



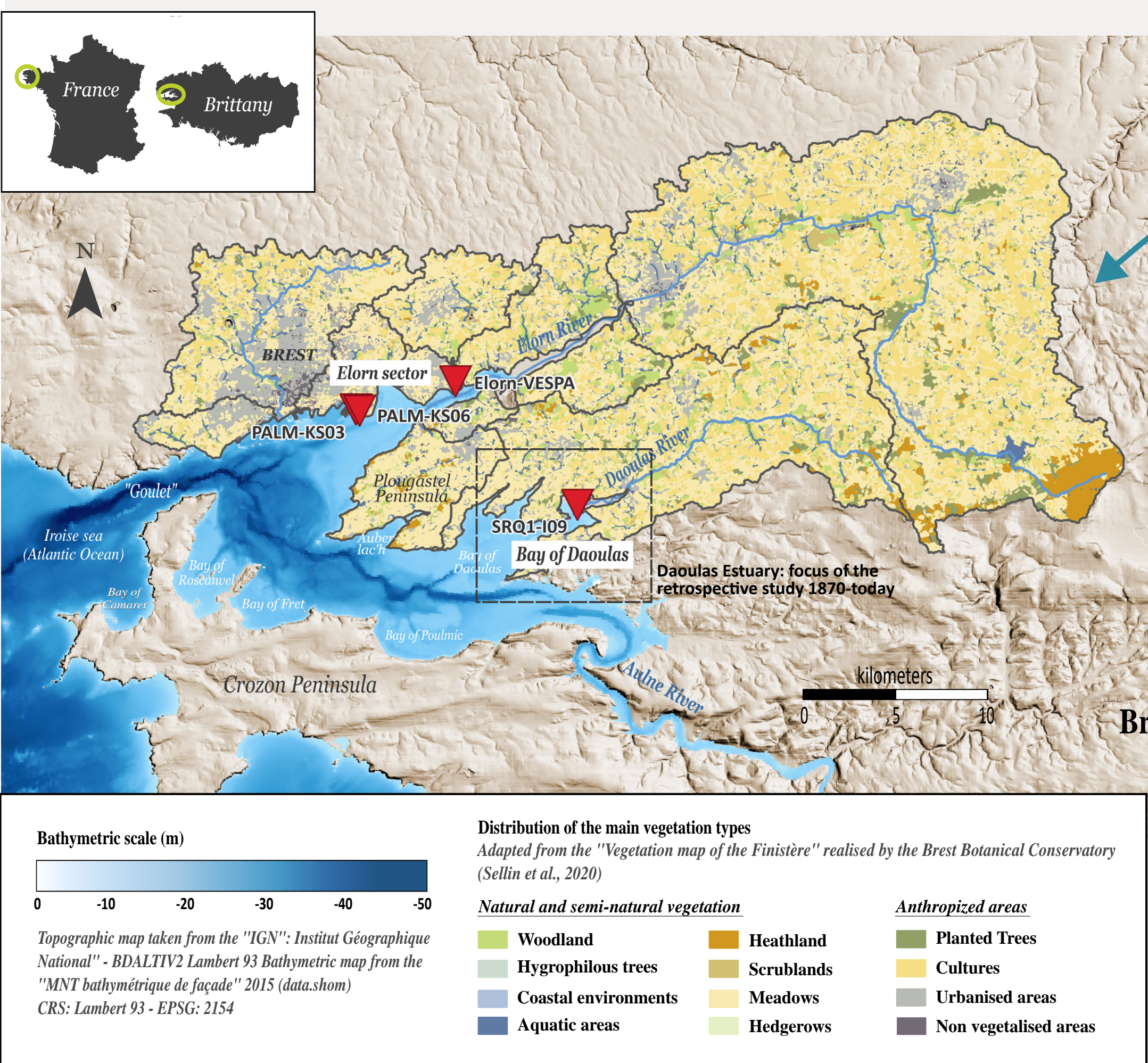
PAST TRAJECTORY OF A SOCIO-ECOSYSTEM AT THE LAND-SEA INTERFACE: the case of the northern watersheds of the Bay of Brest over the last 150 years

