DIPARTIMENTO DI GEOSCIENZE
DEPARTMENT OF GEOSCIENCES

Seminario

MODELING RIVERINE AND OVERLAND SEDIMENT MOVEMENT USING AIRBORNE LIDAR

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Aula Arduino

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Abstract:

The ability to develop spatially distributed models of topographic change is presenting new capabilities in geomorphic research. High resolution maps of elevation change indicate locations, processes, and rates of geomorphic change, and provide a means of calibrating temporal simulation models. Methods of geomorphic change detection (GCD), based on gridded models, may be applied to a wide range of time periods by utilizing cartometric, remote sensing, or ground-based topographic survey data to measure volumetric change. In this presentation, advantages and limitations of Digital Elevation Models (DEMs) derived from airborne LiDAR (Light Detection and Ranging) are discussed with a focus on coupling them with subsequent DEMs to construct DEMs of difference (DoD), which can be created by subtracting one elevation model from another, to map erosion, deposition, and volumetric change. Examples of application of this method will regard the Feather and Yuba rivers in California, and the Sandhills of South Carolina near Columbia, where an extreme rainfall event (the largest on record) took place on October 4, 2015, with a total of 546 mm of rainfall. Overland flow and stream flow caused substantial movements (sheet flows over 1-m in depth) of alluvium in the McCrady National Guard Training Base. To aid in base management for assessing road stability and accumulation areas, airborne LiDAR data was acquired after the event and analyzed in a change detection study with LiDAR data prior to the event.

Proponente: Paolo Mozzi