



Assessment of the GNSS-derived Path Delay (GPD) wet tropospheric correction in the Indonesian Seas

Eko Yuli Handoko (1,2), Maria Joana Fernandes (1,3), Clara Lázaro (1,3)

(1) Faculdade de Ciências, Universidade do Porto, Porto, Portugal, (2) Department of Geomatics Engineering, Institut Teknologi Sepuluh Nopember, Surabaya, Indonesia, (3) Centro Interdisciplinar de Investigação Marinha e Ambiental (CIIMAR), Porto, Portugal

Due to its high temporal and spatial variability, the wet tropospheric correction is one of the major error sources in coastal altimetry. GNSS-derived path delay (GPD) is an algorithm to estimate the wet tropospheric correction which combines zenith wet delays (ZWD) derived from GNSS, valid microwave radiometer (MWR) measurements and atmospheric models (Fernandes, et al., 2010). Global GPD solutions have been derived by University of Porto for the main altimetry missions (ERS-1, ERS-2, Envisat, TOPEX/Poseidon, Jason-1, Jason-2, CryoSat-2 and SARAL/AltiKa) using more than 400 GNSS stations in coastal and island regions. In particular, a local network of near 30 GNSS stations, located mostly along of the Sumatera Island, has been used to improve the GNSS coverage in the Indonesian region. A set of GNSS stations not used in the GPD computations has been reserved for validation purposes.

The focus of this study is the assessment of the GPD wet tropospheric corrections in the Indonesian region by comparing GNSS-derived wet path delays at the Indonesian stations not used in the GPD computations with the various available wet tropospheric corrections: GPD, microwave radiometer (MWR) and atmospheric model (ERA Interim).

In addition to the direct comparison of the wet path delays, sea level anomaly (SLA) variance analysis using the various wet tropospheric corrections has also been performed. The results show the significant impact of the GPD corrections on the improvement of sea level estimation in the Indonesian region, particularly noticeable for the missions possessing a two-band radiometer: all ESA missions and SARAL/AltiKa.