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Temporal evolution of circulation patterns frequency and recent Iberia winter rainfall trends

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We attempt to analyse those winter atmospheric circulation changes throughout the second half of the 20^{th} century and assess their influence on Iberian Peninsula rainfall. We apply a T-mode Principal Component Analysis (PCA) to a daily data grid (NCEP/NCAR reanalysis), at sea level pressure (SLP), in order to carry out an objective synoptic classification. The circulation pattern showing the biggest increases involves high pressure over Central Europe. It means an increase of an anticyclone weather type over Iberian Peninsula, and simultaneously more frequent humid north-eastern winds over the eastern Iberian fringe. The temporal evolution of this circulation pattern frequency is consistent with the winter Iberian rainfall trends along the second half of the 20^{th} century: an overall decrease, mainly in eastern Central Plateau, and no variation or even a slight increase in the Mediterranean fringe. These results fit with the currently strong positive trend of the Arctic Oscillation index (AOi) and the negative trend of the Western Mediterranean Oscillation index (WeMOi) in winter.