

Interactive comment on “Detection of wetland dynamics with ENVISAT ASAR in support of methane modelling at high latitudes” by A. Bartsch et al.

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We would like to thank the reviewer for the very useful comments. Below we provide a reply to all general comments and technical comments which do not relate to grammar or spelling. The latter suggestions will be followed and the paper carefully revised for language.

Reply to general comments

We agree that inundation alone and not all wetland types are addressed. In the title (and running title) 'wetland' needs to be exchanged with 'open water'.

C4577

Reply to technical comments

- 8244 Satellite data have been shown of large value for wetland monitoring (need reference)

Reference suggestion: Davidson, N. C. and Finlayson, C. M.: Earth Observation for wetland inventory, assessment and monitoring, Aquatic Conservation: Marine and Freshwater Ecosystems, 17, 219–228, 2007.

- 8244 This includes regular coverage at as short as possible intervals (very vague statement, need to specify what that is, hourly, daily, weekly. In addition, need to address this in terms of what is an ideal monitoring period to capture inundation dynamics).

suggestion for rephrasing: This includes regular coverage at as short as possible intervals in order to capture dynamics related to e.g. precipitation events and snowmelt which can cause flooding within hours to days.

- 8245 continuation records are ensured due to future plans of ESA with the SENTINEL satellite series (specify when that will be)
launch 2013 onwards at time of writing; www.esa.int

- 8246 especially lake shores can be affected (by what?)

Refers to sentence before. Rephrased: 'This occurs especially along lake shores.'

- 8246 and different backscatter behavior of lakes (what kind of backscatter behavior would that be?)
due to ice cover

C4578

- 8246 this can be achieved by usage of auxiliary data (what kind of auxiliary data?) data which contain information on snowmelt timing;
- 8246 flooded river valleys are also excluded for the purpose of methane modeling (why were they excluded?) as they are not expected to emit methane
- 8246 Ob River floodplain is included (but you mentioned above that the Ob River and its floodplain were excluded) to be rephrased: also a small part of the Ob River floodplain is included for full characterization of inundation dynamics within this environment.
- 8246 is applied for the different environments (what are those different environments?) flood plain and surrounding wetlands
- 8248 region growing (explain) The reference at the beginning of the sentence includes a detailed explanation. Placing of reference will be changed for clarity.
- 8249 how do you know when there is maximum inundation Maximum fraction of classified open water (actual maximum could be of cause larger, we only get the detectable maximum) 'Inundation' should be replaced with 'water fraction' for clarification

C4579

- 8250 variations occur in regions of the Ob basin (what kind of variations...water variations or backscatter variations or both?) 'in open water extent'
- 8252 it is not clear how the product supports or betters CH4 estimates Depending on model, it can help to (1) validate the modelled inundated area or (2) serve as input. Also in reply to the other reviewer, the following sentence is suggested to be added in the discussion: 'These measurements could however indicate possible biases from under/overestimation of the wetland extent.'
- 8264 60 percent of the data are affected in the tundra and the taiga (how?) By 'wind and rain'
- 8255 the Sentinel satellites will provide (which sensors?) The previous sentence states that the Sentinel-1's will carry SAR instruments

Interactive comment on Biogeosciences Discuss., 8, 8241, 2011.

C4580