# MEETINGS

## Climatic, Tectonic, and Biotic Evolution in Continental Cores

***Colorado Plateau Coring Project: Workshop***
***St. George, Utah, 13–16 November 2007***

A workshop was convened in St. George, Utah, to advance planning for the Colorado Plateau Coring Project (CPCP). The vast continental basins of the southwestern United States, particularly well exposed on the Colorado Plateau and its environs, contain one of the richest stratigraphic records of early Mesozoic age (between roughly 145 and 250 million years ago). This time period was punctuated by two of the major mass extinctions in the last 550 million years and witnessed the evolutionary appearance of the modern biota and dramatic climate changes on the continents.

Since the mid-nineteenth century, classic studies of these basins, their strata, and their fossils have made this sequence instrumental in framing our context for the early Mesozoic world. Nonetheless, striking ambiguities in temporal resolution, uncertainties in global correlations with other early Mesozoic strata, and major doubts about latitudinal position still hamper testing of the major competing climatic, biotic, and tectonic hypotheses.

A scientific drilling experiment is essential because the most continuous sections in outcrop are either inaccessible in vertical cliffs or weathered and geochemically altered, making observations and sampling at the appropriate level of detail impossible. Furthermore, the nearly flat lying sediment layers in combination with facies changes compromise the ability to determine superposition in sections compiled over long geographic traverses.

Forty-five researchers from six countries attended the CPCP workshop and focused their discussion on developing a basic coring plan for the American Southwest venue that would attempt to resolve several important issues. These include differentiating global or regional climate trends versus latitudinal changes over Pangea during periods of intense greenhouse warming, the response of largely fluvial systems to cyclical climate change, the rates and magnitudes of the transition from Paleozoic (550-250 million years ago) to essentially modern terrestrial ecosystems, and how the stratigraphy of the basins reflects the interplay between growth in accommodation space, uplift, and eustatic fluctuations.

To tackle these questions, the workshop participants identified five major stratigraphic packages on the Colorado Plateau and environs as key coring targets. These five packages span the Triassic (~200 to 250 million years ago) and Jurassic (145 to 200 million years ago). They include: Early to Middle Triassic Moenkopi Formation, Late Triassic Chinle Group, latest Triassic to (?) Middle Jurassic Glen Canyon Group, Middle to (?) Late Jurassic San Rafael Group, and the Late Jurassic Morrison Formation. Specific geographic areas were selected for drilling of three long (~1 kilometer) cores and two shorter cores that will recover the critical Early Mesozoic transitions in the region (see Figure 1, in the electronic supplement).

With the further development of a robust and effective data management system and an education outreach program, the CPCP workshop endorsed development of drilling proposals for submittal to the International Continental Scientific Drilling Program (ICDP) and the U.S. National Science Foundation (NSF) Continental Dynamics program in 2008. A smaller ICDP workshop is being planned for mid-2008 in Albuquerque, N. M., to refine the science groups (including the principal investigators) for the CPCP. The CPCP workshop was funded by grants from Drilling, Observation and Sampling of the Earth's Continental Crust, Inc. (DOSECC), and NSF (Sedimentary Geology and Paleobiology).

The full text of this meeting report, and Figure 1, can be found in the electronic supplement to this *Eos* issue (http://www.agu.org/eos_elec).

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