The last 1000 years of climate evolution as recorded in sediments and documentary sources in a mediterranean inland wetland.

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Comparison of geochemical, sedimentary and palynological information plus AMS ^{14}C and ^{210}Po, $^{239+240}Pu$ dates obtained from contiguous samples of a core from a mediterranean wetland in inland Spain (Gigüela-4) with regional documentary and historical sources allows to reconstruct the climate evolution of the last 1000 years and to detect some of the more damaging anthropic impacts on the environment. Three main periods are defined for the AD 900-present interval.

AD 900 - 1400 (Medieval Warm Period): Vegetation reflects relatively warm temperatures as compared with the previous and following periods. Moisture indicators show increasing rainfall although the water body reached its maximum extent well before the maximum of rainfall. Changes during this period are gentle and of low amplitude. An anomalous event in the 10th century, recorded by a sudden decrease of the arboreal pollen, did not register in geochemistry. There are not clear evidences about its climatic or anthropic origin.

AD 1400 - ≈1900 (Little Ice Age): A progressive increase in *Pinus* and *Artemisia* reveal a cooling trend that reverted to a warming trend around late XVIIIth century. Moisture indicators show that this period was mainly wet but with increasing aridity. From late XVIIth to the XIXth centuries this arid trend stabilized and reverted. Documentary and geochemical indicators reveal that changes during this period were of higher frequency and amplitudes than in the previous period.

AD ≈1900 - present: This period is characterized by important man-made changes in the environment. From the end of the XIXth century to the few first years of the XXth century, redistribution of land and changes in the crops propitiated vegetation changes not interpretable in climatic terms. Intensive ploughing led to increased soil degradation. Between AD 1967 and 1971, a major attempt of desiccation was responsible of loss many flooded areas. The following groundwater overexploitation almost causes the disappearance of the wetland. It was not until late 1980s that regeneration measures were taken. Climate trends in the XXth century show warming until the late 1950s, and increasing rainfall until the late 1960s. Both trends reversed sligthly after these dates.

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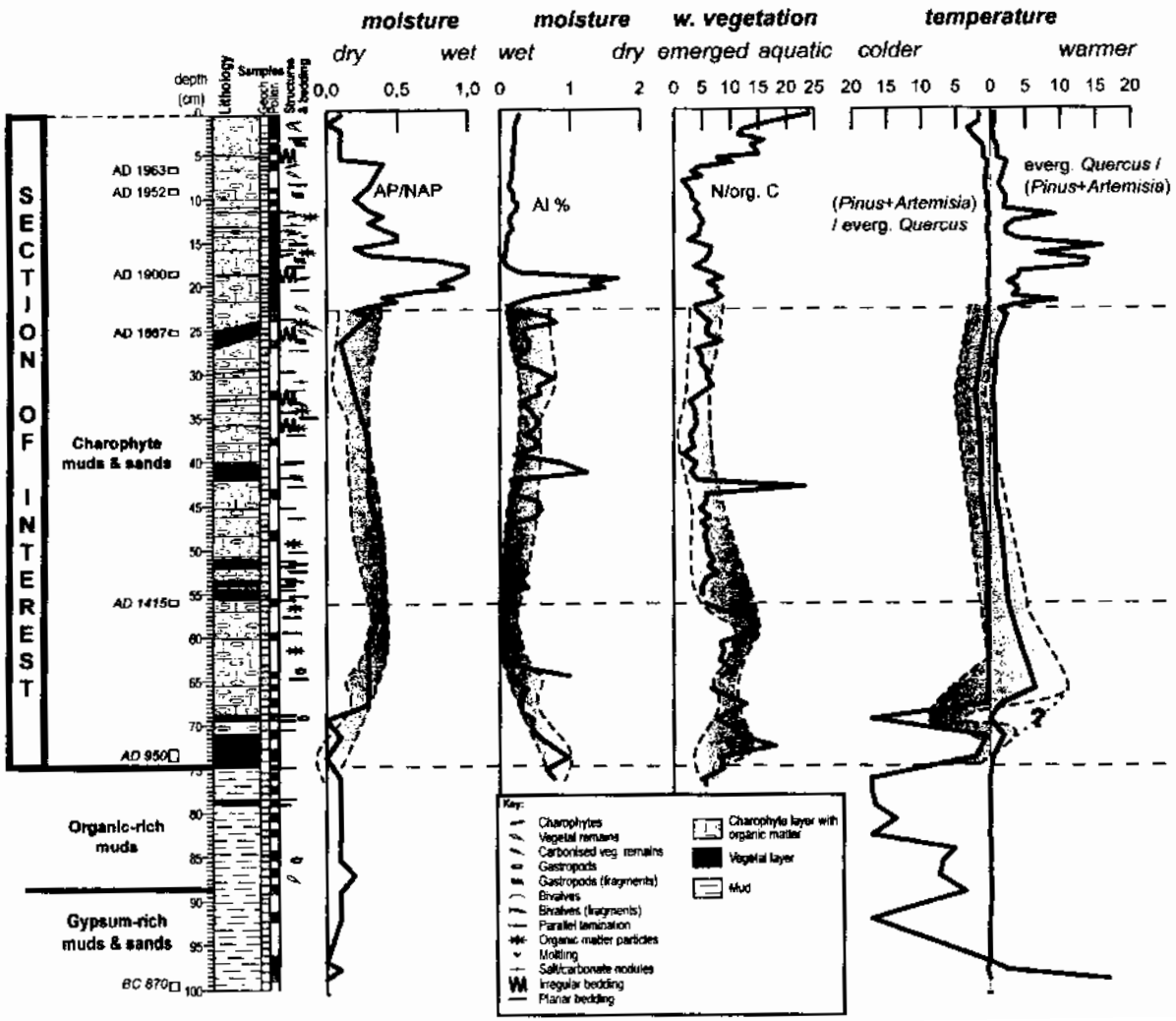

Historical evidences	Main climatological periods
Uncontrolled irrigation (droughts). Serious desiccation attempt (lost of wetland surface). Important land property and use changes.	***XX century*** **(AD ≈1900 to present)**: human impact on the environment is too important so it masks the climate signal.
Alternance of short and cycles of extreme colds-warmths and floods-droughts (docs. since XV century). Floods increasing from XV to XIX centuries. Diseases, starvation mixing with healthy harvests.	***Little Ice Age*** **(AD 1400≈1900)**: slightly colder and drier trend than previous period. Fast and high amplitude changes.
End of the Muslim period in this area and irrigation changes. Man or climate-induced deforestation around Xth c.?	***Medieval warm period*** **(AD 900-1400)**: warm and increasingly humid period. Cold episode around Xth century or man-made changes in vegetation?. Variations are slow and of low amplitude.