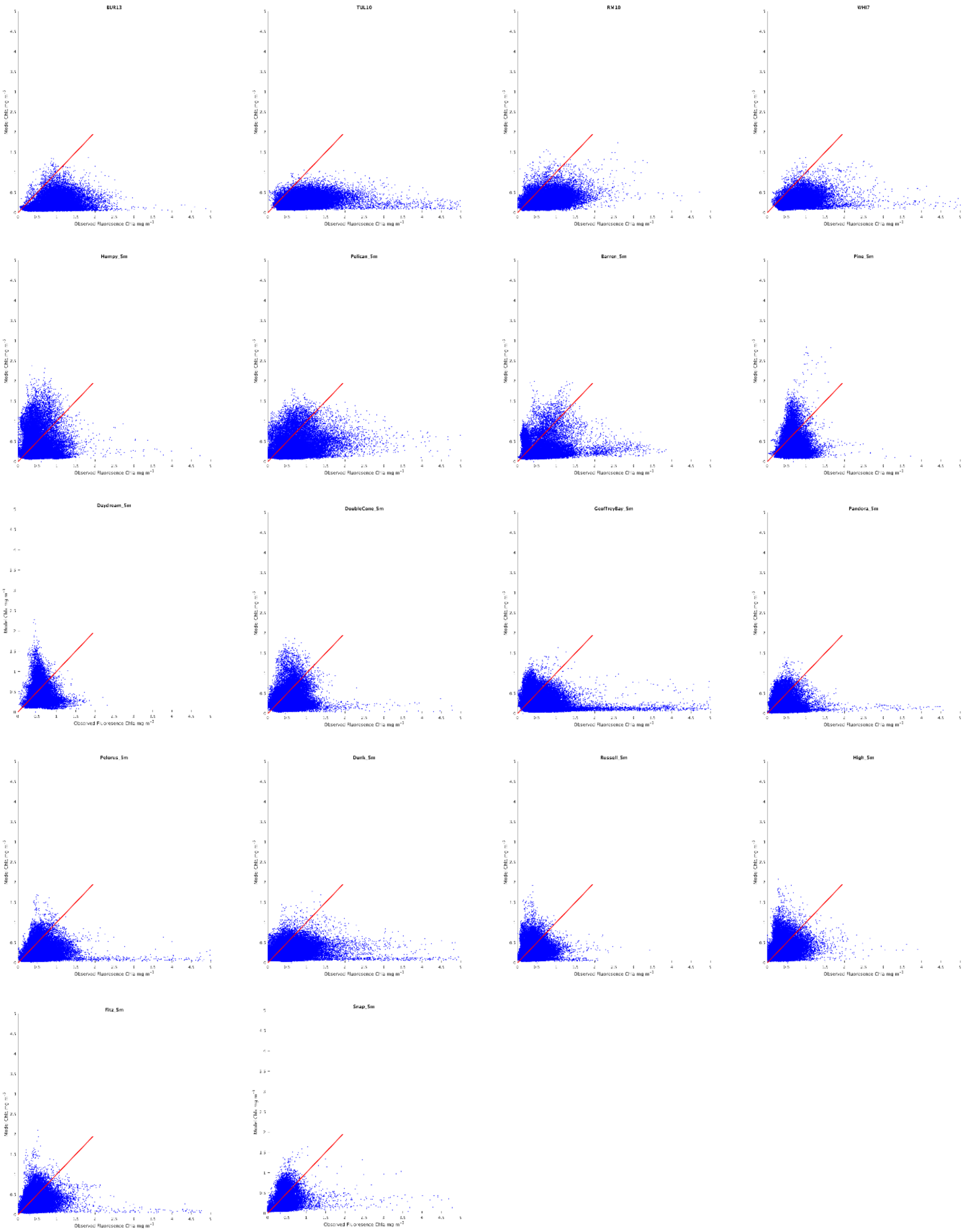


Figure 15 Scatter plot of observed Fluorescence for AIMS MMP assessment against simulated Chl a for model version 3p1

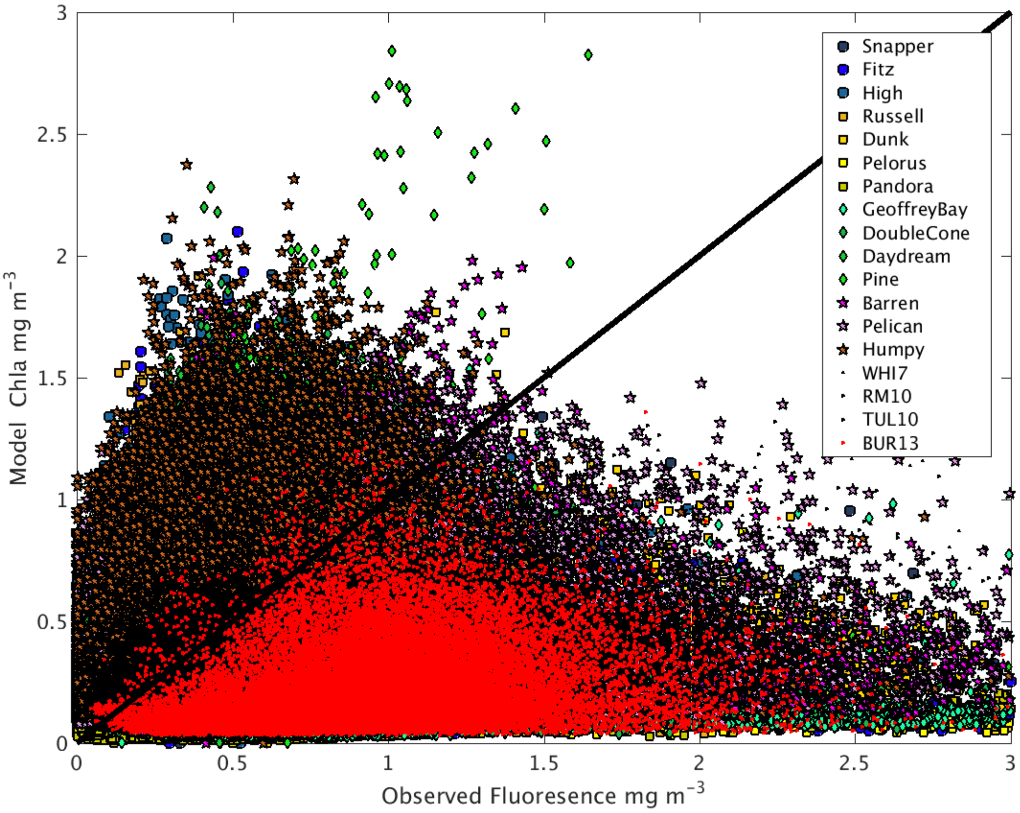


Figure 16 Scatter plot of observed Fluorescence for AIMS MMP assessment against simulated Chl a for model version 3p1

18. Simulated Turbidity assessment against AIMS MMP Turbidity

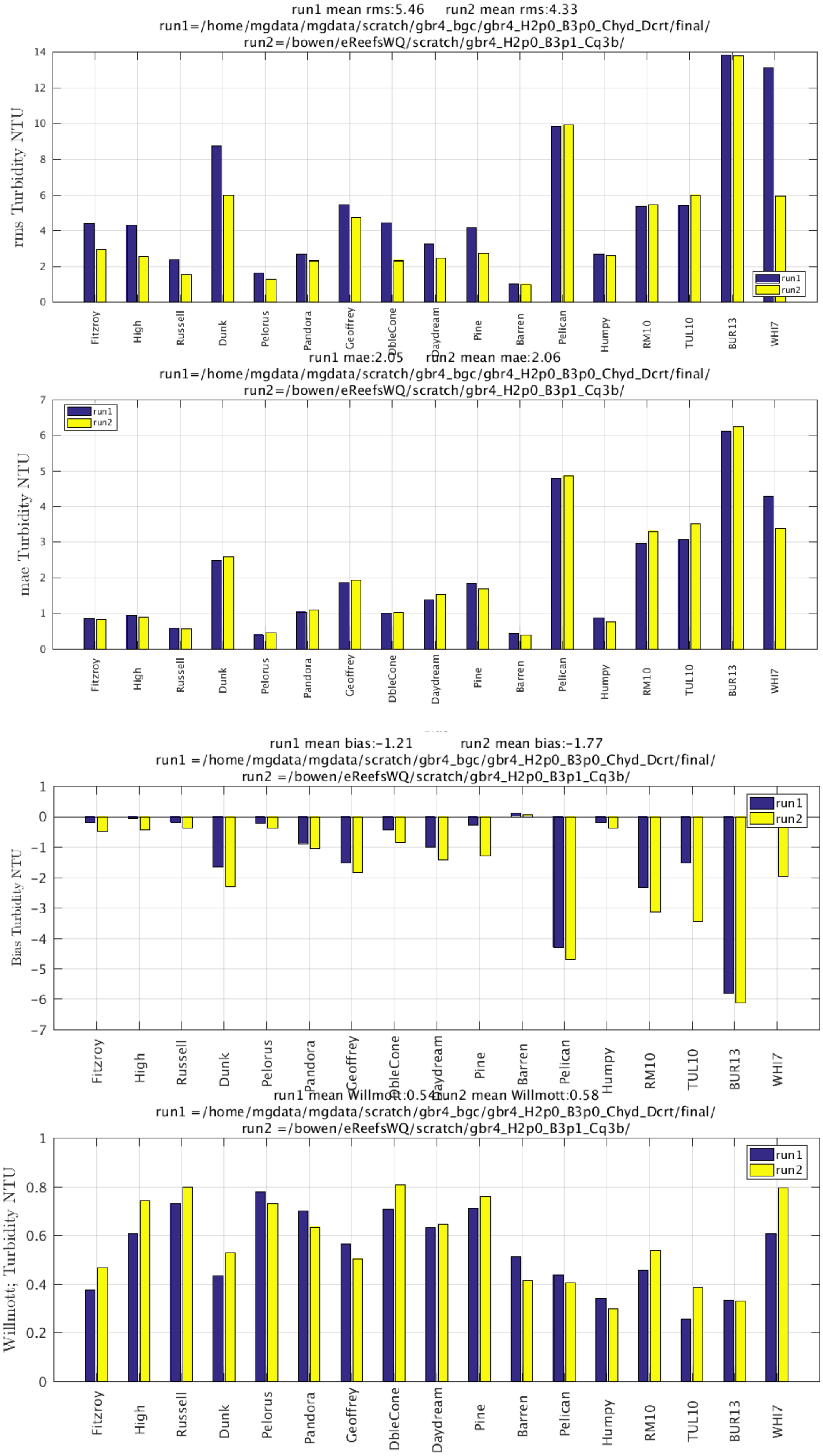
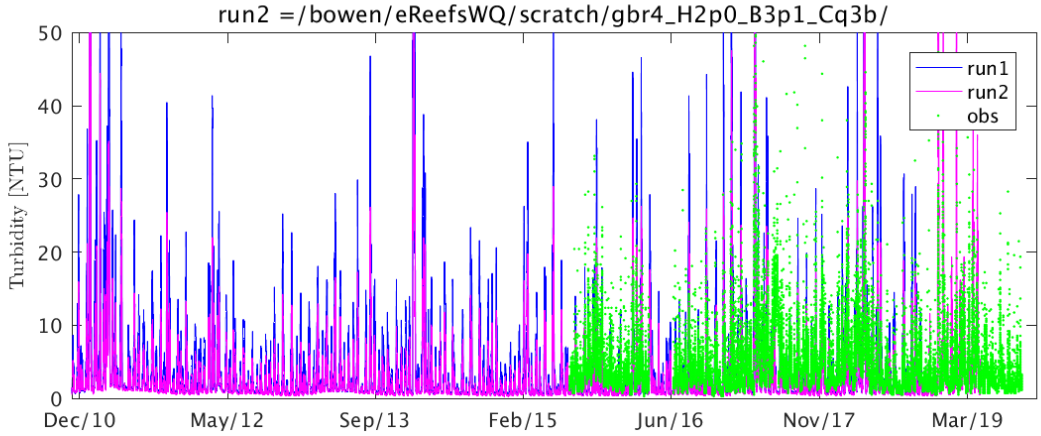
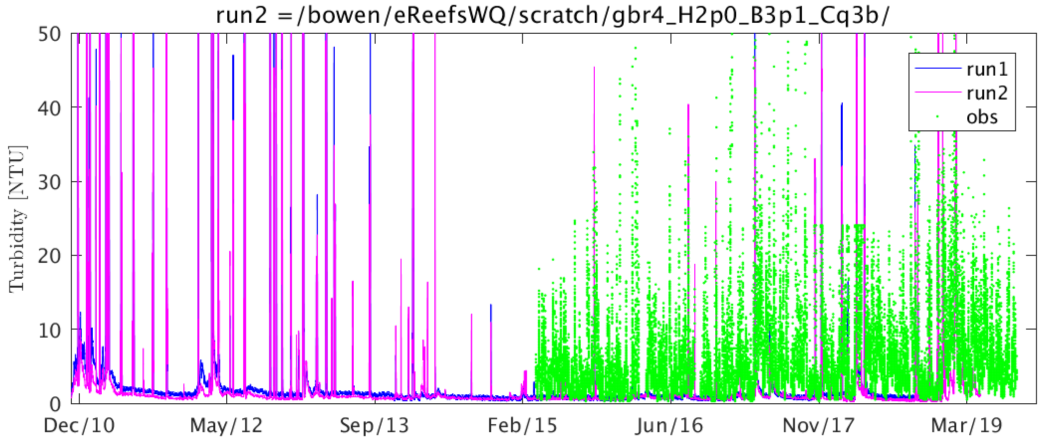


Figure 17 Metrics for AIMS MMP sites simulated turbidity against observations

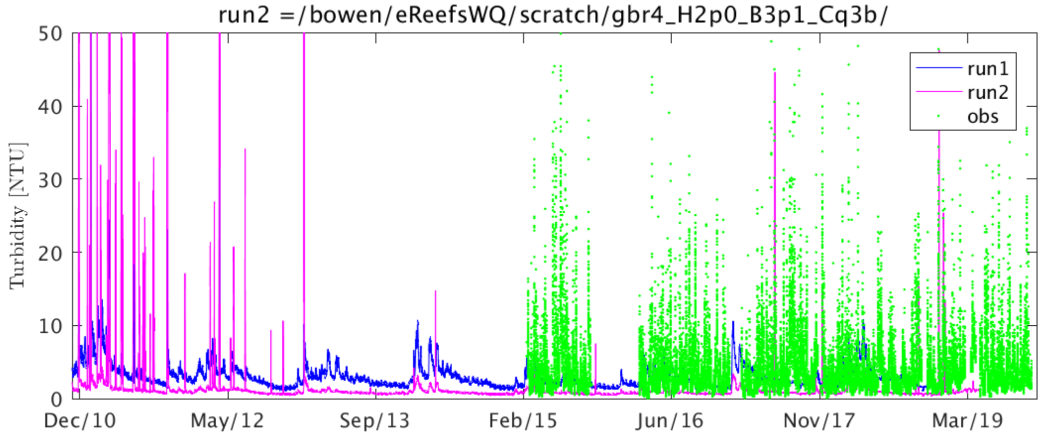
WHI7 run1 d2:0.61, mape:68.7, rms:13.1357
bias:-0.1911, r:0.7092, obsmean:5.0670
WHI7 run2 d2:0.80, mape:63.7, rms:5.9513
bias:-1.9591, r:0.7205, obsmean:5.0670
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/

