

EGU21-14596

<https://doi.org/10.5194/egusphere-egu21-14596>

EGU General Assembly 2021

© Author(s) 2021. This work is distributed under the Creative Commons Attribution 4.0 License.



Validation of the ALES Coastal Altimetry Dataset against the Norwegian Tide Gauges

Fabio Mangini, Antonio Bonaduce, Léon Chafik, and Laurent Bertino

Nansen Environmental and Remote Sensing Center, Norway (fabio.mangini@nersc.no)

Satellite altimetry measurements, complemented by in-situ records, have made a fundamental contribution to the understanding of global sea level variability for almost 30 years. Due to land contamination, it performs best over the open ocean. However, over the years, there has been a significant effort to improve the altimetry products in coastal regions. Indeed, altimetry observations could be fruitfully used in the coastal zone to complement the existing tide gauge network which, despite its relevance, does not represent the entire coast. Given the important role of coastal altimetry in oceanography, we have recently decided to check the quality of a new coastal altimetry dataset, ALES, along the coast of Norway. The Norwegian coast is well covered by tide gauges and, therefore, particularly suitable to validate a coastal altimetry dataset. Preliminary results show a good agreement between in-situ and remote sensing sea-level signals in terms of linear trend, seasonal cycle and inter-annual variability. For example, the linear correlation coefficient between the inter-annual sea level variability from altimetry and tide gauges exceeds 0.8. Likewise, the root mean square difference between the two is less than 2 cm at most tide gauge locations. A comparison with Breili et al. (2017) shows that ALES performs better than the standard satellite altimetry products at estimating sea level trends along the coast of Norway. Notably, in the Lofoten region, the difference between the sea level trends computed using ALES and the tide gauges range between 0.0 to 0.7 mm/year, compared to circa 1 to 3 mm/year found by Breili et al. (2017). These preliminary results go in the direction of obtaining an accurate characterization of coastal sea-level at the high latitudes based on coastal altimetry records, which can represent a valuable source of information to reconstruct coastal sea-level signals in areas where in-situ data are missing or inaccurate.