The timing of redox changes, CAMP volcanism, and the end-Triassic extinction from the Levanto section (Northern Peru)

JOYCE A. YAGER[1], A. JOSHUA WEST[1], FRANK A. CORSETTI[1], WILLIAM M. BERELSON[1], ALYSON M. THIBODEAU[2], PAULINA PINEDO-GONZÁLEZ[1], B. SILVIA ROSAS[3], BRIDGET A. BERGQUIST[4], DAVID J. BOTTJER[1]

[1]University of Southern California, Department of Earth Sciences, Los Angeles, CA 90089

[2]Dickinson College, Department of Earth Sciences, Carlisle, PA 17013

Pontificia Universidad Católica del Perú, Especialidad de Ingeniería Geológic Lima, Perú

[4]University of Toronto, Department of Earth Sciences, Toronto, Ontario M5S 3B1

The end-Triassic mass extinction (ETE; ~201.3 Ma) represents the most severe decrease in the so-called modern fauna throughout the Phanerozoic. The emplacement of the Central Atlantic Magmatic Province (CAMP) and subsequent release of atmospheric CO_2 is the hypothesized extinction mechanism, likely leading to warming and possible ocean anoxia and acidification.

The Levanto section in Northern Peru has absolute chronology from U-Pb dates and is correlatable to most other marine TJ boundary sites through ammonite biostratigraphy (Wotzlaw et al., 2014 and references therein). Using this framework, we generated high resolution records spanning the TJ boundary.

Here, we report $\delta^{13}C_{org}$ and $\delta^{13}C_{carb}$ measurements with $\delta^{15}N$ and trace metal analyses to better understand redox changes during the lead up to the ETE and their connection to possible carbon cycle perturbations and the ETE. We compare these changes with absolute CAMP basalt dates (e.g. Davies et. al., 2017) and with Hg concentrations and isotopes, which represent a record of volcanism in the marine sedimentary record. Broadly, we find increasing oceanic oxygenation during the Late Triassic, with a rapid decrease in oxygenation during the ETE which slightly preceeds an increase in Hg concentrations. We will discuss the timing of these changes and their inferred durations.