



Towards an operational, multi-variable, and real-time water scarcity data platform for the Italian Civil Protection Department

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Since early 2022, Italy has been experiencing a multi-year drought going well beyond a mere precipitation deficit to include a snow deficit, negative soil moisture anomalies, significant streamflow lows, and considerable impacts on various sectors. In the wake of this event, CIMA Research Foundation is working with the Italian Civil Protection Department to establish a real-time, multi-variable and operational water scarcity data platform for real-world applications. These analyses provide monthly snapshots of the following variables: temperature anomaly, Standardized Precipitation Index, Standardized Soil Moisture Index, Standardized Precipitation Evapotranspiration Index, Snow-Water-Equivalent deficit, and anomalies of the fraction of absorbed photosynthetically active radiation. All indices are computed at monthly resolution and are spatially explicit, with varying spatial resolutions up to a maximum of 1 km. In collaboration with the Italian Civil Protection Department, a bulletin is composed every month to translate these indices into decision-relevant information, such as the percentage of the Italian territory that is in a specific drought level every month. Future steps are the inclusion of near real-time, satellite-based information on water reservoir areas and extents for various case studies across the country.