

Un possible desenllaç del canvi climàtic

Setúria novembre 2025

Valentí Turu

Un toc d'alerta

EP **EL DEBATE** FUNDADO EN 1910

PORTADA ESPAÑA ECONOMÍA OPINIÓN INTERNACIONAL **SOCIEDAD** CULTURA RELIGIÓN SALUD Y BIENESTAR



Glaciar Vatnajökull, en Islandia - CONTACTO via Europa Press

Islandia declara el colapso de la corriente oceánica que regula el clima como un riesgo para la seguridad nacional

El país nórdico activa sus protocolos, lo que permite a su gobierno elaborar estrategias en caso de que se produzca ese bloqueo de la AMOC

 Rodrigo Díez Manceñido

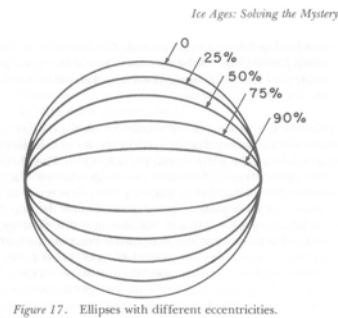
Madrid - 18 nov. 2025 - 04:30

18

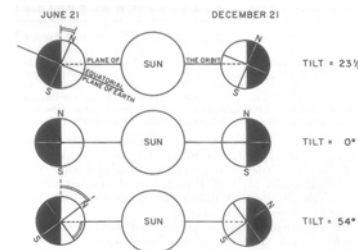
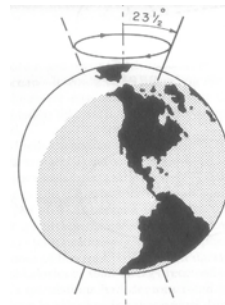
... i a Andorra? ->l'efecte papellona

Què sabem dels canvis globals?

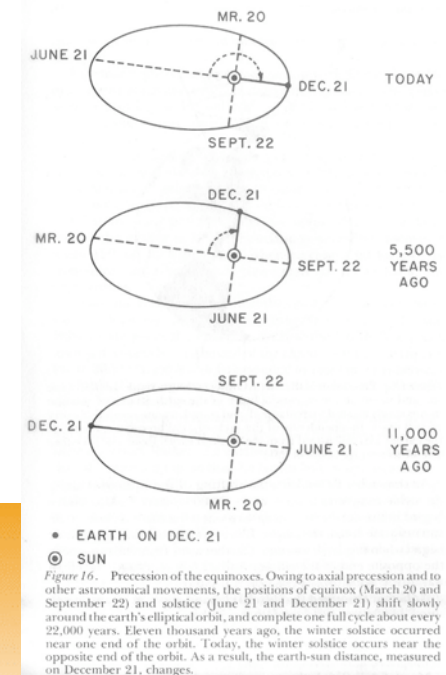
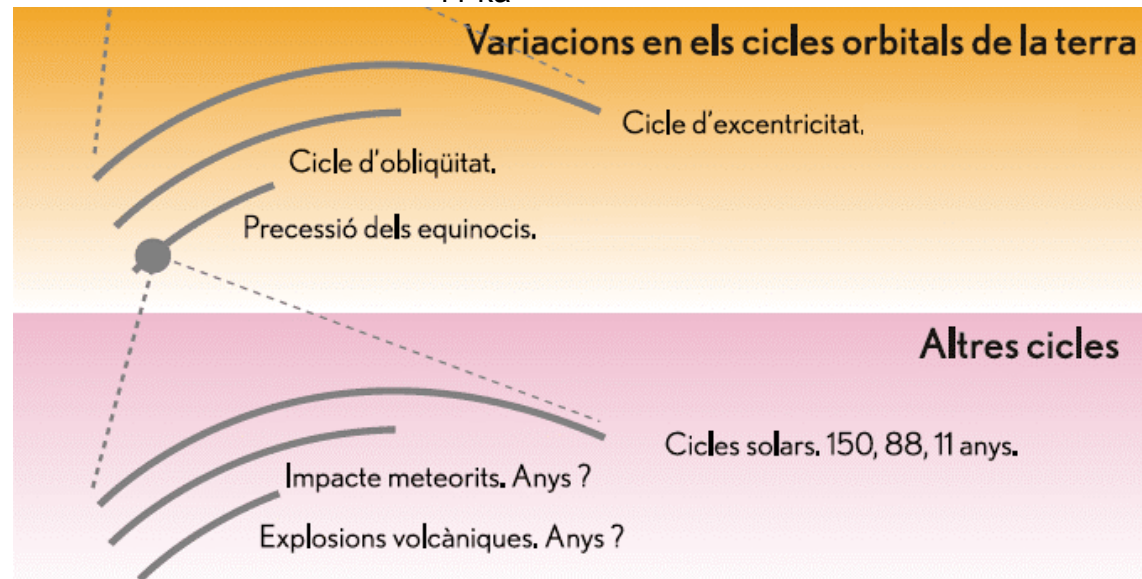
Cicles orbitals i sub-orbitals



100 ka

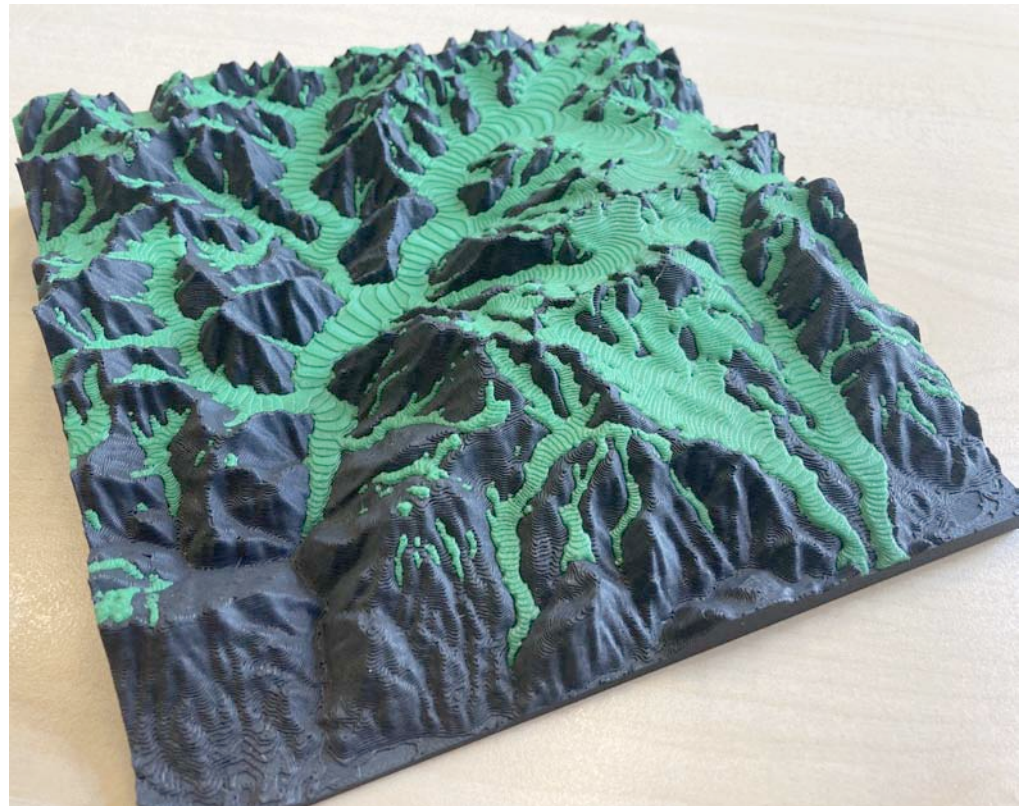
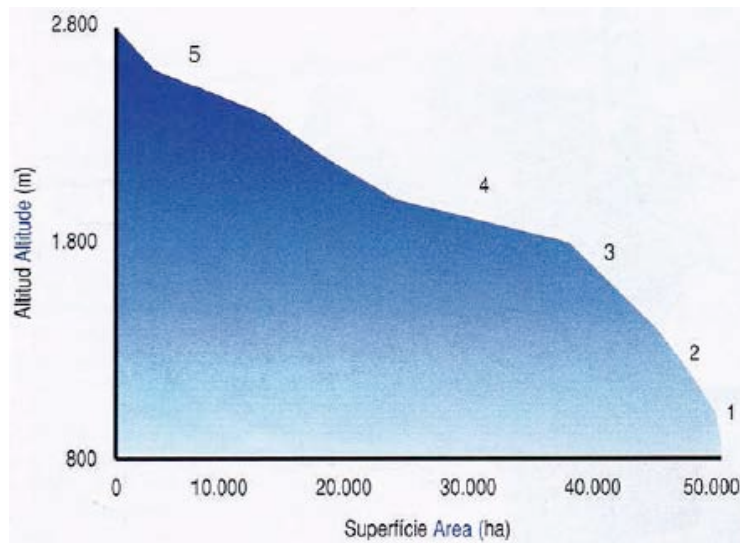


