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Seasonal variations in the frequency of atmospheric circulation types in European regions

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We propose two versions of an "index of seasonality" to study the annual course in the relative frequency of circulation types in several objective and subjective classifications from the COST733 database. The objective classifications have been developed for twelve European regions (domains D00-D11) in the period 1957-2002 and have fixed numbers of types (9, 18, and 27).
Both indices are based on the long-term monthly relative frequency of individual circulation types. For each type we indicate the months with the highest and the lowest relative frequency and calculate their difference (range).
The first index – "average seasonality" – is an average of the ranges of all types within a given classification. It is anti-correlated with the number of types – a higher number of types means a lower average seasonality.
The second index – "maximum seasonality" – only takes into account the circulation type with the highest range (that is, the type with the most pronounced annual course). This index removes the dependence on the number of circulation types in some of the used classifications.
Seasonal variations in the relative frequency of circulation types based on the two indices are generally the highest in the eastern Mediterranean (D11) and in whole Europe (D00). The lowest seasonality is found over the British Isles (D04) and Iceland (D01).
There are large differences in the seasonality in the individual classifications, because the degree to which the classification identifies the natural seasonal circulation patterns strongly depends on the classification algorithm used.
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