



Circulation on an oolite-dominated carbonate platform in an epeiric sea exemplified by clay mineralogy and carbon isotopes: an example from the Middle Jurassic of Switzerland

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The Middle Jurassic Burgundy carbonate platform occupied a central part of the Central European epeiric sea during the Middle Jurassic. This platform was bordered by a wide oolite belt. The facies architecture of the oolite bodies was affected by tidal currents on the platform and relative sea-level changes. The platform deposits contain only sparse macrofossil, but palynomorphs have been proven to provide a reliable stratigraphic frame. In addition carbon isotopes were used as stratigraphic tool. The Middle Jurassic oolites generally reflect the global $\delta^{13}\text{C}$ -trend. However, some deviations have been found. These local signatures help to elucidate changes of the platform waters as they appear to be related to the position on the platform and the current-related sediment dispersal pattern. In addition, due to minor sea-level changes, the platform interior might have been decoupled from the global $\delta^{13}\text{C}$ -trend. Further information on the currents affecting the water-mass composition on the platform is provided by clay minerals. Towards the eastern margin of the platform, detrital chlorite and illite occur in considerable proportions; chlorite and illite are ascribed to a boreal source to the east and the northeast. In contrast, towards the platform interior the kaolinite content increases; kaolinite is related to warm and humid source areas to the west and northwest. All these data support an amphidromal tide-current driven circulation system in the Central European epeiric sea during the Middle Jurassic.