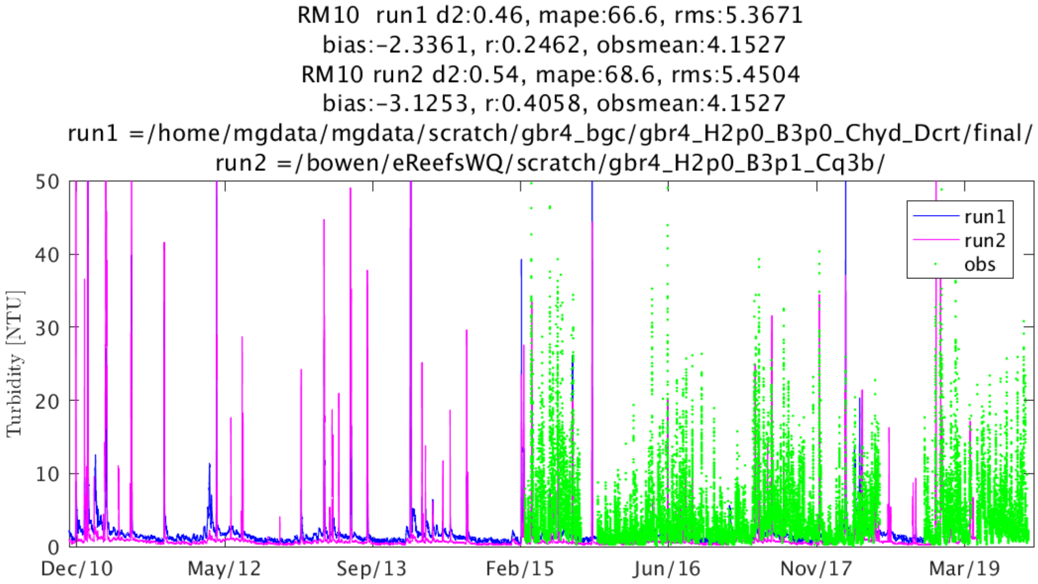


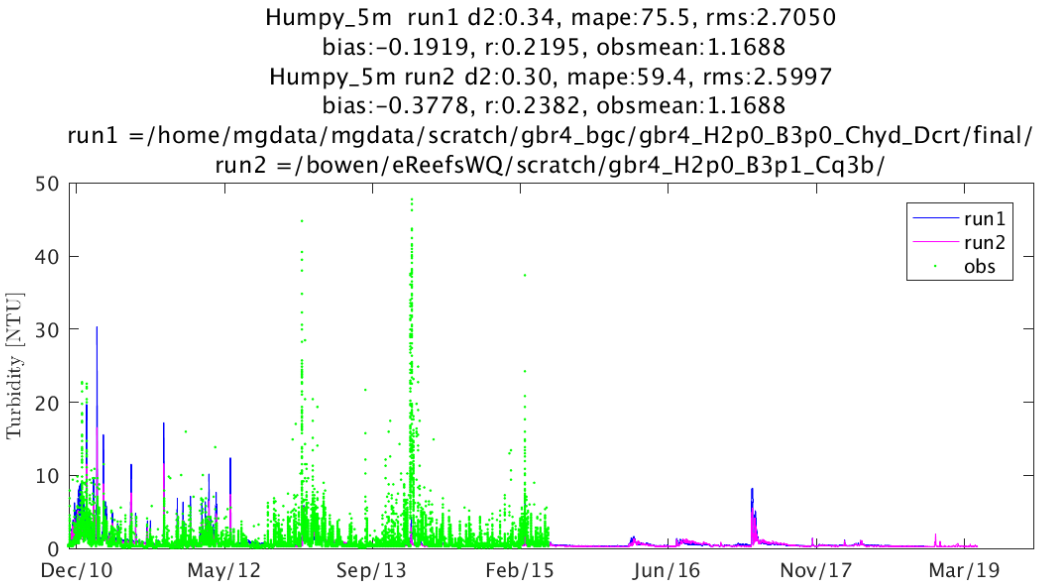
BUR13 run1 d2:0.34, mape:68.8, rms:13.8308
bias:-5.8114, r:0.1551, obsmean:7.2066
BUR13 run2 d2:0.33, mape:72.4, rms:13.7723
bias:-6.1140, r:0.1815, obsmean:7.2066
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/

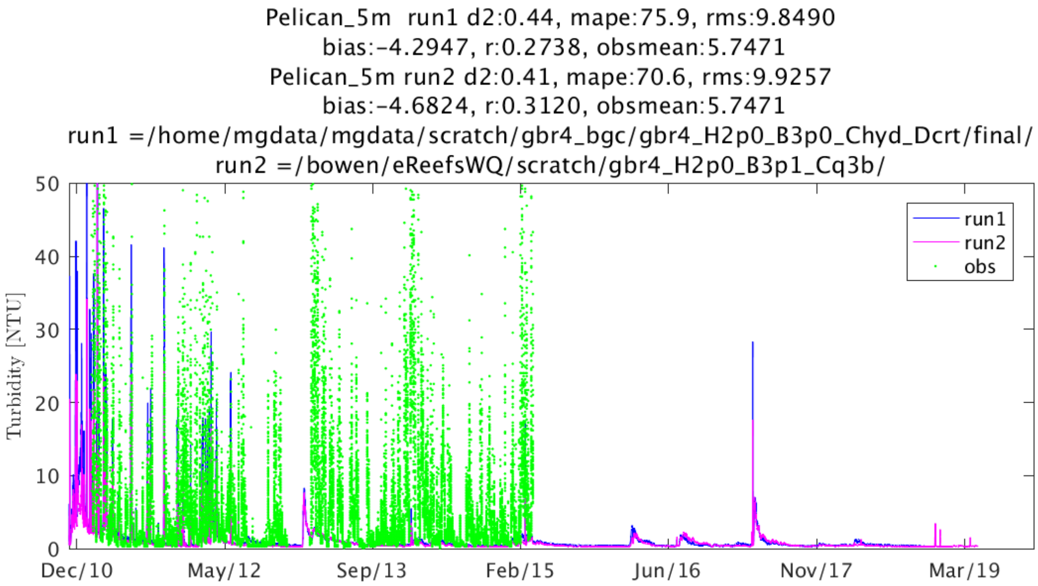


TUL10 run1 d2:0.26, mape:100.4, rms:5.4290
bias:-1.5152, r:-0.1061, obsmean:4.4004
TUL10 run2 d2:0.39, mape:66.9, rms:6.0021
bias:-3.4364, r:0.1106, obsmean:4.4004
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/

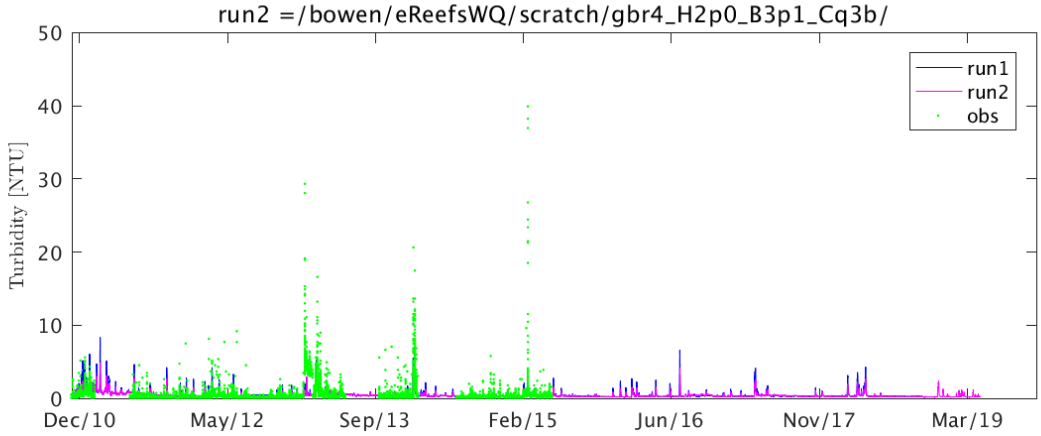



RM10 run1 d2:0.46, mape:66.6, rms:5.3671
bias:-2.3361, r:0.2462, obsmean:4.1527
RM10 run2 d2:0.54, mape:68.6, rms:5.4504
bias:-3.1253, r:0.4058, obsmean:4.1527
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
Turbidity [NTU]
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19

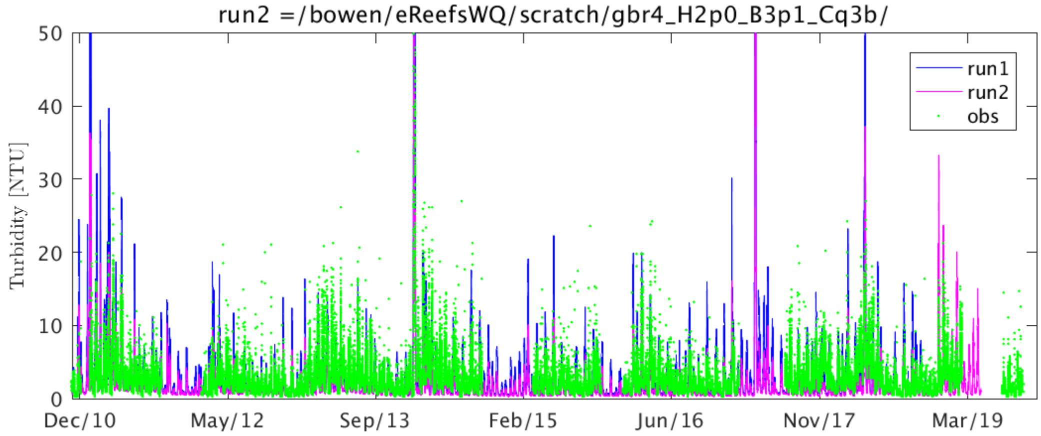

Humpy_5m run1 d2:0.34, mape:75.5, rms:2.7050
bias:-0.1919, r:0.2195, obsmean:1.1688
Humpy_5m run2 d2:0.30, mape:59.4, rms:2.5997
bias:-0.3778, r:0.2382, obsmean:1.1688
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
Turbidity [NTU]
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19


Pelican_5m run1 d2:0.44, mape:75.9, rms:9.8490
bias:-4.2947, r:0.2738, obsmean:5.7471
Pelican_5m run2 d2:0.41, mape:70.6, rms:9.9257
bias:-4.6824, r:0.3120, obsmean:5.7471
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
Turbidity [NTU]
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19

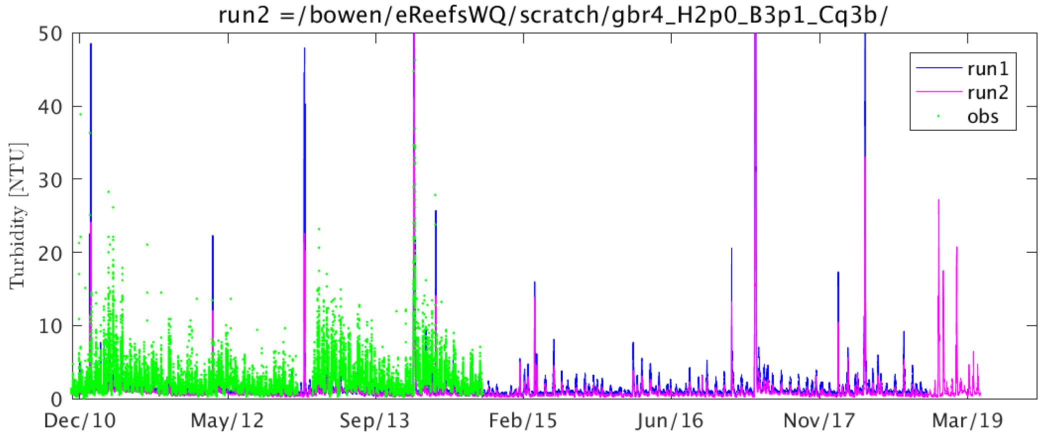
Barren_5m run1 d2:0.51, mape:169.0, rms:1.0269
bias:0.1264, r:0.3853, obsmean:0.4739
Barren_5m run2 d2:0.42, mape:153.5, rms:1.0023
bias:0.0529, r:0.3765, obsmean:0.4739
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/

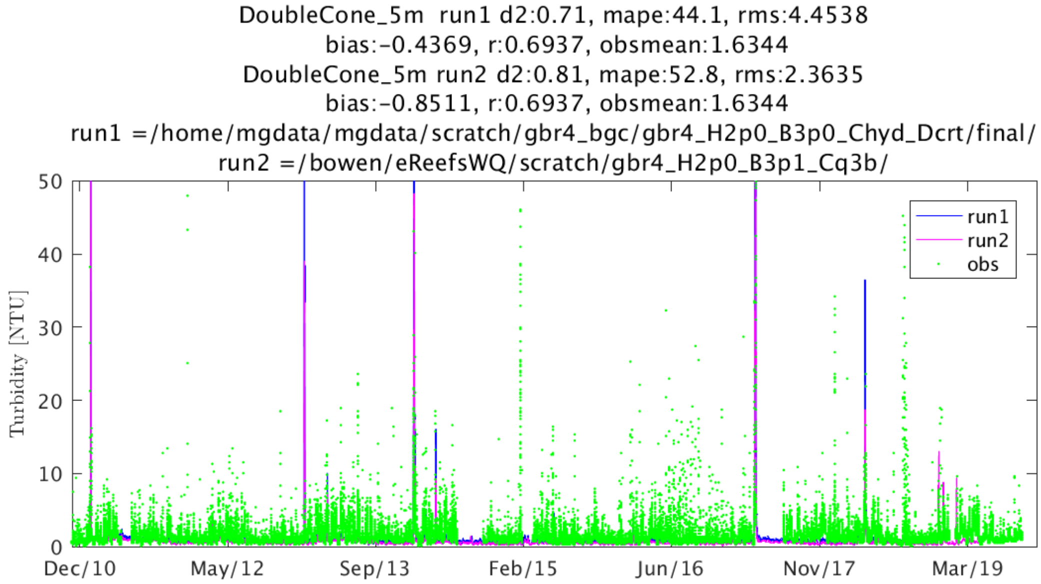


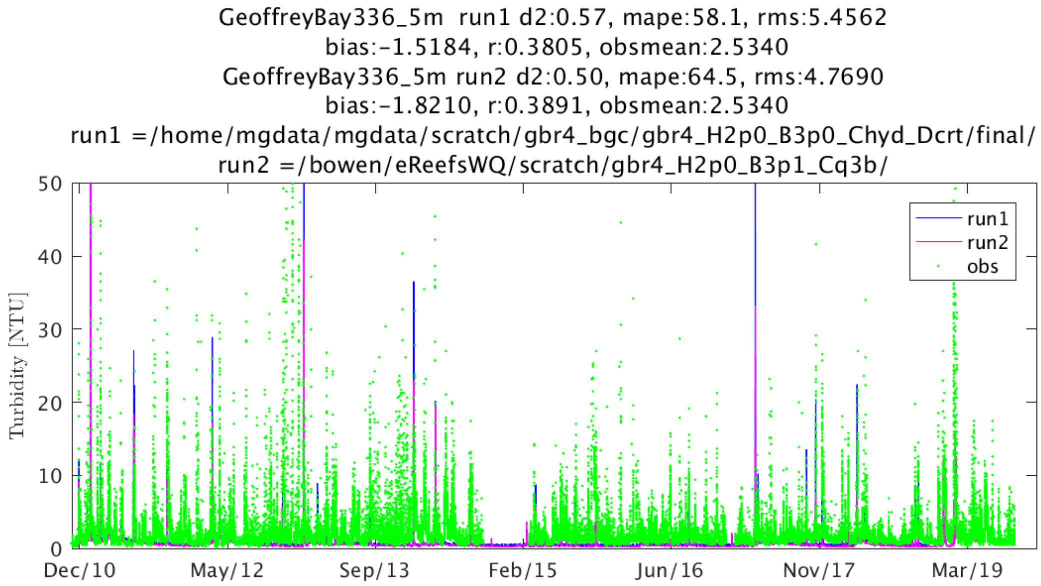
Pine_5m run1 d2:0.71, mape:53.2, rms:4.1669
bias:-0.2636, r:0.6315, obsmean:2.9938
Pine_5m run2 d2:0.76, mape:51.7, rms:2.7331
bias:-1.2873, r:0.6501, obsmean:2.9938
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/

