

Entropy Theory: a simple approach for discharges measurements in gauged and ungauged river sites

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Abstract (Anglais) :

In river monitoring, it is quite difficult to sample velocity points during high floods, especially in the lower portion of flow area, due to the danger that operators might face during measurement. In this context an important contribution is provided by the entropy theory which identified a linear relationship between the mean flow velocity and the maximum flow velocity which can be easily sampled also during high floods for its position in the upper portion of the flow area. The entropic relationship is robust and is based on the estimation of a sole parameter M . Therefore, if one was able to estimate the dependence of M on hydraulic river characteristics and/or morphological basin ones then it would be possible to assess the mean flow velocity and, hence, the discharge just by sampling the maximum velocity through, for instance, non-contact radar sensors.

Based on the above insights, the purpose of this work is to determine simple formulations between the entropy parameter M and morphological characteristics of the basin, subtended from the river site of interest, in terms of drainage density, drainage area and perimeter...etc.

Also rapid validation was made on some other hydrometric stations in order to check the accuracy of the obtained model.

Keywords : entropy, discharge measurement , ungauged sites.