ICDP / EarthRates Workshop and Fieldtrip
EMCT: Early Mesozoic, Low- to High-Latitude Coring Transect for Environmental, Climatic, Biotic, and Solar System Evolution
St. George, Utah
11-14 May 2019 (Workshop); 15-16 May 2019 (Fieldtrip)

Earth's basic tectonic and biotic framework emerged during the Triassic and Early Jurassic (252-174 Ma) with the break-up of Pangea, birth of the Atlantic Ocean, and evolution of all the major groups of living vertebrate animals and plankton. However that interval was arguably dramatically different than now with the highest CO_2 of the Phanerozoic and no evidence of polar glaciers, and was punctuated by two of the largest mass extinctions in Earth history at beginning and end of the Triassic and at least two episodes of major biotic turnover within the Late Triassic (Late Carnian) and at the Toarcian OAE. It was also long enough ago that the chaotic evolution of the Solar System can be clearly discerned in paleoclimate records, opening up the possibility of a new empirical realm to explore fundamental physical theory.

The International Continental Scientific Drilling Program (ICDP) and EarthRates (via US NSF) have funded a multidisciplinary, international workshop to plan paired coring projects in contemporaneous age continental sequences at low (<30°) and high latitudes (>45°) and coordinate efforts with ongoing coring efforts in the mid-latitudes that would provide complimentary geochronological and environmental proxy data. The projects build on the highly successful Newark Basin Coring Project of the 1990s and the Colorado Coring Project (CPCP: drilling completed 2013) and aim to compliment the ongoing JET project in the marine UK. At the most basic level, the goals are to obtain a robust globally-exportable geochronology for at least the Late Triassic and Early Jurassic (237-174 Ma) that links together zircon U-Pb ages, paleomagnetic polarity, and all major parameters of the orbital pacing of climate (precession, eccentricity, obliquity, inclination), that will be invaluable to the general scientific community. It is already been shown this can be done at Neogene-levels of precision, and thus push the properties of these records to obtain valuable information uniquely available from the past, including calibration of Solar System chaos beyond the 60 Myr limit imposed by numerical solutions. Similarly, the environmental proxy records from this project, particularly those for atmospheric CO_2, biomarkers and stable isotopes, will allow assessment of the meaning of those proxies well beyond what is currently available with implications for forecasting the future.

The 4-day workshop will be held in St. George, Utah, May 11-14, 2019 to develop scientific and logistical plans for coring at low and high-latitudes. The workshop will review the overall context of the scientific issues, focus on how selecting the optimal contextually driven locations for coring, articulation the primary and auxiliary scientific objectives, and establishment of collaboration and responsibilities, with an outcome that will establish a draft science plan to be used in producing specific funding proposals. The workshop will be followed by a 2-day fieldtrip to possible paleo-low-latitude coring sites on and adjacent to the Colorado Plateau including in and Arizona. Participants should expect to arrive on May 10th and depart on May 17th if they plan to attend both the workshop and fieldtrip.

Members of the international scientific community interested in this project are invited to participate in this workshop and fieldtrip. Applicants are expected to submit a single pdf file including a one page CV with contact details and a summary of interests and intended contribution to the project to the workshop organizer by February 15, 2019 (Paul Olsen, Lamont-Doherty Earth Observatory of Columbia, polsen@ldeo.columbia.edu). By end-February selected participants will be informed of financial support. Costs will be covered as far as possible by workshop funds, with the cost of the optional fieldtrip to be covered by the participants. Preference will be given to scientists from ICDP member countries, early-career scientists, and to those whose expertise and interests complement that of project initiators.