



This project is part of the PRIMA Programme supported by the European Union



Sustainable groundwater resources management by integrating Earth Observation derived monitoring and flow modeling results



Meisina C.(1), Zucca F.(1), Boni R.(1), Bordoni M.(1), Teatini P.(2), Ferronato M.(2), Zoccarato C.(2), Guardiola Albert C.(3), Herrera Garcia G.(3), Béjar-Pizarro M.(3), Ezquerro P.(3), Tomás R.(4), Valdes-Abellan J.(4), López Sánchez J. M.(5), Cano M.(4), Riquelme A.(4), Pastor J.L.(4), Pla C.(4), Elçi A.(6), Ören H.(6), Shatanawi K.(7), Mohammad A.H.(7), Letterio T.(8), Genovesi R.(8), Anconelli S.(8), Khreisha H.(9), Smadi M.(9)

1. University of Pavia – Department of Earth and Environmental Sciences, claudia.meisina@unipv.it, 2. Dept. of Civil, Environmental and Architectural Engineering, University of Padova, 3. Instituto Geológico y Minero de España, 4. Civil Engineering Department - University of Alicante, 5. Departamento de Física, Ingeniería de Sistemas y Teoría de la Señal - University of Alicante, 6. Dept. of Environmental Engineering- Dokuz Eylul University, 7. Dept. of Civil Engineering - School of Engineering, The University of Jordan, 8. Consorzio di Bonifica di Secondo Grado per il Canale Emiliano Romagnolo, 9. Azraq Wetland Reserve, The Royal Society for the Conservation of Nature

1. Challenge

In Mediterranean areas groundwater resources are taking a more prominent role in providing fresh water supplies in the framework of climatic global changes. Hence, the compound challenges that water planners have to face will require a new generation of more efficient aquifer management plans to address the broad impacts on aquifer storage and aquifer water quality as a result of land subsidence and salinization.

The **RESERVOIR** project, which is funded by the Partnership for Research and Innovation in the Mediterranean Area (PRIMA-H2020) and started in March 2020, is aimed at providing a new approach for the sustainable management of groundwater.

