A new high-resolution sulfur isotope record of Triassic seawater sulfate.

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Changes in the sulfur isotope composition of dissolved marine sulfate through time reflect changes in the global sulfur cycle. A large shift in the sulfur isotope composition of sulfate at the Permian/Triassic boundary has been recognized a long time ago [1]. Except for the study of Song *et al*. [2] however, existing data for the remaining of the Triassic are relatively sparse, have poor time resolution and relatively large age uncertainties, and are mostly focused on a rather limited age range. In addition, in the last few years the Triassic timescale has been significantly changed due to new radiometric data on volcanic ashes interbedded in marine sediments. For these reasons, the correlation between different studies and the construction of a generalized curve for the entire Triassic is very difficult. To obtain a more robust reconstruction of the evolution of the sulfur cycle from the latest Permian to the Late Triassic we have analyzed Middle to Late Triassic evaporites in Northern Switzerland and combine these data with new and published data from evaporites from Germany, Austria, Italy and the Middle East. The revised correlation between the well-dated marine Tethian sections in northern Italy and the evaporites from Northern Switzerland and from the Germanic basin reported in this study, allows for a precise dating of the evaporites. We will compare the evaporite-based reconstruction with the ones based on carbonate associated sulfate (CAS) and discuss the advantages and disadvantages of evaporites and CAS to reconstruct the history of the sulfur cycle in the Triassic. Finally we explore the causes of the observed variations and model the changes in sulfate concentration throughout the Triassic.

[1] Claypool *et al*. (1980) *Chem. Geol*. **28**, 199–260. [2] Song *et al*. (2014) *Geochim. Cosmochim. Acta*, **128**, 5-113.