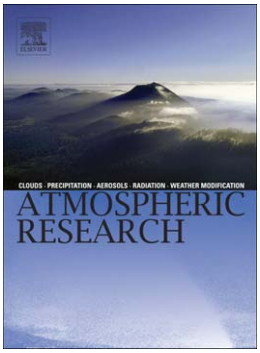


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# Flash flood evolution in North-Western Mediterranean

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## Abstract

The present paper shows an in-depth analysis of the evolution of floods and precipitation in Catalonia for the period 1981-2010. In order to have homogeneous information, and having in mind that not gauge data was available for all the events, neither for all the rivers and stream flows, daily press from a specific newspaper has been systematically analysed for this period. Furthermore a comparison with a longer period starting in 1900 has been done. 219 flood events (mainly flash flood events) have been identified for the period of 30 years (375 starting in 1900), 79 of them were ordinary, 117 of them were extraordinary and 23 of them were catastrophic, being autumn and summer the seasons with the maxima values. 19% of the events caused a total of 110 casualties. 60% of them died when they tried to cross the street or the stream. Factors like the evolution of precipitation, population density and other socio-economical aspects have been considered. The trend analysis shows an increase of 1 flood/decade that probably has been mainly due to inter-annual and intra-annual changes in population density and in land-use and land-cover.

**Key words:** floods, flash floods, press data, vulnerability, societal impact, climate change

## 1. Introduction

Floods constitute the main natural hazard in the world (UNISDR, 2009). More than 280 disasters are produced every year by floods or storms (including hurricanes and tornadoes), this is to be compared to an annual average of 31 disasters associated with earthquakes and 6 with volcanoes. Annually, 105,000,000 people are affected by floods, which is much higher than the 41,000,000 who might be affected by storms, tornadoes and hurricanes (UNISDR, 2009). According to "Flood Risks to People" (DEFRA), in the twentieth century 12% of deaths caused by natural catastrophes were a consequence of floods, and between 1980 and 2000, 170,000 deaths were registered (Dao and Peduzzi, 2004).

The analysis of the distribution of floods in the Mediterranean for the period 1990-2006 (Llasat et al., 2010a), showed a total of 185 episodes of flooding, some of which affected more than one basin, and even more than one country. In total, they caused 4,500 victims and damage exceeding €29,000 million, with Italy being the country that