



Interdecadal variability of precipitation in Europe and its connection with solar variability

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In this study we investigate, by means of long term statistical correlations, the interdecadal variability of precipitation in Central Europe, for the 20th century, in connection to variations in the North Atlantic Oscillation (NAO), one of the important modes of large-scale climate variability in the Northern Hemisphere, and to solar variability. The analysis is done by using annual means of precipitation from meteorological stations for the time interval 1900-2011, of NAO, and of sunspot number (R). The precipitation data were provided by the European Climate Assessment database. Spectral analysis applied to precipitation data using the multiple-taper method (MTM) reveals variations of short period (2-7 years), decadal variations with a period of ~ 11 years and variations with longer periods, 22 and/or 30 years and even longer, well known periodicities corresponding to the Schwabe (~ 11 years), Hale (~ 22 years) and Gleissberg (~ 80 years) solar cycles. To discuss inter-annual to interdecadal variability, the time series have been filtered by means of 11-, and 22-years running averages and the corresponding variations were compared. Significant variations at the decadal and interdecadal timescales were found. The evolution of precipitation in the Danube Basin in connection to variations in the Lower Danube discharge is investigated as well.