

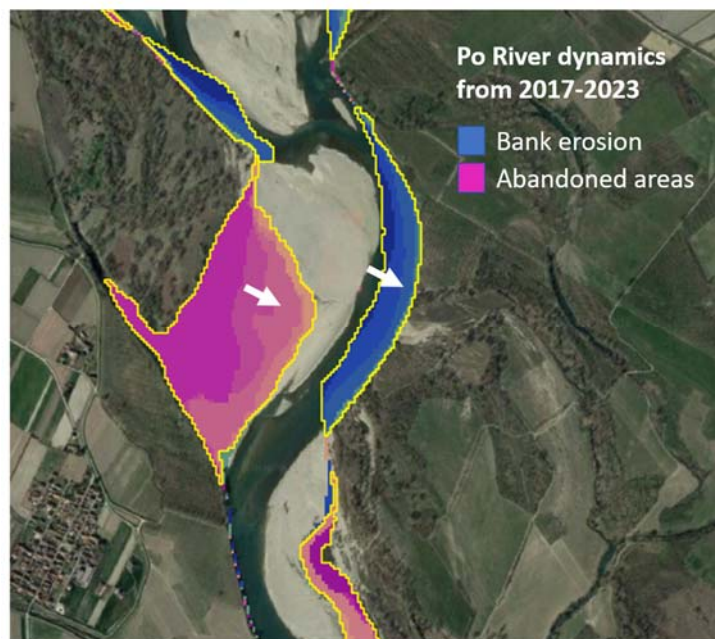
Seminario “Dipartimento di Eccellenza”

## Monitoring river morphology with Sentinel 2 data: limitations and opportunities across scales

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Satellite imageries are starting to become for geomorphologists a new tool to monitor medium-large river dynamics at high revisit time. The Sentinel 2 mission, in particular, freely provides a multi-spectral image of the earth surface at 10 meters resolution every 5 days (cloud cover permitting). Machine learning algorithms can then classify these images automatically into river water, exposed sediment bars and riparian vegetation. The spatiotemporal evolution of these geomorphic features can describe how a river responds to different hydrological impulses and boundary conditions, providing insights for future impacts. In this talk, I will give an overview of how Sentinel 2 images have been used within the Po River catchment (Italy) across different applications. Examples include the quantification of the intrinsic uncertainty that are present when using these tools (what can we actually map at 10 m resolution?) as well as the identification of river change hotspots within the last decade. This information can be used from reach- up to network-scales, supporting a robust understanding of the underlying river processes but also informing river managers of where interventions can be most effective.