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Hydro-geological risk prediction: the operational activity in Abruzzo Region for the rainfall-induced landslides forecasting.

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Hydrogeological hazard and its related risk prediction is becoming increasingly important in the context of climate change. Since extreme meteorological events, such as drought and intense rainfall, are expected to increase, the continuous update of the Early Warning Systems (EWSs) is particularly challenging, in the context of Civil Protection activities. The new regulations concerning the organization of the Civil Protection distributed Service strongly reiterates the role of the collaboration with the scientific community, in order to ensure the EWS adaptation to deal with environmental changes. Scientists are called to convert up-do-date research findings to products available to end-users. On the other hand, civil protection should encourage scientific collaborations, with the aim of providing useful and user-friendly instruments to its operators, to increase the effectiveness of risk prediction and early intervention. In this context, the World Meteorological Organization recommends as sample products should be readily available for potential customers. From this conception, the rainfall-triggered landslides prediction system presented in this work was set-up by the Centre of Excellence CETEMPS for the Abruzzo Region Civil Protection institutional activities. The landslides forecasting system is based on the use of the Cetemps Hydrological Model (CHyM), coupled with different meteorological observations (gauges network, weather radar or satellites) and forecasts from limited area models. The landslide hazard is then given at hourly basis over the whole region, as well as, selected areas at risk, though the use of a stress index based on different thresholds.