High-resolution multi -proxy records from Atlantic peat deposits: NW Spain. A contribution to the ACCROTELM Project

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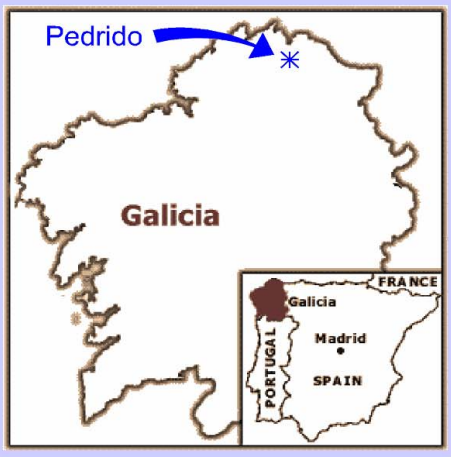
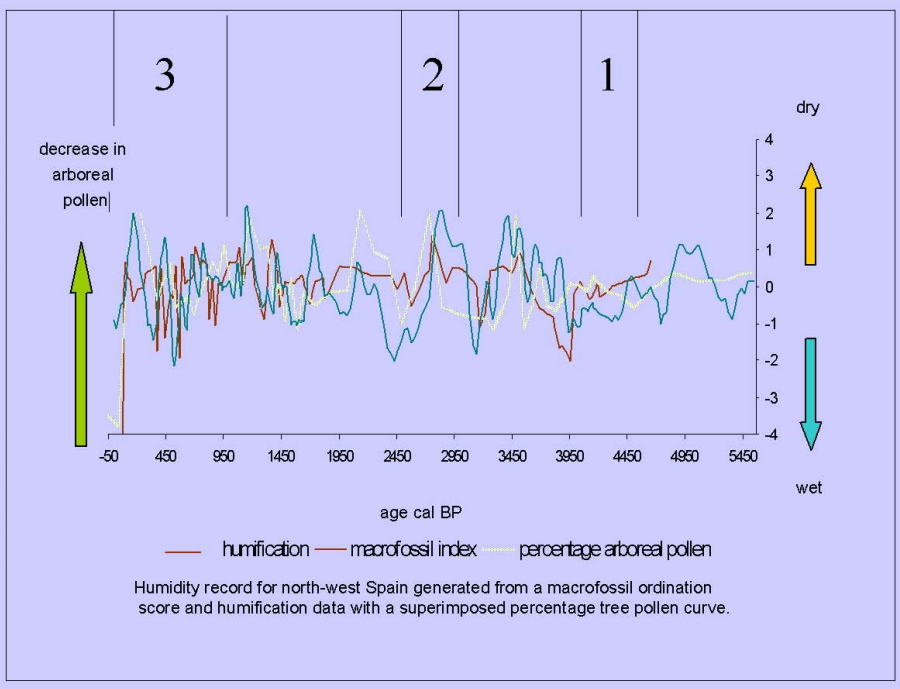
Within the ACCROTELM project, eight ombrotrophic peat sites across western Europe were investigated for rapid climate change events. In Pedrido, the Spanish site, such events were identified through macrofossil and humification analysis. The data is underpinned by a wiggle match dated chronology currently based on 19 ^{14}C AMS dates. Another 10 dates will be added as soon as they become available.

Pedrido measures about 2.5ha and lies at an altitude of 800m a. s. l. in the Xistral mountains of Galicia in north-west Spain. The bog is surrounded by rough pasture and some recent pine and eucalyptus plantations.

A 280cm core consisting mainly of sedge peat was analysed for plant macrofossils, humification and pollen. The macrofossil data are also shown as a NMS ordination score.





Humidity record for north-west Spain generated from a macrofossil ordination score and humification data with a superimposed percentage tree pollen curve.

