



Water vapour isotopic signature along the EAIIST traverse

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Take home messages

- First in-land transect of water vapour isotopic composition monitoring, combined with two static measurements.
- Bridging previously known processes near the coast and far inland.
- To be complemented with surface snow isotopic composition as well as with modelling approaches (in particular MAR)

The EAIIST traverse

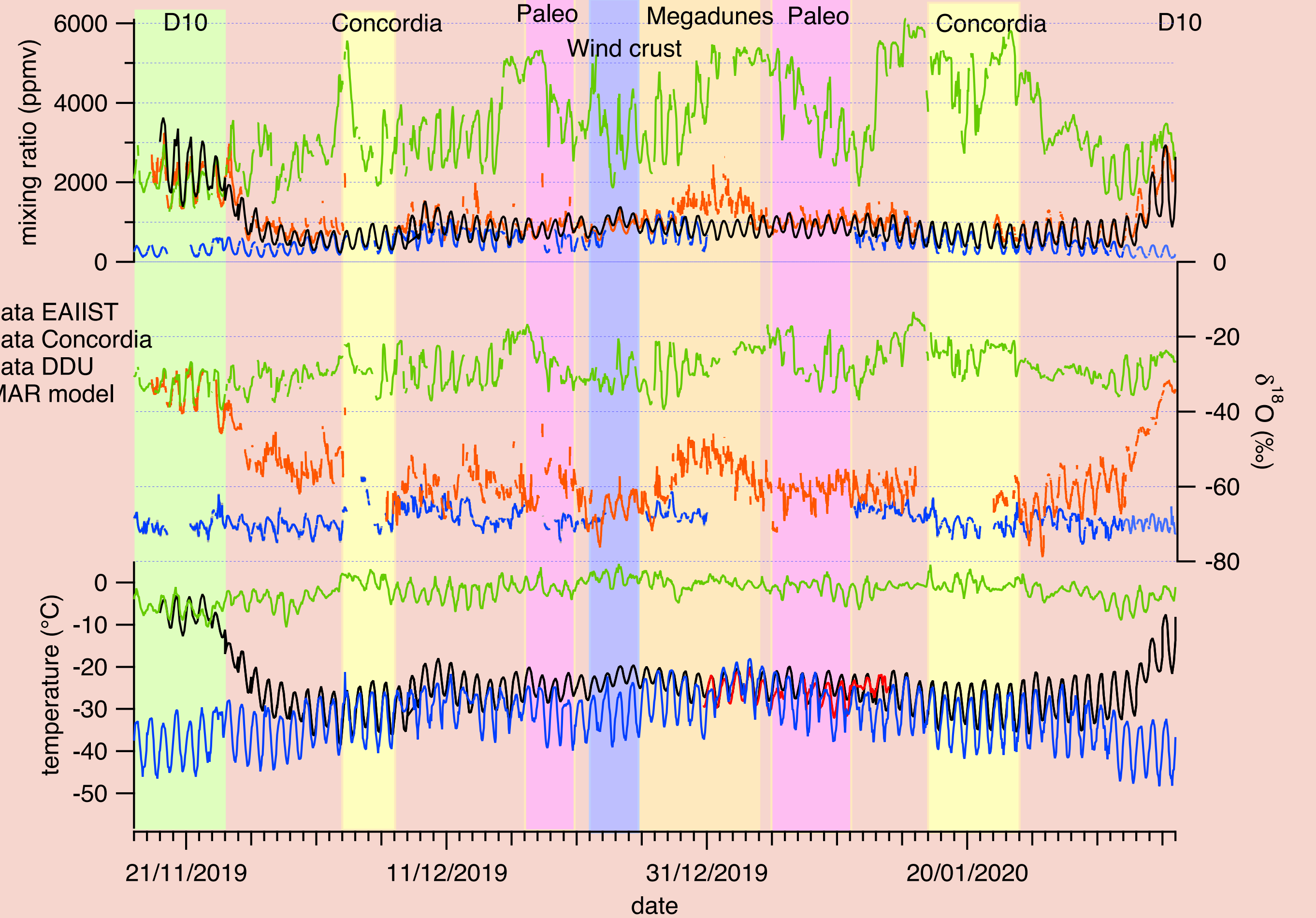
Traverse from Dumont d'Urville to Concordia, to the Megadunes site, and back.

