

## ***Interactive comment on “The importance of Atmospheric Correction for Airborne Hyperspectral Remote Sensing of Shallow Waters. Application to Depth Estimation” by Elena Castillo-López et al.***

**Anonymous Referee #3**

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### **<General Comments>**

The topic is interesting and from an engineering point of view, the technique is important. I have the following general comments

- (1) The authors mentioned “to assess the best atmospheric correction method”. 4 methods are described in page 4. However, error values between 4 methods are not well described.
- (2) Geometry of the sun position, viewing direction, and observation point is critical for radiative transfer but it is not described well.

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- (3) Scope of AMT is measurement of gases, aerosols, and clouds of the Earth’s atmosphere. But the paper describes atmospheric correction
- (4) Estimated water depth and validated data should be compared clearly and presented in a figure or a table.
- (5) Figures and their captions are not consistent. I recommend to submit another journal or resubmit the manuscript by describing radiative transfer of the water and atmosphere and estimating error analysis in more detail.

### **<Specific Comments>**

- (1) Page 2, line 25, ozone ozone absorption has strong spectral dependency. The incident solar light to the surface is also affected by ozone absorption.
- (2) Page 4, line 8, incident light sensor (ILS) Description of the incident light sensor is needed.
- (3) Page 7, line 14, NNDD Definition of NNDD should be described.
- (4) Page 12, Figure 3, Y axis “top of atmosphere reflectance”: Usually reflectance is between 0 and 100%. Values look strange. The caption is “NNDD” but figure shows reflectance.
- (5) Page 13, Figure 4 The figure shows NNDD but the caption is “CTI”.
- (6) Pages 13 and 14, Figures 4, 5, 6, and 7 What is the unit of CTI? Definition or description of X axis “range” is needed. Explanation of linear lines is needed.

### **<Technical Corrections>**

- (1) Page 2, line 10,  $K_u = K_d$  > “ $K_u = -K_d$ ” or Line 9 Eq  $K_d - K_{Fu}$  > “ $K_d + K_u$ ”
- (2) Page 12, figure 2 There is no (a) (b) and (c) in the figure. The second photo looks like (c).

