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# Dansgaard/Oeschger events in the North Atlantic: rapidity, feedback mechanisms, teleconnections and causal connections

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Dansgaard/Oeschger (D/O) events represent the most prominent and recurring examples of abrupt climate changes in paleorecords during the last glacial cycle. These are relatively short-lived warm interstadials that reached almost present day temperatures as recorded in Greenland ice cores. The D/O events are characterised by rapid warming, followed by more gradual cooling culminating into cold stadials. About every second to forth stadial happened to be more extreme, at least from an ocean perspective (North Atlantic Heinrich Events), and probably also in which they gave a strong global signature. Hypothesis in which the Atlantic Ocean may achieve different states of ocean circulation, affecting the ocean heat transport, have been suggested to explain these rapid changes in the climate system. Although there exists a good framework in how to understand these abrupt changes in climate, it is still many questions to be resolved in the understanding of D/O events. Such questions as: What are the similarity and dissimilarity between Heinrich and non-Heinrich stadials in respect of the meridional overturning circulation (MOC)? What is the Northern and Southern Hemisphere response to D/O events, and which hemisphere mostly favour to trigger these abrupt climate changes? What are the different estimates of meltwater discharges and total amount of ice discharge during Heinrich events, as this is crucial for the stability of the Northh Atlantic thermohaline circulation (THC)? How rapid is the warming transitions associated to D/O events from a marine perspective, and what is the phasing of the marine signal compared to Greenland ice cores? What other associated teleconnec-

tions to D/O events and stadials can be identified, and are teleconnections transmitted via ocean or atmosphere. What feedback mechanisms are associated to rapid climate changes? These are questions mainly to be addressed in light of marine proxy data from the North Atlantic compared to ice core data and model results.