

General Theme 3

3.8

More than 100 years ago, the Swedish geoscientist de Geer proposed the concept of annually laminated sediments (i.e. varves) for proglacial deposits. Today varved sediments are known on Earth in multitudinous locations and can date from the current century back to the Precambrian. Under certain favorable conditions, varves can occur in diverse lacustrine and marine environmental settings. Varves provide precise incremental time control in calendar years and can thus offer time-series of biological, stable and radiogenic isotopic, magnetic, geochemical and sedimentological parameters. Moreover, they can archive solar variability and events like volcanic eruptions, earthquakes and flooding. Careful analyses of varve sequences can yield climate reconstructions linked to hydroclimatic conditions, precipitation, temperature, and evaluate human impacts like soil erosion, pollution and eutrophication for past decades and millennia. Altogether, varves can increase our understanding of climatic and environmental impacts on natural and human-influenced systems in the past, present and future. Varves can document frequency and rates of change for environmentally relevant processes. They can enhance our understanding of sedimentary processes when applied together with sediment trapping and instrumental monitoring of local climatic conditions and physical parameters in the water column and in catchment areas. The latter strategy is useful for calibration of sedimentary parameters and to enhance the validity of proxy-based reconstructions.

This session appeals to a multidisciplinary audience of sedimentologists, paleolimnologists, and limnogeologists studying varves with high temporal resolution at all time scales and from many environments. We welcome reconstructions related to climatic conditions, runoff, flooding, catchment erosion, sediment transfer, solar forcing, as well as other suitable topics like environmental monitoring. Moreover, this session invites reports about latest developments in the interpretation of varved sediment records, as well as improvements of geochronological methods and documentation of new analytical techniques. This session is a contribution to the PAGES "Varve Working Group".