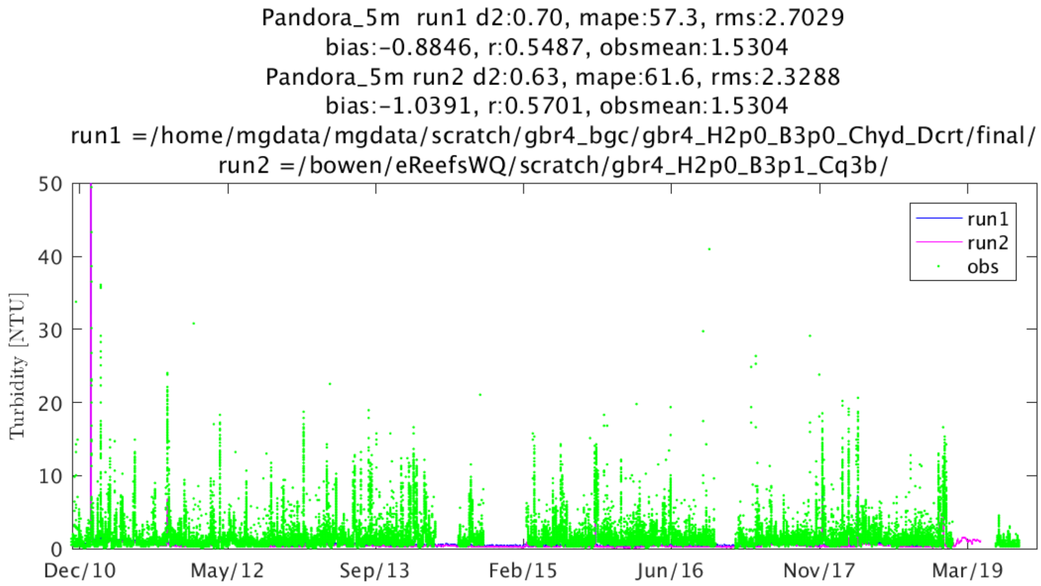


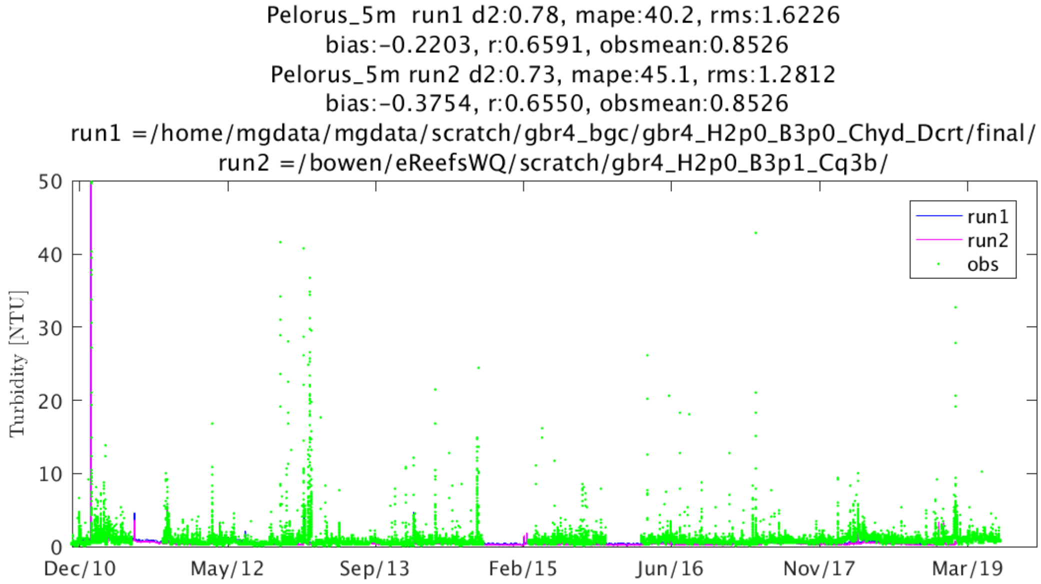
Daydream_5m run1 d2:0.63, mape:46.0, rms:3.2591
bias:-0.9939, r:0.5118, obsmean:2.4123
Daydream_5m run2 d2:0.65, mape:54.1, rms:2.4538
bias:-1.4150, r:0.5312, obsmean:2.4123
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/

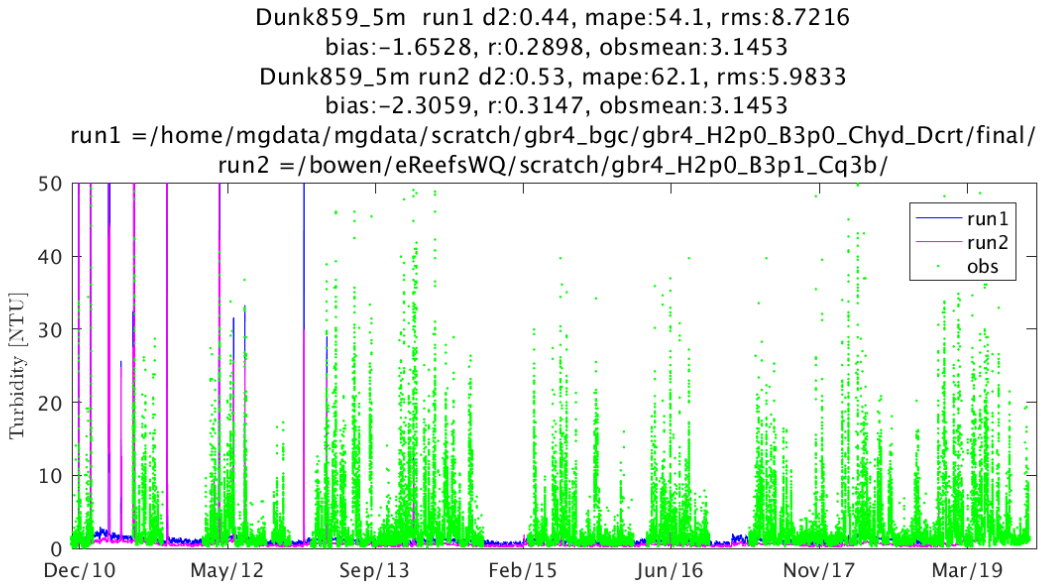


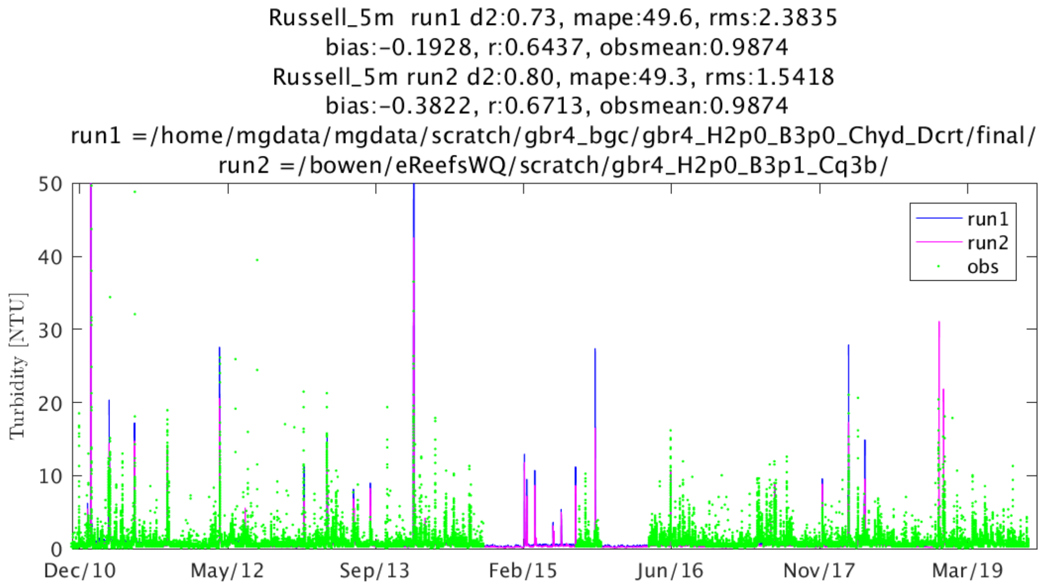

DoubleCone_5m run1 d2:0.71, mape:44.1, rms:4.4538
bias:-0.4369, r:0.6937, obsmean:1.6344
DoubleCone_5m run2 d2:0.81, mape:52.8, rms:2.3635
bias:-0.8511, r:0.6937, obsmean:1.6344
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
Turbidity [NTU]
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19

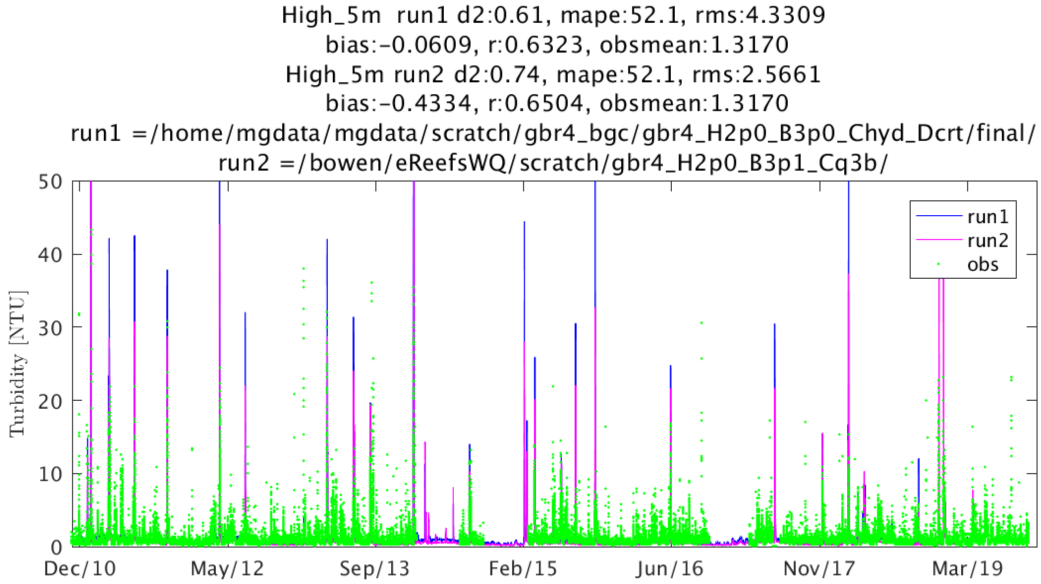

GeoffreyBay336_5m run1 d2:0.57, mape:58.1, rms:5.4562
bias:-1.5184, r:0.3805, obsmean:2.5340
GeoffreyBay336_5m run2 d2:0.50, mape:64.5, rms:4.7690
bias:-1.8210, r:0.3891, obsmean:2.5340
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
Turbidity [NTU]
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19

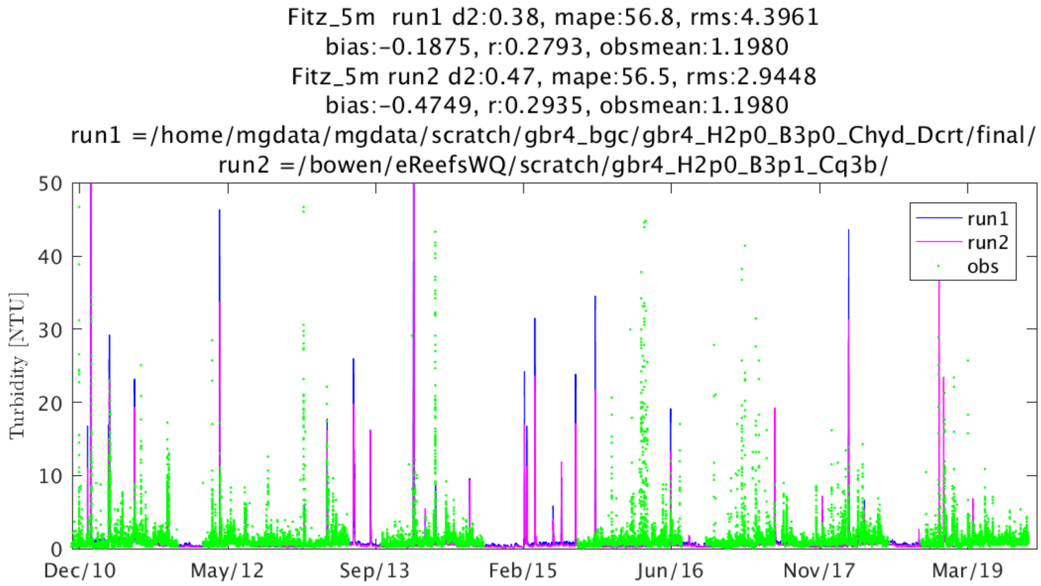

Pandora_5m run1 d2:0.70, mape:57.3, rms:2.7029
bias:-0.8846, r:0.5487, obsmean:1.5304
Pandora_5m run2 d2:0.63, mape:61.6, rms:2.3288
bias:-1.0391, r:0.5701, obsmean:1.5304
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
Turbidity [NTU]
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19


Pelorus_5m run1 d2:0.78, mape:40.2, rms:1.6226
bias:-0.2203, r:0.6591, obsmean:0.8526
Pelorus_5m run2 d2:0.73, mape:45.1, rms:1.2812
bias:-0.3754, r:0.6550, obsmean:0.8526
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
Turbidity [NTU]
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19


Dunk859_5m run1 d2:0.44, mape:54.1, rms:8.7216
bias:-1.6528, r:0.2898, obsmean:3.1453
Dunk859_5m run2 d2:0.53, mape:62.1, rms:5.9833
bias:-2.3059, r:0.3147, obsmean:3.1453
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
Turbidity [NTU]
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19


