



## **Extreme events – different scales, different causes (summer 2006 case study)**

K. Jarzyna

Institute of Geography, The Jan Kochanowski University of Humanities and Science, Kielce, Poland  
(krzysztof.jarzynak@ujk.kielce.pl)

The summer 2006 was rich in extreme meteorological events in Europe. According to the NOAA Worldwide Weather and Climate Events:

- „severe thunderstorms in Germany on the 29th June produced large hail the size of tennis balls in Villingen-Schwenningen”,
- “in Romania, thunderstorms produced flooding during the July 1-2 in the northern part of the country”,
- “hot weather enveloped much of Europe during mid-to-late July, with temperatures surpassing 32°C; in Britain on the afternoon of the 19th, temperatures reached 36.5°C at Wisley - the hottest July temperature ever recorded in Britain”.

Few other extreme events wasn't noticed by NOAA specialists. The hot weather was accompanied by a drought in many parts of Central and Northern Europe. July monthly precipitation totals lower than 10% of 1961-90 normal appeared among others in Saarbruecken, Dresden and Greifswald in Germany, Kuchařovice in Czech Republic, Helsinki in Finland. In the Święty Krzyż meteorological station (Świętokrzyskie Mts. in Southern Poland) a precipitation total was 1,9 mm in July 2006 – the lowest monthly value recorded since an activation of the meteorological station in 1955.

However July 2006 precipitation totals much higher than 1961-90 normals were observed in Karlsruhe, Messina, Jan Mayen, Odessa and few other places.

A period of hot and dry weather finished sharply in the beginning of August 2006. High and intensive rainfalls produced among others floods in the Southwestern Poland. The whole August 2006 was much moister than normally in many regions of Europe.

Mentioned above extreme meteorological events had different spatial extent and duration. The aim of this study is the examination of their causes taking in the account their spatial and temporal scales.

Preliminary results of analyses suggests that long-lasting events affecting large areas, i.e. July drought and heatwave were caused by blocking of the zonal type flow dominating atmospheric circulation in the middle latitudes by atmospheric high. This caused a splitting of the jet-stream which flowing round the northern periphery of the blocking high pressure system caused abnormally high precipitation in Northern Norway. The persistence of high air pressure system caused strong heating of the land surface which led to a strong atmospheric instability where convective motion was blocked by subsidence inversion. But yet an energy of convection was able to cause local downpours, e.a. in Messina or Karlsruhe.