

## **Rapid changes in redox conditions with intermittent photic zone euxinia during Lower Silurian Ireviken event**

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Redox conditions of the lower Silurian, including Ireviken event were studied using coupling of different, independent methods like: sedimentological observations, total organic carbon (TOC) and total sulphur content, inorganic and molecular proxies as well as pyrite framboid diameter study. Sedimentological observations suggest that during Llandovery/Wenlock boundary anoxic / euxinic conditions and hemipelagic settlement were interrupted by the low density bottom currents or detached diluted turbid layers resulting in intermittent increase of oxygen level at the sea-bottom. TOC content pattern across the section corresponds generally to the inorganic proxies values, reflecting variable redox conditions. The U/Th, V/Cr and V/(V+Ni) ratio values as well as U<sub>authig</sub> and Mo concentrations suggest that during the Ireviken event, bottom-water conditions changed from being initially oxic through the almost entire Telychian to being mostly suboxic/anoxic just before the Llandovery/Wenlock boundary and then to changed into oxic again for the short time at the end of the Ireviken event. After the event the conditions stabilized to be oxygen deficient, with occurrence of euxinic zone in the water column.

Pyrite framboid diameter results are in agreement with bulk and inorganic proxies, but the greatest correlation was noted between pyrite diameter results and V/(V+Ni) ratio. In some, less thermally mature cores, the isorenieratane and its diagenetic products were undoubtedly identified, suggesting occurrence of photic zone euxinia in the water column. Rapid fluctuations of the chemocline during Llandovery/Wenlock boundary seems to be a major cause of extinction affected pelagic and hemipelagic fauna.