Russell_5m run1 d2:0.73, mape:49.6, rms:2.3835
bias:-0.1928, r:0.6437, obsmean:0.9874
Russell_5m run2 d2:0.80, mape:49.3, rms:1.5418
bias:-0.3822, r:0.6713, obsmean:0.9874
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
Turbidity [NTU]
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19


High_5m run1 d2:0.61, mape:52.1, rms:4.3309
bias:-0.0609, r:0.6323, obsmean:1.3170
High_5m run2 d2:0.74, mape:52.1, rms:2.5661
bias:-0.4334, r:0.6504, obsmean:1.3170
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
Turbidity [NTU]
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19


Fitz_5m run1 d2:0.38, mape:56.8, rms:4.3961
bias:-0.1875, r:0.2793, obsmean:1.1980
Fitz_5m run2 d2:0.47, mape:56.5, rms:2.9448
bias:-0.4749, r:0.2935, obsmean:1.1980
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
Turbidity [NTU]
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19

19. Simulated NOx assessment against NRS: Yongala and NSI

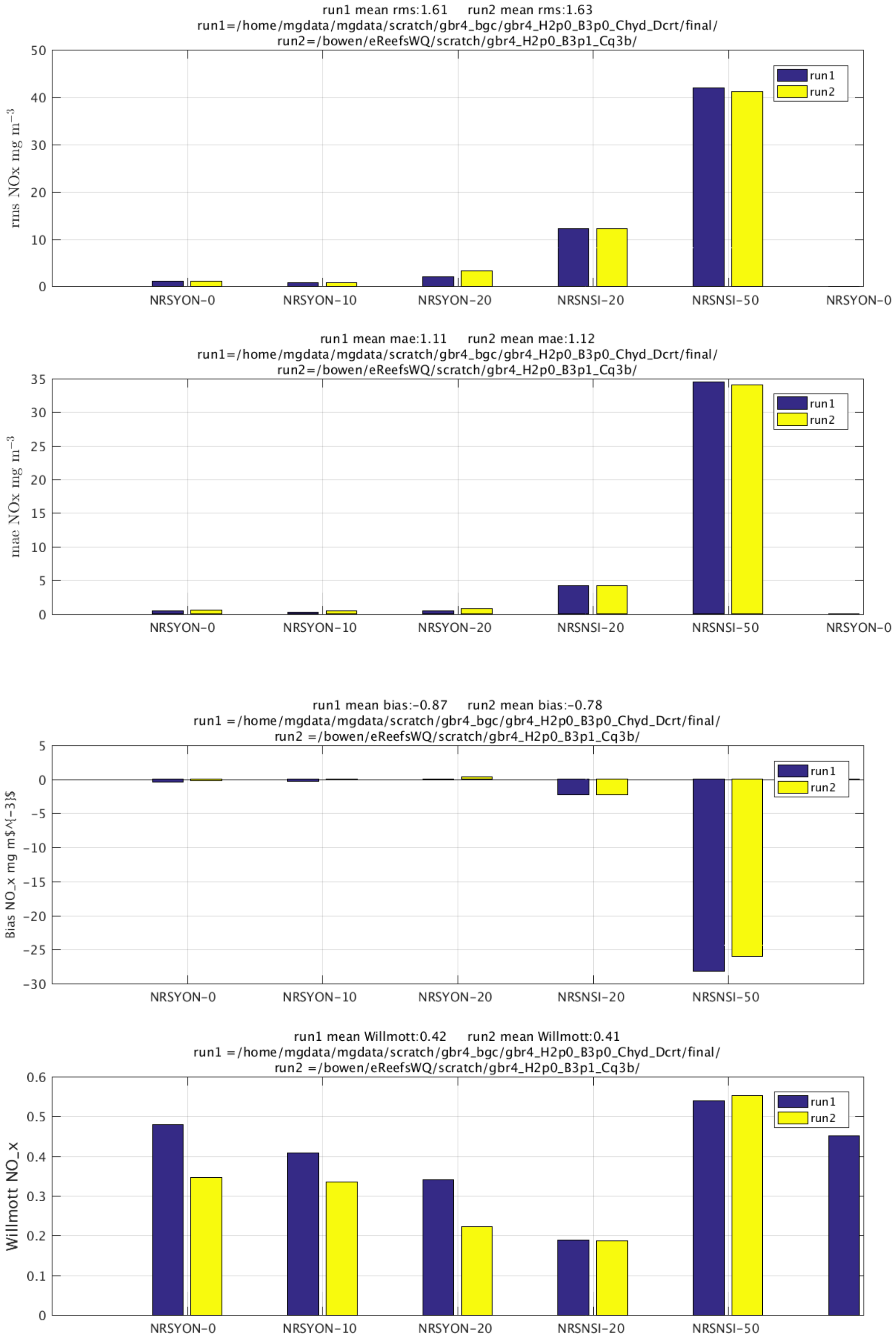
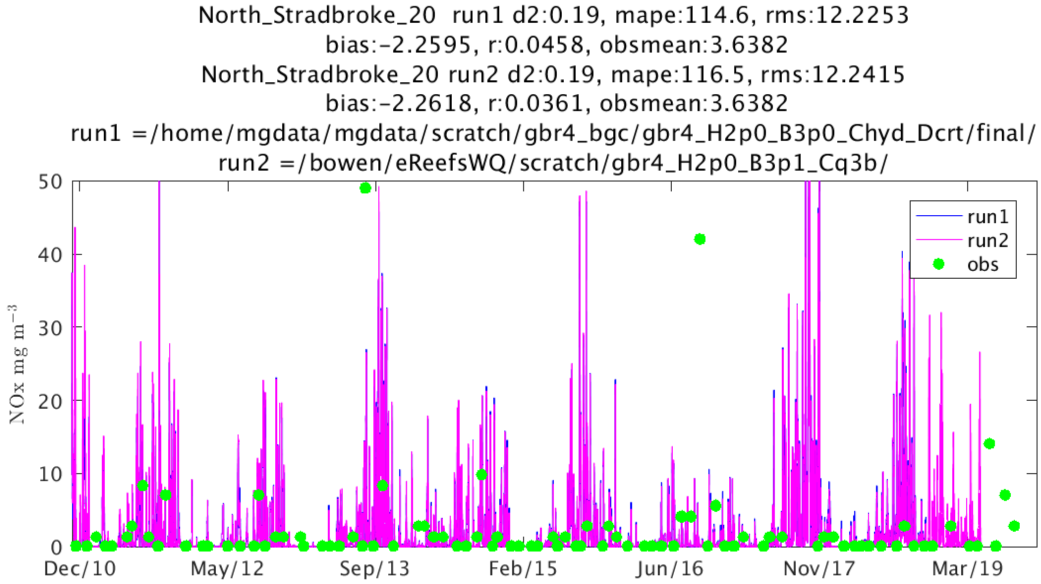
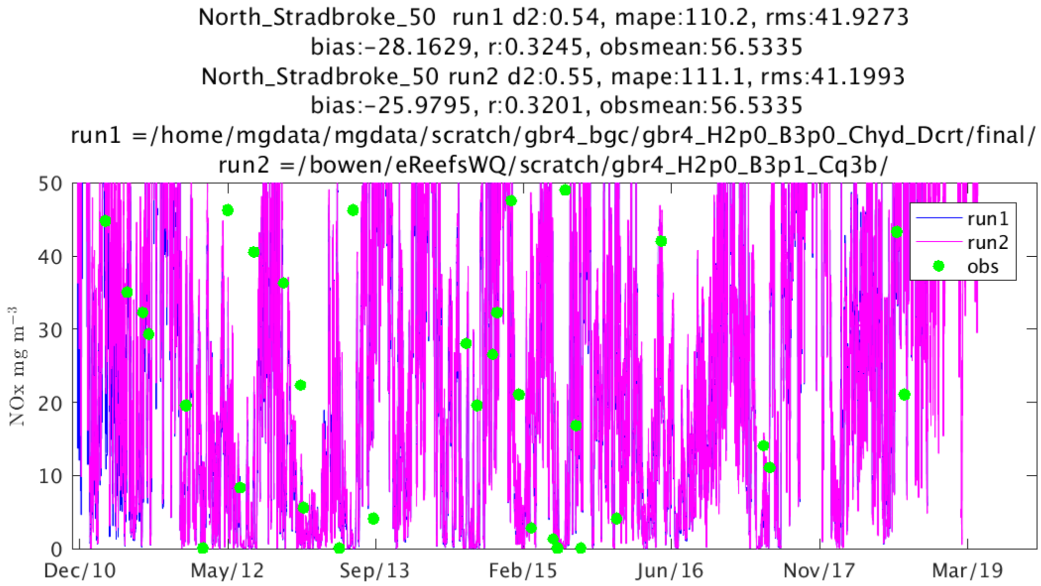
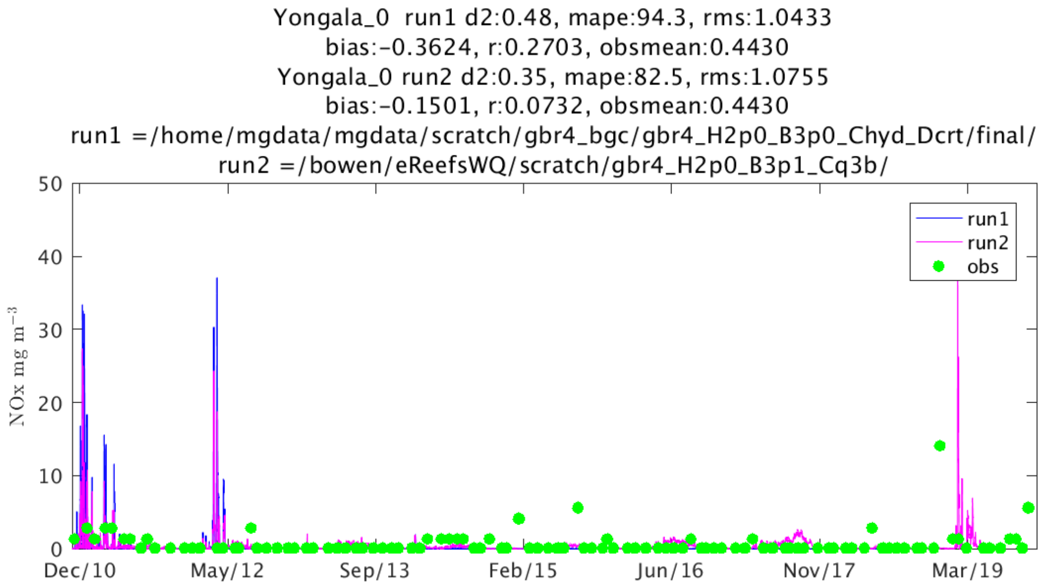
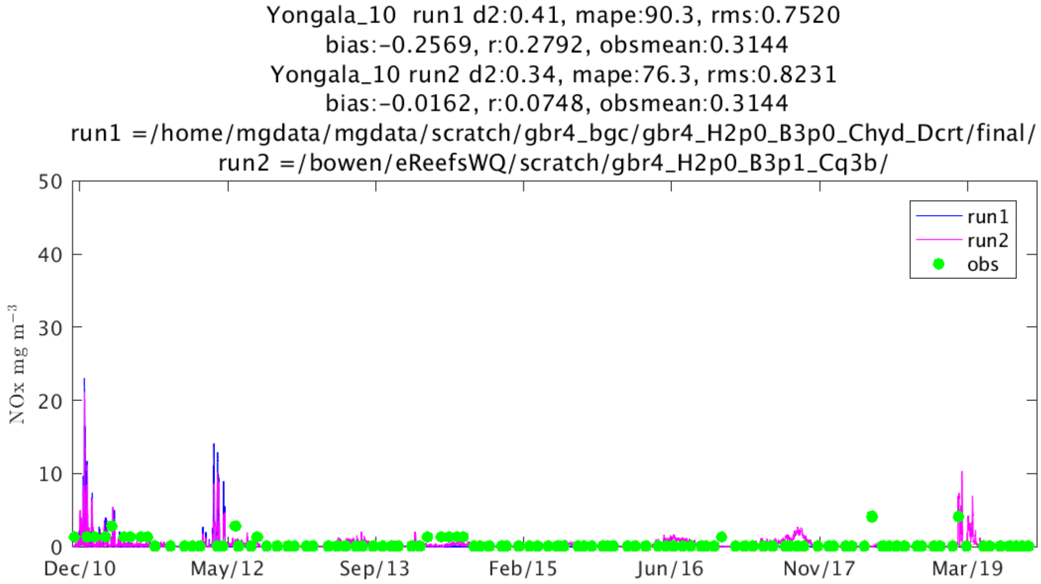


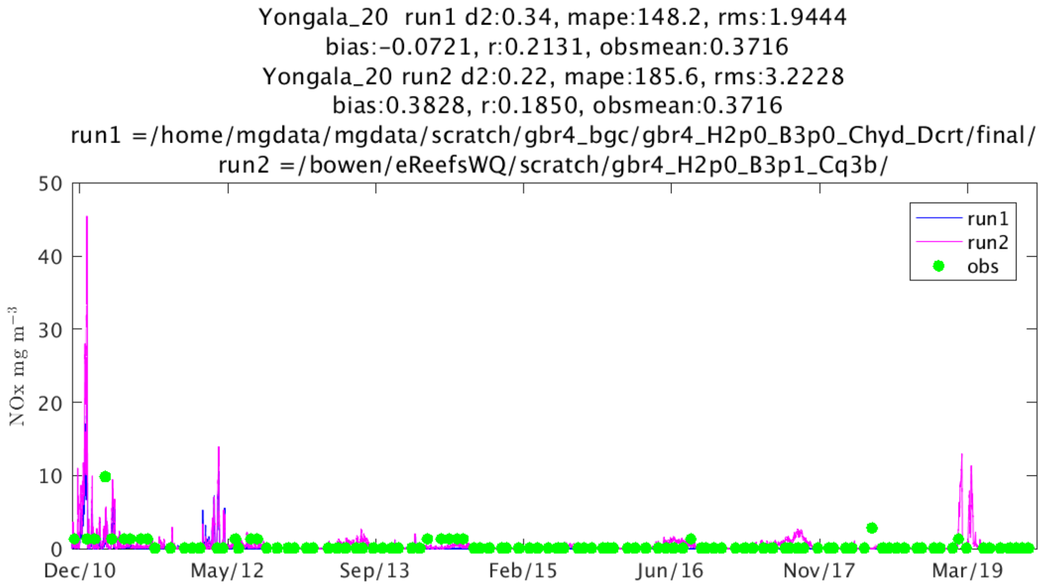
Figure 18 Metrics for NRS sites simulated NOx against observations


North_Stradbroke_20 run1 d2:0.19, mape:114.6, rms:12.2253
bias:-2.2595, r:0.0458, obsmean:3.6382
North_Stradbroke_20 run2 d2:0.19, mape:116.5, rms:12.2415
bias:-2.2618, r:0.0361, obsmean:3.6382
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
NOx mg m^-3
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19