41 ka



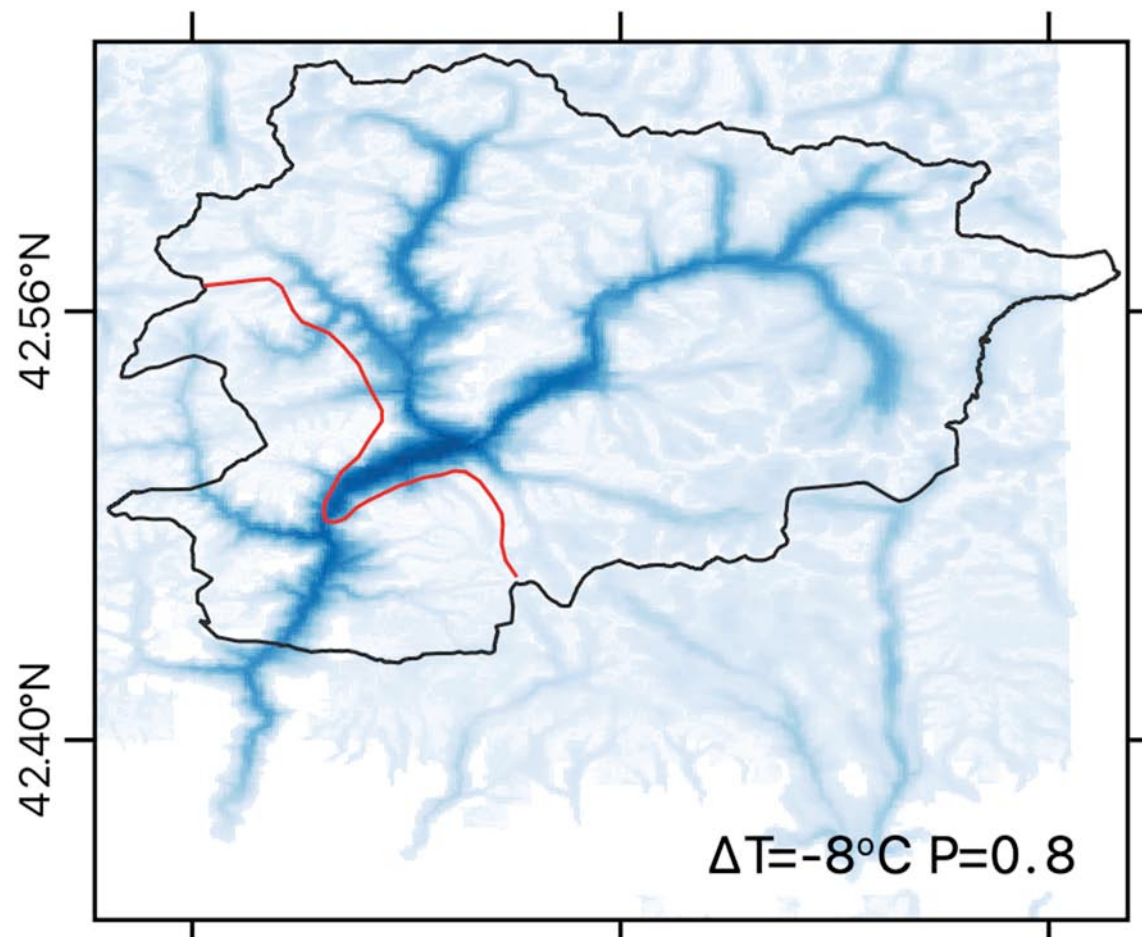
21 ka i 19 ka

Darrer cicle glacial a Andorra



El rol de la corba hipsomètrica

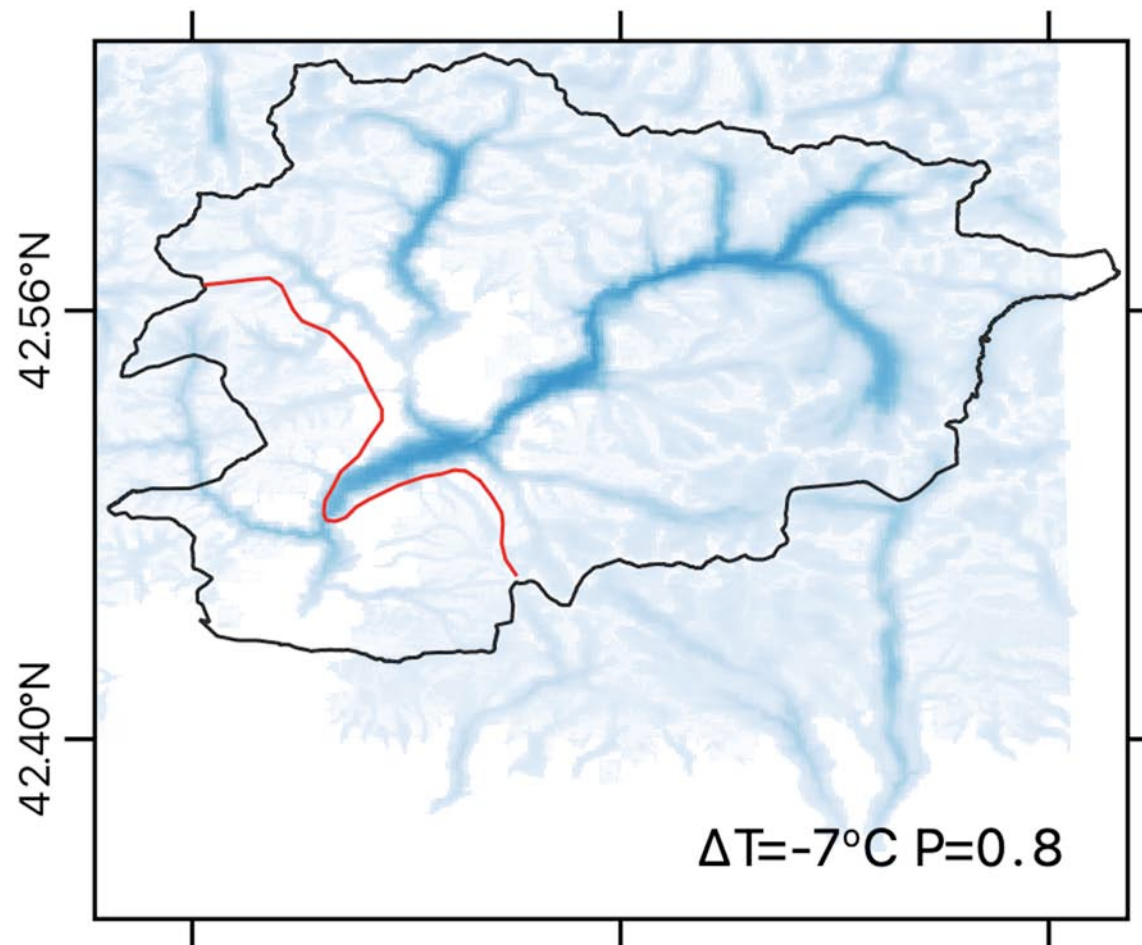
70.000 anys



Temperatura mitja anual -8°C

Precipitació 800 mm/any

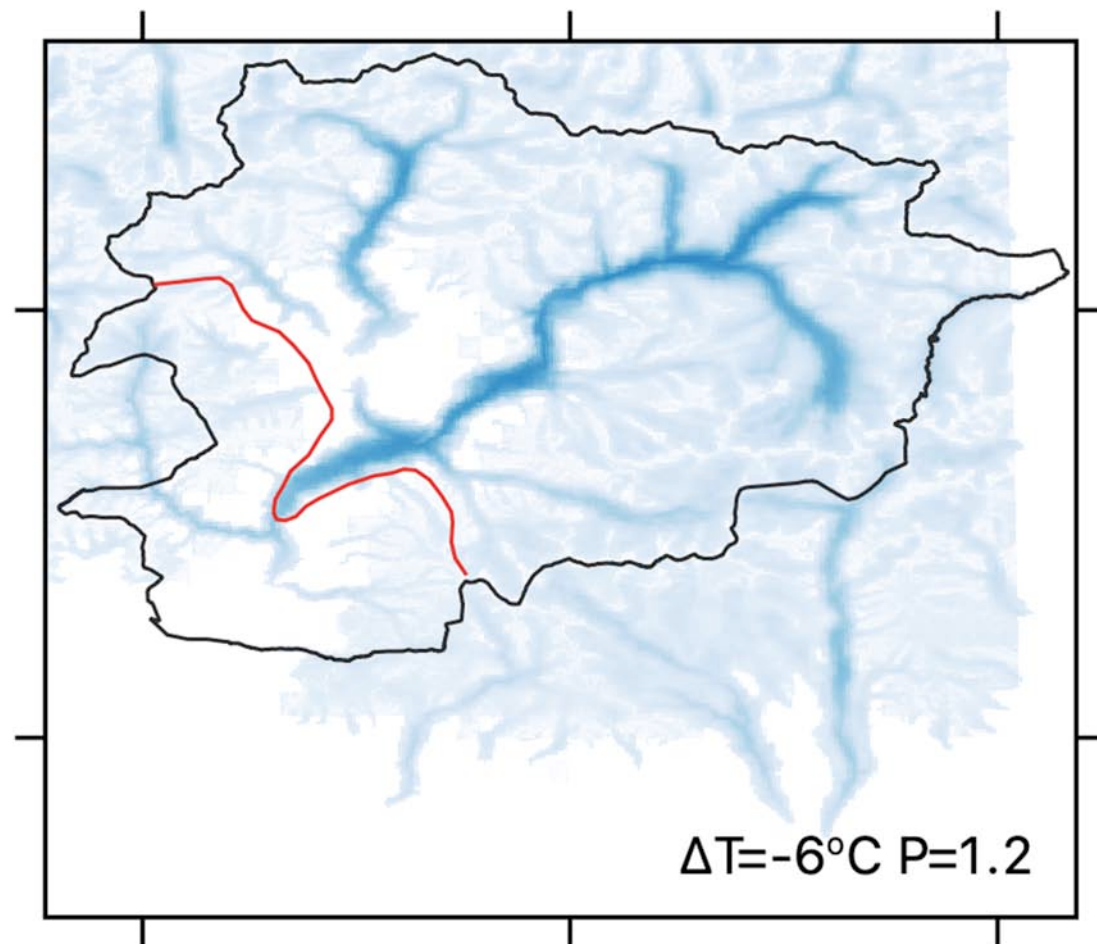
50.000 anys



Temperatura mitja anual -7°C

