

EGU2020-13665

<https://doi.org/10.5194/egusphere-egu2020-13665>

EGU General Assembly 2020

© Author(s) 2021. This work is distributed under the Creative Commons Attribution 4.0 License.



## OMERE: A Long-Term Observatory of Soil and Water Resources, in Interaction with Agricultural and Land Management in Mediterranean Hilly Catchments

Jérôme Molénat<sup>1</sup>, Damien Raclot<sup>1</sup>, Rim Zitouna<sup>2</sup>, Jean Albergel<sup>1</sup>, Marc Voltz<sup>1</sup>, and the OMERE Team\*

<sup>1</sup>INRAE, UMR LISAH, Montpellier, France (jerome.molenat@inrae.fr)

<sup>2</sup>INRGREF, Carthage Univ., Tunis, Tunisia

\*A full list of authors appears at the end of the abstract

The hydrology of the Mediterranean region is affected by global changes such as climate and land use changes. In rural areas, changes in farming practices and landscape management can be the main drivers of changes in water cycles and in matter transport associated with hydrological fluxes, such as contaminants and sediments. The process underlying these changes can be slow, such as in land use or contaminant dynamics, or infrequent over time, such as erosion. Understanding these processes and their relationship requires long-term observations to capture slow dynamics or infrequent events. In this context, we present the Mediterranean agro-hydrological observatory OMERE (Mediterranean observatory of the rural environment and water) by explaining the observation strategy and by emphasizing how this strategy and associated research have contributed to a better understanding of the impact of agricultural and land management on mass flows in Mediterranean farmed headwater catchments.

The OMERE observatory is made up of two agricultural catchments, one in the north of Tunisia and the other in the south of France, accounting for the diversity of agricultural and ecosystem situations in hilly Mediterranean areas. The OMERE observatory belongs to the French national network OZCAR, dedicated to the observation of the critical zone. The observation strategy is motivated by monitoring the flow of water, sediments and contaminants and hydrological and climatic variables at different spatial scales from cultivated plots and landscape elements to the catchment scale. These measurements were made with fine temporal resolution on a long-term scale and examining land use, agricultural practices and soil surface characteristics. The long-term observation strategy aims to support multidisciplinary integrative research to elucidate the conditions that improve soil and water management and the provision of ecosystem services in the Mediterranean context of rain-fed agriculture. The observatory addressed three scientific questions: (i) better understand water flows, erosion and contaminants, in particular pesticides, and their natural and anthropogenic factors in the short and long term; (ii) analyze the overall effects of agriculture and land management on mass flows at different scales, from the plot to the watershed or the landscape; and (iii) develop new scenarios for sustainable agricultural

management and better delivery of ecosystem services. Some of the scientific progresses driven by the questions drawn from the OMERE observatory are presented.

*Voltz, M., and A. Albergel. 2002. OMERE: Observatoire Méditerranéen de l'Environnement Rural et de l'Eau- Impact des actions anthropiques sur les transferts de masse dans les hydrosystèmes méditerranéens ruraux. Proposition d'Observatoire de Recherche en Environnement. Minist. Français Rech., Paris*

*Molénat, J., Raclot, D., Zitouna R., ..., Albergel, J., and Voltz M., 2018, OMERE: A Long-Term Observatory of Soil and Water Resources, in Interaction with Agricultural and Land Management in Mediterranean Hilly Catchments, Vadose Zone J., 17:180086. doi:10.2136/vzj2018.04.0086*

**OMERE Team:** P. Andrieux (1), G. Coulouma (1), D. Feurer (1), O. Grunberger (1), J.M. Lamachère (1), J.S. Bailly (1), J.L. Belotti (1), K. Ben Azzez (1,3), N. Ben Mechlia (1), M. Ben Younès Louati (3), A. Biarnès (1), Y. Blanca (1), D. Carrière (1), H. Chaabane (4), C. Dagès (1), A. Debabria (1,5), A. Dubreuil (1), J.C. Fabre (1), D. Fage (1), C. Floure (1), F. Garnier (1), C. Geniez (1), C. Gomez (1), R. Hamdi (1,3), O. Huttel (1), F. Jacob (1), Z. Jenhaoui (1,3), P. Lagacherie (1), Y. Le Bissonnais (1), R. Louati (1,2), X. Louchart (1), I. Mekki (2), R. Moussa (1), S. Negro (1), Y. Pépin (1), L. Prévot (1), A. Samouelian (1), J.L. Seidel (6), G. Trotoux (1), S. Troiano (1), F. Vinatier (1), P. Zante (1), J. Zrelli (1),