

## Switching off the Toarcian OAE

B. VAN DE SCHOOTBRUGGE<sup>1\*</sup>, G. SUAN<sup>2</sup>, F. ERCAN<sup>1</sup>,  
AND D. HARAZIM<sup>3</sup>

<sup>1</sup>Utrecht University, Heidelberglaan 2, 3584CS, Utrecht,  
(correspondence B.vanderSchootbrugge@uu.nl)

<sup>2</sup>Universite de Lyon (guillaume.suan@univ-lyon1.fr)

<sup>3</sup>Colorado State University (harazimdario@gmail.com)

The onset of the Toarcian Oceanic Anoxic Event has been linked to the combined effects of global warming, nutrient input driving high productivity, and restriction of basins leading to poor ventilation. How extreme euxinia were switched off has been poorly explained. Here, we use geochemical and palynological data from the Kelimyar River section in Siberia (Russia) that spans from the Late Pliensbachian to Late Toarcian, to examine and compare phytoplankton communities between the Arctic and the Tethys. Rather than a "dinocyst black-out", the Siberian record shows high abundances of dinocyst genera throughout the TOAE. Significantly, various species of the *Parvocysta* and *Phallocysta* suites make their first appearance already during the Falciferum Zone, whereas in NW Europe similar taxa typically first appear during the Bifrons Zone in conjunction with a positive C-isotope excursion. The southward spread of Arctic dinoflagellate species thus indicates a connection opened up via the Viking Strait as a result of sea level rise. Trace element records show also major changes at this level, likely due to mixing of different water masses and drawdown of trace metal inventories under dysoxic conditions. Extreme euxinic conditions were terminated by an opening gateway and influx of cold polar waters.