Precipitació 800 mm/any

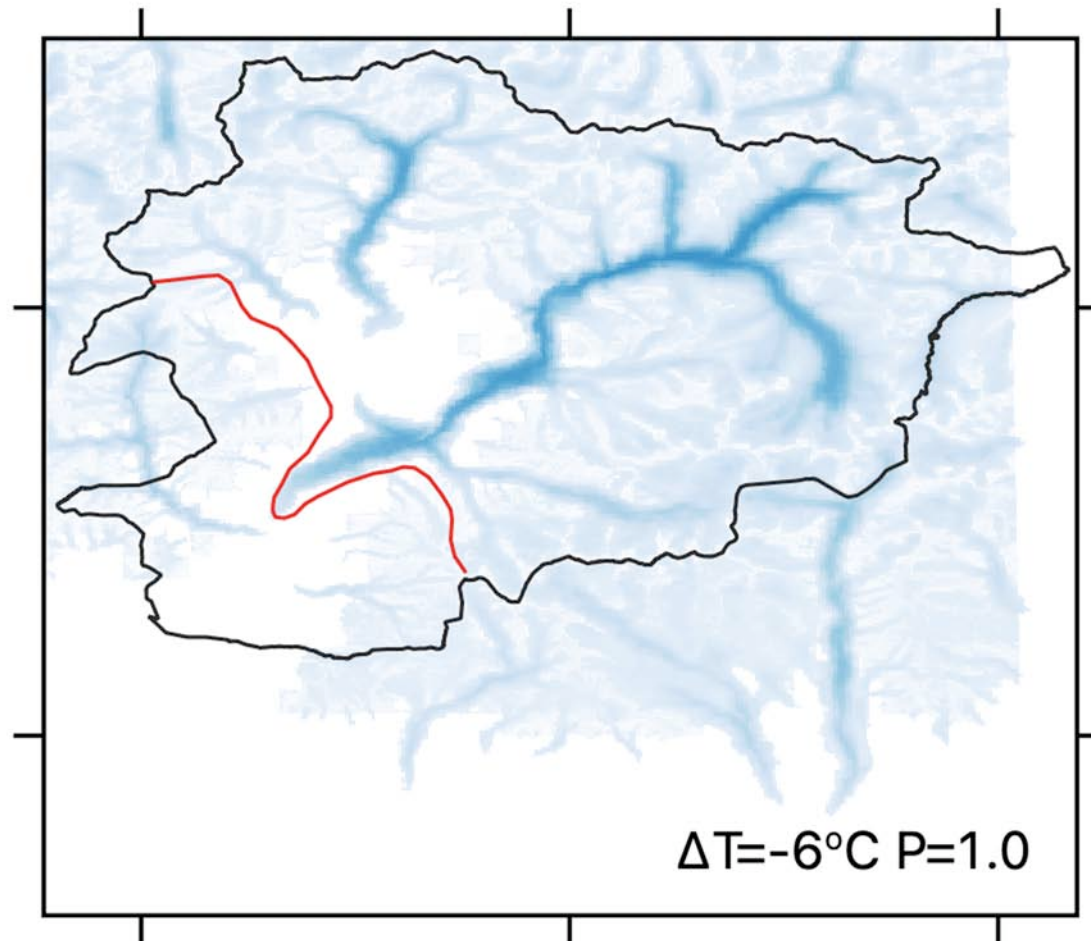
36.000 anys



Temperatura mitja anual -6°C

Precipitació 1200 mm/any

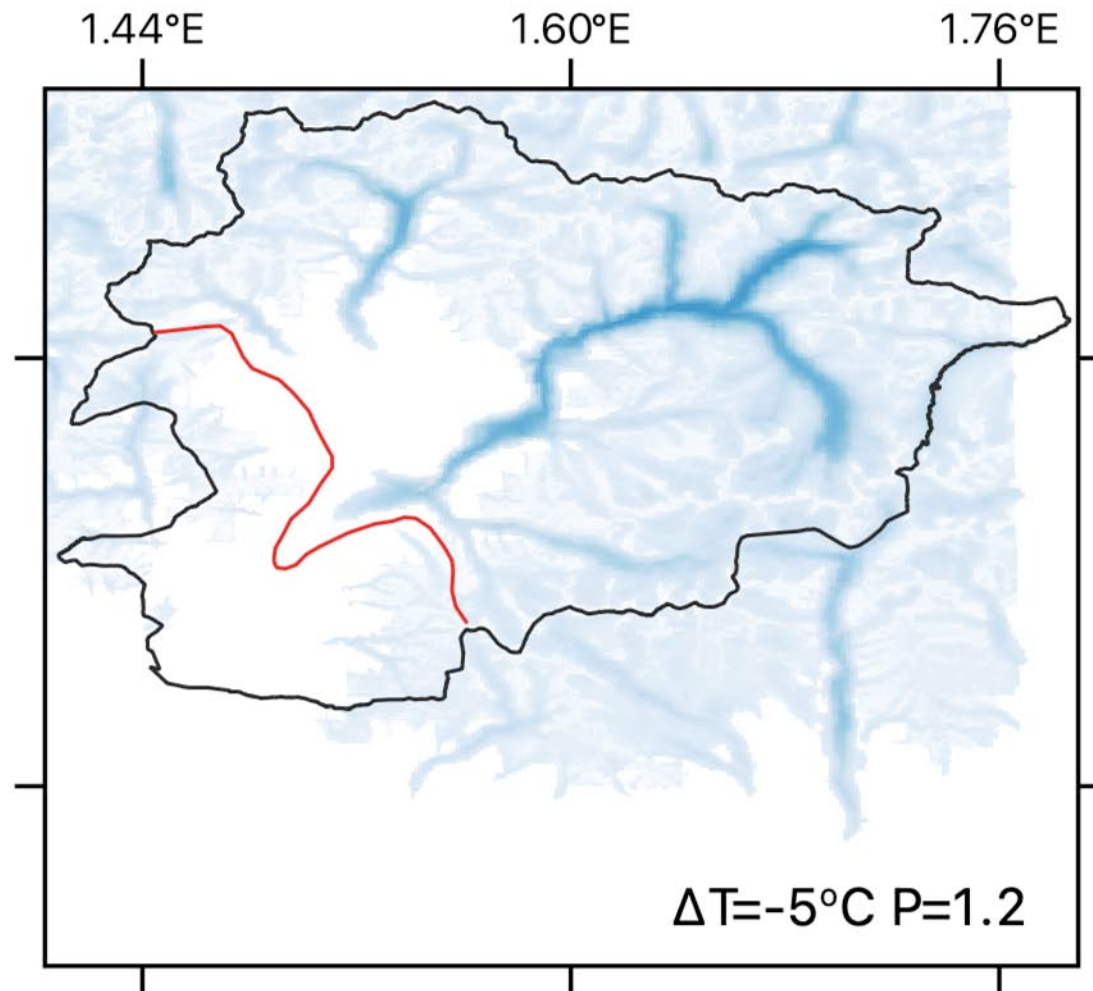
26.000 anys



Temperatura mitja anyal -6°C

Precipitació 1000 mm/any

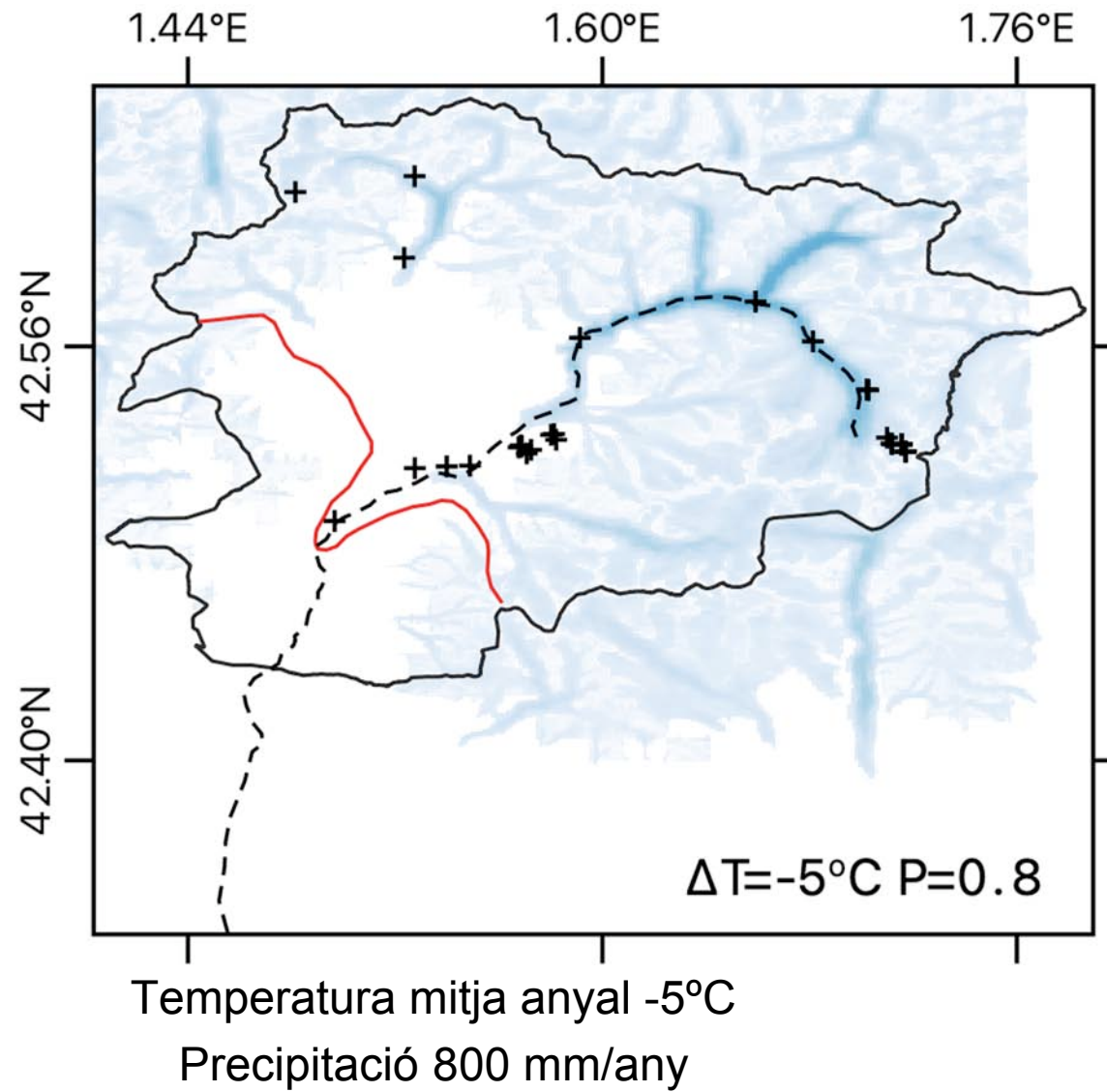
17.500 anys



