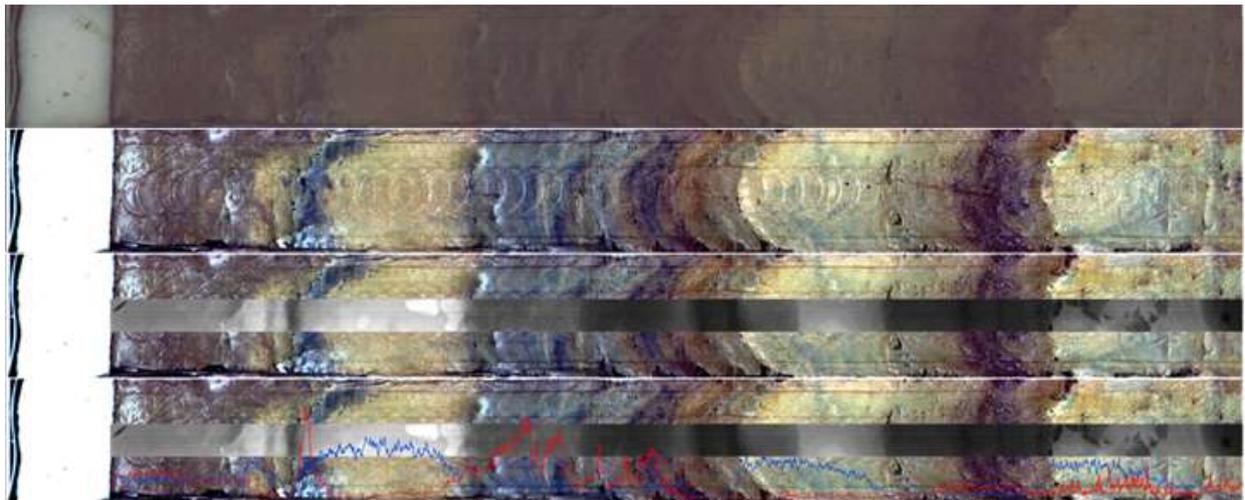


## Itrax XRF Corescanner Newsletter March 2015

*In this issue*

### Analysis of an Arctic sediment

Analyze your sediments at a rate of one second per point, with good reproducibility ! XRF core scanning is today a well established tool in sediment examinations, and Itrax Core Scanner is well established among paleo climatologists as well as oceanographers. The XRF performance of Itrax XRF corescanner has been greatly improved over the years and the standard time for analysis has gone down at the same rate. Today is the time for analysis can be as short as 1 second per analytical point. Already at this short time, reproducibility is good and a wide range of elements can be determined simultaneously. In the example shown here, the following elements were detected with one second per point: Al, S, Cl, K, Ca, Ti, V, Cr, Fe, Ni, Cu, Zn, As, Br, Rb, Sr, Zr, Ba, La and Pb. Short time per analysis point allows for high sample throughput and low costs per analysis. With this kind of speed available for sediment scanning, large amounts of sediment cores can be scanned at high analytical resolution. Together with the non contact feature of the analyses, it also means minimized sample deterioration. Below is shown data from a marine sediment core sampled in the Arctic. See image texts for details.

