



Towards a classification of dendrogeomorphological evidences and their utility in flood hazard analysis

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Dendrogeomorphological techniques have been applied to the analysis of flood risks for more than four decades. Although a simplified and unique naming would ease the realization of cross studies and the spatial correlation of the results, there is no classification or any commonly accepted nomenclature of dendrogeomorphological evidences in use. In addition, a naming convention would also be useful as a guide to novice researchers on this field, providing a basic doctrinal body.

Following an exhaustive bibliographic research, a classification is proposed for dendrogeomorphological evidences that are most commonly used in dendrohydrology of floods. The conductive thread of this classification is the spatial scale of the evidence (from macro- to microscopic, from kilometres to microns) and the scale of the elements to study (from forest communities and vegetal formations to changes in the cell structure). More than 29 types of disturbance signs have been distinguished and hierarchically arranged, with 15 of them referring to entire individuals (tree or bush) or their parts (trunk, branches or roots). The classification has a cross tabular shape and is complemented with graphics of the evidences, both in the form of sketches and pictures from field examples.

However, not all signs appear to be equally useful for the reconstruction of magnitudes or frequencies of past flood events. Using a cross table, the most significant signs are

shown in the sense that they provide the date as well as the area affected by an event, the minimum levels reached that can later be used for the estimation of peak flows with hydraulic modelling and simplified equations (e.g., critical flow, super-elevation).