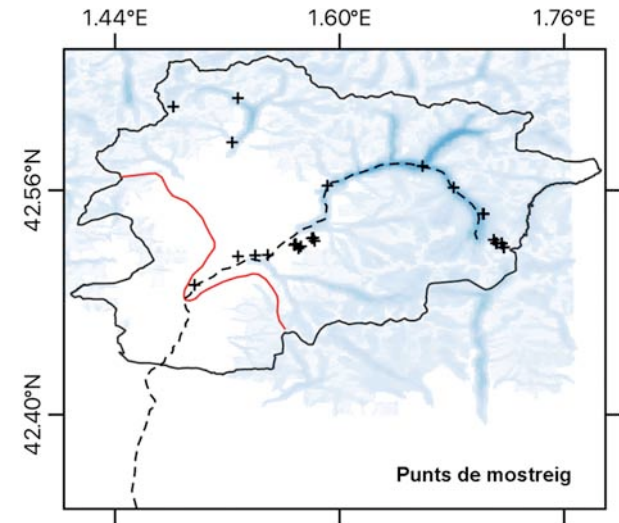
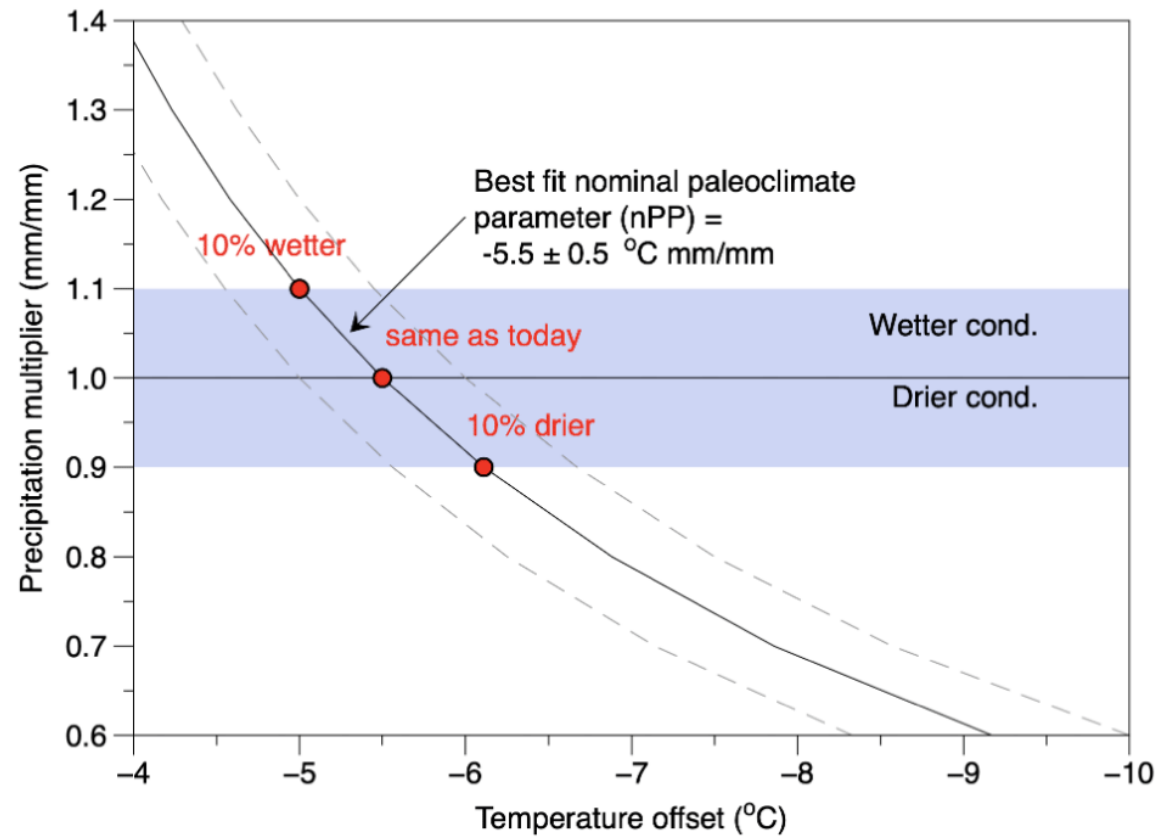
Temperatura mitja anyal -5°C

Precipitació 1200 mm/any

16.000 anys

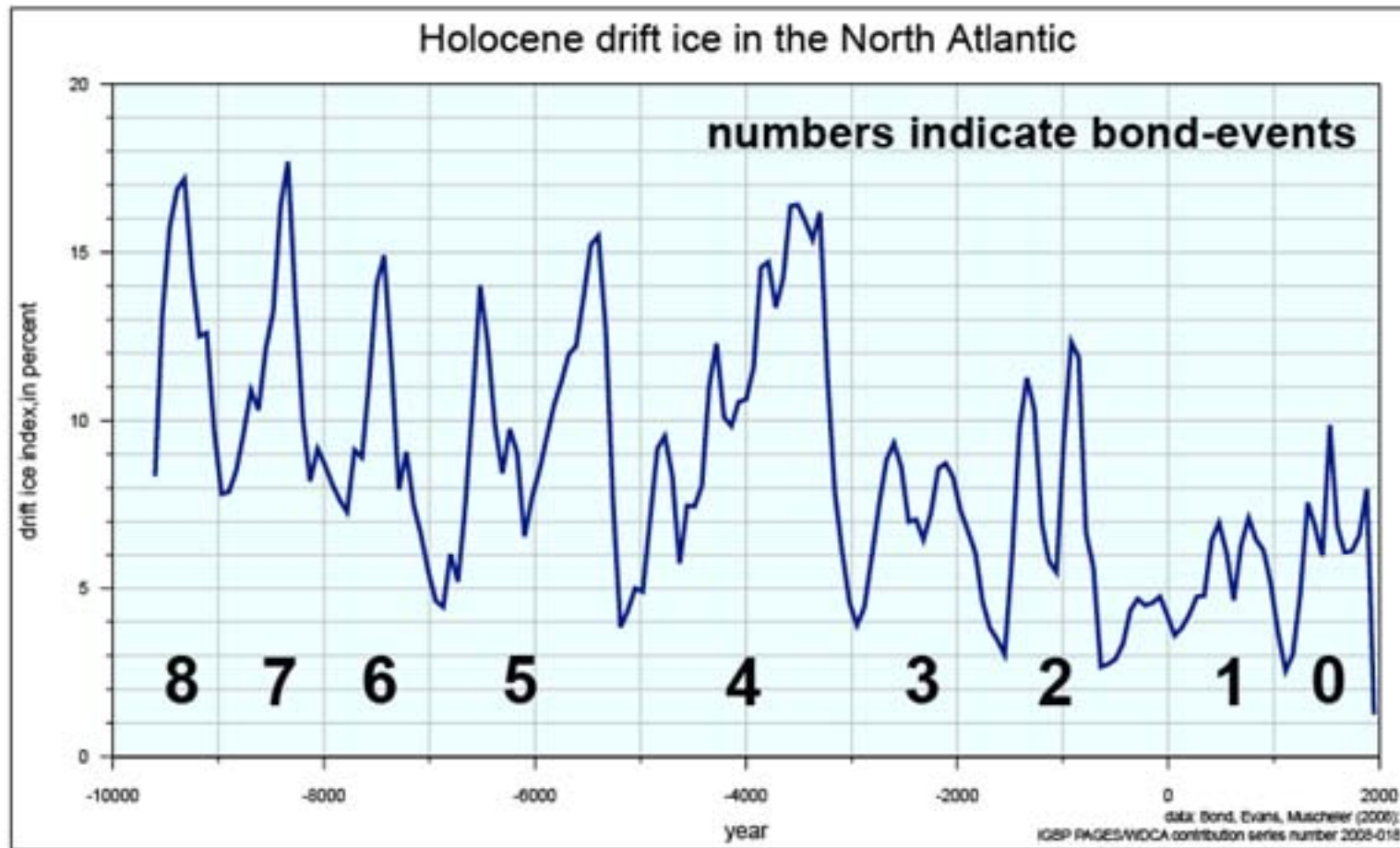


Istanbul Technical University



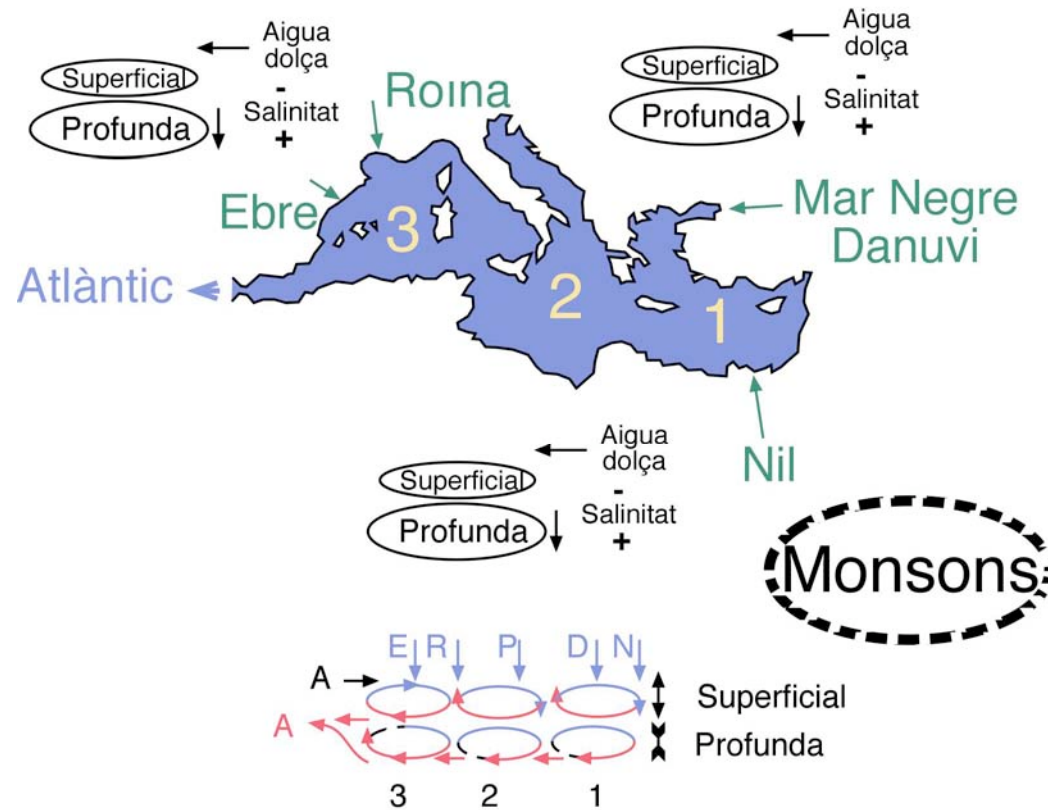
(Akif Sarikaya and Adem Candaç)

Què sabem dels cicles sub-orbitals?



