

Seminario

Geomorphic controls on organic carbon storage and flux in river corridors

Tuesday, 3 March 2026 – 16:30, Aula Arduino

Relatore: **Prof. Katherine B. Lininger**– Geography Department, University of Colorado Boulder (USA)



River corridors (channels and floodplains) are active components of the carbon cycle, transporting, transforming, and storing carbon. However, the details of how carbon is partitioned and stored in river corridors are still relatively unexplored. In this seminar, I provide examples of how geomorphic processes influence the storage and flux of sediment organic carbon (OC) and downed wood, which are two of the largest OC stocks in river corridors. First, using field data from Colorado, USA as well as physical experiments, I demonstrate how ecogeomorphic characteristics (e.g., floodplain forest stand density, flood magnitude, and valley context (slope, confinement)) govern wood transport and deposition on floodplains, modifying where and how much OC is stored. Next, I discuss how the legacy of channel migration on the Snake River in Wyoming, USA results in floodplain surface age variation, which in turn influences floodplain sediment/soil OC content and storage. Ecogeomorphic variations (e.g., vegetation type, grain size distribution, elevation) within the floodplain are correlated with sediment OC storage. Finally, I present preliminary results from a project assessing the impacts of human alterations to river corridors (e.g., levees, water withdrawals) on floodplain carbon storage. Understanding the effect of human alterations on river corridor carbon storage has implications for river restoration approaches aimed at increasing carbon storage, but we currently lack the ability to quantify and predict the effect of human activities. I end by highlighting areas for future research that would improve our understanding of how geomorphic processes modify carbon dynamics.

Proponente: **Simone Bizzi**