

Short information about presentations:

Section 2: Meteorological and Hydrological Drought

Chair - prof. RNDr. Miriam Fendeková, CSc., PriFUK

- M. Lapin – Assessment of meteorological and hydrological drought from the viewpoint of potential and topical evapotranspiration development in Slovakia in the period 1951 – 2015 and scenarios until 2100 (lapin@fmph.uniba.sk)
Presentation is available in English language.
Potential (E_o) and actual (E) evapotranspiration are impossible to be measured correctly at meteorological station, we can calculate it with some accuracy and use it at soil moisture and hydrological balance evaluation and forecast. E_o is a sum of maximum possible evaporation + plants transpiration at given unchanged meteorological conditions in case of unlimited water supply. Because of drought development analysis, we evaluate the past situation in 1951-2015 based on evapotranspiration calculation using Budyko-Tomlaine Complex method and the future development using scenarios of saturation deficit for calculation of E_o by Zubenok method up to the year 2100.
- M. Fendeková – Hydrological drought – current status and new challenges of the research (fendekova@fns.uniba.sk)
Presentation defines drought and its quantification through the most used indices. There is the question how the drought should be characterized. Drought analysis of 2015 discusses the sectors with possible drought impact and consequences as well as measures possible to adopt. Conclusion of the presentation shows the challenges faced by scientific society and state institutions in the field of drought prevention, mitigation or elimination.
- L. Blaškovičová – Assessment of hydrological regime with the emphasis on hydrological drought in surface waters (lotta.blaskovicova@shmu.sk)
Drought is a natural phenomenon implying the lack of water in the soil, plants and atmosphere, and has its consequences for the life of human society. As a result of the insufficient precipitation the decrease of discharges in surface flows as well as groundwater levels decrease and decrease of water levels in lakes, wetlands and water reservoirs are taking place – the hydrological drought starts. Duration of a low-flow represents a continuous period of time during which the flow is lower than a suitably selected threshold of flow rate. In this paper we present some results of drought occurrence analyses, assessments of drought occurrence trends based on the results of the monitoring of the hydrological regime of surface waters.
- V. Slivová – Assessment of hydrological drought as a part of groundwater monitoring (valeria.slivova@shmu.sk)
This presentation is divided into two parts. The first part describes the choice and suitability of monitoring groundwater objects and spring discharges for evaluation of hydrological drought in groundwater and the method of evaluation. In the second part is evaluated hydrological year 2015 in the territory of the Slovak Republic, depending on the amount of precipitation. For visual display of evaluated year was used method of spatial interpolation (Krigging)
- L. Blaškovičová – Interconnection of hydrological drought assessment results in surface and ground waters in selected sections of Orava and Kysuca watercourses (lotta.blaskovicova@shmu.sk)

The hydrological assessment of the low-flow periods of surface waters and groundwater covers some differences and uses also different methodologies. As there have been identified different trends in surface waters and groundwater in the assessment of some areas, e.g. Kysuce, we have decided to join the assessments in selected water-gauging stations and groundwater wells. We have evaluated the interrelation between the surface water and groundwater levels and discharges in daily and monthly step.

- K. Hlavčová – Change of outflow regime extremes in the conditions of climate change (kamila.hlavcova@stuba.sk)
Presentation deals with a change of outflow regime extremes in the conditions of climate change. Decrease of long-term average annual outflow is more probable than its increase. Expected changes in the outflow season distribution are outflow increase in winter and decrease in summer. Monthly rainfall totals do not have to be changed significantly but extremes can increase – changing periods of little rain with periods with more extreme precipitation and in the future there is probability of extreme rainfall events. Minimal discharges cause a significant change in aquatic habitat quality.
- L. Labudová – SHMI Drought Monitoring in the Danube Lowland and East Slovakia Lowland in 2015 season (livia.labudova@shmu.sk)
Due to the global climate change, drought begins to be more important natural phenomenon, which has an influence on the agricultural production, and consequently on the production of food. The Danubian and the East Slovakian lowlands are the driest areas in Slovakia and meanwhile, they are intensively used for the agricultural industry. Both lowlands are the warmest ones in Slovakia and for this reason, especially in the summer season, the drought monitoring is the most important here. The season 2015 was first season of all and had the character of the testing version. We used 4 worldwide used drought indices (SPI, SPEI, CMI, Z-index), which were counted weekly for 12 station representative for both lowlands. Except that we tried to do a 7-day forecast for all indices based on the model ECMWF. This presentation illustrates results of the season 2015.