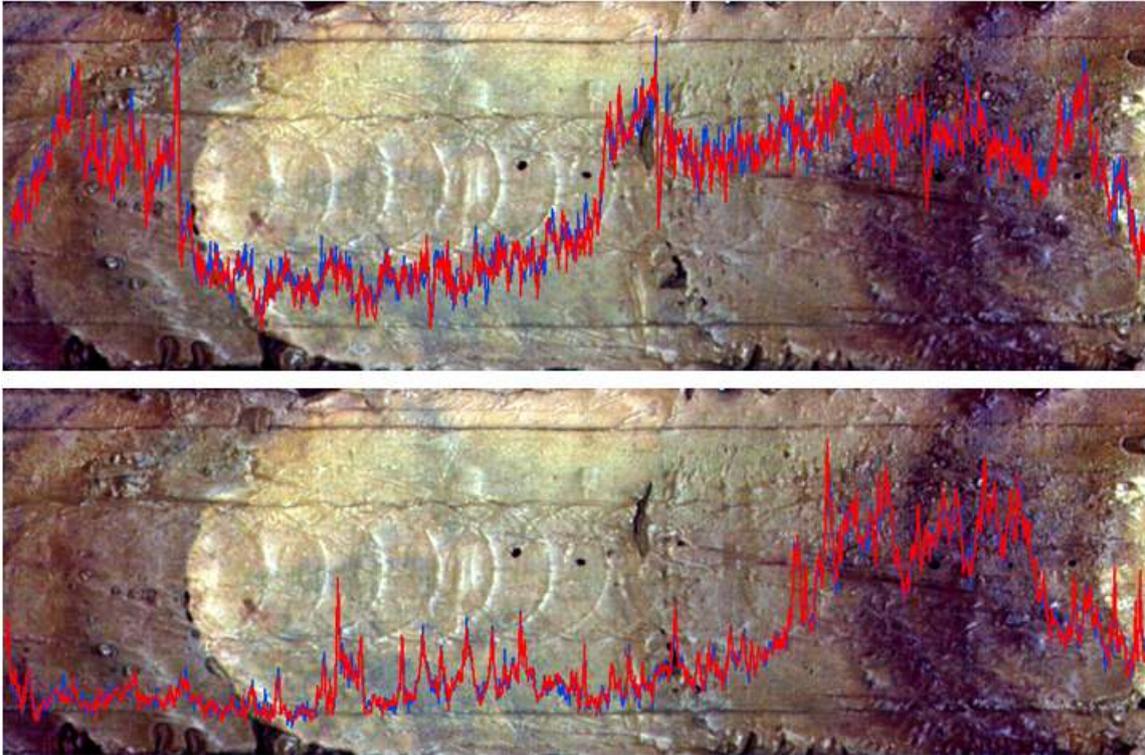


*These data are from an analysis of a section of a marine sediment core from the Arctic, and give an idea of the level of accuracy and detail of core data that can be gathered in short time. The photos were recorded with Itrax Core Scanner, and the top photo shows the sample as seen by the naked eye.*

*The second photo from the top shows the same sample, after applying the digital contrast enhancement which is available in the Itrax software package. In the photo, imprints from a magnetic susceptibility measurement appear as circular marks on the sample surface, while Itrax optical, radiographic and XRF analyses do not touch the surface, leaving no marks to minimize the sample impact.*

*The third photo shows again the same image, but here overlaid with a radiographic image of that same sample, placed in the center of the image. Please note that the x-ray radiographic image reveals structures also in areas of the sample that by eye seem to be homogenous. X-ray radiography is a useful complement to XRF since it can clarify whether shifts in the XRF signal relate to layered structures, or not.*

*In the fourth photo from the top (above) has been added an overlaid Manganese profile (red), together with a profile showing the Bromium/Strontium ratio profile (blue).*



*In the two photos here is shown a blow up of a 200 millimeter section of the sample. In the upper one, two element profiles in Red and Blue are overlaid on the photo, showing the variation of Silica (Si) concentration along the sample as determined in two consecutive scans. Please note the good correspondence between the two scans. The lower photo shows the same sample section, here with two Manganese (Mn) profiles overlaid. Like for Si above, the two profiles were registered during two consecutive scans. Together, the profiles give an idea of the level of repeatability that can be achieved in one second per analytical point for light as well as heavier elements. The exposure time was 1 (one) second per point. The beam footprint and step was 0.2 millimeter. The Si concentration is on average roughly 10%. while the Mn concentration is on average roughly 0.07% (700 PPM). Other elements that were determined simultaneously in this sample include Al, S, Cl, K, Ca, Ti, V, Cr, Fe, Ni, Cu, Zn, As, Br, Rb, Sr, Zr, Ba, La and Pb (not shown). This measurement was conducted with an Itrax Core scanner equipped with our top-of-the-line XRF offering a count rate of up to 300.000 x-ray photon counts per second into the spectra. Itrax offers up to ~100,000 counts per second with standard XRF system, and so the measurement time would be 3seconds per point to reach this level of data quality. Core material with courtesy of Dr. Richard Gyllencreutz, Stockholm University. From Expedition LOMROG III, Lomonosov ridge, off Greenland 2012, sampled at 4228 meters depth.*

More information about Itrax is found on our web site, where you can read about the instrument and download a product leaflet and application notes. There are now 39 installations of Itrax Core Scanner globally

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info@coxsys.se

