



A regional approach for estimating flow duration curves at ungauged sites

G. Di Baldassarre, A. Castellarin, A. Montanari and A. Brath

Faculty of Engineering, University of Bologna, Italy

A flow duration curve (FDC) provides the duration in which a daily streamflow is exceeded in a historical period for a river basin. FDC are widely used in several water management problems and hydrological applications (such as planning and design of irrigation system, river sedimentation, fluvial erosion). The scarcity of streamflow data characterise several geographical areas around the world, therefore several procedures for regionalising FDC have been performed. We perform a regional analysis in eastern central Italy where daily streamflow series, observed in 51 river basins in the period 1921-2000, are available. The analysis employs a statistical approach, where FDC is viewed as the complement of the cumulative distribution function of the considered streamflow (see e.g. Le Boutillier and Waylen, WRR, 1993). The reliability of the regional model is assessed through a jack-knife cross validation procedure. The results are relevant given that the proposed model is able to reasonably reproduce the statistical properties of streamflow series observed.