A WATERLINE METHOD TO DERIVE INTERTIDAL BATHYMETRY FROM MULTISPECTRAL SATELLITE IMAGES AND ITS APPLICATION IN HYDRODYNAMIC MODELLING

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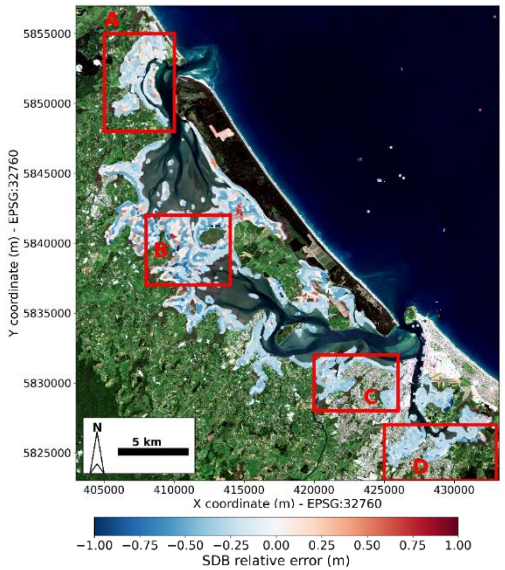
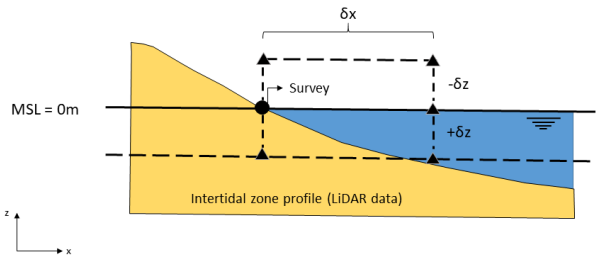
1. Optical Waterline method

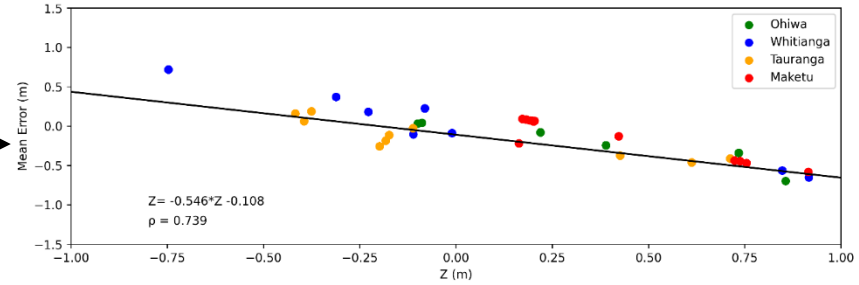
a) identification of tidal flat zones through temporal variability of NDWI

b) Waterline location and height determined by Otsu threshold and local tidal observation, respectively.



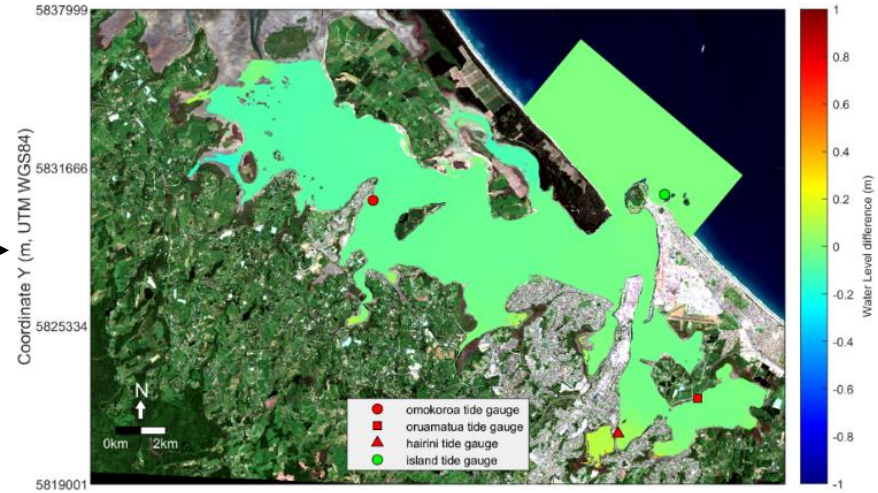


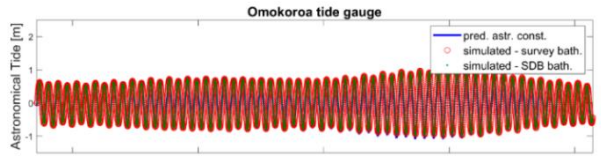
2. Statistical correction

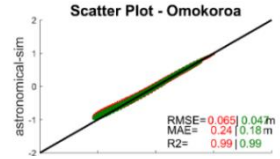


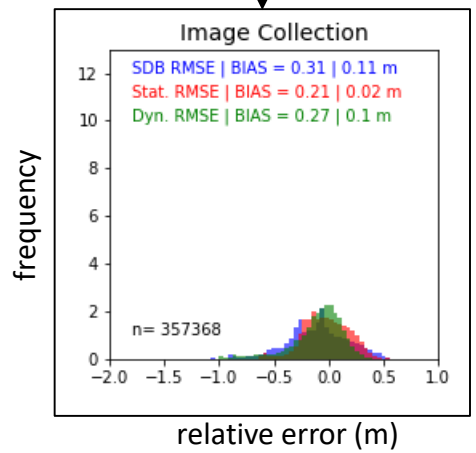
**** Statistical correction:***
linear relation between local observed tide level and mean relative error per image analysed

3. Dynamical correction and modelling assessment









**** Dynamical correction:***
For each point in the waterline, we replaced its height accordingly to the hydrodynamic simulation corresponding to the moment the image was acquired.

**** Hydrodynamic modelling assessment:***
Showed that is possible to perform similarly and with a slight improvement in the water level predictions when using the statistically corrected satellite derived bathymetry