

## **Fjords as Aquatic Critical Zones**

THOMAS S. BIANCHI

Dept. of Geological Sci., Univ. of Florida, Gainesville, Florida

More attention is needed on Aquatic Critical Zones (ACZs), within the aquatic continuum, to better understand OC cycling in “newly” created dynamic interfaces in the Anthropocene. The majority of organic carbon (OC) in the global ocean is buried in the coastal margin. In particular, non-deltaic shelf regions bury an estimated 70 Tg C year<sup>-1</sup>, with only ca. 6 Tg C year<sup>-1</sup> buried in the open ocean. While there has long standing general agreement that continental shelves represent the largest sink of both terrestrial (OC<sub>terr</sub>) and marine (OC<sub>mari</sub>) OC in the global ocean, our understanding of the spatial and temporal complexity of this region continues to evolve. For example, fjords are now more recognized as “hotspots” of carbon burial with recent estimates suggesting fjord surface area-normalized OC burial rates are at least five times greater than other marine systems and one hundred times greater than the entire ocean average. Here, I will compare and contrast some of the key molecular biomarkers that have been used to date and track OC across different fjord systems and explore how redox, transport residence time, hydrodynamic sorting, glaciers, and molecular stability, impact the utility of using different biomarkers in coastal OC cycling and paleo-reconstruction.