



Warning maps against extreme meteorological hazards - an example from Poland

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The importance of historical information is being stressed as necessary to identify hazard impacts or further risks by recognizing hazard patterns, calculating the probabilities of their occurrences or severity. Strong winds, heavy snow, river floods, and heat waves are listed at the top of hydrometeorological hazards affecting Europe; only slightly less dangerous are thunder- and hailstorms, freezing rain or dense fogs.

The main objective of the study is an attempt to define a method of permanent (based on automated operations) warning system protecting the society against extreme weather events. Meteorological hazard maps are one of the components of IT system for country protection against extreme hazards (ISOK) created by the consortium of Polish institutions, including the Institute of Meteorology and Water Management – National Research Institute. The system will become fully operational in the year 2015.

Warning maps will be generated in the system (in automatic mode) relying on formulated algorithms describing occurrence of meteorological hazards. The algorithms will facilitate generation of maps forecasting probability of occurrence of defined hazards (temperature extremes, heavy rainfalls, strong winds, snowfalls) or occurrence of conditions supporting appearance of a given phenomenon (thunderstorms with hail, fogs, rime, glaze). The algorithms' structure allows to reclassify predicted in grid points (with spatial resolution of 7.4 km) into four groups of hazard limited by the previously set values of the parameters used in the algorithm (heavy wind, snowfall, hailstorm, fog, rime, glaze) or values which are generated on the basis of historical analysis (temperature extremes, heavy rainfall). Hazard classes will be defined basing on the results of the ALADIN weather prediction model for the nearest 12, 24, and 48 hours.

The maps will also facilitate the identification (based on historical analysis) of the areas in which the potential hazards may occur.