



Meteorological and Hydrogeological Warning Thresholds in the operational bulletins of the Albanian National Centre for Forecast and Monitoring of Natural Risks

M. Marku (1), V. Mustaqi (1), E. Abazi (1), K. Zaimi (1), E. Vako (1), M. Gjonaj (1), F. Hoxhaj (1), M. Deda (2), E. Fiori (3), M. Massabò (2), and F. Castelli (4)

(1) Institute of Geosciences, Energy, Water and Environment-IGEWE, (2) CIMA Resersch Foundation Albania, (3) CIMA Research Foundation, Italy, (4) International Consultant of IGEWE

Most operational meteo-hydrological warning system uses fixed rainfall thresholds on given durations to switch alerting bulletins. This may be a too rough approximation in regions with strong climate gradient like Albanian, especially when this bulletins need to include the evaluation of potential ground effect like floods.

In the framework of the International cooperation between the Civil Protection of Italy and Albania, the National Centre for Forecast and Monitoring of Natural Risks has been established at the Institute of Geosciences, Energy, Water and Environment (IGEWE). The Centre is supported by expertise of CIMA Research Foundation - International Centre on Environmental Monitoring. The Centre issues (every morning) on a daily basis a Meteorological Warning Bulletin (the first bulletin was issued quite recently on the 20th of December 2011). It is mostly dedicated to the precipitation forecast, the most important hazard in Albania. It covers 36 hours, starting for the noon of the current day till the end of the next day. It offers a detailed precipitation forecast for each prefecture of Albania (12 in total). The prefectures that have to do with the most problematic river (Drini) are divided in a few warning areas each homogenous with respect to climatologic and hydrologic conditions.

The meteo-warning is synthetically evaluated for each prefecture; it contains the assessment of the experts about the severity of the forecasted storm in terms of average precipitations, and maximum and, possible storms (if rainfall intensity exceed 90 mm in 3 hours). Reference meteorological model is COSMO LAMI7 (managed by ARPA Bologna, Italy), its spatial resolution is 7 km and temporal resolution for the outputs is 3 hours. Also ECMWF model is available. After the pure meteorological evaluation, possible adverse ground effects are assessed with a second level of variable rainfall thresholds, whose estimated recurrence interval is compared to soil moisture dependent values. The soil moisture conditions are computed by the operational probabilistic forecasting model Flood Proofs, implemented by CIMA for the Drin and lake of Shkodra basins. Flood Proof is also used to forecast river discharge at the mains hydraulic cross-section of the basins; the third level of assessment is based on discharge thresholds.

All the meteorological and hydrological forecast models are available in the open source web-based platform DEWETRA (DEWETRA has been developed by CIMA on behalf of the Italian department of Civil Protection who uses it routinely for its activities of forecast, monitor and surveillance of Natural Risks)

Meteo-Warning classification is chosen to be similar to MeteoAlarm; in the future the Center wish to participate in this European activity. Hydrological warnings are expressed in terms of risk scenarios.