



## **Wood anatomy of debris-flood scars in broadleaved tree species of central Spain**

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The study of hyperconcentrated flows (debris floods) with dendrogeomorphological techniques in the Iberian Peninsula has not been realized so far. This is why an initial wood anatomical analysis is required so as to characterize the nature of response of several broadleaved species to this kind of disturbance and in these latitudes. With this purpose, the following species were selected for tree-ring analysis on the banks of the Arroyo Cabrera torrent in the Sierra del Valle (Spanish Central System): alder (*Alnus glutinosa*), ash (*Fraxinus angustifolia*), poplar (*Populus nigra*), willow (*Salix atrocinerea*) and oak (*Quercus pyrenaica*). The torrent was selected as it produced a large debris-flood in December 1997 causing considerable damage to the local vegetation.

The sampling was carried out during summer 2007 and consisted in collecting from 10-20 wedge samples for each species, discs and increments cores from the scars. After the preparation (cutting and sanding), tree-ring series were measured with a LINTAB table and TSAP software. The samples were scanned to preserve the original image and micro-sections were obtained from transversals sections 10 to 15  $\mu\text{m}$  thick, using a sliding microtome. Digital images were then prepared with a camera attached to an optic microscope And quantitative as well as qualitative anatomical parameters assessed using the Régent WinDendro software.

Preliminary results show a significant variability in the different woody anatomical

variables identified after the 1997 debris-flood event. The diameter as well as the number of vessels per tree ring were significantly decreasing in ash, oak, willow and poplar after the 1997 event. In alder, it was the area of earlywood cells showing significantly lower values. In contrast, we observe an increase in the ratio between cellulose tissue and lignified tissue in ash, willow and poplar. The results presented above are a first step towards the identification of the best indicators in Mediterranean broadleaved trees, but further research is needed to allow for the dating of past debris-flood events.