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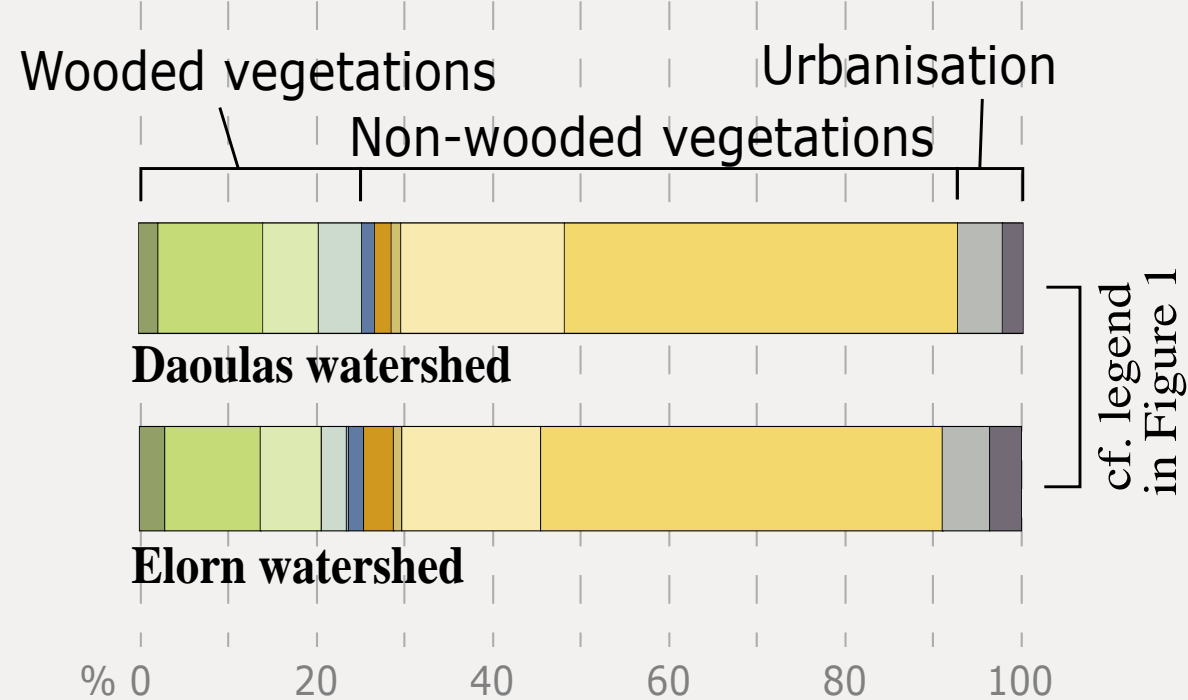
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The **Bay of Brest (BB; Figure 1)** is a semi-enclosed basin of 180 km² subject to tidal dynamics and to the fluvial influences of two main rivers: Aulne and Elorn. They drain well-defined watersheds that cover 2600 km² around the BB. This coastal environment, at the land-sea interface, has been exposed to **strong anthropogenic pressures over the past decades**, especially in the aftermath of World War II. Therefore, it is considered as a regional pilot site for addressing coastal ecosystem transformations since ca. 1800. We analysed sediment cores collected in 2 different BB areas more or less exposed to marine hydrodynamic processes (**Figure 1**): Northern sector (**3 cores**) and Daoulas estuary sector (**2 twin cores**), aiming at deciphering **past environmental changes at a high temporal resolution** (sub-decadal) over the **two past centuries**.

