



## **Regional analysis of flow duration curves for mediterranean ungauged basins**

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The Flow Duration Curves (FDC) are used in many hydrological applications related to the water resources management and soil and environment preservation. In 2007 Iacobellis introduced a new model, called Eta Beta, to describe the FDCs by using a probabilistic bounded model whose upper and lower limits respectively coincide with the total volume and the minimum daily volume observed in the same return period  $T$ . The parameters ( $a, b$ ) of Eta Beta model are strictly connected to climatic and hydrogeological conditions. In particular, a small slope of the low-flow tail indicates persistent discharge, possibly due to significant groundwater/subsurface contribution. In such a case, one would expect a large value of  $a$ , indicating a significant volume of water already available for large durations. On the other hand, a steep curve indicates a small and/or variable base flow contribution. This is the case of arid or semiarid basins, including intermittent regimes. Such a shape would be associated with a smaller value of  $a$ . Analogous considerations may be made regarding the high flows of the FDC. In fact, one may expect that persistent and frequent precipitation events typical of a humid climate may lead to a flat tail, and a smaller value of  $b$  would indicate a less pronounced peak of the FDC. Vice versa for arid and semiarid basins where the variability of peak flows is large and may lead to a steep tail, large values of  $b$  are expected. The regional analysis has been performed in order to extend the application of model to Mediterranean ungauged basins. We investigate the relationship between the model parameters and climatic and hydrogeological factors, like rainfall, temperature, land cover, permeability and soil behavior by using suitable indices such as, for example,

the Thornthwaite Climatic Index and the Base Flow Index (BFI).