Three ACCROTELM focus periods were investigated for rapid climate change events at a higher resolution than the rest of the core:

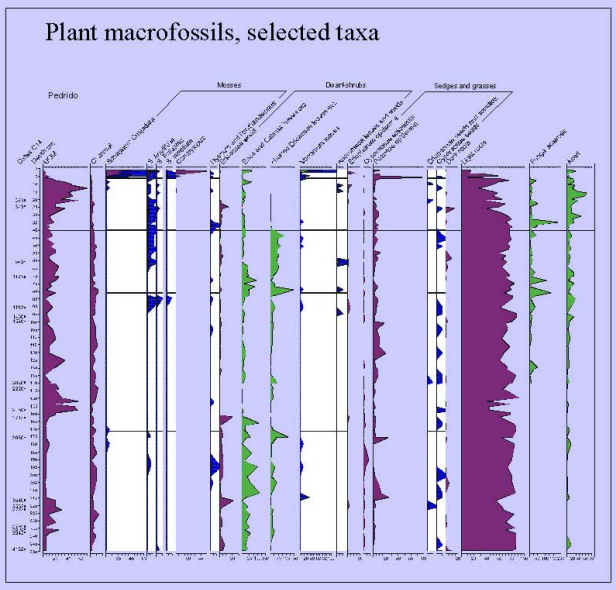
1. 4500-4000 cal yrs BP. A wet shift in the humification record shows up at about 4450 followed by one in the macrofossils at 4000 cal yrs BP. Both proxies initiate a pronounced dry shift at 3950 cal yrs BP.

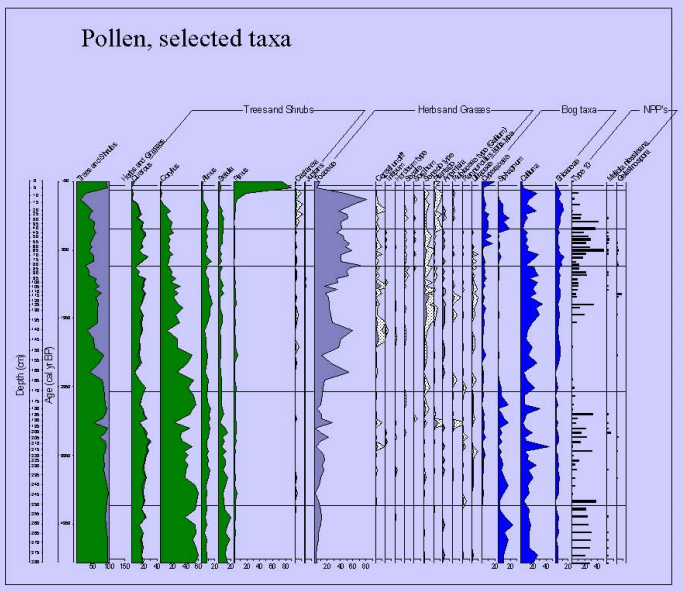
2. 2950-2450 cal yrs BP The Subboreal / Subatlantic transition is recorded in a prominent and extended climatic downturn starting around 2800 and continuing until about 2450 with a recovery phase in between at 2500 cal yrs BP.

3. 950 cal yrs BP to present. From medieval times onwards the proxies display shorter climatic cycles possibly reflecting decreased peat accumulation during the Little Ice Age. At this time bog surface water availability seems to have been variable and short lived in Pedrido. Even where the macrofossil and humification records agree broadly there are often discrepancies in detail and extent of the changes.

Macrofossil and humification analysis record wet shifts at ca 3350, 2800, 2100, 1750, and 1400 cal yrs BP and dry shifts at 3950, 3250, 3000, 2400, 1450 and 1250 cal yrs BP. In the last millennium the records oscillate between humid and dry cycles and loose much of their former cohesion. In the most recent section the macrofossils indicate much wetter conditions with the possibility of open pools on the bog surface.

Until very recently the macrofossil and humification records point to predominantly dry conditions in Pedrido. Nevertheless several rapid climate shifts, some of which coincide roughly with changes in the cultural landscape, are present in the record. Forest recovery after clearance episodes at 3550, 2900 and 2500 cal yrs BP for instance occurred in the wake of climatic downturns at 3250, 2800 and 2100 cal yrs BP. A general trend towards reduced forest cover started around 3500 cal yrs BP and continued to a minimum of less than 30% arboreal pollen at 1200 cal yrs BP. Since then tree cover remained low until recent afforestation.





Despite being at the southern limit of ombrotrophic mires, the Pedrido profile still appears to generate a reliable palaeoclimate record. Upon completion of the chronology of this site comparisons will be made with the other ACCROTELM records.

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ACCROTELM
Abrupt Climate Changes Recorded Over The European Land Mass

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