[Wikipedia.org/wiki/Bond_event](https://en.wikipedia.org/wiki/Bond_event)

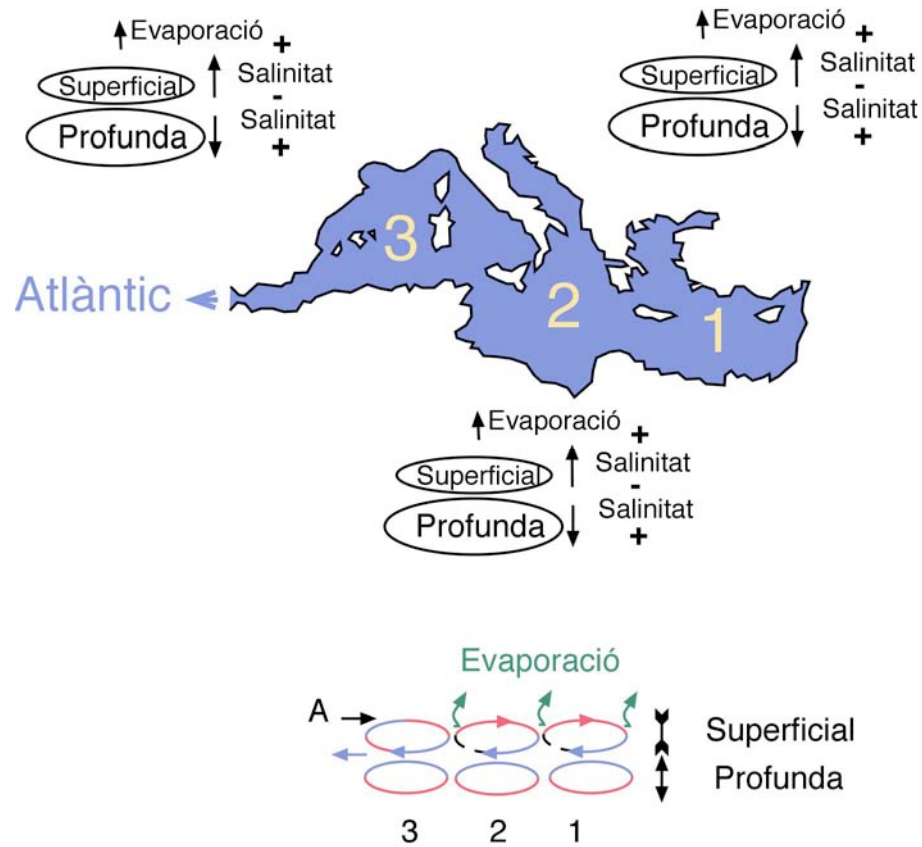
Situació humida al Mediterrani



Aportació dels rius europeus i augment de les diferències entre la salinitat de la corrent superficial de la profunda. El transport de la salinitat és també de calor i produint ciclogèneis.

Situació de sequera al mediterrani

crisi de salinitat cada 3-4 ka



L'evaporació produeix un augment de la salinitat disminuint la diferent densitat entre la corrent profunda i la superficial.
Disminueix la ciclogènesi.

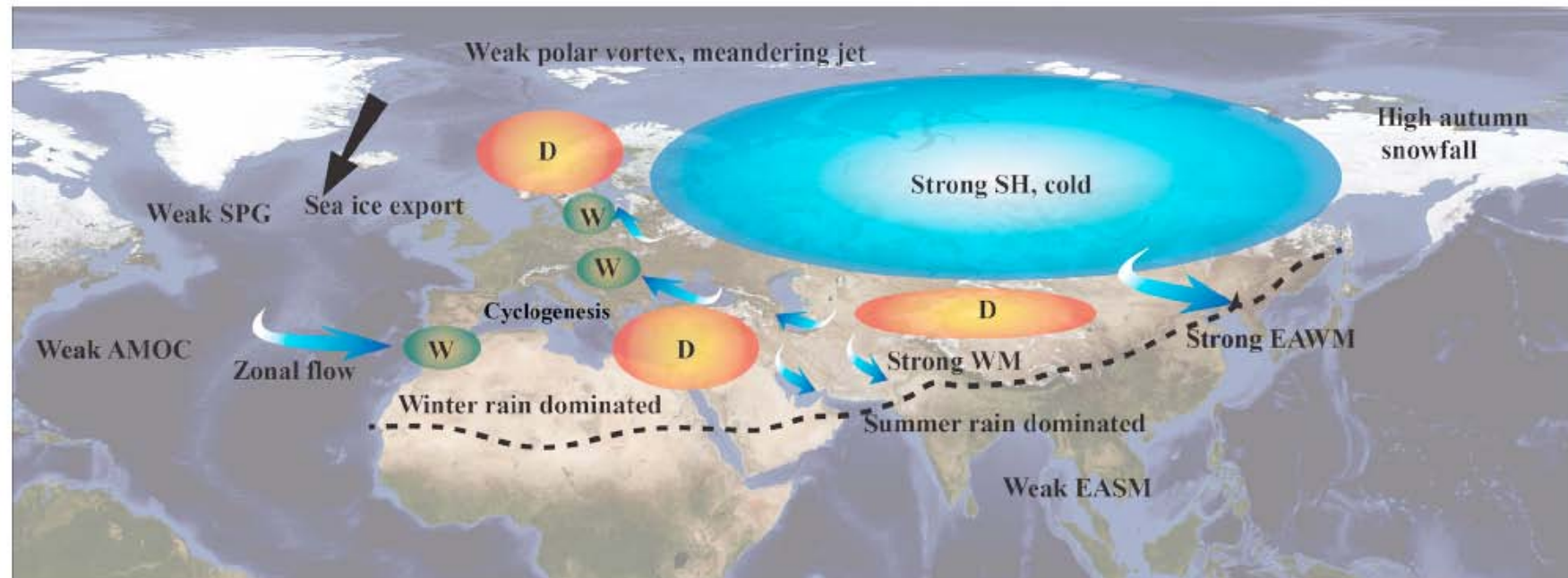
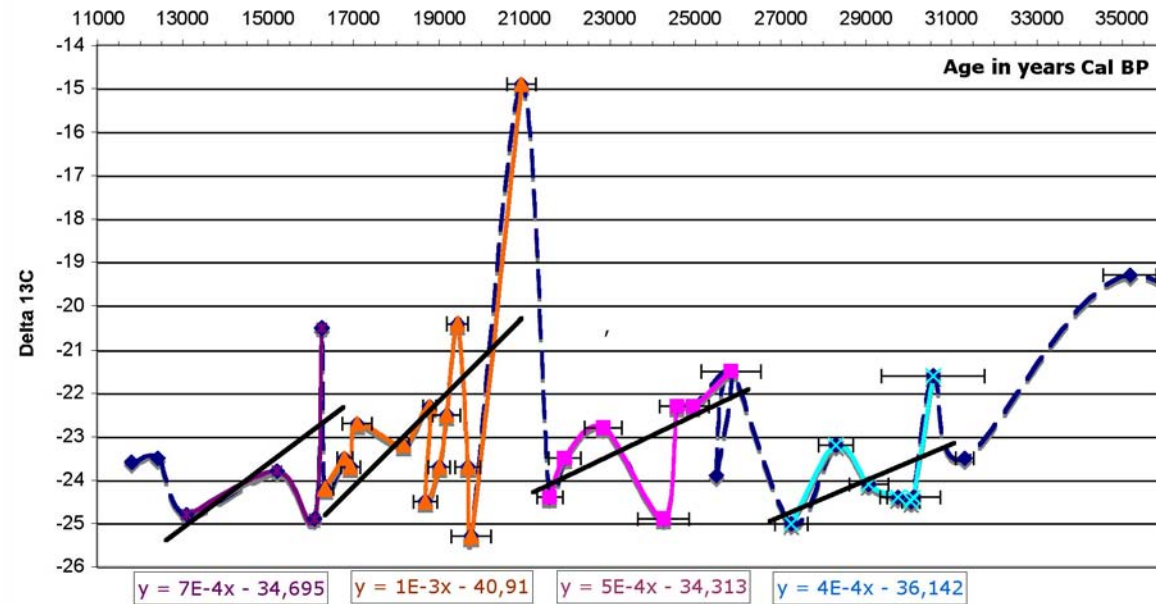


Figure 3. Inferred winter climatic conditions between ~ 4.3 ka and 3.9 ka cal BP. The position of the polar vortex is only indicative. The base map shows the Earth's surface conditions during November (Reto Stöckli, NASA Earth Observatory).

DOI: 10.5194/cp-15-781-2019

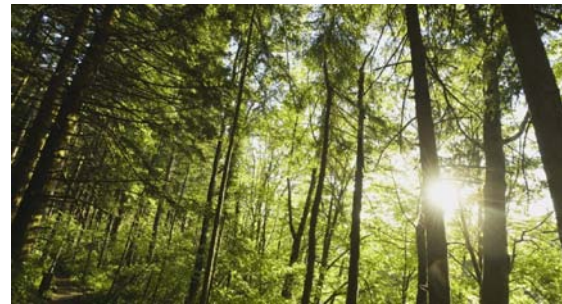
Paleovegetació a Andorra: Climax - Crisi sobtada i llarga recuperació (4,5 ka)?



Turu & Jalut (en preparació)



