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Biogeosciences Discussions

Interactive comment on "High-resolution measurements of atmospheric molecular hydrogen and its isotopic composition at the West African coast of Mauritania" *by* S. Walter et al.

Anonymous Referee #1

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Comments on "High-resolution measurements of atmospheric molecular hydrogen . . ." by S Walter et al., ms #bg-2012-621 submitted to Biogeosciences Discussion

General comments In view of the role of hydrogen (H2) as potential new energy source, there is an increasing interest to identify its natural formation and consumption pathways as well as to quantify the atmospheric budget of H2. Walter et al report a new data set of atmospheric H2 and its isotope signature in the atmospheric boundary layer over the eastern tropical N Atlantic (ETNA). Measurements from two cruises are presented. The ms is well written and the results are well presented and discussed. The conclusions are justified by the presented results.

Therefore I recommend publication with a few minor corrections.

Specific comments 1) Overwhelming (and necessary) information about H2 is presented in the introduction. In order to clarify the major points I suggest a re-organization of the introduction along the following outline: - atmospheric chemistry/new energy source, - global budget (please give an estimate about the oceanic contribution, in %, to the atm. H2 budget), - oceanic pathways, - isotope signatures of H2, - major aims of the ms.

2) Please compile the information about the hydrographic and biological settings of the ETNA in a separate section (e.g. study area description)

3) I can see that for the 2008 cruise measurements of marker pigments do exist. However, I am wondering if a similar set of data exists for the 2007 cruise? This is especially important to assess whether the two upwelling events encountered may have had different biological settings (c.f. interannual variability?).

4) I am wondering whether the measurements of atmos. compounds such as CO, CH4, NMHC or OVOCS (incl. acetaldehyde) could be used to get additional information for the atmos. H2 distribution. These data are measured at the Cape Verde Atmos. Observatory, CVAO, data are available from http://www.ncas.ac.uk/index.php/en/cvao-home .

Interactive comment on Biogeosciences Discuss., 9, 18799, 2012.