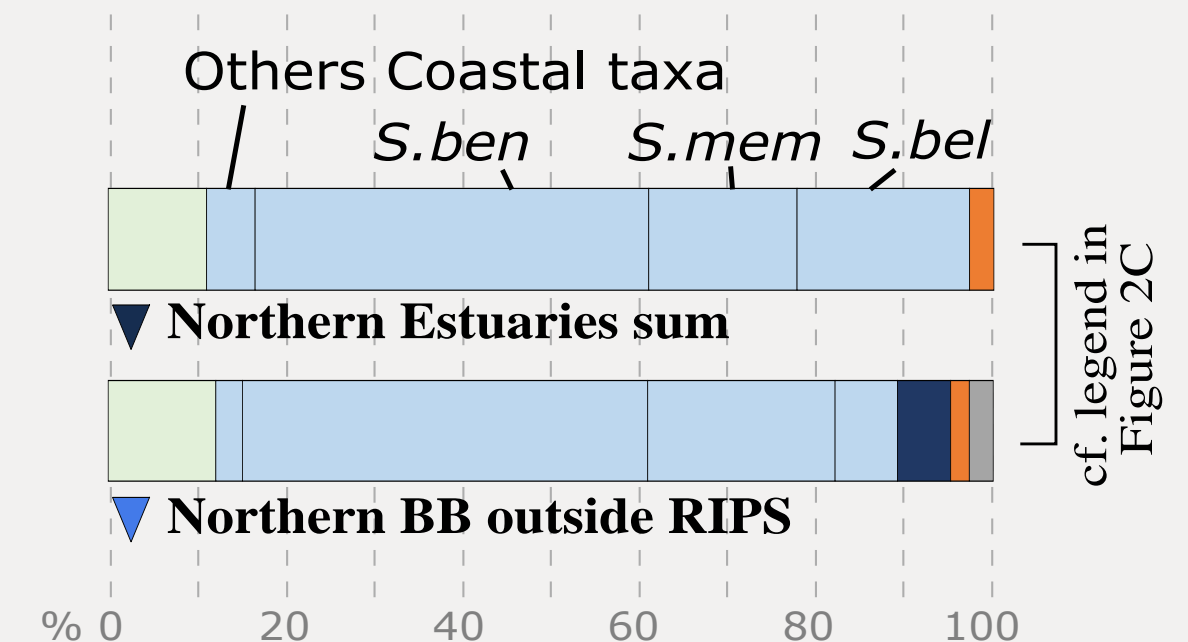


① Spatial comparisons between land-sea data

A) Present-day vegetation



B) Modern dinocyst data



C) Palynological data over the 1990-2010 period

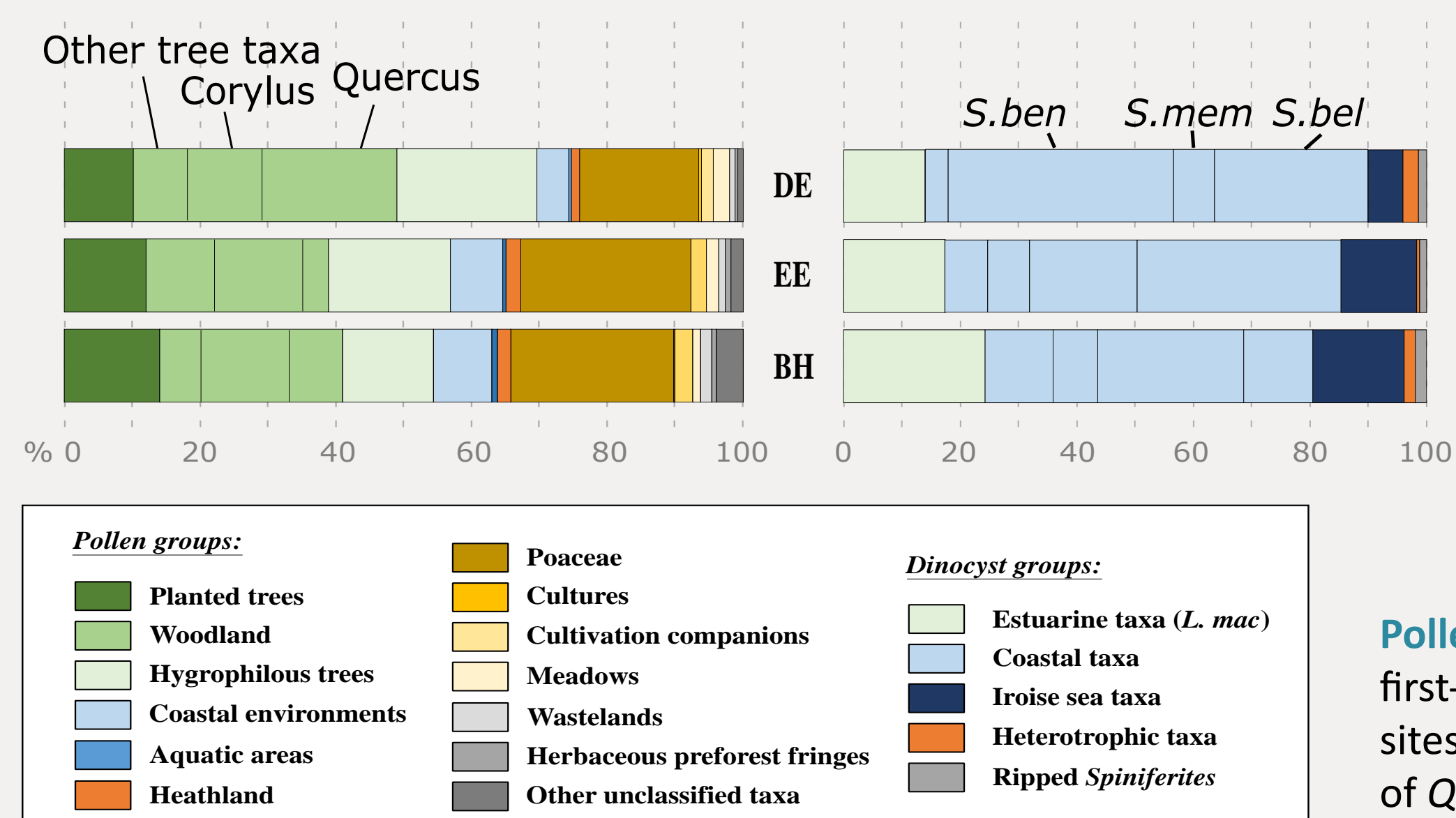


Fig. 2

A) Modern vegetation data from the Daoulas and Elorn watersheds (cf. Figure 1A; Sellin et al., 2020). B) Modern dinocyst data acquired from the 18 samples based on top of interface cores (Figure 1B) grouped for studied estuaries as well as for areas beyond the limits of the river-induced palynological signal (RIPS). C) Spatial overview of Bay of Brest palynological data at the 3 studied sites (blue triangles in Figure 1): Daoulas estuary (DE), Elorn estuary (EE) and Brest harbour (BH) over a 20-year period (1990-2010).

Pollen : a relatively homogeneous first-order pollen signal at the 3 sites, with an over-representation of *Quercus* in the Daoulas estuary and Poaceae in the Elorn sector.

Dinocysts : typical assemblage of estuarine environments under tidal and fluvial influences, dominated by coastal taxa at the river mouths. In the harbour sector, more exposed to Atlantic currents, the assemblage is more equidistributed with higher % of neritic and oceanic taxa.

