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The Atlantic Multidecadal Oscillation record for the last millennium in a Mediterranean wetland.

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The meteorological instrumental records for the last 150 years in central Spain show out-of-phase 60-70 years cycles in rainfall and temperature. The time lag between the temperature and rainfall cycles is around 10-20 years.

Analysis of temperature and rainfall records reveals that they control flooded surface of Las Tablas de Daimiel fluvial wetland (central Spain), being temperature the main control and rainfall the secondary one for annual and decadal time scales.

Changes in flooded surface controlled by temperature are coeval to variations in salinity of the water table, biologic productivity and clastic input into the wetland that can be reconstructed for the last millennium by means of geochemical proxies. These variations show a period of 60-100 years related to the cumulative effect of annual to multi-annual drought-flooding cycles that result in a progressive degradation of the ability of soils and water to support life.

When compared these records with changes in the temperature of the Mediterranean and North Atlantic surface waters for the last 150 years, they show a close match that can be correlated to the Atlantic Multidecadal Oscillation. This is a cycle of climate variability mode with a period of 50-70 years related to changes in the Thermohaline Circulation in the North Atlantic. Despite the instrumental record doesn't show at least two full oscillations, it's been argued that it has a great effect on the temperature and drought in Europe and North America.

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