North_Stradbroke_50 run1 d2:0.54, mape:110.2, rms:41.9273
bias:-28.1629, r:0.3245, obsmean:56.5335
North_Stradbroke_50 run2 d2:0.55, mape:111.1, rms:41.1993
bias:-25.9795, r:0.3201, obsmean:56.5335
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
NOx mg m^-3
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19


Yongala_0 run1 d2:0.48, mape:94.3, rms:1.0433
bias:-0.3624, r:0.2703, obsmean:0.4430
Yongala_0 run2 d2:0.35, mape:82.5, rms:1.0755
bias:-0.1501, r:0.0732, obsmean:0.4430
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
NOx mg m^-3
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19


Yongala_10 run1 d2:0.41, mape:90.3, rms:0.7520
bias:-0.2569, r:0.2792, obsmean:0.3144
Yongala_10 run2 d2:0.34, mape:76.3, rms:0.8231
bias:-0.0162, r:0.0748, obsmean:0.3144
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
NOx mg m^-3
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19


Yongala_20 run1 d2:0.34, mape:148.2, rms:1.9444
bias:-0.0721, r:0.2131, obsmean:0.3716
Yongala_20 run2 d2:0.22, mape:185.6, rms:3.2228
bias:0.3828, r:0.1850, obsmean:0.3716
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
NOx mg m^-3
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19

20. Simulated NHx assessment against NRS: Yongala and NSI

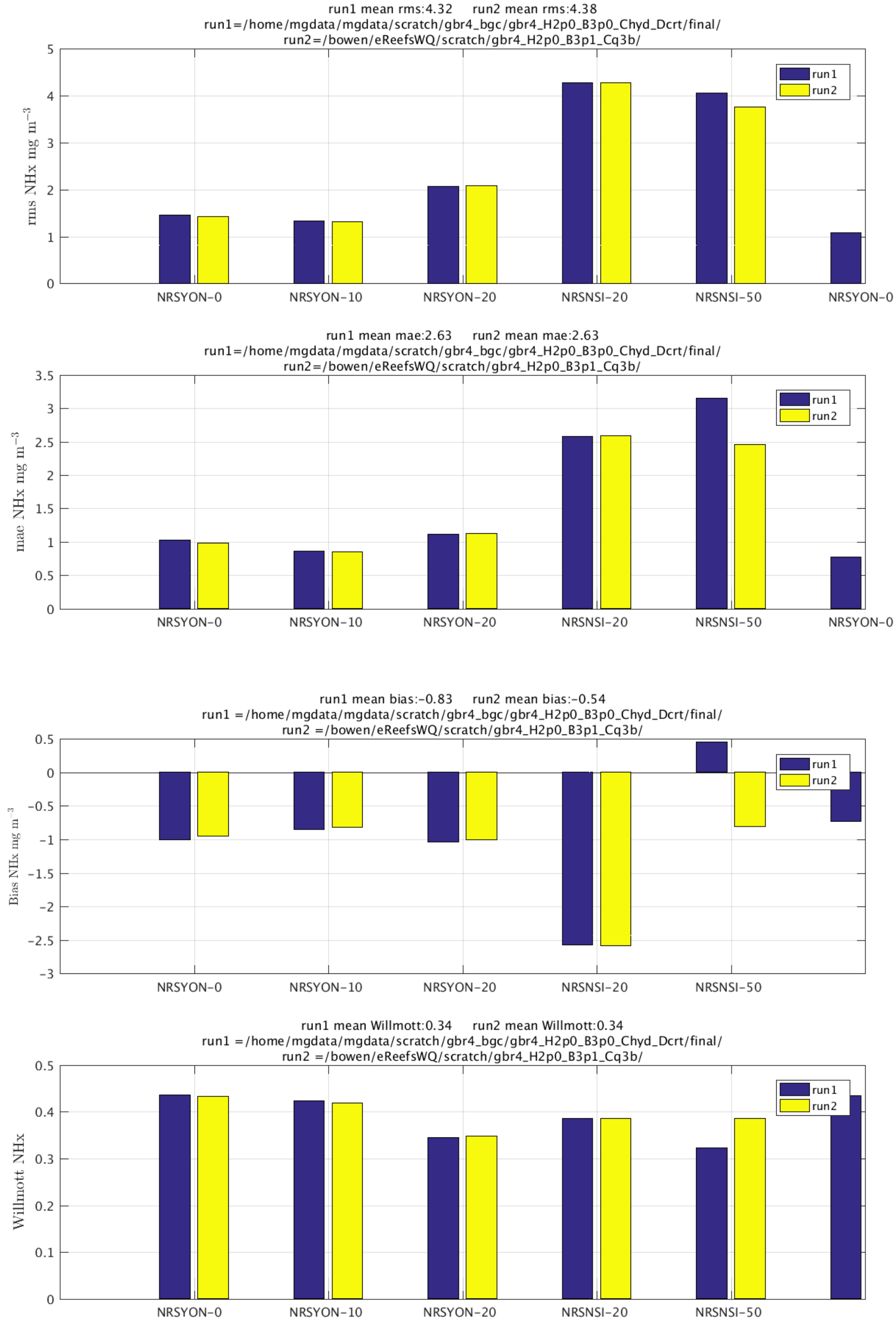
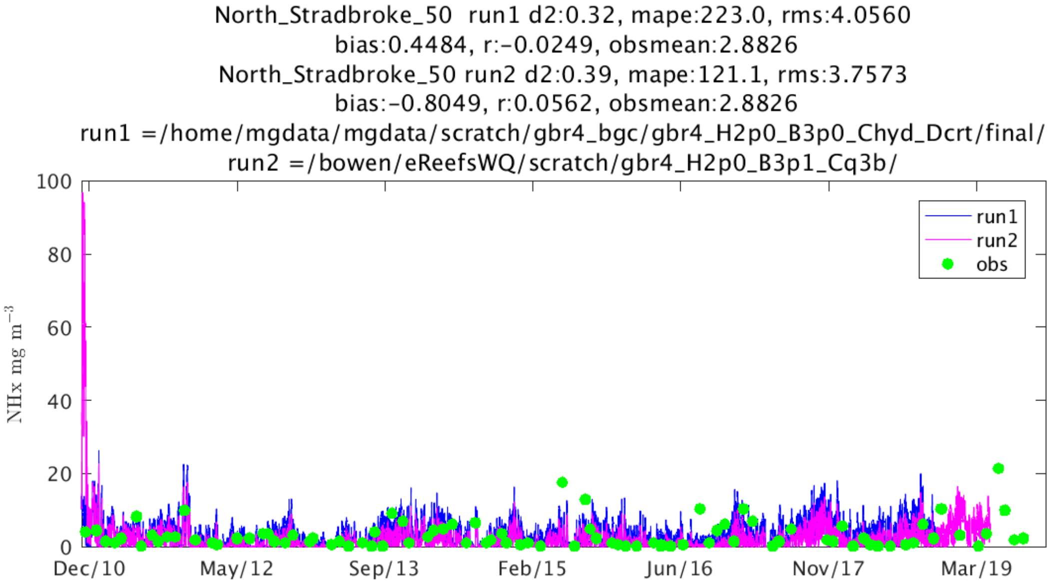
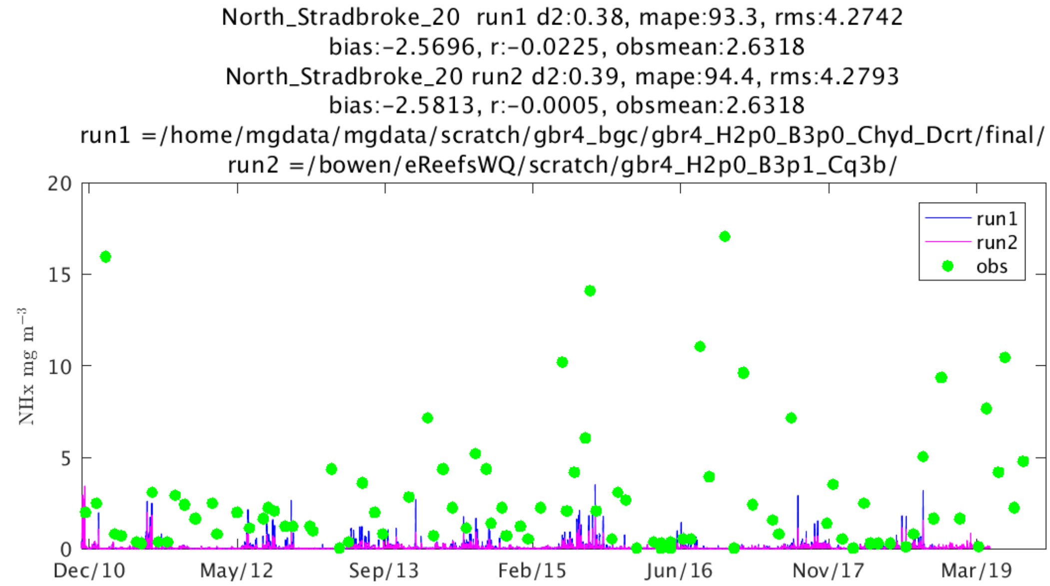
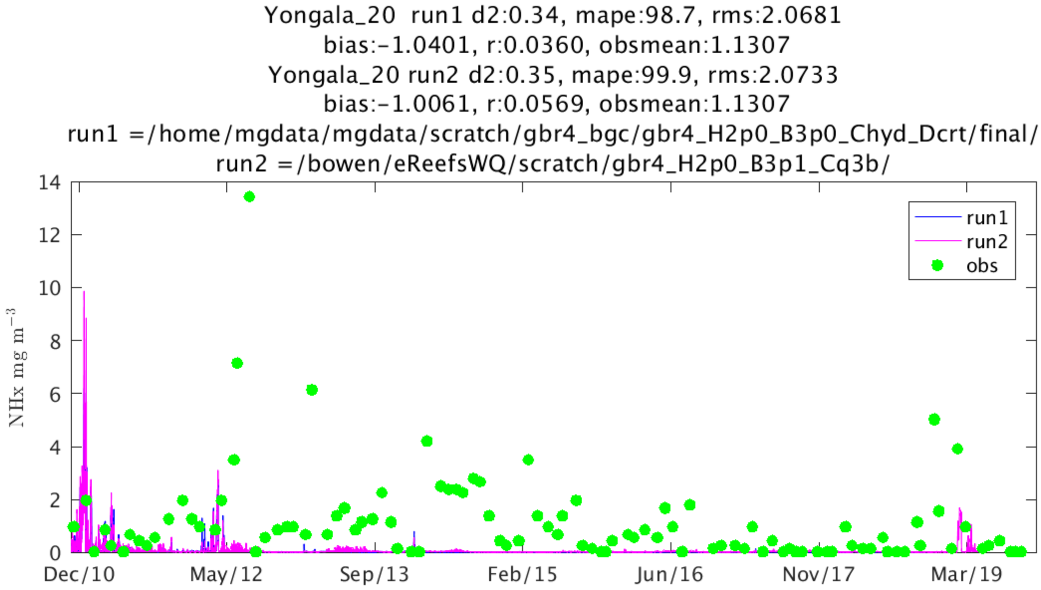


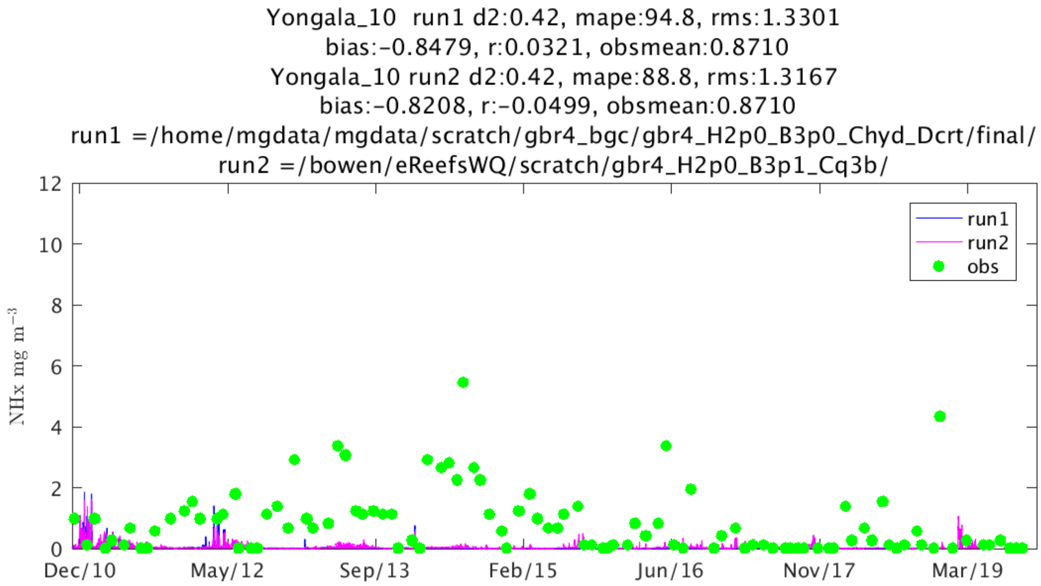
Figure 19 Metrics for NRS sites simulated NHx (ammonia + ammonium) against observations


North_Stradbroke_50 run1 d2:0.32, mape:223.0, rms:4.0560
bias:0.4484, r:-0.0249, obsmean:2.8826
North_Stradbroke_50 run2 d2:0.39, mape:121.1, rms:3.7573
bias:-0.8049, r:0.0562, obsmean:2.8826
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
NIIx mg m^{-3}
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19


North_Stradbroke_20 run1 d2:0.38, mape:93.3, rms:4.2742
bias:-2.5696, r:-0.0225, obsmean:2.6318
North_Stradbroke_20 run2 d2:0.39, mape:94.4, rms:4.2793
bias:-2.5813, r:-0.0005, obsmean:2.6318
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
NIIx mg m^{-3}
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19



Yongala_20 run1 d2:0.34, mape:98.7, rms:2.0681
bias:-1.0401, r:0.0360, obsmean:1.1307
Yongala_20 run2 d2:0.35, mape:99.9, rms:2.0733
bias:-1.0061, r:0.0569, obsmean:1.1307
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
NHx mg m-3
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19



Yongala_10 run1 d2:0.42, mape:94.8, rms:1.3301
bias:-0.8479, r:0.0321, obsmean:0.8710
Yongala_10 run2 d2:0.42, mape:88.8, rms:1.3167
bias:-0.8208, r:-0.0499, obsmean:0.8710
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
NHx mg m-3
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19

