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Structure, duration and timing of the bipolar seesaw pattern over Marine Isotopic Stage 5: A detailed comparison with Marine Isotopic Stage 3

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The synchronisation of ice core records from Greenland and Antarctica has been crucial to identify the bipolar seesaw mechanisms involved in abrupt climate change of the last glacial period. A new high resolution record covering the past 140 ka is now available from the EPICA (European Project for Ice Coring in Antarctica) Dronning Maud Land ice core drilled at Kohnen Station, located in the Atlantic sector of the Southern Ocean region (EDML – 75.00 S, 00.04 E, 2892 m a.s.l).
Through a dating strategy coupling measurements of d18O of O2 and CH4 performed on the EDML and the NorthGRIP (Greenland – 75.10 N, 42.32 W, 2917 m a.s.l., 17.5 cm w.e. yr-1) ice cores, we produce the first continuous and accurate sequence of the north-south climatic dynamics on a common ice timescale for the first Dansgaard-Oeschger events of Marine Isotopic Stage 5 (MIS 5).
This EDML-NorthGRIP synchronisation provides new firm evidence that the bipolar seesaw pattern was a persistent feature since the last glacial inception despite large changes in the background of the climate system (ice volume, sea level and orbital geometry). The characteristics of MI5 and MIS 3 abrupt events can then be precisely compared, with a focus on the warming amplitudes, timing, structure and duration of the rapid events.