

Europe's flood regions

October 20th, 2015



Five large-scale homogeneous regions in Europe have been identified in terms of flood regimes, based on the longest available flow series from across Europe (hydrological data from gauging stations in 25 European countries). These regions are:

- An Atlantic region, from the Iberian Peninsula to Denmark and central Germany in the east and Iceland in the north. In this region floods are mainly driven by persistent and intense rainfall associated with frontal storms caused by extra-tropical depressions moving into Europe by westerly atmospheric circulation. For this region, the available flow series show a flood-rich season from December to March, and a flood-poor season from May to September.
- A Continental region in Central Europe, from eastern Germany to the Baltic states and from Slovakia and northern Austria to southern

Sweden. In this region, snowmelt, synoptic depressions and atmospheric blocking in winter and spring are occasionally complemented by Vb systems in summer, which are Central European cyclonic weather patterns embedded in mid-latitude synoptic depressions, linked to the large-scale atmospheric flow coming from the Atlantic and encircling the northern hemisphere, and further fed by local depressions of Mediterranean nature. For this region, the available flow series show two flood-rich months in March and April, and two flood-poor months in September and October.

- A Scandinavian region that includes the Nordic countries, except Denmark and southern Sweden, where floods are often driven by snowmelt potentially in combination with rainfall mostly generated by synoptic systems. For this region, the available flow series show two flood-rich months identified in May and June, and a flood-poor season between November and April.
- An Alpine region that includes rivers with headwaters in the Alps, where most of the largest floods are summer floods resulting from blocking situations and more minor ones that may occur in winter associated with snowmelt and rain on snow. In the Alpine region, a flood-rich season extends from May to July, and a flood-poor season is detected from September to March.
- A Mediterranean region, from eastern Spain to Romania, where floods are driven by multiple mechanisms of both continental and maritime nature. In the Mediterranean region, a mixture in flood generating mechanisms leads to a similar monthly frequency of floods throughout the hydrological year.

Source: Mediero et al., 2015. Journal of Hydrology 528: 341-360.

Photo: Bishib70 (www.flickr.com)