21. Simulated DIP assessment against NRS: Yongala and NSI

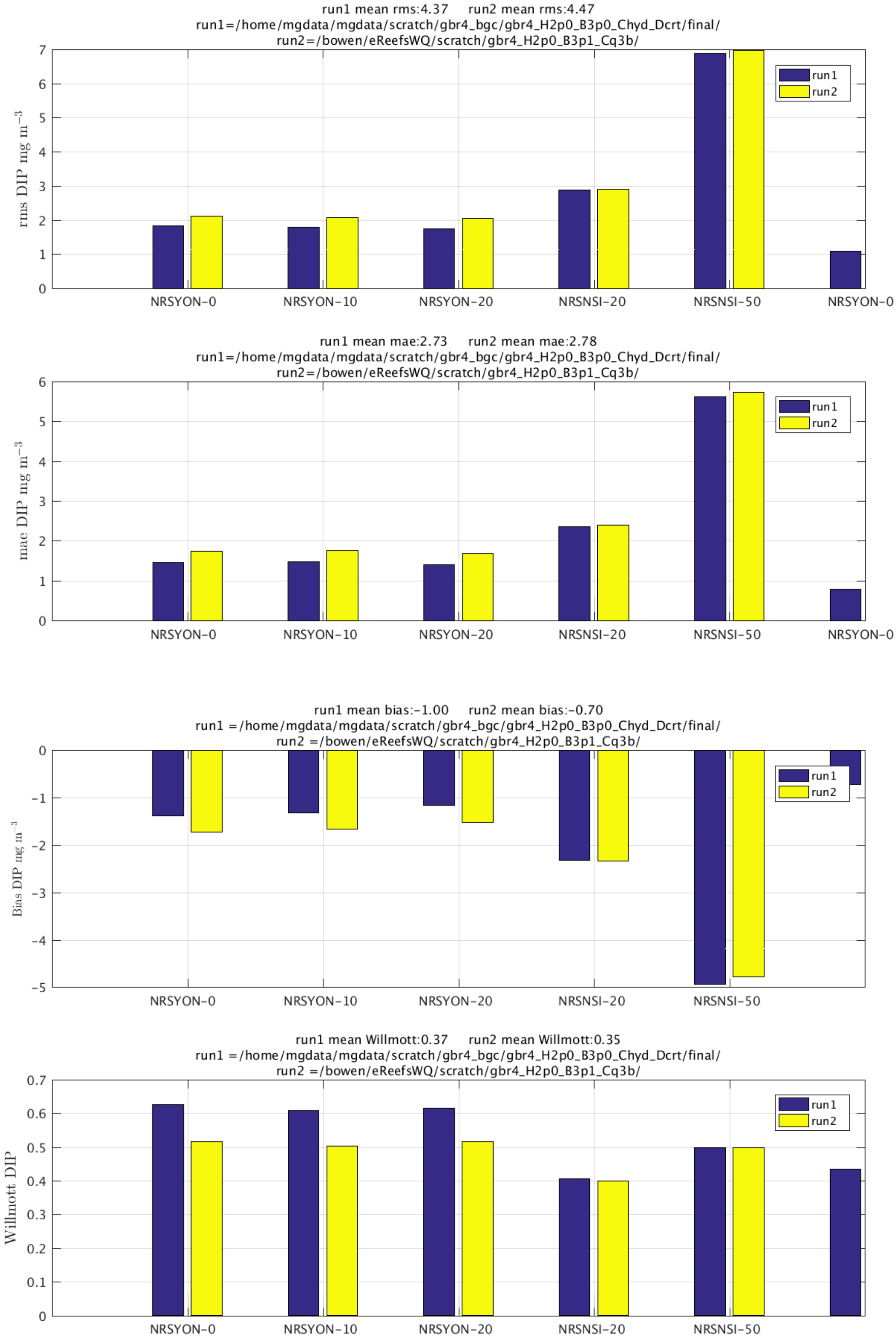
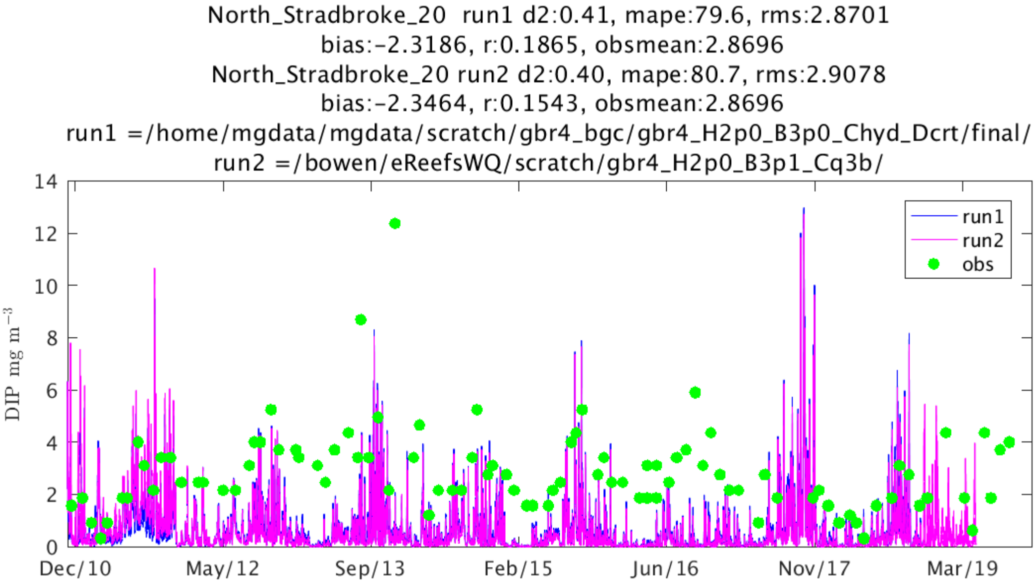
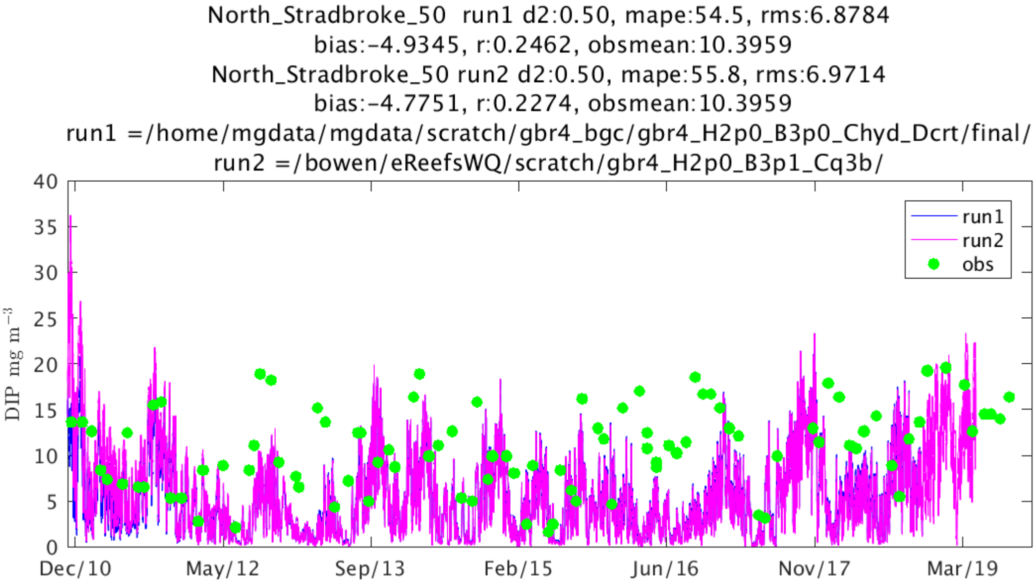
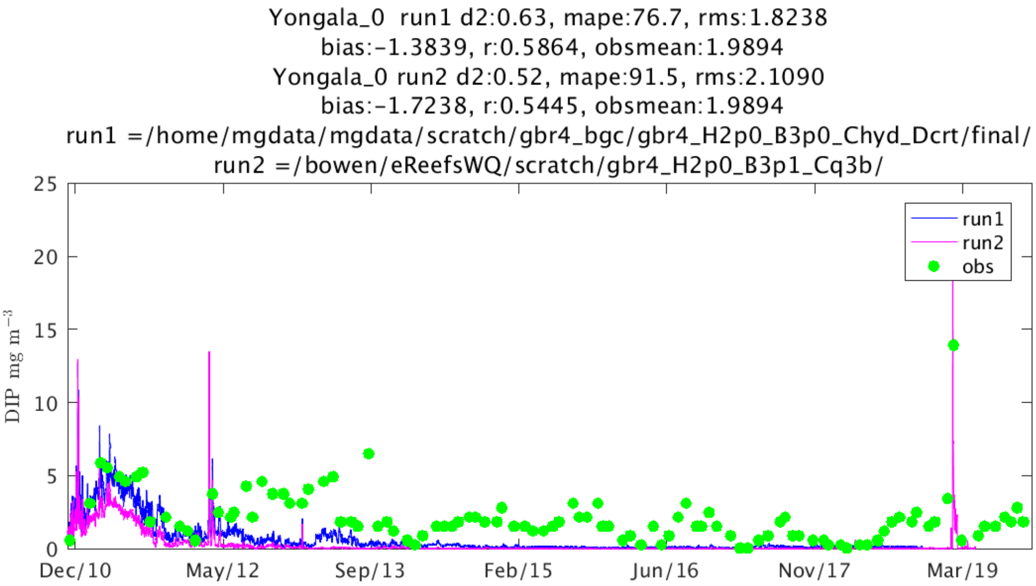
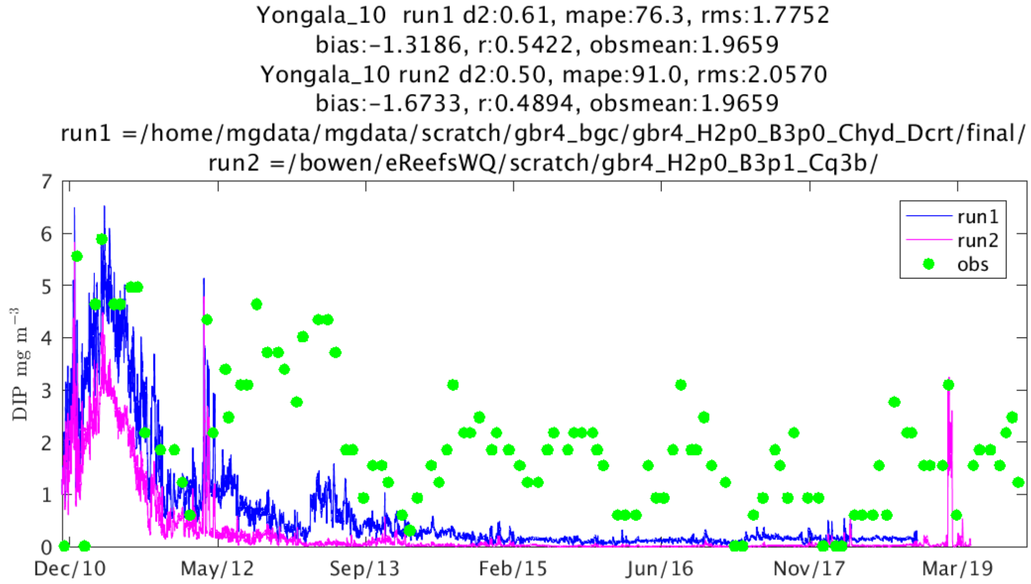


Figure 20 Metrics for NRS sites simulated DIP against observations

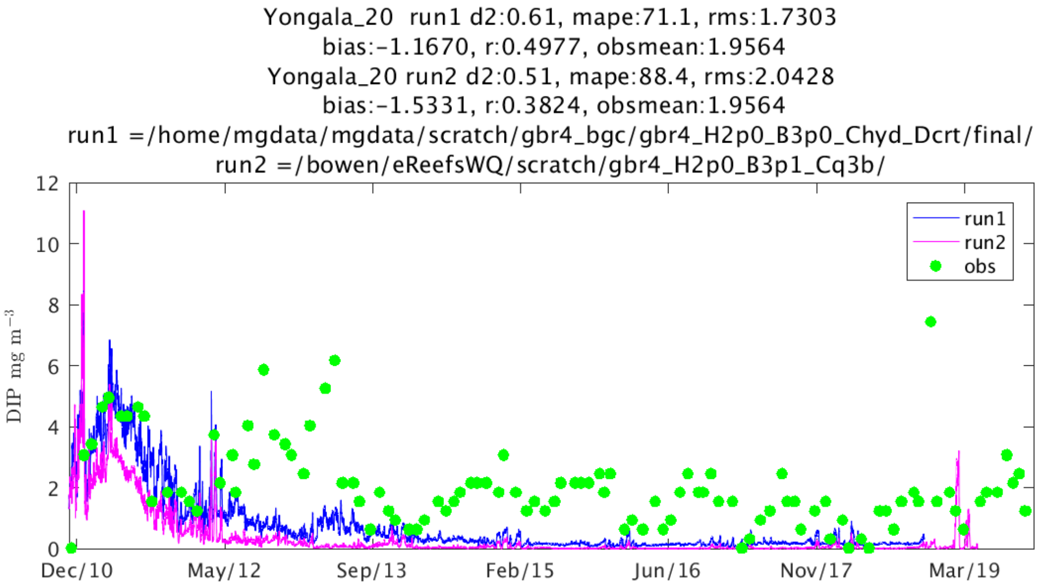

North_Stradbroke_20 run1 d2:0.41, mape:79.6, rms:2.8701
bias:-2.3186, r:0.1865, obsmean:2.8696
North_Stradbroke_20 run2 d2:0.40, mape:80.7, rms:2.9078
bias:-2.3464, r:0.1543, obsmean:2.8696
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
DIP mg m⁻³
0
2
4
6
8
10
12
14
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19
run1
run2
obs


North_Stradbroke_50 run1 d2:0.50, mape:54.5, rms:6.8784
bias:-4.9345, r:0.2462, obsmean:10.3959
North_Stradbroke_50 run2 d2:0.50, mape:55.8, rms:6.9714
bias:-4.7751, r:0.2274, obsmean:10.3959
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
DIP mg m⁻³
0
5
10
15
20
25
30
35
40
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19
run1
run2
obs


Yongala_0 run1 d2:0.63, mape:76.7, rms:1.8238
bias:-1.3839, r:0.5864, obsmean:1.9894
Yongala_0 run2 d2:0.52, mape:91.5, rms:2.1090
bias:-1.7238, r:0.5445, obsmean:1.9894
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
DIP mg m⁻³
0
5
10
15
20
25
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19
run1
run2
obs



Yongala_10 run1 d2:0.61, mape:76.3, rms:1.7752
bias:-1.3186, r:0.5422, obsmean:1.9659
Yongala_10 run2 d2:0.50, mape:91.0, rms:2.0570
bias:-1.6733, r:0.4894, obsmean:1.9659
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
DIP mg m-3
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19



Yongala_20 run1 d2:0.61, mape:71.1, rms:1.7303
bias:-1.1670, r:0.4977, obsmean:1.9564
Yongala_20 run2 d2:0.51, mape:88.4, rms:2.0428
bias:-1.5331, r:0.3824, obsmean:1.9564
run1 =/home/mgdata/mgdata/scratch/gbr4_bgc/gbr4_H2p0_B3p0_Chyd_Dcrt/final/
run2 =/bowen/eReefsWQ/scratch/gbr4_H2p0_B3p1_Cq3b/
DIP mg m-3
run1
run2
obs
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19

