Thursday, April 27, 2017
SOLAR SYSTEM SITES: EARTH IN TIME/DEEP BIOSPHERE:
SUSTAINED HABITABILITY, LIFE, AND THE BIOSIGNATURES OF A DYNAMIC EARLY EARTH II
1:30 p.m. Arizona Ballroom D

Chairs: **Chris Reinhard**
Charles Diamond

1:30 p.m. Romaniello S. J. * Zhang F. Algeo T. J. Anbar A. D.
High-Resolution Reconstruction of Anoxia Across the End-Permian Mass Extinction from Composite Uranium Isotope Records **[#3729]**
We use high-resolution profiles of $^{238}U/^{235}U$ in marine carbonates to reconstruct the temporal trend and spatial extent of marine anoxia over the EPME.

1:45 p.m. Mansor M. * Macalady J. L. Fantle M. S.
Quantitative Constraint on Molybdenum-Nitrogen Co-Limitation in the Proterozoic Ocean **[#3285]**
[Mo(aq)] in the Proterozoic, reconstructed from pyrite-Mo, suggest values >5 nM. This suggests that eukaryotic development was not Mo-N co-limited at that time.

2:00 p.m. Kipp M. A. * Stüeken E. E. Buick R. Bekker A.
A Quantitative Framework for the Interpretation of Nitrogen Isotope Data in Ancient Marine Sedimentary Rocks **[#3471]**
Here we use the record of nitrogen isotope ratios in marine sedimentary rocks to quantify the prevalence of nitrogen-fixing organisms through Earth's history.

2:15 p.m. Castleberry P. R. * Romaniello S. J. Anbar A. D.
The Possible Photochemical Origins of Banded Iron Formations **[#3528]**
We tested the theory that Fe photooxidation could deposit BIFs. We find photooxidation could contribute to, but likely not be completely responsible for, BIFs.

2:30 p.m. Krissansen-Totton J. * Olson S. Catling D. C.
Atmospheric Disequilibrium Biosignatures on Earth Through Time **[#3104]**
Earth's atmosphere may have been in chemical disequilibrium since 3.5 Ga due to the presence of life. This disequilibrium was potentially remotely detectable.

2:45 p.m. Ozaki K. * Tajika E. Reinhard C. T.
Limited O_2 Production in the Mid-Proterozoic Oceans **[#3121]**
Numerical model constrained by geological records suggests that O_2 production rate in the mid-Proteorozic oceans were a factor of two below the modern ocean.

3:00 p.m. Planavsky N. P. * Cole D. B. Reinhard C. T. Lyons T. W.
Mid-Proterozoic Records of Atmospheric Oxygen **[#3333]**
We will present a critical review of currently utilized pO_2 toolkit and explore the history of atmospheric biosignatures on Earth.

3:15 p.m. Johnson B. W. * Goldblatt C.
Earth System Nitrogen Cycle Through Time: Interactions Between Biology, Plate Tectonics, and the Atmosphere with Implications for Planetary Habitability and Nutrient cycles **[#3636]**
We present an Earth system N-cycle model that simulates N transport between Earth's reservoirs (atmosphere, crust, mantle) over time mediated by biology.

3:30 p.m. Goldblatt C. * Dewey M. Johnson B. W.
Nitrogen, an Equivocator to Climate **[#3681]**
Changing the nitrogen inventory may warm or cool a planet, by pressure broadening and Rayleigh scattering. There is also fun to be had with other N species.

3:45 p.m. *Coffee Break*