Hydrology in a Changing World: Environmental and Human Dimensions
Proceedings of FRIEND-Water 2014, Montpellier, France, October 2014 (IAHS Publ. 363, 30-35, 2014).

Synthesizing changes in low flows from observations and models across scales

KERSTIN STAHL[1], JEAN-PHILIPPE VIDAL[2], JAMIE HANNAFORD[3], CHRISTEL PRUDHOMME[3], GREGOR LAAHA[4] & LENA M. TALLAKSEN[5]

1 University of Freiburg, Chair of Hydrology, Fahnenbergplatz, D-79098 Freiburg, Germany
kerstin.stahl@hydrology.uni-freiburg.de

2 Irstea, UR HHLY, 5 rue de la Doua, CS70077, F-69626 Villeurbanne Cedex, France

3 Centre for Ecology and Hydrology, Benson Lane, Crowmarsh Gifford, Wallingford OX10 8BB, UK

4 University of Natural Resources and Life Sciences, BOKU Vienna, Peter Jordan-Straße 82, A-1190 Vienna, Austria

5 Dept. of Geosciences, University of Oslo, PO Box 1047 Blindern, N-0316 Oslo, Norway

Abstract This contribution presents a comparison of the observed and projected low flow trends and changes for the European domain (as derived from homogenized large-scale datasets and model applications) with the mosaic of results obtained from pan-European and national-scale studies. The large-scale datasets include the streamflow records held in the European Water Archive and the WATCH large-scale model ensemble. National studies are available from Norway, the UK, southern Germany, Austria and France. The comparison shows that large-scale model experiments focus mostly on the general pattern of seasonal flow changes, whereas national to regional scale studies tend to focus on absolute low flow values and deficits below relevant thresholds and often stratify their assessments by hydrological regime or dominant process control. The study concludes that different levels of information can indeed benefit synthesis assessments of low flow changes at the hydrological planning scale.

Key words low flow; Europe; climate change, trend analysis, scenarios