22. Simulated alkalinity assessment against NRS: Yongala and NSI

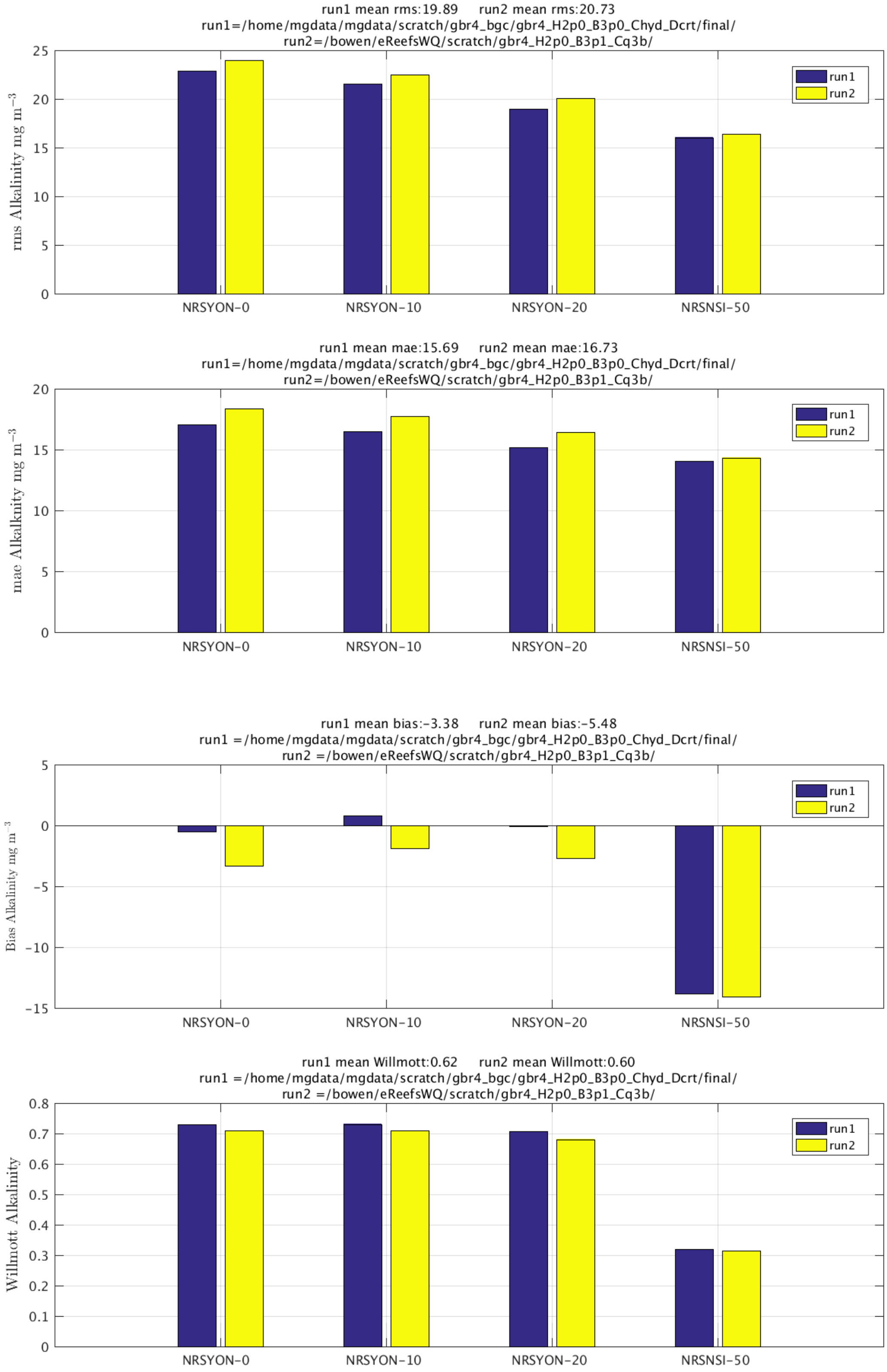
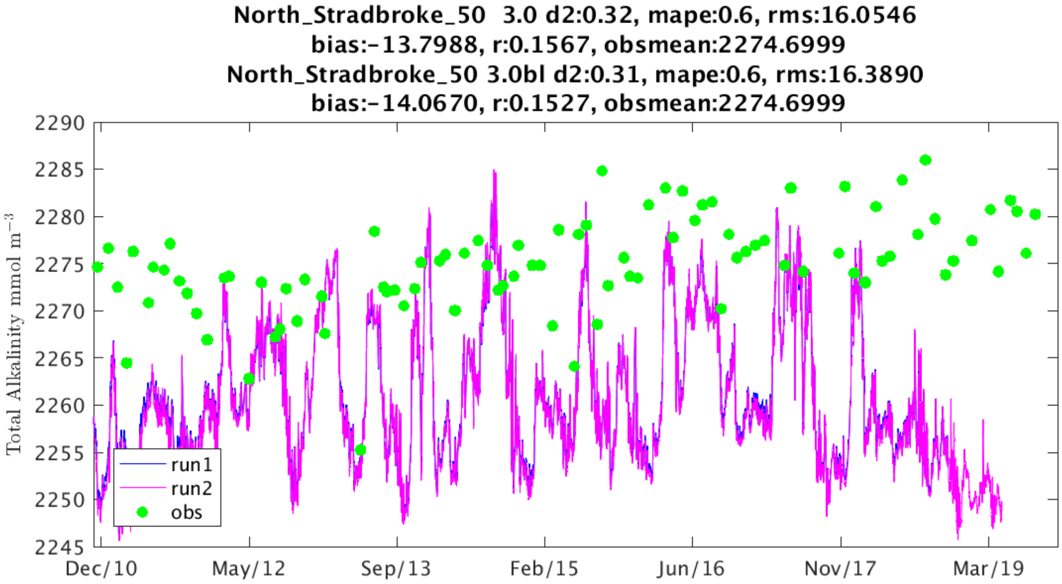
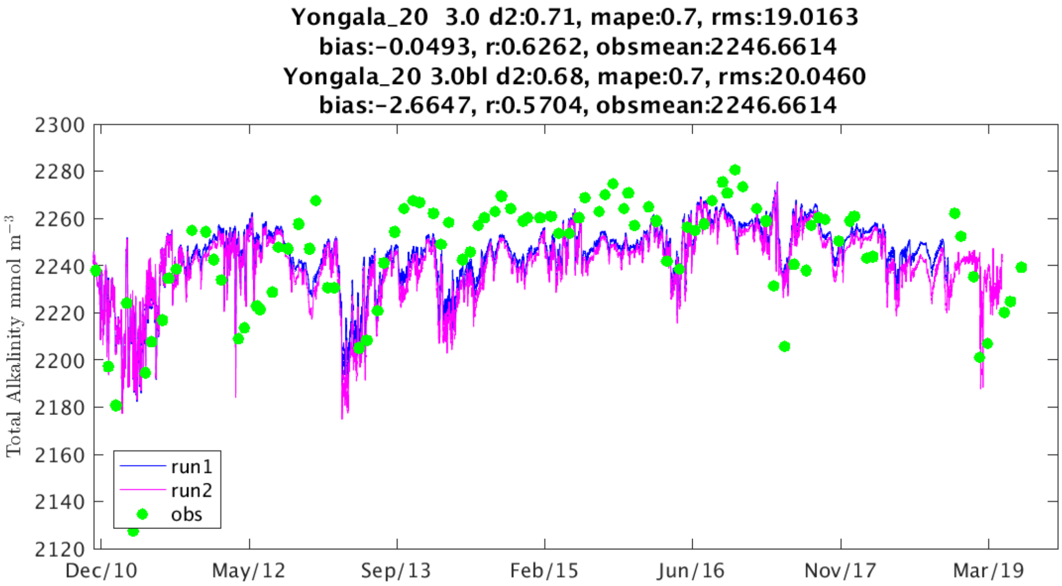
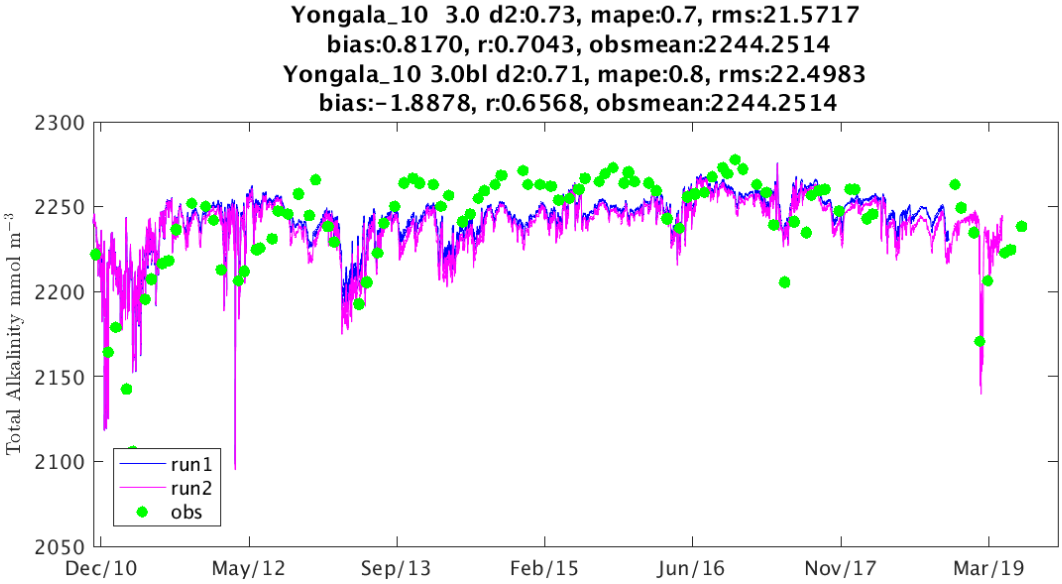
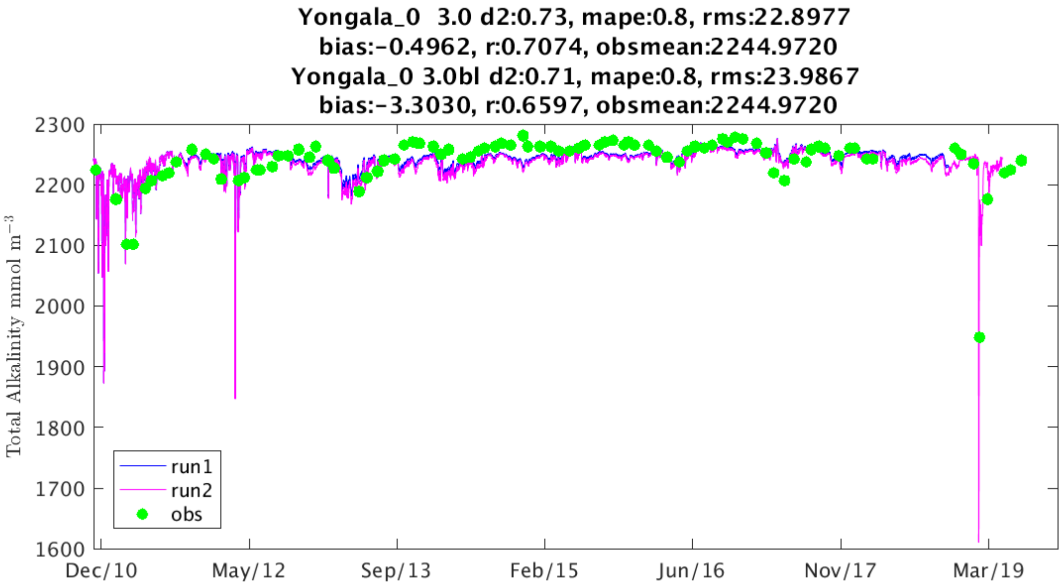


Figure 21 Metrics for NRS sites simulated alkalinity against observations


North_Stradbroke_50 3.0 d2:0.32, mape:0.6, rms:16.0546
bias:-13.7988, r:0.1567, obsmean:2274.6999
North_Stradbroke_50 3.0bl d2:0.31, mape:0.6, rms:16.3890
bias:-14.0670, r:0.1527, obsmean:2274.6999
Total Alkalinity mmol m⁻³
2290
2285
2280
2275
2270
2265
2260
2255
2250
2245
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19
run1
run2
obs


Yongala_20 3.0 d2:0.71, mape:0.7, rms:19.0163
bias:-0.0493, r:0.6262, obsmean:2246.6614
Yongala_20 3.0bl d2:0.68, mape:0.7, rms:20.0460
bias:-2.6647, r:0.5704, obsmean:2246.6614
Total Alkalinity mmol m⁻³
2300
2280
2260
2240
2220
2200
2180
2160
2140
2120
Dec/10
May/12
Sep/13
Feb/15
Jun/16
Nov/17
Mar/19
run1
run2
obs





23. Parameter values for gbr4_H2p0_B3p1_Chyd_Dcrt

The following tables list the parameter values used in the gbr4_H2p0_B3p1_Chyd_Dcrt biogeochemical model simulation

Parameter description	Symbol	Units	Value	Reference
Phytoplankton				
Chl-specific scattering coefficient. for microalgae	bphy	m^{-1} (mg Chl a $m^{-3})^{-1}$	0.2	Typical microalgae value, Kirk (1994)
Natural (linear) mortality rate, large phytoplankton	PhyL_mL	d^{-1}	0.1	Not attributed
Natural (linear) mortality rate in sediment, large phytoplankton	PhyL_mL_sed	d^{-1}	10	Not attributed
Natural (linear) mortality rate, small phytoplankton	PhyS_mL	d^{-1}	0.1	Not attributed
Natural (linear) mortality rate in sediment, small phytoplankton	PhyS_mL_sed	d^{-1}	1	Not attributed
Respiration as a fraction of umax	Plank_resp	none	0.025	Not attributed
Radius of the large phytoplankton cells	PLrad	m	0.000004	Not attributed
Maximum growth rate of PL at Tref	PLumax	d^{-1}	1.4	CSIRO Parameter Library
Ratio of xanthophyll to chl a of PL	PLxan2chl	mg mg^{-1}	0.81	CSIRO Parameter Library
Radius of the small phytoplankton cells	PSrad	m	0.000001	Not attributed
Maximum growth rate of PS at Tref	PSumax	d^{-1}	1.6	CSIRO Parameter Library
Ratio of xanthophyll to chl a of PS	PSxan2chl	mg mg^{-1}	0.51	CSIRO Parameter Library
Trichodesmium				
DIN conc below which *Trichodesmium* N fixes	DINcrit	mg N m^{-3}	10	Lower end of Robson et al., (2013) 4-20 mg N m^{-3}
Maximum density of *Trichodesmium*	p_max	kg m^{-3}	1050	Not attributed
Minimum density of *Trichodesmium*	p_min	kg m^{-3}	900	Not attributed
Radius of *Trichodesmium* colonies	Tricho_colrad	m	0.000005	Not attributed
Critical *Trichodesmium* above which quadratic mortality applies	Tricho_crit	mg N m^{-3}	0.0002	Not used in code
Linear mortality for *Trichodesmium* in sediment	Tricho_mL	d^{-1}	0.1	Not attributed
Quadratic mortality for *Trichodesmium* due to phages in water column	Tricho_mQ	d^{-1} (mg N $m^{-3})^{-1}$	0.1	At steady-state, indep. of temp, Tricho_N ~ Tricho_umax / Tricho_mQ = 0.27 / 0.405 = 0.7 mg N m^{-3} ~ 0.1 mg Chl m^{-3}
Trichodesmium grazing preference	Tricho_pref	none	0	Not attributed
Radius of *Trichodesmium* colonies	Tricho_rad	m	0.000005	Not attributed
Sherwood number for the *Trichodesmium* dimensionless	Tricho_Sh	none	1	Not attributed
Maximum growth rate of *Trichodesmium* at Tref	Tricho_umax	d^{-1}	0.2	Robson et al., 2013 + Parameter library
Ratio of xanthophyll to chl a of *Trichodesmium*	Trichoxan2chl	mg mg^{-1}	0.5	Subramaniam et al. 1999. LO 44:618-627
Microphytobenthos				
Respiration as a fraction of umax	Benth_resp	none	0.025	Not attributed
Radius of the MPB cells	MBrad	m	0.00001	Not attributed
Maximum growth rate of MB at Tref	MBumax	d^{-1}	0.839	CSIRO Parameter Library
Ratio of xanthophyll to chl a of MPB	MBxan2chl	mg mg^{-1}	0.81	Not attributed
Natural (quadratic) mortality rate, microphytobenthos, applied in sediment	MPB_mQ	d^{-1} (mg N $m^{-3})^{-1}$	0.0001	SS argument

