

## SEMINAR

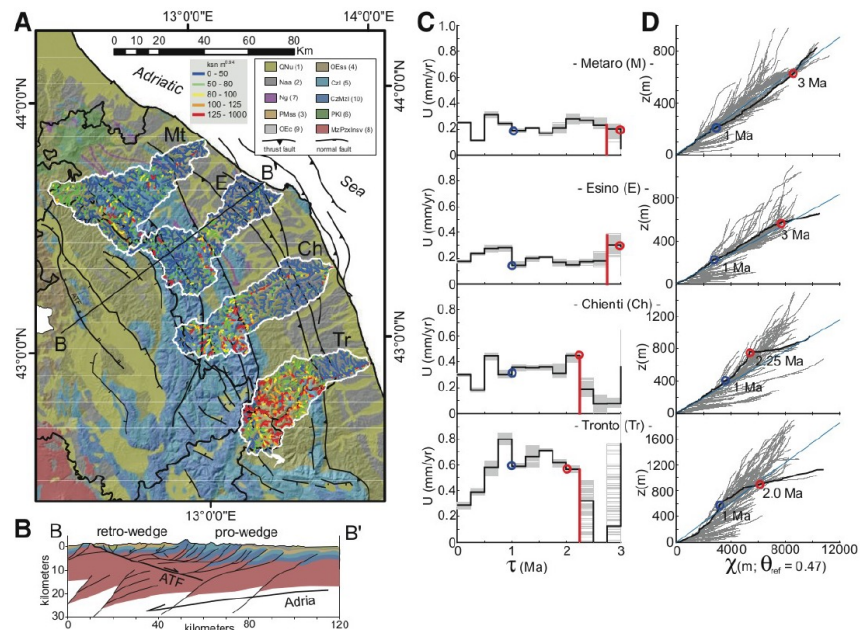
Recovery of base level fall histories from  
an inversion of fluvial topography:  
examples from the Apennines

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**Abstract:**

River long profiles are shaped by climo-hydrologic and tectonic forcings balanced against rock erodibility. The now familiar stream power rule for bedrock channel erosion provides a foundation to explore the history of base level fall that leverages this balance between driving and resisting forces. Considering purely detachment-limited bedrock channel erosion processes the steepness of river long profiles is the linear ratio of the average rate of erosion with respect to rock erodibility. In this way observables of stream steepness, extracted from a DEM, and erosion determined from geomorphic markers, thermochronology, and/or concentrations of cosmogenic nuclides can be used to determine rock erodibility and by extension, the response time of a transient, kinematic wave of erosion that may be propagating through the landscape as a family of equal-elevation knickpoints. The base level fall history is assembled using a linear inversion technique that operates on the response time of all channels with respect to their elevation, in a contiguous drainage system. If uplift is uniform, rock erodibility can be varied according rock type. The fluvial inversion technique and resulting base level fall histories will be explored using example landscapes from the northern, central, and southern (Sicilian) Apennines.



**Tuesday 9 May**  
**15.30 – 16.30**

Room F Department of Physics and Geology  
Piazza dell'Università 1, Perugia



[Link for remote access on Teams](#)

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