

## **Hydro-Meteorology Research and ICT: DEWETRA, OWIS and DRIHMS experiences.**

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The mitigation of the effects of natural disasters can be achieved through the identification, analysis and understanding of the causes and of the underlying hydrological, meteorological, and chemical processes. This is why research at CIMA Foundation is particularly devoted to the observation of the environment using the most advanced remote sensing technologies currently available and to the reproduction of observed phenomena with numerical modeling approaches.

To achieve its goals, research at CIMA Foundation is driven by Civil Protection applications and focuses on several topics, going from predictability of meteorological extremes to modelling and prediction of floods, through collection and observation of hydrometeorological variables, data fusion and data assimilation.

In this framework, CIMA Foundation has designed, on behalf of the Italian Civil Protection Department, Dewetra which is an integrated system for real-time risk forecasting, monitoring and prevention. Dewetra HW and SW architecture is fully compliant with the requirement of a flexible Decision Support System, which through a multi-layer Graphical User Interface (GUI) can provide decision makers with high resolution and rapid refresh information of the expected and observed risk.

To use on real-time satellite images for flood risk assessment requires to bring together in short time a very distributed network of experts. This need led to the development of the Opera Web Interfaces (OWIS) system which develops WPS-like concepts and bring them into operational practice.

This combination of research and operational expertises in hydrometeorology and intensive use of new technologies has brought CIMA Foundation closer to the ICT community. Under the motto of “Hydrometeorology and ICT: two worlds that should talk more together” the FP7 DRIHMS (Distributed Research Infrastructure for Hydro-Meteorology Study) aims to optimize the application of ICT technologies (including computer intensive frameworks for data sharing and new approaches for achieving model interoperability) in the study and comprehension of hydrometeorological processes.

The main ideas of DEWETRA, OWIS and DRIHMS will be discussed in this talk.