

Supplementary information materials for

CO₂ and temperature decoupling at the million-year scale during the Cretaceous Greenhouse

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Figure S1. Geographical map of the eleven localities corresponding to the twelve Cretaceous stages from which *Frenelopsis* samples were studied (original maps from d-maps.com; Europe map: http://d-maps.com/carte.php?num_car=30075&lang=es; Belgian regions: http://d-maps.com/carte.php?num_car=17839&lang=es; French regions: http://d-maps.com/carte.php?num_car=18001&lang=es; Spanish regions: http://d-maps.com/carte.php?num_car=18017&lang=es).

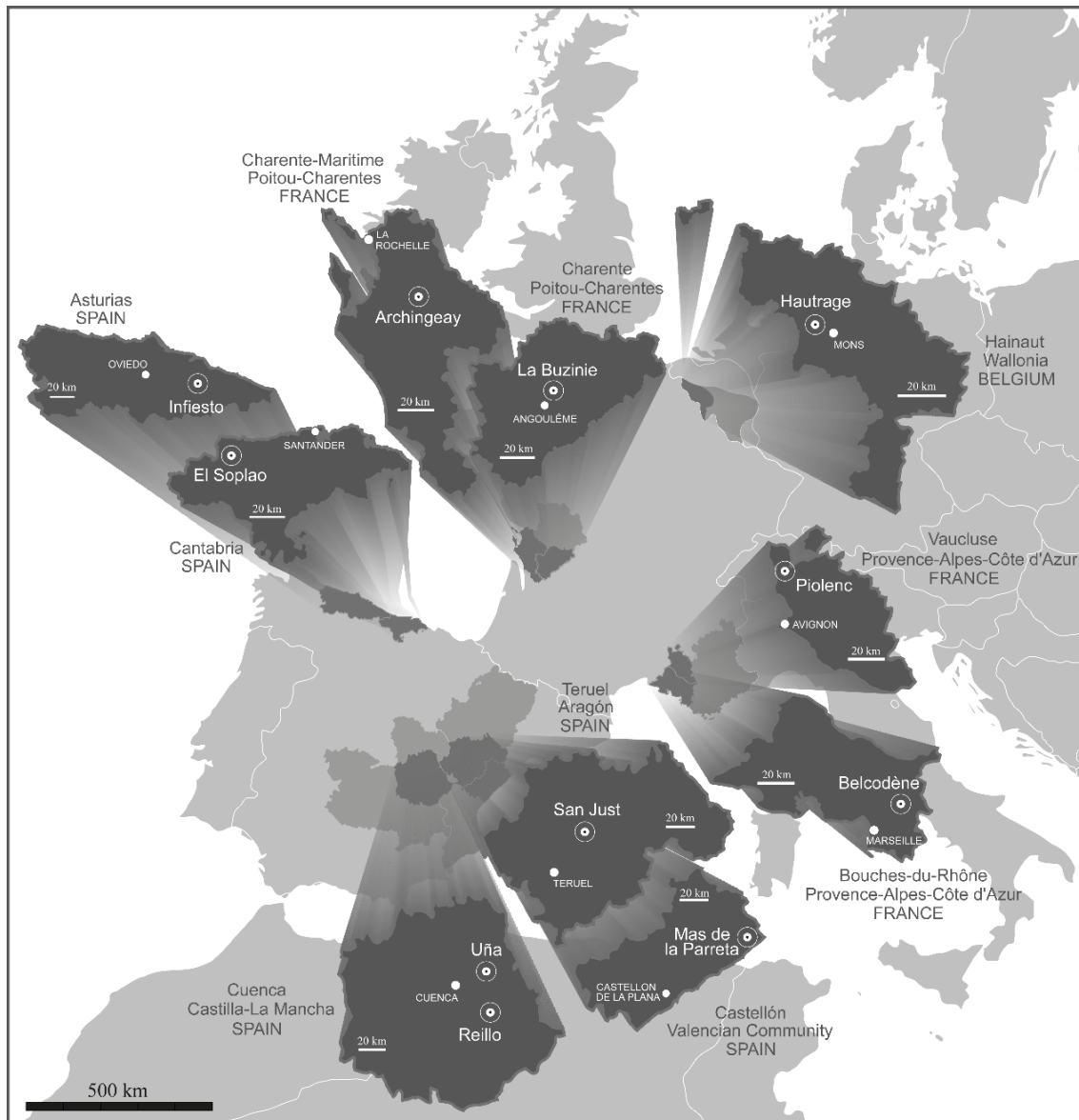


Table S1. Geographical, geological and palaeoenvironmental settings of the localities from which *Frenelopsis* samples were studied.

| Locality | Area | Country | Stratigraphy | Age | Bed | Lithology | Paleoenvironment | Refs. |
|-------------------|-------------------|---------|----------------------------|---|---------|--|---|-------|
| Hautrage | Hainaut | Belgium | Hautrage Clays Fm. | upper lower Barremian-lower upper Barremian | HTpt-4 | Sideritic dark clays | Floodplain with very poor development of soil | 1-6 |
| Uña | Cuenca | Spain | La Huérguina Fm. | upper Barremian | 3 | Coaly laminated clays draping massive sandy layers | Flooding event in a cycle of deltaic progradation-retrogradation in the marginal zone of a lake | 7 |
| Mas de la Parreta | Castellón | Spain | Arcillas de Morella Fm. | uppermost Barremian-lower Albian | CMP-3 | Red clays | Freshwater swamp or mangrove | 8,9 |
| El Soplao | Cantabria | Spain | Las Peñasas Fm. | lower Albian | FA3 | Silty clays | Delta plain | 10,11 |
| San Just | Teruel | Spain | Escucha Fm. | lower-middle Albian | SJpt-1 | Grey-black clays | Freshwater swamp plain subenvironment within an upper deltaic plain | 12-15 |
| Reillo | Cuenca | Spain | Arenas de Utrillas Fm. | upper Albian | - | Red clays | Floodplain | 16 |
| Archingeay | Charente-Maritime | France | Charente-Maritime deposits | uppermost Albian | A1sl-A | Clays intersected by fine sandy beds | Brackish or marine water influenced environment, mangrove | 17 |
| | | | | lowermost Cenomanian | A2sm1-2 | Blue-Grey laminated clays | Freshwater or brackish water influenced environment, mangrove | 17,18 |
| La Buzinie | Charente | France | - | uppermost lower-lowermost middle Cenomanian | B3/C | Lignitic clays | Paralic environment | 19 |
| Infiesto | Asturias | Spain | Infiesto Fm. | upper Turonian-Coniacian | - | - | - | 20 |
| Piolenc | Vaucluse | France | - | lower Santonian | C | Sandy clays | Supratidal ponds or marshes | 21 |
| Belcodène | Bouches-du-Rhône | France | - | upper Santonian | - | Laminated marls | Coastal environment | 22 |

Supplementary Information References

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