23/11/2019 to 05/02/2020

3657 km



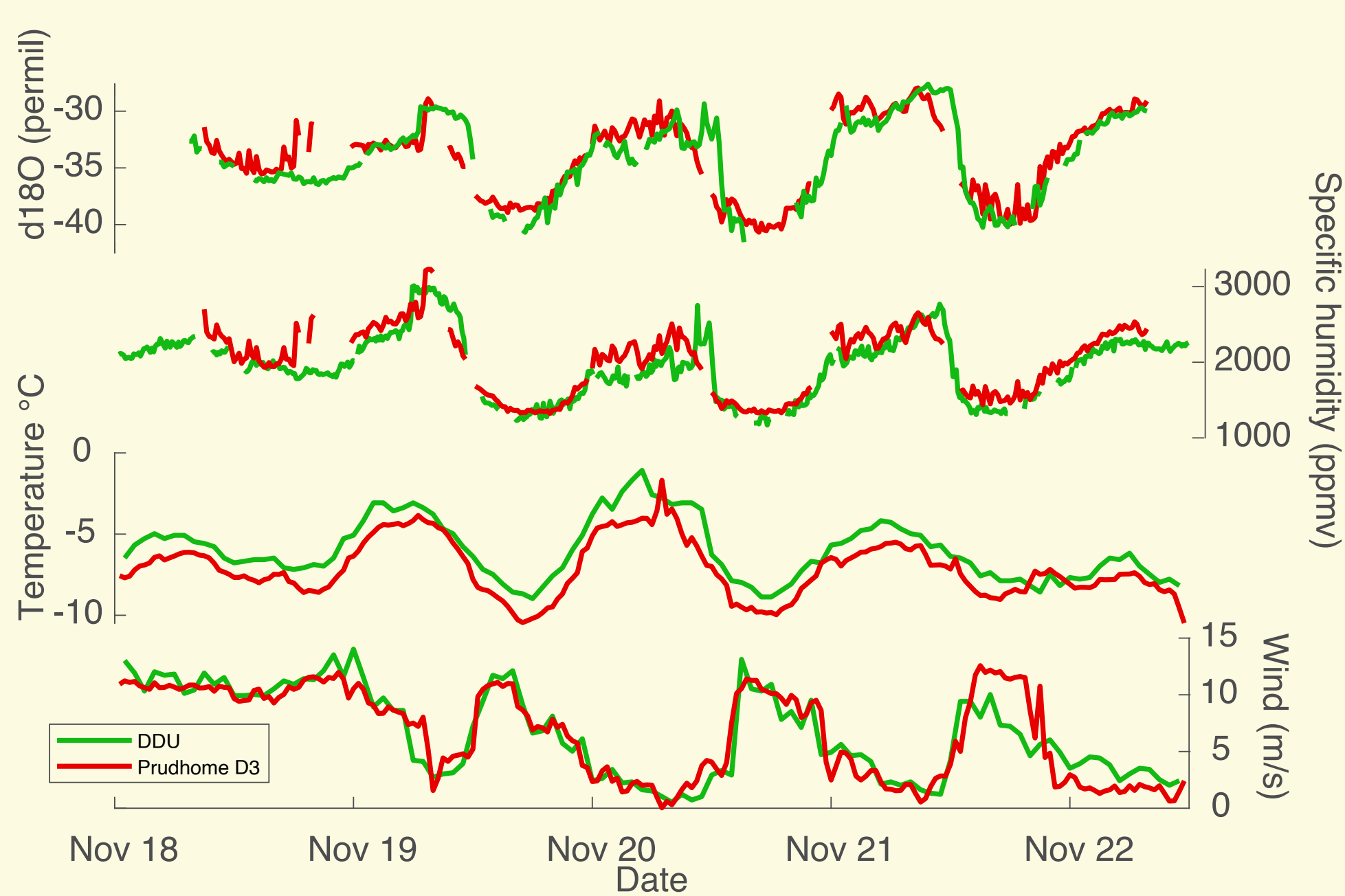
Vapour isotopic composition



- Spatial and temporal variability recorded through the traverse

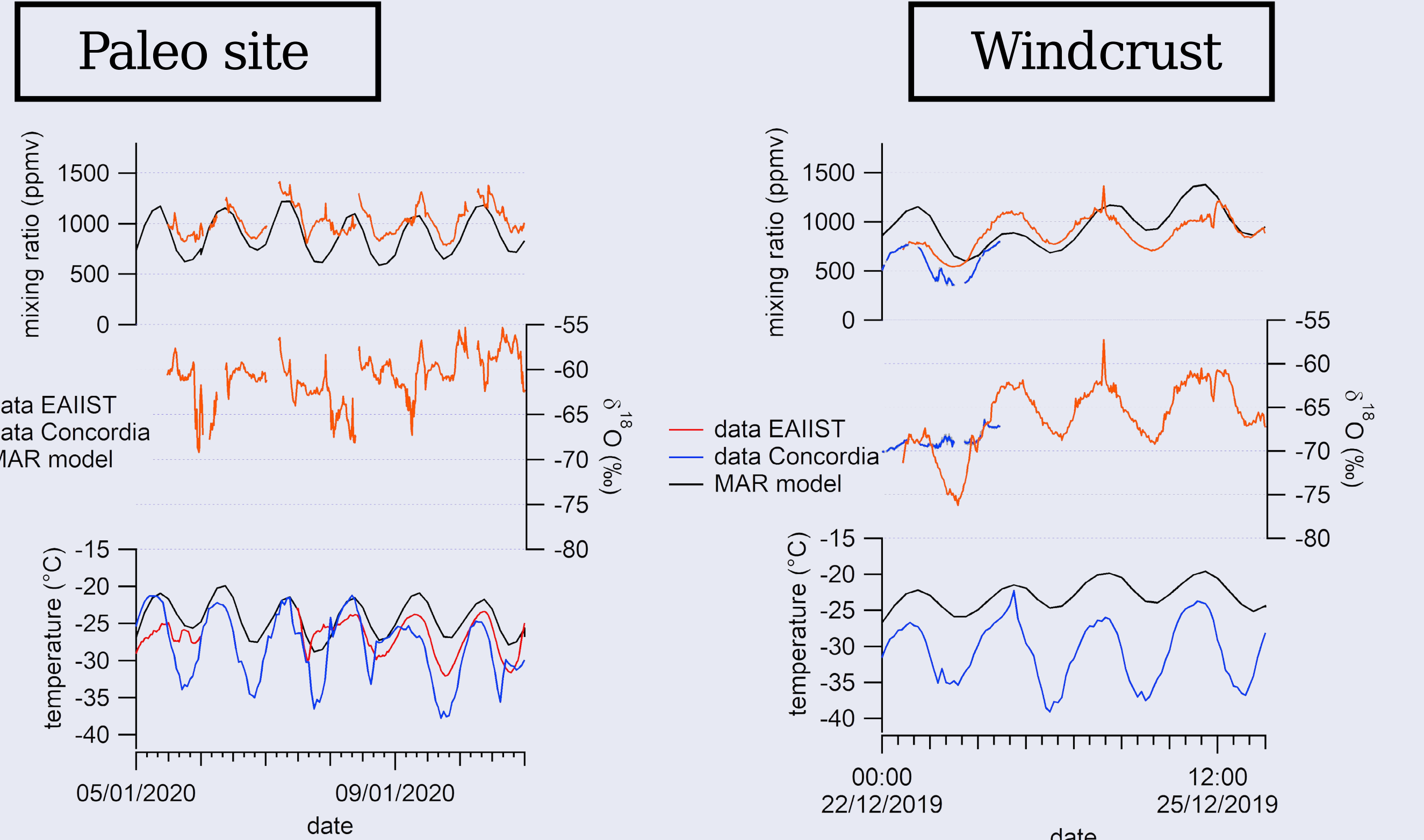
Zoom 1: near the coast

- Very good agreement between DDU and Prudhomme D3. Distance: ~10km
- Nearly identical vapour isotopic composition despite significant temperature difference: influence of transport ?



