



New isotopic measurements of near-surface water vapor in Niamey as a tool for studying convection at different time scales

Guillaume Tremoy (1), Françoise Vimeux (1,2), Olivier Cattani (1), Salla Mayaki (3), Ide Souley (3), and Guillaume Favreau (2)

(1) Laboratoire des Sciences du Climat et de l'Environnement (LSCE), IPSL, Gif-sur-Yvette, France (guillaume.tremoy@lsce.ipsl.fr), (2) Laboratoire Hydrosciences Montpellier (HSM), IRD, Montpellier, France, (3) Institut des Radioisotopes (IRI), Niamey, Niger

Recently, the isotopic composition of Sahelian precipitation have been used to record the intra-seasonal variability of the West African Monsoon system and to better understand convective processes. Nevertheless those previous studies have shown the importance of measuring simultaneously the water isotopic composition of both precipitation and water vapor in order to progress in our understanding of the isotope/convection relationship. Since July 2010, thanks to the new laser technology, a continuous monitoring of the isotopic composition of water vapor at the surface has been set up in Niamey (Niger). We will present here the first results focusing on both diurnal and seasonal variability. We will show that a clear isotopic variability characterizes the monsoon period and its onset and that a clear signal is also visible during the dry season deciphering isolated from organized convection. We will also interpret the diurnal variability from month to month as reflecting changes in terms of convection development, and large-scale subsidence both depending on advection and vertical mixing.