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The LOVECLIM coupled model and the last glacial maximum: sensitivity studies

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As part of the ORMEN projet (RAPID program), the ECBilt–CLIO–VECODE coupled atmosphere–ocean–vegetation model is integrated until steady-state under Last Glacial Maximum boundary conditions (ice-sheet topography and albedo taken from ICE-5G, sea-level, insolation, greenhouse gases concentration). The changes in term of thermohaline circulation, sea-ice extend and water masses properties are discussed for this state, with respect to existing data and other coupled simulations of the LGM. A series of sensitivity studies are then undertaken from the LGM state to understand the response of the thermohaline circulation to various forcings including changes in river routing basins, icebergs melting regions, physical parameters of the ocean model, etc. A freshwater forcing hysteresis to the north Atlantic is also discussed with respect of already published comparable experiments.