Geophysical Research Abstracts, Vol. 9, 02819, 2007
SRef-ID: 1607-7962/gra/EGU2007-A-02819

Hydrogen isotopologues at the West African coast of Mauritania

S. Walter and T. Röckmann

Institute for Marine and Atmospheric Science, Utrecht, The Netherlands

(s.walter@phys.uu.nl / Phone: 0031 30 253 2903)

Although hydrogen is considered as one of the most important energy carriers in the future, relatively little is known about the global biogeochemical cycle of this trace gas. To better quantify sources and sinks of H_2 measurements of the isotopic ratio of H_2 are helpful tools.

Oceans are a source of atmospheric H_2, probably produced by phytoplankton and bacteria. However, the isotopic ratio of released H_2 is unknown and has so far only been estimated from thermodynamic equilibrium.

The coastal region of Mauritania shows an intensive upwelling season which peaks in late winter / early spring. The upwelling results in high nutrient concentrations, high biomass, and high trace gas emissions, and causes a strong gradient of these parameters to the open ocean. This gradient is also observable in the composition of the phytoplankton. Thus, this region is highly applicable to determine the isotopic composition of hydrogen produced in the ocean.

Here we will present the first results of H_2 isotope ratio measurements from the West African coast of Mauritania in February 2007, which are useful for a better understanding of the global H_2 cycle.