Regional to global-scale perspectives on organic carbon burial in continental margin sediments

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Carbon cycling over continental margins is highly dynamic and spatially heterogeneous, resulting in complex patterns of organic matter (OM) content and composition in underlying sediments. Improved assessment of the role of and sensitivity of organic carbon (OC) burial as a component of carbon cycle requires comprehensive understanding of OC sources as well the processes that influence OM fate.

We seek to address this information void through combined geochemical and sedimentological investigations continental margin sediments spanning a range of spatial scales. As part of region-specific investigations, we focus on bulk- to molecular-level ^{14}C measurements as a means to constrain OM ages and aging during supply and dispersal over continental margins. These studies highlight the strong hydrodynamic controls on the distribution and composition of sedimentary organic matter, and the pervasive influence of lateral transport processes on continental margins. We will draw upon several continental margin settings to illustrate the complexity of processes at work, and to emphasize the role of hydrodynamic processes in shaping the nature and efficiency of OC burial in continental margin settings. We will place these observations in a more global context through utilization of a nascent margin-centric surface ocean sediment database that incorporates geochemical and sedimentological information. Ultimately, we seek to derive a more spatially-resolved view of the amount, nature and age of organic matter accumulating in sediments of the modern ocean, to understand the underlying processes at work, and to assess past and future changes in OC burial on continental margins.