Isotopic composition at DDU and at Prudhomme D3, roughly 10 km apart

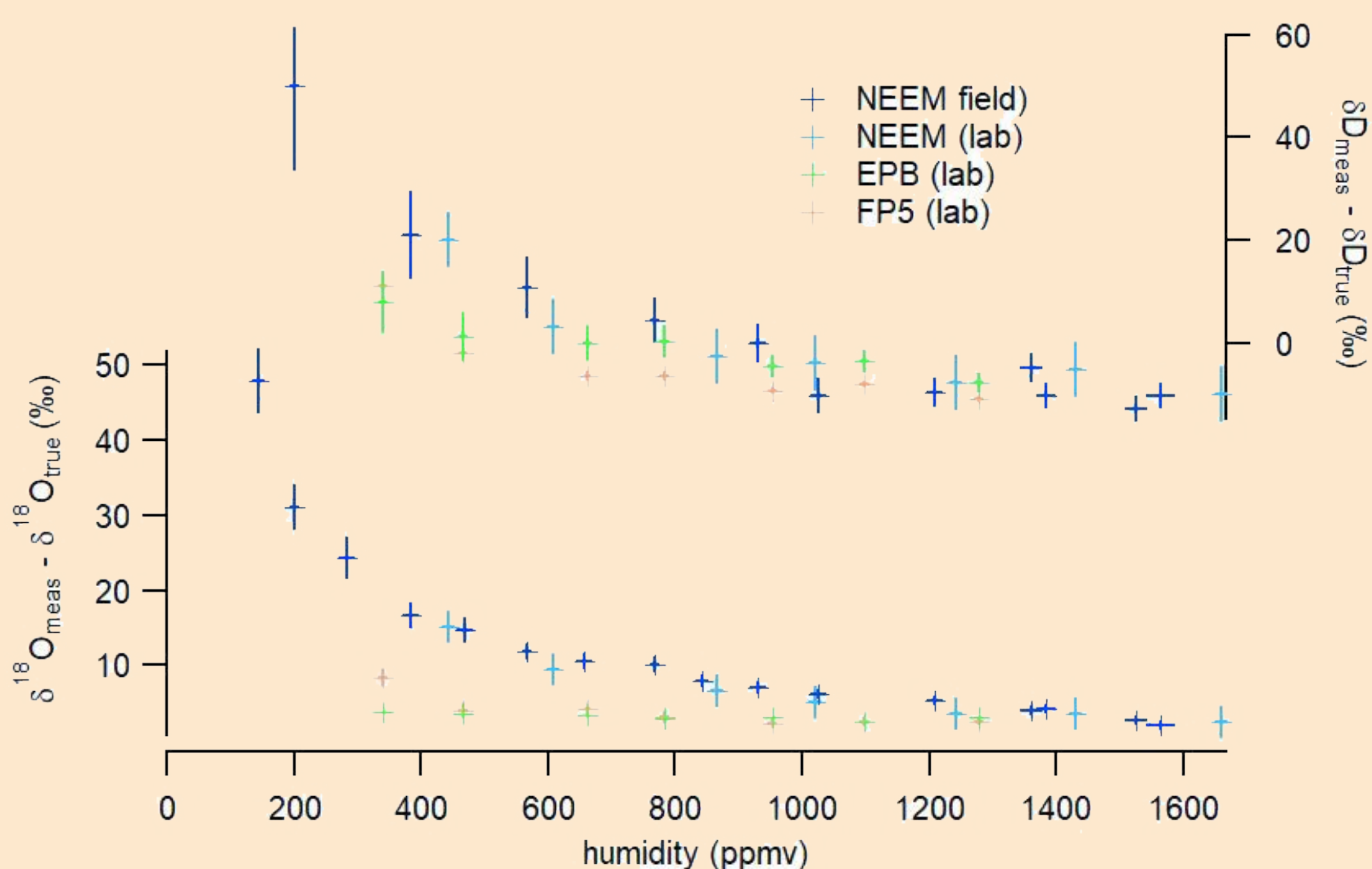
Zoom 2: Inland



- Diurnal cycles clearly visible at Windcrust, while at the Paleo site, it is not the case
- Influence of the temperature cycles not clear
- Potential impact of the local topography and turbulence level in the boundary layer

Calibration of the instruments

Calibration of the instrument in the lab (LSCE) and in the field (DDU) with internal standards NEM, EPB and FP5



- Calibration realised only at the beginning of and after the traverse
- Comparison with two other instruments at DDU and Dome C to evaluate the associated uncertainty
- Use of a dedicated calibration instrument to be able to reach low humidity levels

Conclusion

- Vapour monitoring on a traverse, showing similar potential than on marine campaigns
- Intercomparison with global and regional climate models outputs
- Parallel study of the vapour and the surface snow across the traverse

