

Sedimentology, sequence- and cyclostratigraphy

Shallow-marine sedimentary systems react to a multitude of physical, chemical, and biological parameters, which vary with changes in climate, sea level, subsidence pattern, and oceanic circulation. Detailed analysis of the sedimentary record allows monitoring such variations through time and space. We study Late Jurassic and Early Cretaceous sections in the Swiss and French Jura, and Late Eocene strata in the Helvetic nappes and in Italy. By combining the concepts of sequence stratigraphy and cyclostratigraphy, and by good biostratigraphical control, a relatively high time resolution (20- to 100-ka scale) can be obtained. Detailed correlations thus become possible between different palaeogeographic realms and across different palaeoclimatic zones. Comparison with Holocene and Pleistocene sedimentary and ecological systems allows better constraining the various parameters controlling carbonate production and deposition. For this, we study shallow-water and coastal sediments in Tunisia, Egypt, Florida, the Bahamas, Belize, and Australia.

This research is funded mainly through the Swiss National Science Foundation. The current project is: "Palaeoecology, palaeoclimate, sea-level changes, and sediment fluxes in mixed carbonate-siliciclastic sedimentary systems".

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