

# Meteorological reconstruction of four major flash floods in NE Iberian Peninsula since 1874

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- **Our objective** is to describe the atmospheric conditions that produced the most important flash floods- occurred in NE Iberian Peninsula since **1874**.  
- **21 episodes** were selected according to the area and number of basins affected and damages caused.  
- Here, **four episodes** with different atmospheric conditions are presented: one occurring in winter, one in summer and two in autumn.  
- **NCEP Reanalysis V2** (Compo et al., 2011) available since 1871 was used to describe the synoptic conditions and to calculate some convective indexes (CAPE, LI, TT; Grieser, 2012).

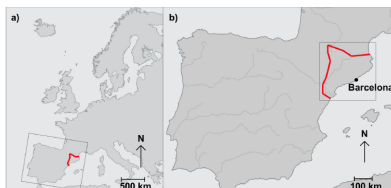


Figure 1. Location of the study area within Europe (a) and within the Iberian Peninsula (b). Source: Own elaboration from a map Copyright © 2009 National Geographic Society, Washington, D.C.

## References

Compo, G.P., et al., 2011. The Twentieth Century Reanalysis Project. Quarterly J. Roy. Meteorol. Soc., 137, 1-28. DOI: 10.1002/qj.776

Grieser, J., 2012. Convection Parameters. Last accessed on September 15th 2014 at <http://www.juerger-grieser.de/ConvectionParameters/ConvectionParameters.pdf>

**Acknowledgements:** Research supported by projects CGL2012-35071, and CGL2012-37416-C04-03 (Spanish Ministry of Economy and Innovation). One of the authors has a pre-doctoral grant from the University of Lleida.

EGU General Assembly  
Vienna, 2015



## Winter (5-7 January 1977)

Winter episodes are characterized by **low values** of the convective indexes (CAPE, precipitable water)

1977 event affected basins located near the north coast (6-7 January 243 mm Girona, 163 mm Cadaqués). Figures of 6 January 1977 at 0 UTC.

## Summer (3 August 1963)

Summer episodes are characterized by a short duration **high** values of the convective indexes (CAPE, precipitable water)

1963 event affected basins located in the Pyrenees. Figures of 3 August 1963 at 0 UTC.

## Autumn 1 (26-28 October 1937)

Autumn episodes are characterized by variable duration and **moderate** values of the convective indexes (CAPE, precipitable water)

1937 event affected basins located in the Pyrenees. Figures of 28 October at 6 UTC.

## Autumn 2 (2-3 October 1951)

1951 event affected basins located along the central coast (on 1 October, Prat 110 mm, Teià 149 mm). Figures of 2 October at 0 UTC.

## Evolution of the convective indexes

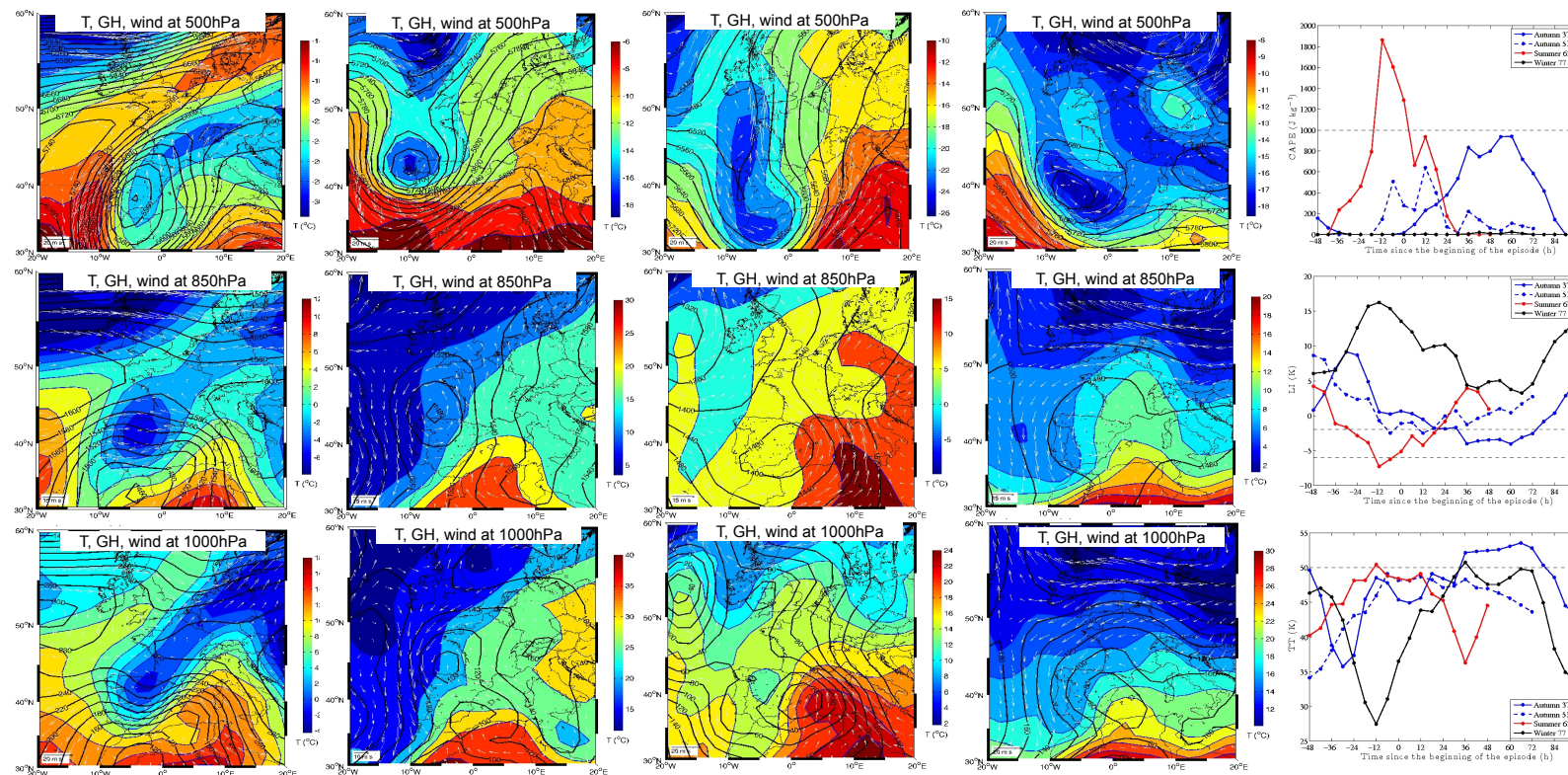


Figure 2. Temperature (in colour), geopotential height (GH) (in black lines) and wind (in white arrows) during the floods at different pressures. Source: NCEP Reanalysis V2

Figure 3. Convective indexes (CAPE, LI and TT) during the four selected floods