Silverman S. N. Kopf S. Gordon R. Bebout B. Som S.  
*Measuring Ancient N₂ Pressure Using Fossilized Cyanobacteria* [#3242]

The physical spacing between heterocysts in filamentous cyanobacteria is proportional to atmospheric pN₂ and thus is a new potential proxy for atmospheric N₂.

Donovan A. L. Kacar B.  
*Resurrecting Ancestral RuBisCO in Silico* [#3531]

Reconstruction of ancestral RuBisCO proteins and analysis of chemical interactions at relevant interfaces correlates RuBisCO evolution to atmospheric changes.

Chen X. Sherry A. Romaniello S. J. Havig J. McCormick M. Anbar A. D.  
*Exploring Molybdenum and Uranium Isotope Fractionation Across the Chemocline of Fayetteville Green Lake, New York* [#3603]

Mo isotopic compositions became lighter across the chemocline of Fayetteville Green Lake, which is opposite to other euxinic basins.

Diamond C. W. Lyons T. W.  
*How Low Can You Go? A Story of Mid-Proterozoic Oxygen and the Possibility of Transient Oxygenation Events* [#3656]

This work considers all new and previously published data spanning the period of breakup of the Proterozoic supercontinent Nuna.

Lineweaver C. H.  
*Long Duration Surface Water as a Biosignature on Rocky Planets* [#3300]

I develop the idea that the long duration existence of liquid water on the surface of a rocky planet could only be due to life and is a useful biosignature.

*Coastal California’s Fog as a Unique Habitable Niche: Design for Autonomous Sampling and Preliminary Aerobiological Characterization* [#3549]

Local California sampling results confirm that fog/cloud water can be a significant reservoir for viable organisms, and may be a habitat in its own right.

Lee B. K. Tsikos H. Oliveira E. Bekker A. Lyons T. W.  
*Banded Iron Formations of the Qadrilátero Ferrífero Minas Gerais, Brazil as Archives of Biospheric Evolution* [#3714]

Iron Formations (IFs) record the evolution of oxygenic photosynthesis and dissolved O₂ concentrations in the oceans.

Stanton C. L. Reinhard C. T. Kasting J. F. Lyons T. W. Glass J. B.  
*No Laughing Matter: Nitrous Oxide Production by Chemodenitrification in the Ferruginous Proterozoic Ocean* [#3542]

Nitrous oxide could have contributed to the ancient greenhouse effect via production through chemodenitrification in the ferruginous Proterozoic ocean.