

## ***Interactive comment on “Quantification of surface water volume changes in the Mackenzie Delta using satellite multi-mission data” by Cassandra Normandin et al.***

### **Anonymous Referee #1**

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This manuscript quantifies temporal changes of surface water volume water storage in the Mackenzie Delta based on multispectral images and altimetry data. The authors validates (1) classification of land water surface with multispectral images, (2) water level estimates by altimetry data, and (2) surface volume estimations retrieved by both multispectral and altimetry data. The manuscript is well-written and easy to follow their methodology and results. However, I am compelled to say that the present manuscript misses to demonstrate the scientific significance to stand alone in a HESS's publication.

The authors fail to demonstrate its originality of the manuscript. The authors described

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“the originality and novelty ... (P3L7)“. However, I felt that the present manuscript just applied existing approaches proposed by Frappart et al. (2006b, 2010, 2012) for long-time period in the target area. I could not understand challenges and difficulties in the present manuscript. I understand that the authors processed a number of data carefully and correctly. However, scientific paper needs to demonstrate (1) scientific questions or challenges that present human being does not know/understand, (2) to propose how to solve the issue (i.e., hypothesis) and (3) discuss to differentiate its originality from existing studies. I suggest the authors to reconstruct the manuscript again to demonstrate its originality. The present manuscript is quite good as engineering/technical description paper, but needs originality as a scientific paper.

[Other Issues] 1. P2L32: What are traditional methods? 2. Section 4.1 (P7L1-L6): How did authors decide the criteria? 3. P9L1: Please describe the definition of the “errors”. 4. P9L35: It is better to explain the method of Emmerton et al. (2007) since the authors used Emmerton et al.'s results for the validation. 5. I recommend the authors to discuss generality of their approach. Namely, what kinds of difficulty do you expect if the other researchers would apply the same method for other areas?

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