IT system for country protection against extreme hazards (ISOK) - the example for Poland

A. Wypych (1,2) and Z. Ustrnul (1,2)

(1) Institute of Meteorology and Water Management - NRI, Poland , (2) Jagiellonian University, Krakow, Poland

The main aim of the study is to present activities undertaken by the consortium of Polish Institutions including Institute of Meteorology and Water Management – National Research Institute regarding creation of the system protecting Polish society, economy and the environment against extreme weather phenomena and hydrological risks.

The warning system is created within the frame of the project ISOK co-financed by EU. One of its components are maps presenting meteorological phenomena such as: temperature extremes, heavy and floods leading rainfalls, strong winds, intensive snowfalls, fogs, glaze, rime, thunderstorms and hail. These elements have been chosen arbitrary due to recorded or roughly estimated loses.

The main aim of the maps is to present the actual information (updating every 12 hours) about the regions endangered with the above mentioned extreme meterological phenomena or the conditions favorable to their occurrence within the nearest 48 hours.

To identify areas especially exposed to feasible meteorological threats, climatological analyses were performed (so-called historical maps). They are based on the long-term daily data originated mainly from the period 1951-2010. The results are to be presented by a number of climatological maps accompanied by the additional fact sheets to give the society the fair view of the spatial differentiation of distinguished weather phenomena and the interrelated risks.

The main component of the system is the set of prediction maps created automatically on the basis of algorithms giving the probability of particular phenomena occurrence or the conditions favorable (so-called operational maps). The algorithms structure, based on the information about physical processes within the atmosphere as well as the detailed climatological analysis, will enable to reclassify the values forecasted (by mesoscale model ALADIN) into four groups of danger at gridded points. Finally the information will be interpolated and give the map of the spatial differentiation of probability of the particular hazard and its occurrence risk.