Hemera Technologies/AbleStock.com/Getty Ima



gJupiterimages/Comstock/Getty Imageses

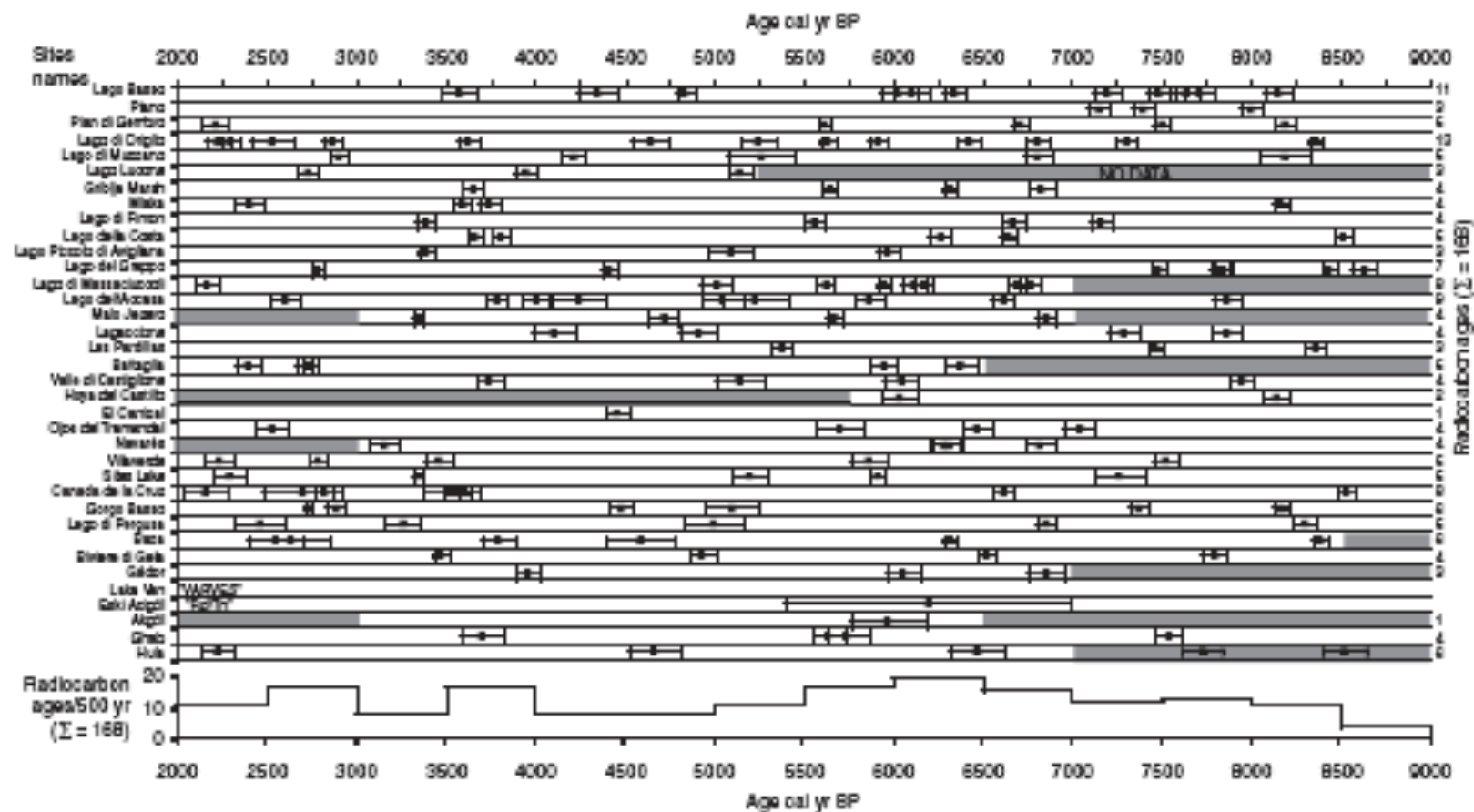


Figure 4. Corpus of radiocarbon dates available from the 36 series (references are listed in Table 1). Chronological distribution of ages with the calibrated interval and 500 yr window quantification curves for each region. Grey zones indicate the absence of data within the series

Restes de carbons en els sediments de l'Europa mediterrània

DOI: 10.1177/0959683610384164

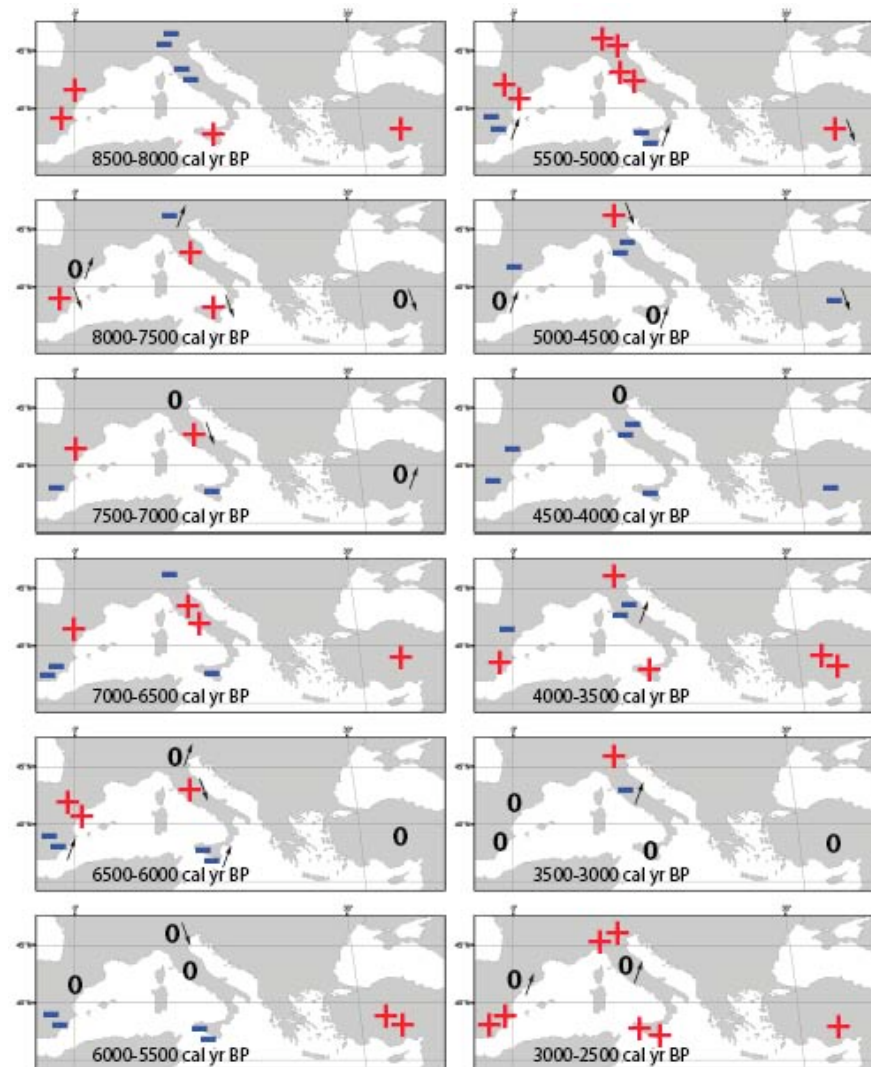
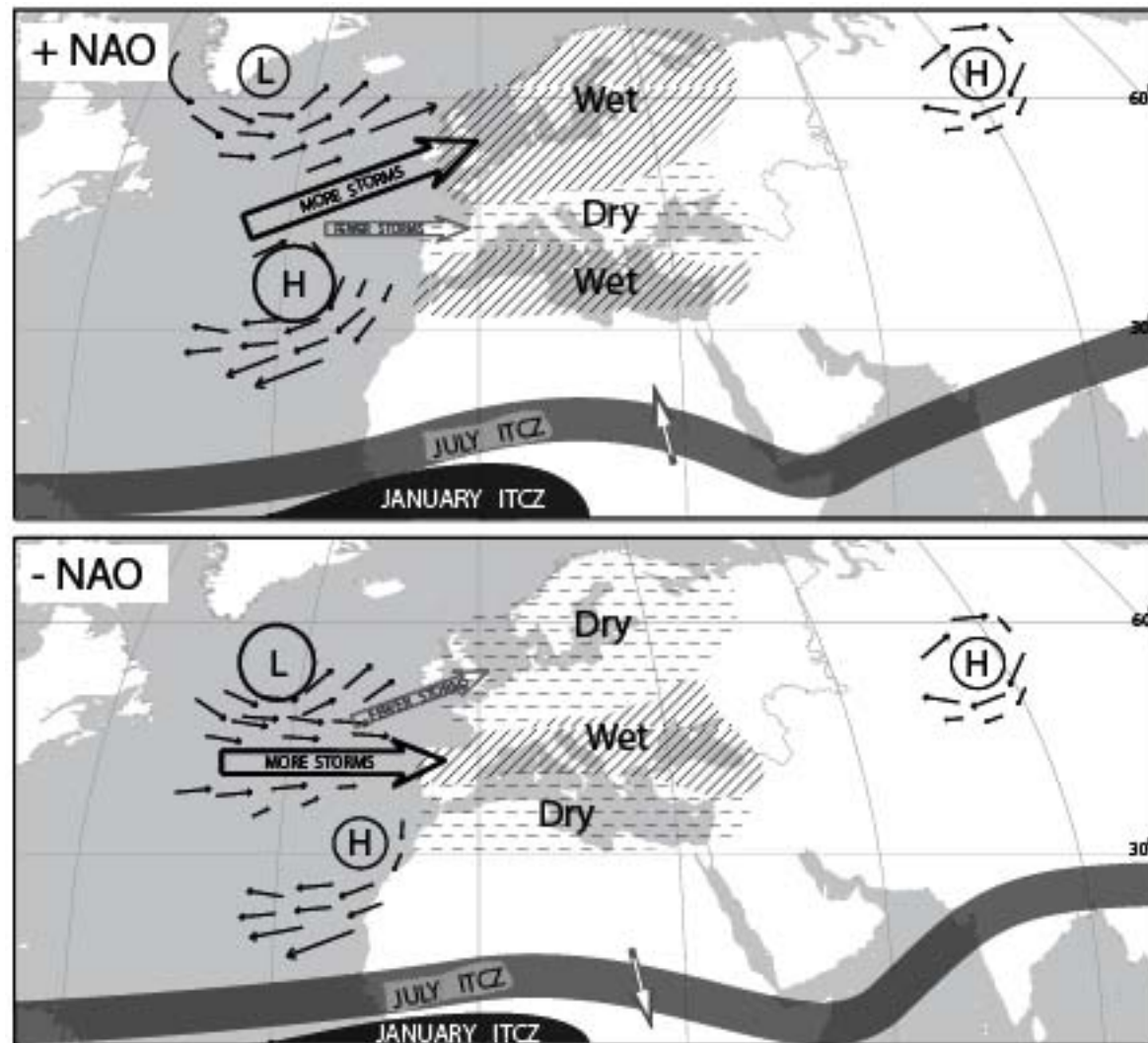


Figure 8. 500 year time slices map of mean regional fire activity. Positive indicates mean Z-scores higher than the Holocene average (dotted lines), double positive corresponds to very high values, zero indicates values around the average, minus shows low values and double minus indicates very low values. Arrow indicates tendency

Paleoincendis al Mediterrani

DOI: 10.1177/0959683610384164



Mecanisme de la North Atlantics Oscillation (NAO)

