

## **Insolation influence on Late Pleistocene-Holocene hydrology of the southern Iberian Peninsula**

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The southern Iberian Peninsula, located between both Atlantic and Mediterranean realms, is a key area to understand the North Atlantic atmospheric dynamics affecting the Mediterranean Region. In this regard, Atlantic westerlies have driven the moisture transport over this area during the Holocene; i.e. enhanced precipitation associated with a southward displacement of the westerly winds under negative North Atlantic Oscillation (NAO) modes [1,2]. In the studied area precipitation generally occurs during the cold season. Although moisture mainly derives from humid Atlantic air masses, occasional but intense Mediterranean precipitation events are also registered in Autumn [3]. Here we present a new leaf wax  $\delta D$  record from a sedimentary sequence in the southern Iberian Peninsula (Padul peat bog) in order to assess paleohydrological changes registered during the last ~36 ka in this area.  $\delta D_{wax}$  values showed maxima ( $>-185\text{‰}$ ) during Heinrich Stadial 2 (~22-25 ka), only reached again in the middle-late Holocene transition (~4.5-3.9 ka) and latest Holocene (~0.8 ka) ( $\delta D_{wax} >-185\text{‰}$ ). The lowest  $\delta D$  values ( $\delta D_{wax} <-210\text{‰}$ ) were recorded during the latest Pleistocene - early-middle Holocene (~14-5 ka). Long-term  $\delta D_{wax}$  oscillations for the last 36 ka in southern Iberia do not correlate with local sea surface temperatures of the Alborán Sea ( $r=0.12$ ,  $p<0.001$ ) [4], but agree with cold-season insolation (autumn + winter) at 37°N ( $r=0.58$ ;  $p<0.0001$ ) [5]. These preliminary observations suggest that insolation might have some influence on the paleohydrology of the area at long millennial time scales, and therefore, on the mechanism driving moisture delivery in southern Iberia.

- [1]Moreno, A, et al. (2012) *Quat Sci Rev* 43, 16-32 [2] Ramos-Román, MJ, et al. (2018) *Clim Past* 14, 117-137 [3] Araguas-Araguas, L (2005) *IAEA-TECDOC* 1453, 173-190. [4]Martrat, B, et al. (2004) *Science* 306, 1762-1765. [5]Laskar, J, et al. (2004)*Astron. Astrophys.* 428, 261-285.