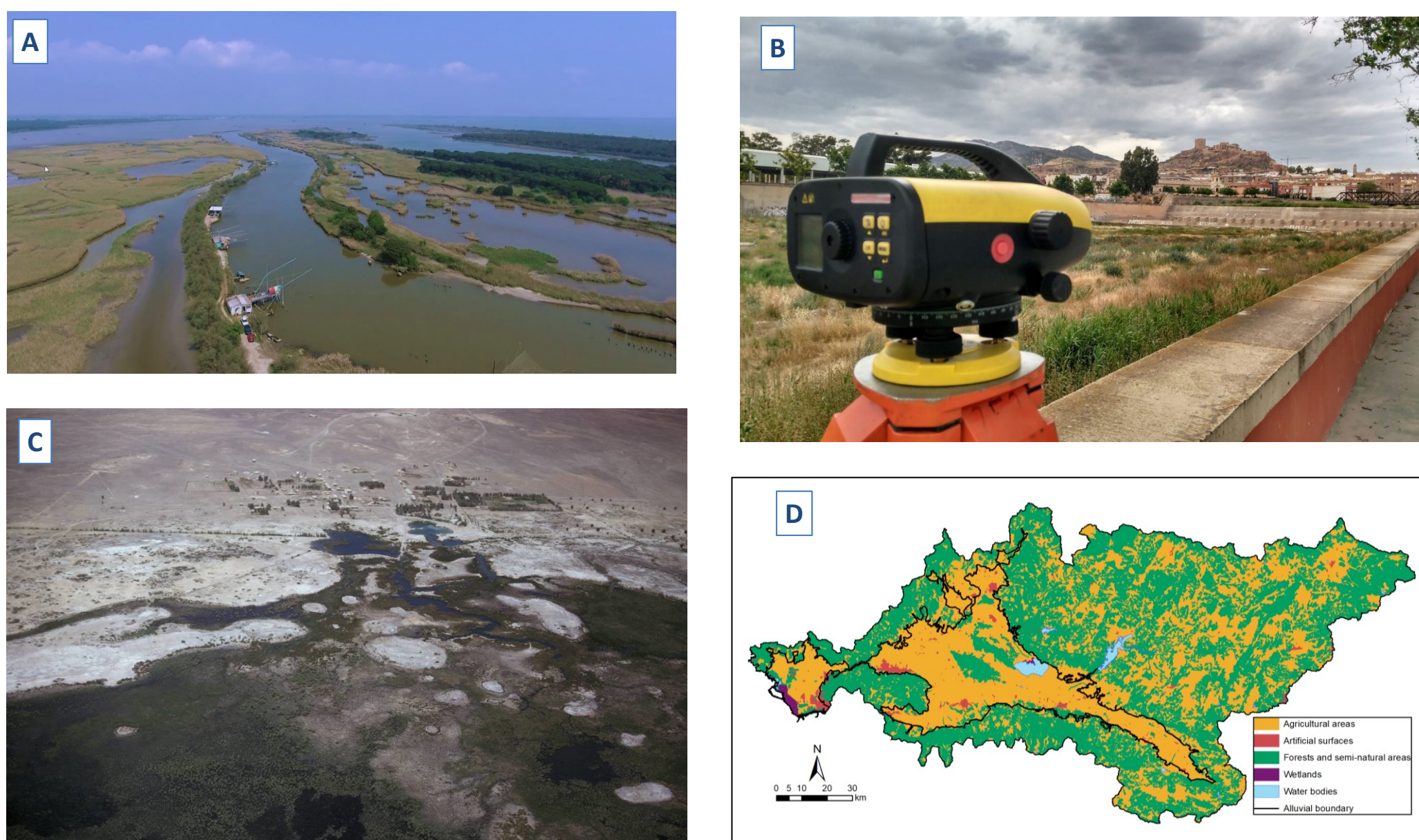
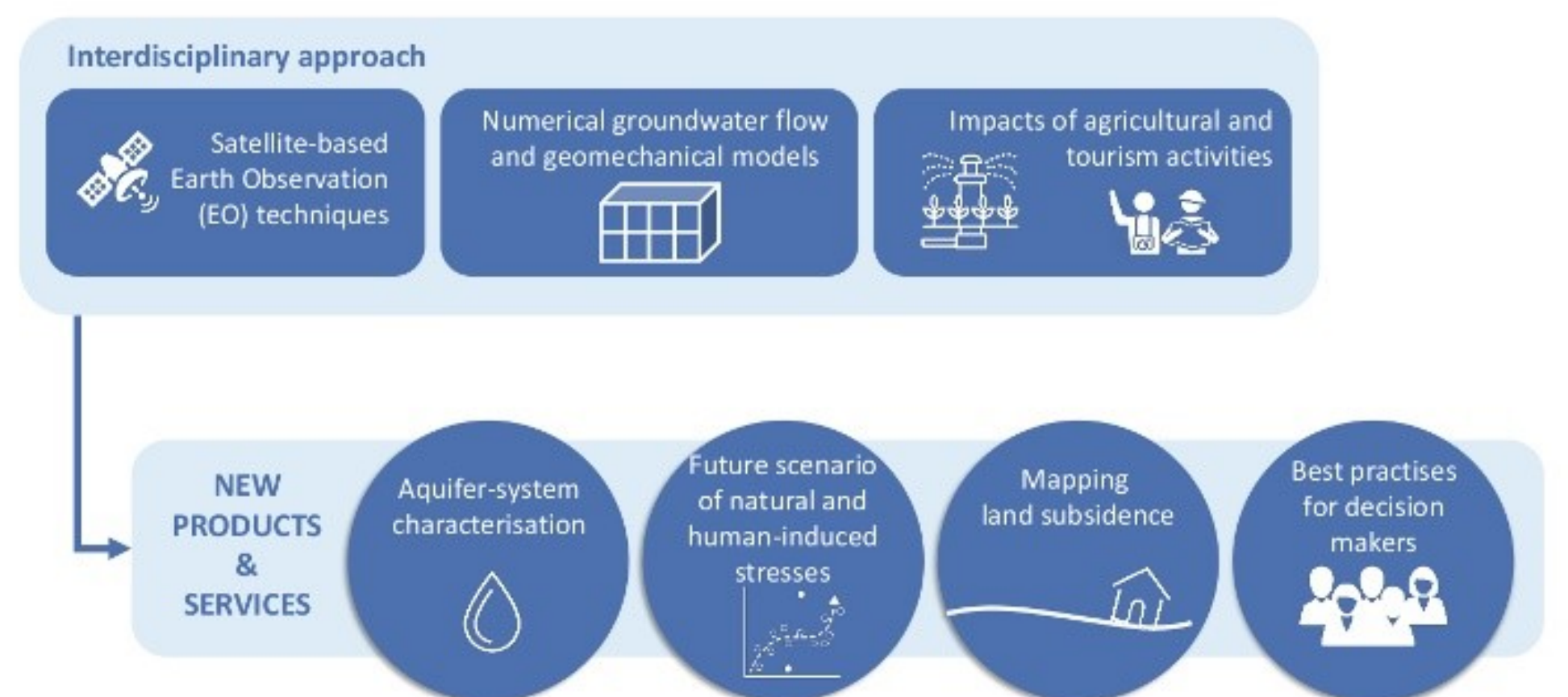


Figure 1. The test sites: A) Coastal Aquifer of Comacchio, Italy; B) Alto Guadalentín Aquifer, Spain; C) Azraq Basin, Azraq Oasis, Jordan; D) Gediz River Basin, Turkey.

2. Goals

1. Develop an innovative methodology for the hydrogeological characterisation of large-scale aquifer systems using low-cost and non-intrusive data such as satellite-based Earth Observation (EO) techniques.
2. Integrate advanced EO techniques into groundwater flow and geomechanical numerical models to improve the knowledge about the current capacity of aquifers systems to store water and their future response to natural and human-induced stresses.
3. Enhance the knowledge about the impacts of agriculture and tourism on groundwater resources by quantifying ground deformation.
4. Engage water management authorities and provide strategies for optimal management of the aquifer systems.

3. Methodology



4. Test areas

The innovative approach will be tested in four water-stressed Mediterranean areas. The Coastal Aquifer of Comacchio (Italy), the Alto Guadalentín Aquifer (Spain), the Gediz River Basin alluvial aquifer (Turkey), and the Azraq Wetland Reserve (Jordan). These sites have been selected based on a) vulnerability to drought, b) occurrence and/or frequency of occurrence of important dry periods, and c) intensive exploitation for agriculture and/or touristic purposes.



Figure 2. Geographic location of the consortium.

5. Expected impact

The main expected outcomes will be advanced numerical models casted in an operational groundwater management framework, tested and validated in the four pilot sites. Various strategies will be developed in cooperation with local water management authorities and best practices will be delineated to support decision makers. The developed approach will be applicable in other regions of the Mediterranean basin suffering for water scarcity.

Follow us on:

<https://web.facebook.com/Reservoir-Project-104777871209651>

<https://www.researchgate.net/project/RESERVOIR-Sustainable-groundwater-RESources-managEment-by-integrating-earth-observation-deriVed-monitoring-and- fIOW-modellng-Results>