DOI: 10.1177/0959683610384164

- Lost of ignition

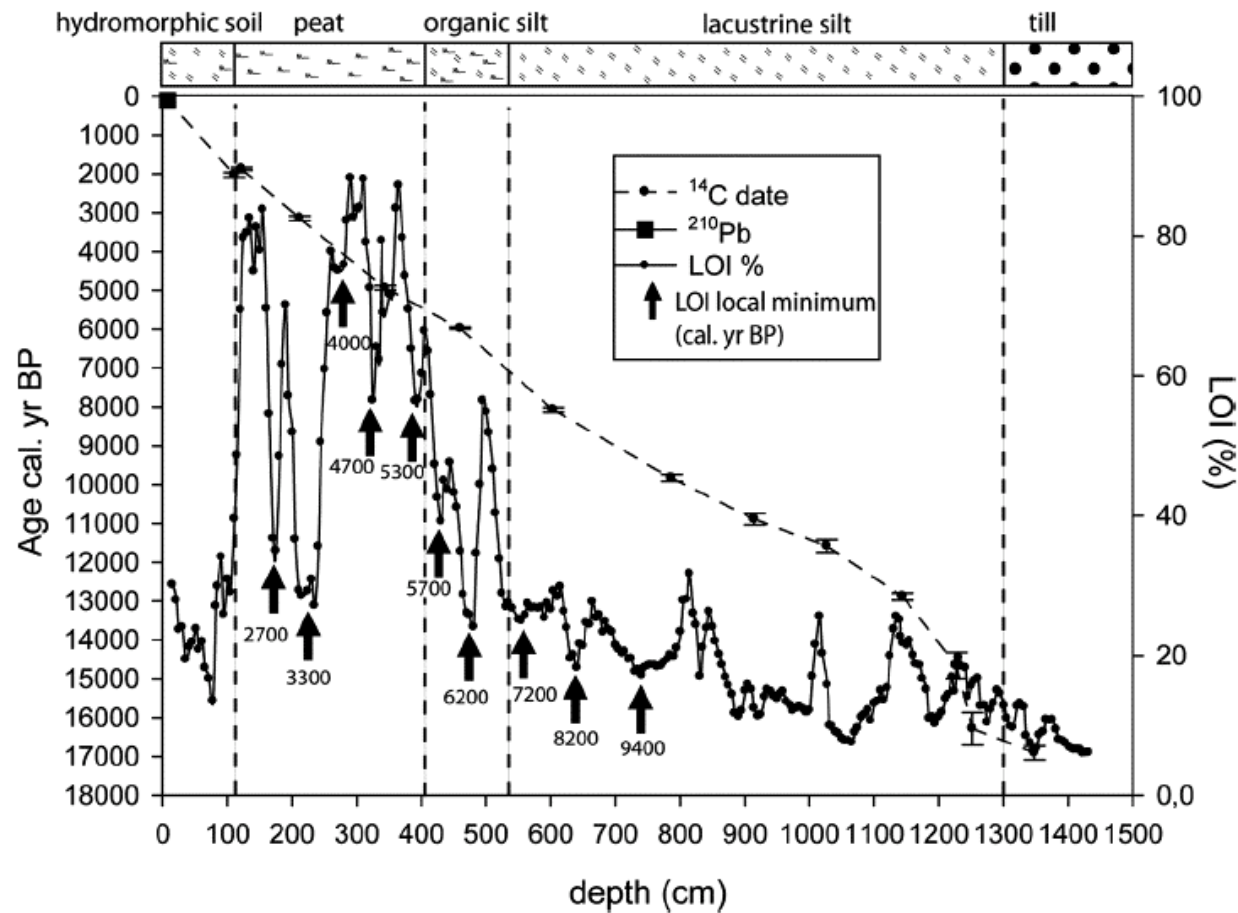
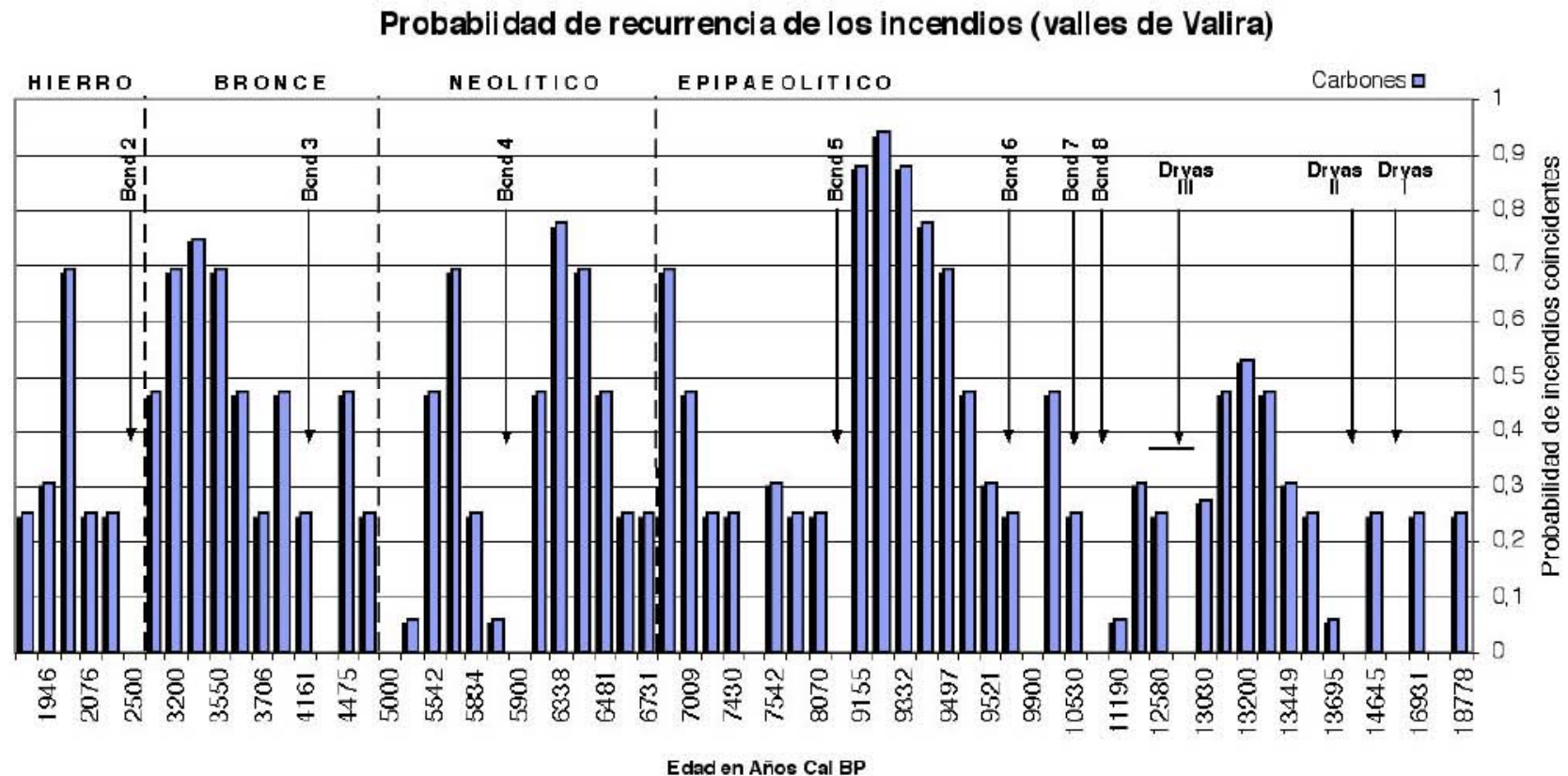


Figure 2. Age–depth model and loss on ignition (LOI) throughout the sediment record of Burg lake

El registre de l'estany de Burg de Farrera (Pallars Sobirà)

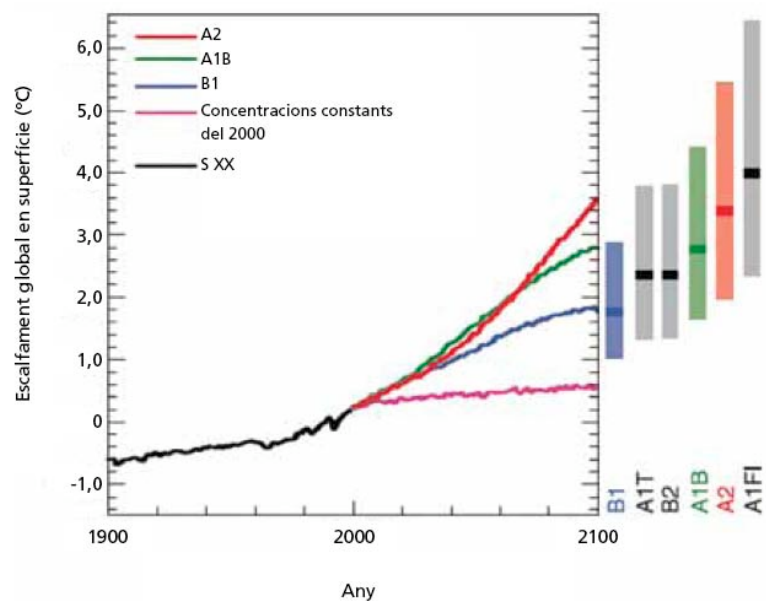
DOI: 10.1177/0959683610386820



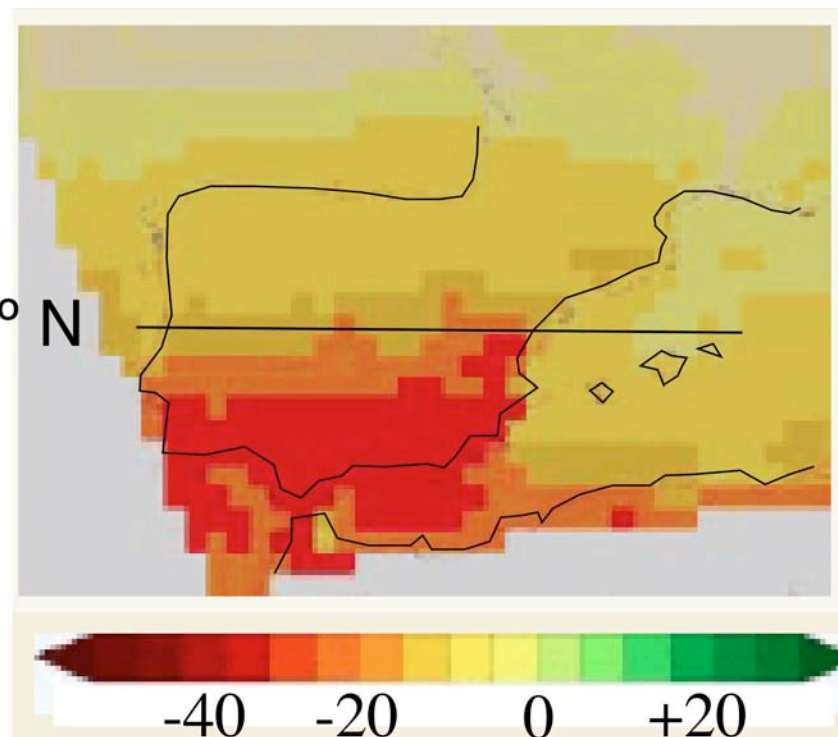
Els períodes sense incendis s'interpreta que no hi ha res per cremar (LOI baixa)

Turu (2018) Paleoclima i geomorfologia de los valles de Andorra. In: Remolins G. & Gibaja, J.F. (Eds) Les valls d'Andorra durant el Neolític. Monografies del MAC, 2, 103-109

Projeccions Generalitat de Catalunya en 2005



40° N



http://www.gencat.cat/mediamb/publicacions/monografies/aigua_canvi_climatic.pdf

...i si col.lapsa la corrent del golf?



