

Ocean Sediment Isotopic Records of the Last Deglaciation Contain key Information on the Interactions Between Climate and Thermohaline Circulation at the Global Scale

Laurent Labeyrie¹, Elsa Cortijo¹, Claire Waelbroeck¹, Martine Paterne¹, Nejib Kallel (nejib.kallel@fss.rnu.tn)² & Jean Claude Duplessy

¹ LSCE Domaine du CNRS, Bat 12, Avenue de la Terrasse, Gif/Yvette, F 91198, France

² Faculté des Sciences de Sfax, Département de Géologie, Route de Soukra, Km 3,5, 3038, Sfax Tunisie

The termination of the last glacial period (20 to 9 kyr BP) has been a focus of numerous studies, mostly concentrated on the cold oscillation of the Younger Dryas (YD), between 13 and 11 kyr BP. Although it has been observed for years that the Earth climate did not respond in phase to the post glacial warming (by example Labracherie et al., 1989), it is only very recently, after the major paper of Blunier et al. (1997), that the idea began to be accepted that high latitude records from both hemispheres may have been in anti-phase around that period. Since then, Rühlemann et al. (1999) has shown that surface water from the western tropical Atlantic ocean did also change in opposition of phase to the higher latitude Atlantic temperature records, during YD and Heinrich 1 (a major Northern hemisphere cooling preceding YD by 4 kyr). We will discuss these observations, based on planktic and benthic foraminifera isotopic records from

surface, intermediate and deep water in the Atlantic, Indian, and Southern Ocean, dated by AMS ¹⁴C. We propose a “flip-flop” scheme of deep and intermediate water circulation inversion driven by small changes in high latitude North Atlantic surface salinity, and directly interacting with atmospheric dynamics and wind forcing of the surface ocean circulation.

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