② Evolution of the Bay of Brest socio-ecosystem since 1871 : focus on the Daoulas estuary

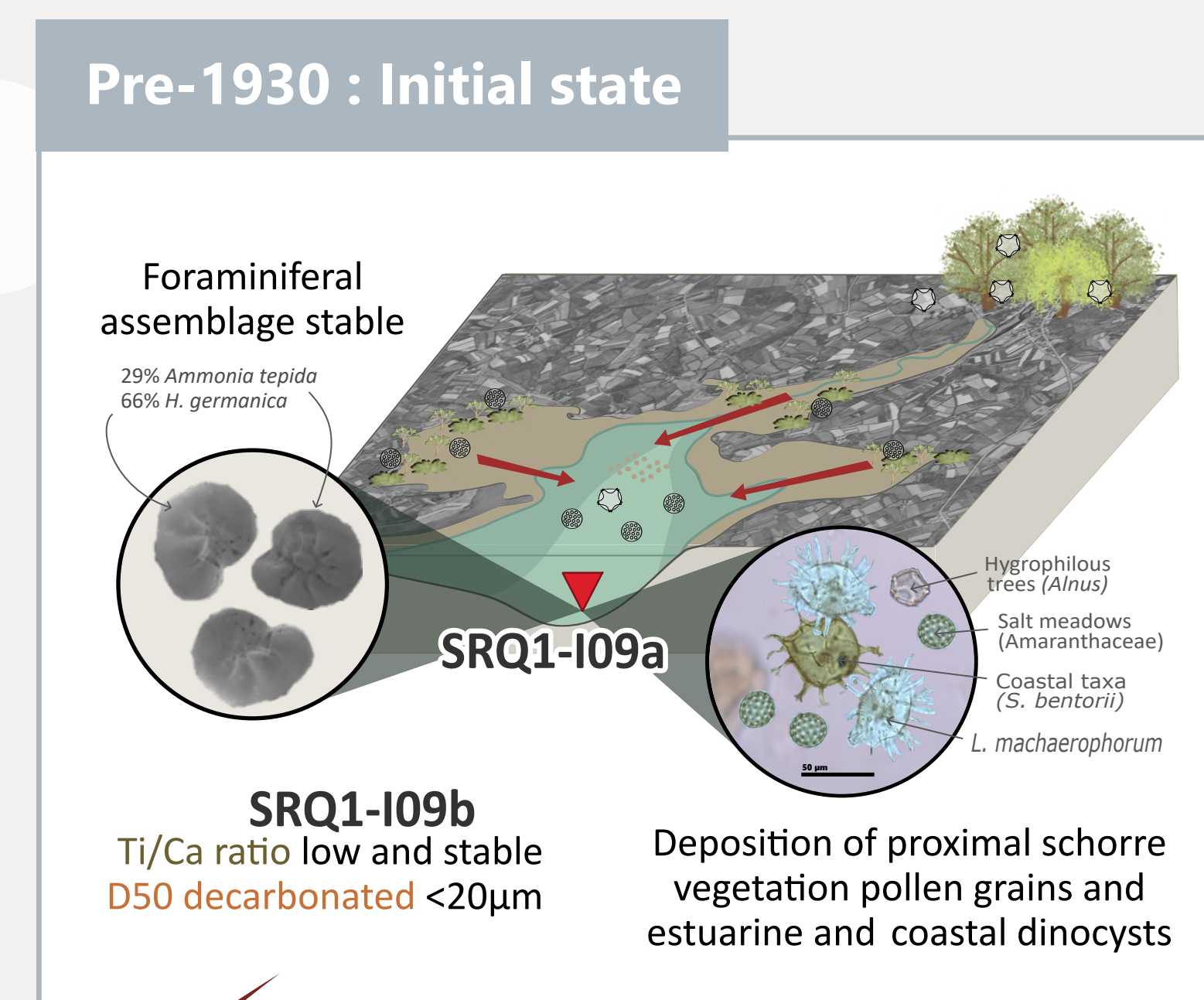
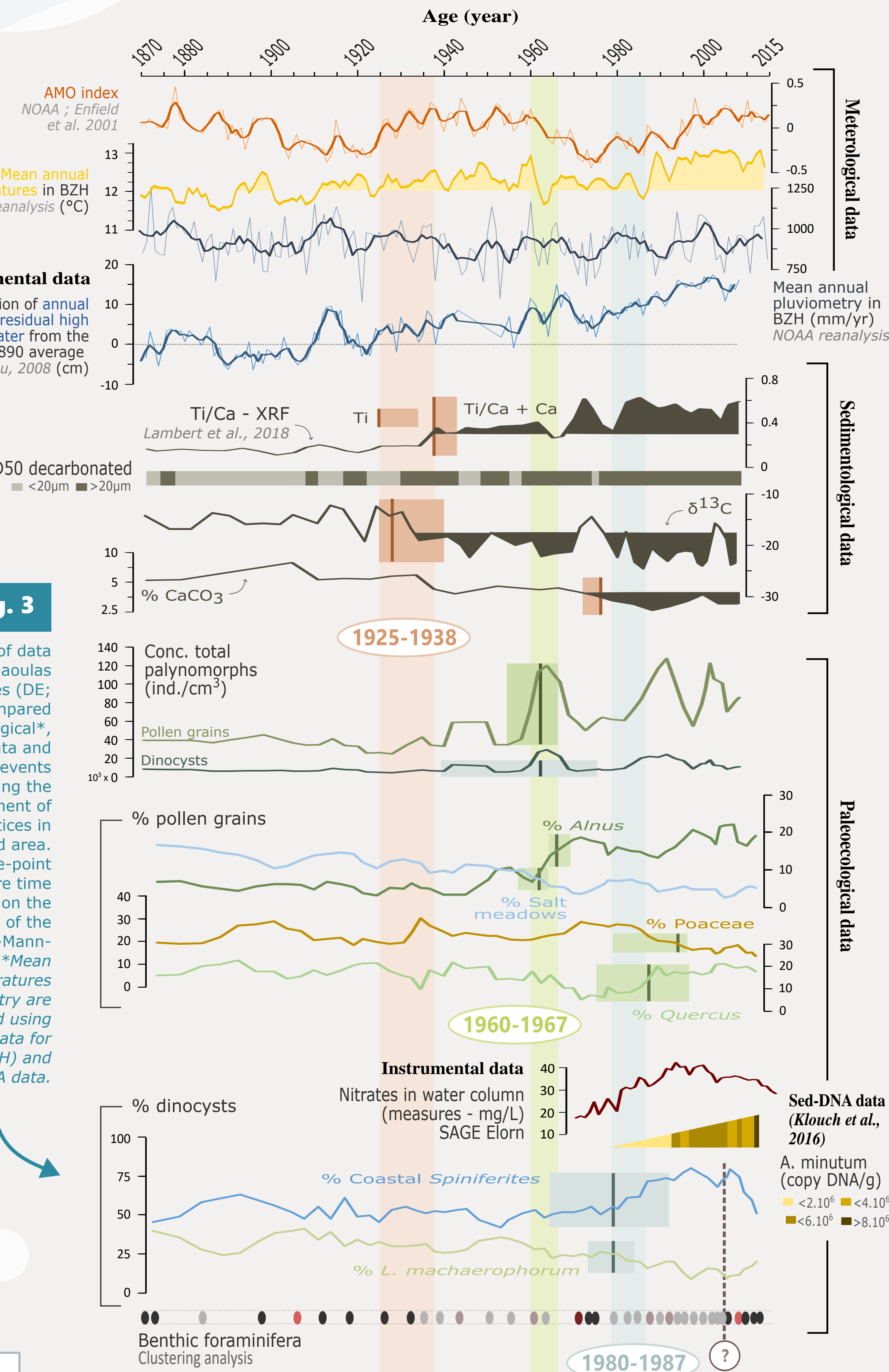


Fig. 3

Synthesis of data acquired on Daoulas estuary cores (DE; Figure 1) compared with meteorological*, instrumental data and major historical events tracing the development of agricultural practices in the studied area. Statistical change-point limits in core time series are based on the repeated use of the Wilcoxon-Mann-Whitney test. *Mean annual temperatures and pluviometry are modelled using meteorological data for Brittany (BZH) and NOAA data.



References

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