Continental Crises of the Jurassic: Major Extinction Events and Environmental Changes within Lacustrine Ecosystems

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Jurassic Tropical to Polar Biotic and Climatic Transects

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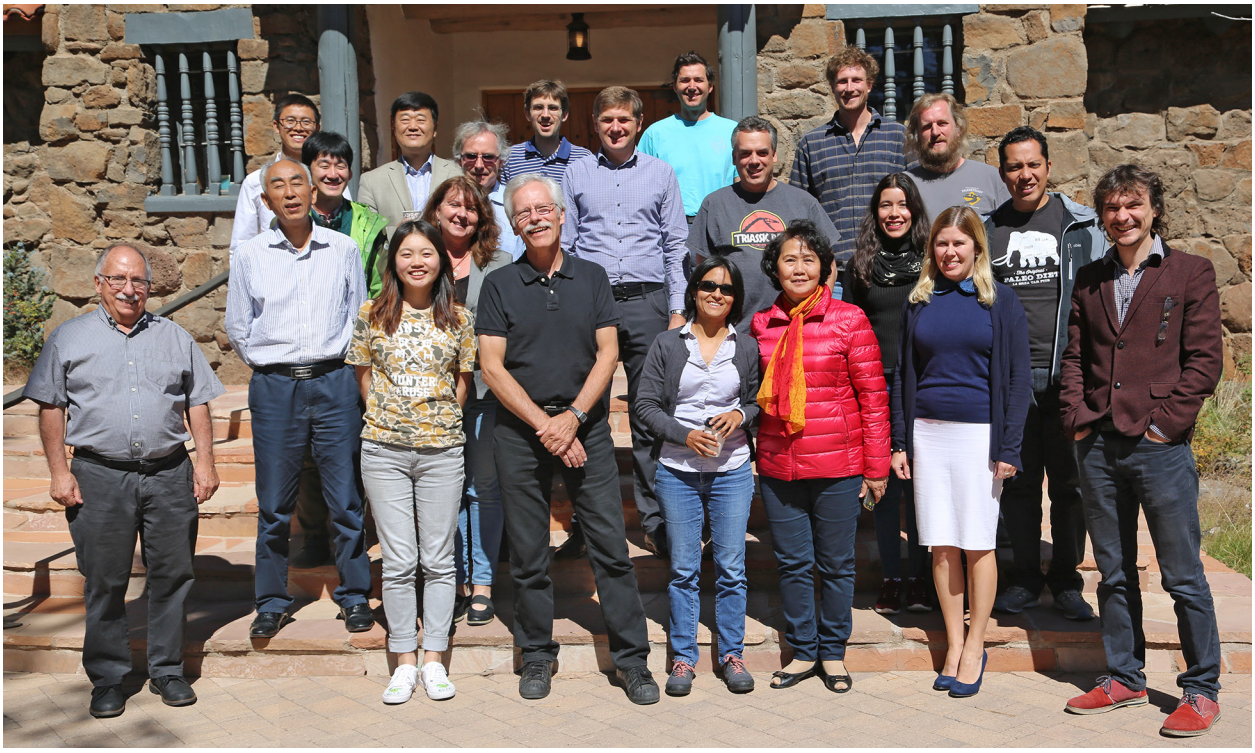
SYMPOSIUM ABSTRACTS WITH PROGRAM



Symposium Presenters

THE WHITE MOUNTAIN MAGMA SERIES OF NEW ENGLAND: NEW PERSPECTIVES FROM ZIRCON U-PB GEOCHRONOLOGY

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The magmatic complexes of the White Mountain Magma Series (WMMS) collectively form the largest expression of post-orogenic, felsic magmatism on the Eastern North American Margin (ENAM) and fall into two broad age groupings, based upon early studies: 1) ~200 – 160 Ma (a Jurassic suite); and 2) ~130 -100 Ma (a Cretaceous suite). Much debate surrounds their formation, age distribution, and relationship to other regional features/events. A major obstacle in obtaining a greater understanding of the WMMS has been the tenuous legacy temporal framework for the timing and duration of its magmatic activity. Because both precise and accurate ages are necessary to properly reconstruct the history of regional magmatism, we are obtaining new zircon U-Pb ages from LA-ICP-MS and CA-ID-TIMS techniques, intending to provide insight on the following questions: 1) What is the total timing and duration of magmatism and under what geodynamic settings did each suite form?; 2) What, if any, connection is there to the Central Atlantic Magmatic Province (CAMP, the largest known flood basalt province, linked to the end-Triassic Extinction)?; 3) What is the relationship of the Cretaceous suite to the nearby Monteregian Hills (Quebec) and New England Seamount Chain?

Thus far, our results indicate that magmatism associated with the largest Jurassic intrusion (the White Mountain Batholith) occurred over a shorter interval than previously thought, potentially coeval with the CAMP. Additionally, magmatism outside the batholith occurred during the same interval, without any apparent spatial trend. If the Jurassic suite is indeed geodynamically connected to the CAMP, it may help to provide insight on the mechanism by which the CAMP formed (plume, thermal insulation of the mantle, etc.), currently an open question. Our ongoing work involves obtaining age constraints on the entirety of the Jurassic suite and formally testing the proposed mechanism (hot spot) for the Cretaceous suite.