



## **Cloudiness trends over the Iberian Peninsula from the second half of the 20<sup>th</sup> century**

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This work analyses cloudiness trends over the Iberian Peninsula covering the 1961-2004 period. The data are in situ visual observations from the surface and the variables are total cloud cover (TCC) in oktas, overcast and cloud-free sky frequencies (which are more objectively determined than TCC by individual observers), and relative frequencies of cloud types. Specifically, cloud types are grouped into 4 families: high clouds (Ci, Cs and Cc), middle clouds (Ac and As), low stratiform clouds (St, Sc and Ns), and clouds with vertical development (Cu and Cb). This grouping mitigates the possible inhomogeneities derived from individual genera identification. The temporal evolution of the mean series for the whole IP shows a significant decrease in TCC over all the analyzed period. On seasonal basis, the spring series is the only one with a significant (and negative) trend, which is probably the consequence of an important TCC decrease from the 1980s to the 1990s. The frequency of overcast sky shows a significant decrease in the annual series and also in all seasons but the autumn. Regarding the cloud-free sky series, most of them show positive trends, but these are non-significant. Highly remarkable changes are observed in the frequencies of the different families of cloud types, with an abrupt decrease after the 1970s in the frequencies of low, stratiform and convective cloud types, and a coherent opposite significant increase in the frequencies of observation of middle and high-level clouds.