



Flood Warning and Forecasting System of the Slovak Republic

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The recent extreme floods in Europe and in Central Europe in particular, resulted into scientific and societal concerns about the reliability of short-term quantitative meteorological forecasts and flood forecasts also in Slovakia. The territory of Slovakia - due to its geographic location and geomorphologic characteristics was often exposed to floods in the past. Beside the flood danger in large basins, flash floods represent a serious threat. Since 1990 the periodicity of occurrence of floods seems to increase. Recent floods endangered the health and lives of thousands of inhabitants. Besides the suffering of people in the flooded areas significant material damage was caused. For example an extraordinary extreme storm hit a part of east Slovakia in July 1998. The consequent flash floods in small mountainous basins affected 10 850 people in 75 villages. The flood took 47 human lives, 756 people became homeless, and 3618 people had to be evacuated, 2059 houses were flooded, 279 houses were destroyed and over 5300 farm animals perished. The total flood damages were estimated to be exceeding 20 mil. Euros. As a consequence of this and other floods, the performance of several current flood-forecasting methods was evaluated. A pressing need to increase the standard of forecasts in the cases of floods striking larger territories, rivers with regulated flows and local flood events (flash floods) has been identified. In response the Government of Slovak Republic in 2001 has approved The National Programme of Flood Protection till 2010. As part of the project "Flood Warning and Forecasting System of Slovakia (POVAPSYS)", which is aimed at the considerable innovation of the flood warning and forecasting practices, started in 2001. One of the aims of the project is to considerably improve the quality of the information necessary for early

and effective flood forecasting by the enlargement and modernization of the monitoring, processing and telecommunication systems of the Slovak Hydrometeorological Institute. The data processing capacity of the existing telecommunication networks will be also increased in order to become consistent with the expected increase of the data transfer volumes (radar, satellite, and other sources). Installation of a satellite data receiver for the METEOSAT MSG01 is planned. For the substantial increase of the radar monitored territory the replacement of the two outdated radar installations with modern units will be complemented by the installation of a new meteorological radar in Central Slovakia. In order to enhance the ability of the analysis and prediction of precipitation fields (including quantitative precipitation forecasting) new meteorological forecasting methods and models will be implemented based on the further development of NWP limited area model ALADIN. The increase of the number of river sites subject to regular hydrological forecasting using hydrological forecasting models from 19 to 90 is planned. The existing rainfall runoff models will be upgraded by the use of LAM predictions and real-time weather radar data. As a consequence, the improvement of timeliness and accuracy of the flood forecast and warning is expected. The improvement of the operational co-operation between the flood forecasting and warning service and flood control bodies in Slovakia will also be envisaged.