

WATZON: the Italian network of ecohydrology and critical zone observatories

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## WATZON: the Italian network of ecohydrology and critical zone observatories

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The Italian initiative WATZON (WATER mixing in the critical ZONE) is a network of instrumented sites, bringing together six pre-existing long-term research observatories monitoring different compartments of the Critical Zone - the Earth's permeable near-surface layer from the tops of the trees to the bottom of the groundwater. These observatories cover different climatic and physiographic characteristics over the country, providing information over a climate and ecohydrologic transect connecting the Mediterranean to the Alps. With specific initial scientific questions, monitoring strategies, databases, and modeling activities, the WATZON observatories and sites is well representative of the heterogeneity of the critical zone and of the scientific communities studying it. Despite this diversity, all WATZON sites share a common eco-hydrologic monitoring and modelling program with three main objectives:

- 1) assessing the description of water mixing process across the critical zone by using integrated high-resolution isotopic, geophysical and hydrometeorological measurements from point to catchment scale, under different physiographic conditions and climate forcing;
- 2) testing water exchange mechanisms between subsurface reservoirs and vegetation, and assessing ecohydrological dynamics in different environments by coupling the high-resolution data set from different critical zone study sites of the initiative with advanced ecohydrological

models at multiple spatial scales;

3) developing a process-based conceptual framework of ecohydrological processes in the critical zone to translate scientific knowledge into evidence to support policy and management decisions concerning water and land use in forested and agricultural ecosystems.

This work provides an overview of the WATZON network, its objectives, scientific questions, and data management, with a specific focus on existing initiatives for linking data and models based on WATZON data.