Parameter description	Symbol	Units	Value	Reference
Zooplankton				
Growth efficiency, large zooplankton	ZL_E	none	0.426	CSIRO Parameter Library, [0.341 (0.017900) Baird and Suthers, 2007 from Hansen et al (1997) LO 42: 687-704]
Fraction of growth inefficiency lost to detritus, large zooplankton	ZL_FDG	none	0.5	Not attributed
Fraction of mortality lost to detritus, large zooplankton	ZL_FDM	none	1	Not attributed
Natural (quadratic) mortality rate, large zooplankton	ZL_mQ	d^{-1} (mg N $m^{-3})^{-1}$	0.012	Not attributed
Diel vertical migration rate of ZL	ZLdvmrate	m d^{-1}	0	Not attributed
Grazing technique of large zooplankton	ZLmeth	none	rect	Not attributed
Light at which the	ZLpar	mol photons m^{-2} s^{-1}	1.00E-12	Not attributed
Radius of the large zooplankton cells	ZLrad	m	0.00032	Not attributed
Swimming velocity for large zooplankton	ZLswim	m s^{-1}	0.003	Not attributed
Maximum growth rate of ZL at Tref	ZLumax	d^{-1}	1.33	Not attributed
Growth efficiency, small zooplankton	ZS_E	none	0.462	CSIRO Parameter Library [0.3080000 (0.026600) Baird and Suthers, 2007 from Hansen et al (1997) LO 42: 687-704]
Fraction of growth inefficiency lost to detritus, small zooplankton	ZS_FDG	none	0.5	Not attributed
Fraction of mortality lost to detritus, small zooplankton	ZS_FDM	none	1	Not attributed
Natural (quadratic) mortality rate, small zooplankton	ZS_mQ	d^{-1} (mg N $m^{-3})^{-1}$	0.02	Not attributed
Grazing technique of small zooplankton	ZSmeth	none	rect	Not attributed
Radius of the small zooplankton cells	ZSrad	m	0.000005	Not attributed
Swimming velocity for small zooplankton	ZSswim	m s^{-1}	0.0002	Not attributed
Maximum growth rate of ZS at Tref	ZSumax	d^{-1}	4	Not attributed
Coral				
Quadratic mortality rate of coral polyp	CHmort	(g N $m^{-3})^{-1}$ d^{-1}	0.01	Not attributed
Nitrogen-specific area of coral polyp density	CHpolypden	m2 g N^{-1}	2	Not attributed
Fraction of Host death translocated.	CHremin	-	0.5	Not attributed
Max. growth rate of Coral at Tref	CHumax	d^{-1}	0.05	Not attributed
Linear mortality rate of Zooxanthellae	CSmort	d^{-1}	0.04	Not attributed
Radius of the Zooxanthellae	CSrad	m	0.000005	Not attributed
Fraction of Zooxanthellae growth to Host.	CStoCHfrac	-	0.9	Gustafsson et al. (2013) Ecol. Mod. 250: 183-194
Max. growth rate of Zooxanthellae at Tref	CSumax	d^{-1}	0.4	Not attributed
Maximum daytime net coral calcification	k_day_coral	mmol C m^{-2} s^{-1}	0.0132	Anthony et al. (2013), Biogeosciences 10:4897-4909, Fig 5A: 50, 50, 35 55 mmol m^{-2} h^{-1} for Acropora aspera n=4
Grid scale to reef scale ratio	CHarea	m m^{-1}	0.1	Not attributed
Maximum night time net coral calcification	k_night_coral	mmol C m^{-2} s^{-1}	0.0069	Anthony et al. (2013), Biogeosciences 10:4897-4909, Fig 5A: 20, 30, 20, 30 mmol m^{-2} h^{-1} for Acropora aspera n=4
Rate coefficient for plankton uptake by corals	Splank	m d^{-1}	3	Ribes (2003), PARAMETER library analysis;Ribes and Atkinson (2007) Coral Reefs 26: 413-421
Macroalgae				
Maximum growth rate of MA at Tref	MAumax	d^{-1}	1	Not attributed
Natural (linear) mortality rate, macroalgae	MA_mL	d^{-1}	0.01	Not attributed
Nitrogen-specific area of macroalgae leaf	MAleafden	m^2 g N^{-1}	1	Not attributed

Parameter description	Symbol	Units	Value	Reference
Seagrass				
Half-saturation of SG N uptake in SED	SG_KN	mg N m^{-3}	420	Lee and Dunton (1999) 1204-1215. Table 3 Zostera
Half-saturation of SG P uptake in SED	SG_KP	mg P m^{-3}	96	Gras et al. (2003) Aquatic Botany 76:299^{-3}15. Thalassia testudinum.
Natural (linear) mortality rate, seagrass	SG_mL	d^{-1}	0.03	Fourquean et al.(2003) Chem. Ecol. 19: 373^{-3}90.Thalassia leaves with one component decay
Critical shear stress for SG loss	SG_tau_critical	N m^{-2}	1	NESP project
Time-scale for critical shear stress for SG loss	SG_tau_efold	s	43200	NESP project
Half-saturation of SGD N uptake in SED	SGD_KN	mg N m^{-3}	420	Not attributed
Half-saturation of SGD P uptake in SED	SGD_KP	mg P m^{-3}	96	Not attributed
Natural (linear) mortality rate, aboveground SGD	SGD_mL	d^{-1}	0.06	NESP project
Critical shear stress for SGD loss	SGD_tau_critical	N m^{-2}	1	NESP project
Time-scale for critical shear stress for SGD loss	SGD_tau_efold	s	43200	NESP project
Fraction (target) of SGD biomass below-ground	SGDfrac	-	0.25	Duarte (1999) Aquatic Biol. 65: 159-174, Halophila ovalis.
Nitrogen-specific leaf area of SGD	SGDleafden	m^2 g N^{-1}	1.9	Halophila ovalis: leaf dimensions from Vermaat et al. (1995)
Compensation irradiance for Halophila	SGDmlr	mol m^{-2}	1.5	NESP project
Sine of nadir Deep Seagrass canopy bending angle	SGDorient	-	1	No source
Natural (linear) mortality rate, belowground SGD	SGDROOT_mL	d^{-1}	0.004	NESP project
Maximum depth for Halophila roots	SGDrootdepth	m	-0.05	NESP project
Halophila seed biomass as fraction of 63 % cover	SGDseedfrac	-	0.01	Not attributed
Time scale for seagrass translocation	SGDtransrate	d^{-1}	0.0333	Loosely based on Zostera marine Kaldy et al., 2013 MEPS 487:27-39
Maximum growth rate of SGD at Tref	SGDumax	d^{-1}	0.4	x2 nighttime, x2 for roots.
Fraction (target) of SG biomass below-ground	SGfrac	-	0.75	Babcock (2015) Zostera capricornii
Half-saturation of SGH N uptake in SED	SGH_KN	mg N m^{-3}	420	Not attributed
Half-saturation of SGH P uptake in SED	SGH_KP	mg P m^{-3}	96	Not attributed
Natural (linear) mortality rate, seagrassH	SGH_mL	d^{-1}	0.06	Fourquean et al.(2003) Chem. Ecol. 19: 373^{-3}90.Thalassia leaves with one component decay
Critical shear stress for SGH loss	SGH_tau_critical	N m^{-2}	1	NESP project
Time-scale for critical shear stress for SGH loss	SGH_tau_efold	s	43200	NESP project
Fraction (target) of SGH biomass below-ground	SGHfrac	-	0.5	Babcock 2015, Halophila ovalis
Nitrogen-specific area of seagrass leaf	SGHleafden	m2 g N^{-1}	1.9	Halophila ovalis: leaf dimensions from Vermaat et al. (1995)
Compensation irradiance for SG	SGHmlr	mol m^{-2}	2	Not attributed
Sine of nadir Halophila canopy bending angle	SGHorient	-	1	No source
Natural (linear) mortality rate, seagrassH	SGHROOT_mL	d^{-1}	0.004	Fourquean et al. (2003) Chem. Ecol. 19: 373-390. Thalassia roots with one component decay
Maximum depth for Halophila roots	SGHrootdepth	m	-0.08	Roberts (1993) Aust. J. Mar. Fresh. Res. 44:85-100.
Halophila seed biomass as fraction of 63 % cover	SGHseedfrac	-	0.01	Not attributed
Time scale for seagrass translocation	SGHtransrate	d^{-1}	0.0333	Loosely based on Zostera marine Kaldy et al., 2013 MEPS 487:27-39
Maximum growth rate of SGH at Tref	SGHumax	d^{-1}	0.4	x2 night-time, x2 for roots.
Nitrogen-specific area of seagrass leaf	SGleafden	m2 g N^{-1}	1.5	Zostera capricornia: leaf dimensions Kemp et al (1987) Mar Ecol. Prog. Ser. 41:79-86.
Compensation irradiance for SG	SGmlr	mol m^{-2}	4.5	Not attributed
SGorient	SGorient		0.5	Not attributed
Natural (linear) mortality rate, seagrass	SGROOT_mL	d^{-1}	0.004	Fourquean et al. (2003) Chem. Ecol. 19: 373-390. Thalassia roots with one component decay
Maximum depth for Zostera roots	SGrootdepth	m	-0.15	Roberts (1993) Aust. J. Mar. Fresh. Res. 44:85-100.
Seagrass seed biomass as fraction of 63 % cover	SGseedfrac	-	0.01	No source
Time scale for seagrass translocation	SGtransrate	d^{-1}	0.0333	Loosely based on Zostera marine Kaldy et al., 2013 MEPS 487:27-39
Maximum growth rate of SG at Tref	SGumax	d^{-1}	0.4	x2 nighttime, x2 for roots.

Parameter description	Symbol	Units	Value	Reference
Biogeochemistry				
Reference temperature	Tref	Deg C	20	CSIRO Parameter Library
Temperature coefficient for rate parameters	Q10	none	2	CSIRO Parameter Library
Nominal rate of TKE dissipation in water column	TKEeps	$m^2 s^{-3}$	0.000001	Not attributed
Atmospheric CO2	xco2_in_air_dum	ppmv	396.48	Mean 2013 at Mauna Loa: htttrp://co2now.org/current-co2/co2-now/
Wavelengths of light	Light_lambda	nm	Various*	Approx. 20 nm resolution with 10 nm about 440 nm. PAR (400-700) is integral of bands 2-22 (290 310 330 350 370 390 410 430 440 450 470 490 510 530 550 570 590 610 630 650 670 690 710 800)*
Nominal N:Chl a ratio in phytoplankton by weight	NtoCHL	$g N (g Chl a)^{-1}$	7	Represents a C:Chl ratio of 39.25, Baird et al. (2013) Limnol. Oceanogr. 58: 1215-1226.
Concentration of dissolved N2	N2	$mg N m^{-3}$	2000	Robson et al. (2013)
Fraction of labile detritus converted to refractory detritus	F_LD_RD	none	0.19	Not attributed
Fraction of labile detritus converted to dissolved organic matter	F_LD_DOM	none	0.1	Not attributed
fraction of refractory detritus that breaks down to DOM	F_RD_DOM	none	0.05	Not attributed
Breakdown rate of labile detritus at 106:16:1	r_DetPL	d^{-1}	0.04	Not attributed
Breakdown rate of labile detritus at 550:30:1	r_DetBL	d^{-1}	0.001	Not attributed
Breakdown rate of refractory detritus	r_RD	d^{-1}	0.001	Not attributed
Breakdown rate of dissolved organic matter	r_DOM	d^{-1}	0.0001	Achieves approx. SS of global ocean at 20 C.
Oxygen half-saturation for aerobic respiration	KO_aer	$mg O m^{-3}$	256	Not attributed
Maximal nitrification rate in water column	r_nit_wc	d^{-1}	0.1	Not attributed
Maximal nitrification rate in water sediment	r_nit_sed	d^{-1}	20	Not attributed
Oxygen half-saturation for nitrification	KO_nit	$mg O m^{-3}$	500	Not attributed
Rate at which P reaches adsorbed/desorbed equilibrium	Pads_r	d^{-1}	0.04	Not attributed
Freundlich Isothermic Const P adsorption to TSS in water column	Pads_Kwc	$mg P kg TSS^{-1}$	30	Not attributed
Freundlich Isothermic Const P adsorption to TSS in sediment	Pads_Ksed	$mg P kg TSS^{-1}$	74	Not attributed
Oxygen half-saturation for P adsorption	Pads_KO	$mg O m^{-3}$	2000	Not attributed
Exponent for Freundlich Isotherm	Pads_exp	none	1	Not attributed
Maximum denitrification rate	r_den	d^{-1}	0.8	Not attributed
Oxygen half-inhibition of denitrification rate	KO_den	$mg O m^{-3}$	10000	Not attributed
Rate of conversion of PIP to immobilised PIP	r_immob_PIP	d^{-1}	0.0012	Not attributed
Sediment-water diffusion coefficient	EpiDiffCoeff	$m^2 s^{-1}$	3.00E-07	Not attributed
Thickness of diffusive layer	EpiDiffDz	m	0.0065	Not attributed
age tracer growth rate per day	ageing_decay	d^{-1}	1	Not attributed
age tracer decay rate per day outside source	anti_ageing_decay	d^{-1}	0.1	Not attributed
net dissolution rate of sediment without coral	dissCaCO3_sed	$mmol C m^{-2} s^{-1}$	0.001	Anthony et al. (2013), Biogeosciences 10:4897-4909, Fig 5E: -1 2 3 6 $mmol m^{-2} h^{-1}$
DOC-specific absorption of CDOM at 443 nm	acdom443star	$m^2 mg C^{-1}$	0.00013	Not attributed
Minimum carbon to chlorophyll ratio	C2Chlmin	wt/wt	20	Not attributed
swr scaling factor	SWRscale	none	1	Not attributed
Bleaching ROS threshold	ROSthreshold	-	5.00E-04	Not attributed
increased breakdown fraction DetrP to DOP	r_RD_NtoP	-	2	Not attributed
increased breakdown fraction DOMP to DIP	r_DOM_NtoP	-	1.5	Not attributed