

Calibration and Validation of the Sentinels Geophysical Observation Models

*Salama, Mhd. Suhyb¹; Van der Velde, Rogier¹; Van der Woerd, Hans²; Kromkamp, Jacco³; Philippart, Katja⁴
¹Utwente, ITC, NETHERLANDS; ²Institute for Environmental Studies (IVM), VU University, NETHERLANDS; ³Royal
Netherlands Institute for Sea Research (NIOZ),, NETHERLANDS; ⁴Royal Netherlands Institute for Sea Research
(NIOZ), NETHERLANDS*

We present a method to calibrate and validate observational models that interrelate remotely sensed energy fluxes to geophysical variables of land and water surfaces. Coincident sets of remote sensing observation of visible and microwave radiations and geophysical data are assembled and subdivided into calibration (Cal) and validation (Val) data sets. Each Cal/Val pair is used to derive the coefficients (from the Cal set) and the accuracy (from the Val set) of the observation model. Combining the results from all Cal/Val pairs provides probability distributions of the model coefficients and model errors. The method is generic and demonstrated using comprehensive matchup sets from two very different disciplines: soil moisture and water quality. The results demonstrate that the method provides robust model coefficients and quantitative measure of the model uncertainty. This approach can be adopted for the calibration/validation of satellite products of land and water surfaces, and the resulting uncertainty can be used as input to data assimilation schemes.