

## Comments on 'Apparent optical properties of the Canadian Beaufort Sea- Part I'

The manuscript deals with a data set of apparent optical properties gathered in 2009 in the Beaufort Sea. The manuscript provides a good description of AOPs and discuss the profound effect of CDOM on the spectral characteristics and the usefulness of bio-optical models. Overall, the manuscript is of good quality, and I have only a few comments to make.

1. Some of the referred work are not in the references (e.g. Bélanger et al 2013; Hooker et al 2013). I suppose this is because these references are still under review by BGS but the titles would have been appreciated.
2. I recommend to the authors to include a discussion about the impact of these observations on the use of other models such as the GSM and QAA. The MM01 model is not the model of choice for many applications.
3. Some recently published results should be referred to (e.g. B. Brunelle et al., 2012 who provided an overview of IOP in the Canadian Arctic). There is also Matsuoka et al., 2009 who provided IOP variability in the fall period in the Beaufort Sea. Finally, I can also think of Bélanger (2000) that provides estimates of  $K_d$  for the Northwater polynya. The omission of the last 2 references is particularly strange as the authors are part of the submitted manuscript. Considering the relatively small amount of Arctic data sets, these omissions are somewhat troubling.
4. Page 4028: line 15: The statement about the 'unprecedented' amount of data gathered during MALINA seems to ignore the fact that earlier work in that area has been done during the CASES program (2003-04). A similar amount of multispectral light profiles data (32) was gathered during that experiment.
5. Page 4029: line 11: the authors talk about a companion paper. This should normally be Part II of the actual manuscript, not another paper in the same special issue.
6. The authors could have tested the recently published 2-bands ratio empirical algorithm by Ben Mustapha et al. (2012) developed using the CASES data set as a way to confirm their assertion about the 'illusory colour remote sensing algorithms'.
7. The Conclusion is more a Discussion section with figures and results. That section should be renamed.
8. Unless I am wrong, I have not seen the particle absorption data used in that manuscript. Thus section 2.2.1 could be removed.