

# The UltraFine+<sup>®</sup> Next Gen Analytics Workflow

If it seems overwhelming to look at all the data and products, opportunities and targets waiting for you in your data package, here is your step-by-step guide to help you get started.

## 1. What is in my UltraFine+<sup>®</sup> Next Gen Data Package?

Your data package has a lot of information. If you are looking for something specific but don't have the time to look at every single file, we provide a quick overview here [\[link\]](#).

## 2. How can I QA/QC my data?

You don't have to! We have done it for you, and you can find the automated QA/QC output in your Data Package under Data → QA/QC. There are also two handy [How-to guides](#) that explain how the data was QA/QC'd and what you need to look out for. To make it extra easy, we developed a traffic light system. \*Nothing can or should hold you back from doing your own QA/QC on your raw data, but if you just want to get stuck into your data with the security that it is all above board, our traffic-light QA/QC system will aid you. The current research project is also developing uncertainty maps, so watch this space!

### **The Shortcut – AKA I just want to look at my data all in one place**

If you just want to start playing with all the data to get a feel for it, head to your *Data Package* under *Digital Sample Observer* and navigate to the overview HTML file. This video [\[link\]](#) will give you a run through on how to use it. The DSO (Digital Sample Observer or as we initially called it, *Dave's Shiny Output*) makes it easy to get an understanding of what to follow up and where it is.

## 3. How do I pick the right amount of landscape clusters?

All project sites are modelled with 4, 8 and 12 landscape clusters. The most appropriate number of clusters is dependent on the area size of your project site, the complexity of the landscape and the number of samples for each landscape type. To find out which one is the most appropriate number of clusters for your specific project site and why, we have written a handy [How-to guide](#). If you want the ultimate short-cut without explanations so you can just get stuck into your data right away (and are a Sponsor of the UltraFine Next Gen Analytics Project 2021-2023), you can head to your *Data Package* and open the *readme.txt* file to see which output the UltraFine+<sup>®</sup> Next Gen Team recommends for your specific project site.

## 4. How do I define my proxy landscape types?

In general, all landscape types are ordered by MrVBF from dark red-brown (indicating outcropping/erosional landscape settings) to dark blue (indicating deeper depositional landscape settings). However, reality is more complex, and it is very likely that you know your project site very well and are already familiar with which landscape clusters identify your outcrops, sand dunes, sheetwash or alluvial channels. However, here is a handy [How-to guide](#) for all the desktop users on how you can define your proxy landscape types from the comfort of your chair. \*It is important for the interpretation of your geochemistry to know which cluster colour relates to depositional vs. erosional/residual landscapes.

## 5. How do I review my geochem results in landscape context?

Your *Data Package* contains outputs for both, outliers for the whole dataset (“traditional” outliers) and outliers by landscape type. There are boxplots, maps and shape files for each, and a handy [How-to guide](#) on how you might want to review these to get you started.

## 6. How do I find interesting areas?

The UltraFine+® Next Gen workflow creates automated exploration indices via principal component analysis of all analysed elements for all samples with the aim to provide a first-pass multi-element geochemistry interpretation tool to identify potential areas of interest, or those that you might not even have been looking for. You can find the outputs as JPEG, CSV and shapefiles in your *Data Package* under *Landscape Analysis* → *3 Principal Component Analysis*. You can also find a handy [How-to guide](#) on how to use this data here. \*More traditional, first pass regolith ratios and indices based on decades of scientific literature have also been added to the workflow and we have developed an additional [How-to guide](#) for these.

\*\*Exploration indices and regolith ratios are meant to flag areas of interest for rapid first-pass interpretation, they do not replace in-depth professional interpretation of your data.

## 7. Are there other soil properties to provide context for my geochemical outliers?

Yes, in addition to the geochemistry your soil samples are also analysed for pH, EC, particle size distribution and spectral mineralogy, and you can find PNGs and shapefiles for all of these in your *Data Package* under *Landscape Analysis* → *4 Other Soil Properties*. We also developed handy How-to guides for each soil property analysis [here](#).

## 8. I want even more context

If outliers by landscape type, exploration indices and other soil properties have whetted your appetite and you want to squeeze out even more information from your data, you can head to your *Data Package* under *Landscape Analysis* → *6 Source and Dispersion Directions* where you will find PNGs and shapefiles for source directions for your samples and dispersion directions for your site. If you are unsure how to use these, head to this handy [How-to guide](#). \*The current research project is also developing catchment analysis, so there'll be more reason to return to this website!