..hi hauran canvis de la situació anticiclònica

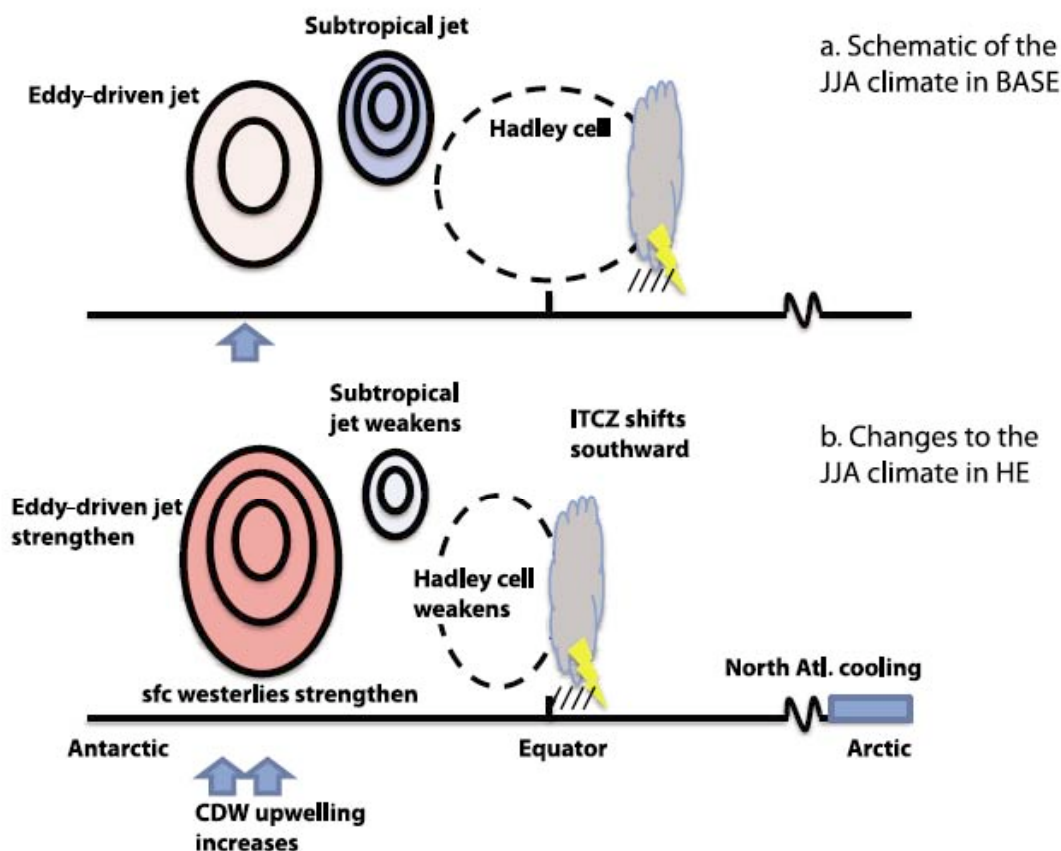


Figure 10. Schematics of the JJA climate in BASE experiment and changes to the JJA climate in HE that illustrate the proposed north-south teleconnection. When the North Atlantic is forced to cool, the CCM3-RGO responded with a southward-shifted ITCZ and increased Southern Ocean midlatitude surface (sfc) westerlies. Other studies have shown that an increase in wind stress leads to a stronger ACC which consequently brings CDW from greater depths.

La resposta de l'Atlàntic sud (vent) a el refredament de l'Atlàntic nord (Bond)

DOI: 10.1029/2010PA002004

UBICACIÓN ANORMAL



LA VOZ

Afecació de la NAO actualment

Estancament de les baixes pressions

<https://doi.org/10.1038/s43247-025-02888-9>

Article

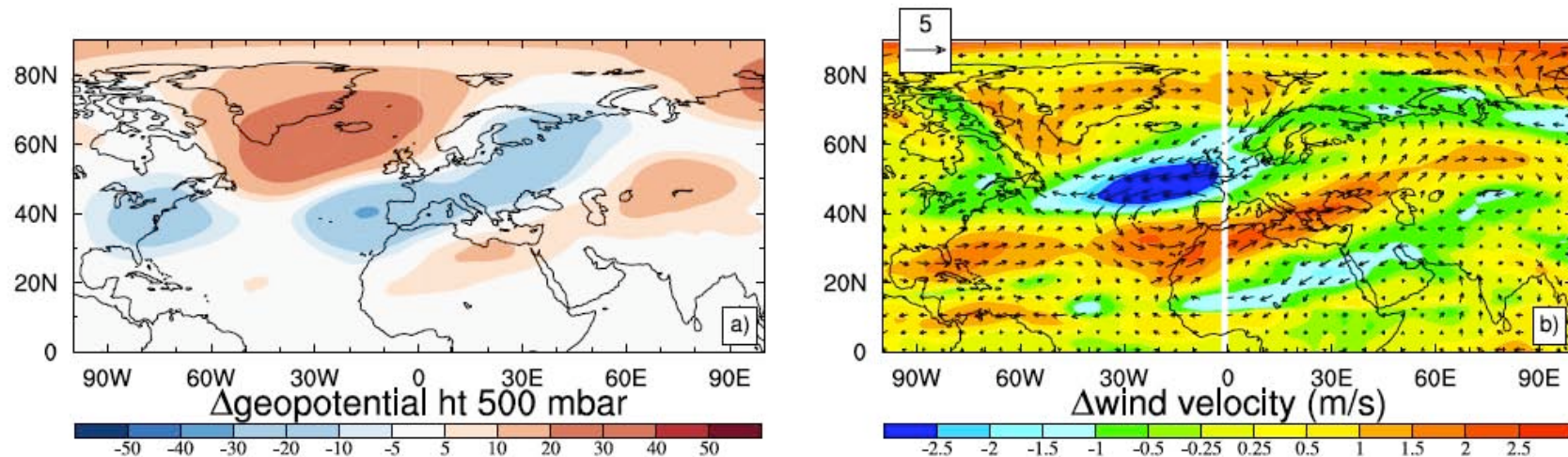


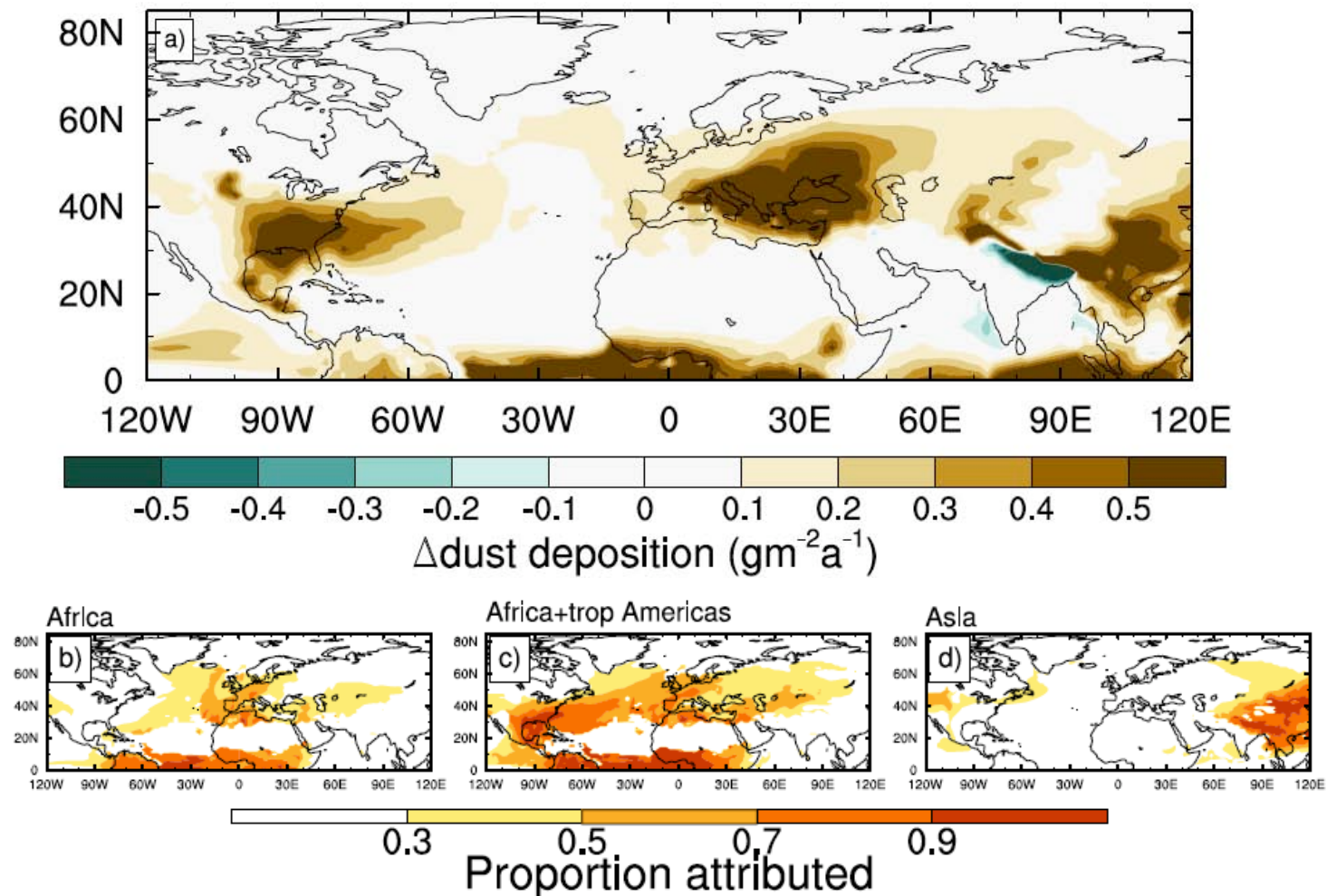
Fig. 9 | Anomalies calculated from monthly-means exceeding the 80th percentile for dust flux over Europe (for the finest two dust size bins) minus remaining months for the LGM simulation for Spring (MAM) for. a) the 500 mbar geopotential height (m) and b) the wind velocity (shading) and vectors (arrows) in ms^{-1} .

Situació similar a la del darrer LGM

Augment de l'aport extraconca

<https://doi.org/10.1038/s43247-025-02888-9>

Article



... augment de l'aport de pols del Sahara

Com afectarà a Andorra, estem
preparats?

Som espectadors o actors?

Gràcies