

IGU 2014 Book of Abstracts  
IGU2014 – 0670

## Flood Hazard Analysis in the "Caldera de Taburiente" National Park (La Palma, Canary Islands, Spain) using Dendrogeomorphology

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Las Angustias torrent is one of the most visited spots of the La Palma Island, with more than 60,000 hikers per year. In this gauge, flash floods recurrently cause the evacuation of visitors and have occasionally provoked casualties in the Park . Furthermore, the revegetation of the torrential floodplain and shores have been hampered by torrential floods occurrence, and has caused the loss of more than 0.7 M€ during 2011 and 2012. The classic data sources and methods (hydrological and hydraulic modelling) for flood hazard analysis have important shortcomings regarding the lack of information (i.e., precipitation and flow data) in Las Angustias basin; and due to the low statistical representativeness of time series, which normally leads to under- or over-estimated results. In this work, we present a study case of flash flood activity reconstruction based on the dendrogeomorphological analysis of trees (*Pinus canariensis*) affected by the impact of sediment load and woody debris during floods events. The reconstruction is based on 54 trees located in the Playa de Taburiente of the Barranco de las Angustias (PN. Caldera de Taburiente). The main objective is to improve the flood hazard analysis in the Caldera de Taburiente NP, in order to supply tools to the NP managers to reduce the natural risks and their incidence in visitors and infrastructures. More than 150 tree-ring cores were analyzed and measured using binocular microscope and a LINTAB semi-automatic measuring table, with the TSAPWin and Cofecha softwares, looking for evidences of past flood events. In addition, a detailed topographical survey using GPS and total station allowed us to obtain the inputs for hydraulic modelling. As preliminary results, two recent flood events have been well identified, corresponding to the winters 1962–1963 and 1990–1991; and evidence of flood events in other dates has been observed (1993, 2001, 2003 and 2007) and previous evidences that could no be reliably dated. The magnitude reconstruction of these

IGU Regional Conference, Kraków, Poland  
18-22 August 2014



events, using 2D hydraulic models, will improve the flood hazard and risk analyses and will be useful for National Park managers to landuse and visitors planning.

### **Acknowledgement**

These studies are funded by the Spanish Ministry of Agriculture, Food and Environment by a means of the research Project IDEA-GesPPNN (OAPN 163-2010).