



Spectral coherence between precipitation in the Danube basin and indices of the teleconnections patterns by means of wavelet transform

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In the present study, details of the link between the precipitation in the Danube Basin quantified by the first principal component of EOF analysis and climate indices, in the time-frequency domain, were obtained separately for each season, through wavelet transform coherence. Wavelet power spectrum comparatively with traditional spectral analysis methods, identify series' characteristics under both temporal and frequency domains.

The climate indices that characterize the following teleconnections patterns were considered: Arctic Oscillation (AO), Atlantic Multidecadal Oscillation (AMO), East Atlantic (EA), East Atlantic/Western Russia (EAWRUS), Greenland-Balkan Oscillation (GBO), North Atlantic Oscillation (NAO), Scandinavian (SCAND) and Southern Oscillation (SO).

The highest wavelet coherence between precipitation and the climate indices was found in the winter season. The most significant values of the coherence between precipitation and climate indices, taking into account both the time and frequency domains, were observed with indices of the teleconnections patterns: GBO, EAWRUS and AO. For frequency bands corresponding the periods of (4-17yr), these three climate indices showed significant coherence with precipitation in the Danube basin, almost over the entire time domain. The weakest coherence of the precipitation was obtained with EA, SCAND and SO.