Finanziato dall'Unione europea NextGenerationEU | Ministero dell'Università e della Ricerca | Italiadomani PIANO NAZIONALE DI RIPRESA E RESILIENZA

multi-Risk sciEnce for resilienT commUnities undeR a changiNgclimate

Codice progetto MUR: **PE00000005** – CUP LEAD PARTNER

Integrated monitoring strategies (ground and remote) to deliver a comprehensive overview of the status of hydrological and agricultural drought in real time.

Deliverable ID: 1.3.1

Due date: 30.11.2023

Submission date:

AUTHORS

Edoardo Cremonese (CIMA Foundation), Francesco Avanzi (CIMA Foundation), Michel Isabellon (CIMA Foundation), Luca Trotter (CIMA Foundation), Simone Gabellani (CIMA Foundation), Andrea Galletti, (EURAC Research), Fabio Deidda (EURAC Research), Roozbeh Rajabi (UNIGE), Gabriele Moser (UNIGE), Fabiola Banfi (POLIMI), Carlo De Michele (POLIMI), Daniele Penna (UNIFI), Luigi Piemontese (UNIFI), Jost von Hardenberg (POLITO), Stefania Tamea (POLITO), Amirarsalan Shahmohammadi (POLITO)

1. Technical references

Project Acronym	RETURN
Project Title	multi-Risk sciEnce for resilienT commUnities undeR a changiNg climate
Project Coordinator	Domenico Calcaterra UNIVERSITA DEGLI STUDI DI NAPOLI FEDERICO II domcalca@unina.it
Project Duration	December 2022 – November 2025 (36 months)

Deliverable No.	DV 1.3.1
Dissemination level*	
Work Package	WP 1.3 Drought risk under environmental and climatic changes -
Task	T 1.3.1-Monitoring and data
Lead beneficiary	CIMA
Contributing beneficiary/ies	Edoardo Cremonese (CIMA Foundation), Francesco Avanzi (CIMA Foundation), Michel Isabellon (CIMA Foundation), Luca Trotter (CIMA Foundation), Simone Gabellani (CIMA Foundation), Andrea Galletti, (EURAC Research), Fabio Deidda (EURAC Research), Roozbeh Rajabi (UNIGE), Gabriele Moser (UNIGE), Fabiola Banfi (POLIMI), Carlo De Michele (POLIMI), Daniele Penna (UNIFI), Luigi Piemontese (UNIFI), Jost von Hardenberg (POLITO), Stefania Tamea (POLITO), Amirarsalan Shahmohammadi (POLITO)

* PU = Public

PP = Restricted to other programme participants (including the Commission Services)

RE = Restricted to a group specified by the consortium (including the Commission Services)

CO = Confidential, only for members of the consortium (including the Commission Services)

Document history

Version	Date	Lead contributor	Description
0.1	06/11/2023	Edoardo Cremonese (CIMA FOUNDATION)	First draft
0.2	23/11/2023	Roberto Rudari (CIMA FOUNDATION)	Critical review and proofreading
0.3	27/11/2023	Edoardo Cremonese (CIMA FOUNDATION)	Edits for approval
1.0	29/11/2023	Francesco Ballio (POLIMI)	Final version

2. ABSTRACT

The Spoke VS1-Water is developing a number of outreach products / services for technological transfer of the knowledge developed within the research project. Such products will be demonstrated through the Digital Twin. This report includes sections related to monitoring and data management for outreach product NatDHMS - National Drought Hydrological Monitoring System, an advanced monitoring tool for the assessment of water resources. This tool will be demonstrated through case studies covering different scales within Italy, ranging from the entire country to specific hydrologic basins. Specific actions are aimed at:

- providing advanced monitoring tools delivering a comprehensive assessment of drought conditions and water resources at the entire Italian scale;
- generating a pipeline capable to leverage information from different sources (i.e., ground data, reanalysis and remotely sensed data) in near-real time, integrating it into a framework for producing hydro-meteorological variables and drought indexes on multiple spatial scales (gridded or aggregated);
- creating a high-resolution estimate of daily evapotranspiration over complex terrain by means of the Sentinel constellation products;
- monitoring and classifying crops using satellite image time series with a specific focus on winter crops and summer crops;
- providing a dataset of drought events over Europe with related attributes;
- identify and test indicators for the quantification of crop water stress based on satellite products;
- providing advanced monitoring tools to track the local-scale network connectivity dynamics in a forest headwater catchment.