

SWOT NRT GPS OGDR Release Note

NASA's Physical Oceanography Distributed Active Archive Center (PO.DAAC) is pleased to announce the public release of the value-added SWOT Level 2 Near Real Time GPS Nadir Altimeter Operational Geophysical Data Record (NRT GPS OGDR). The dataset produced by the Surface Water and Ocean Topography (SWOT) mission provides sea surface height, significant wave height and wind speed measurements from the Poseidon-3C nadir altimeter, a Jason-class dual frequency (Ku/C) altimeter. SWOT is a joint mission between NASA and CNES that launched on December 16, 2022. It aims to measure ocean surface topography with unprecedented resolution and accuracy, as well as map inland water bodies globally.

The NRT GPS OGDR modifies the standard SWOT Nadir Altimeter OGDR to facilitate NRT nadir altimeter sea surface height measurements with very similar accuracy to those provided on the next-day SWOT Nadir Altimeter Interim Geophysical Data Record (IGDR). The NRT GPS OGDR has typical latencies of 3-5 hours from the last available measurement, while the OGDR has typical latencies of 1-3 hours. The NRT GPS OGDR uses a higher accuracy GPS-based orbit ephemeris instead of the onboard DORIS orbit ephemeris, and it accounts for radiometer beam pointing and spacecraft attitude when computing the radiometer wet troposphere correction instead of computing it at nadir.

The NRT GPS OGDR and OGDR datasets are otherwise identical. Both consist of discrete measurements along the nadir track with posting intervals of approximately 6-km and 300-m at 1Hz and 20Hz, respectively. Both are distributed as one file per data downlink in netCDF-4 file format. This NRT GPS OGDR collection has no sub-collections, unlike the other SWOT nadir altimetry collections. This NRT GPS OGDR is a value-added best efforts product.

Details of NRT GPS OGDR modifications to the standard OGDR product

The standard OGDR product is described by the following document:

- SALP-ST-M-EA-17043-CN, SALP Products Specification: SWOT Nadir Altimeter (L2_NALT_GDR) User Products,” Centre National d’Études Spatiales Internal Document, 2025.

The table below summarizes the modification that the NRT GPS OGDR makes to the standard OGDR. The file names of the NRT GPS OGDR are similar to the standard OGDR except in the file name prefix. The NRT GPS OGDR uses the prefix SWOT_NPN while the standard OGDR uses SWOT_OPN. An example is shown below.

NRT GPS OGDR:

SWOT_NPN_2PsSccc_ppp_yyyymmdd_hhmmss_yyyymmdd_hhmmss.nc

OGDR:

SWOT_OPN_2PsSccc_ppp_yyyymmdd_hhmmss_yyyymmdd_hhmmss.nc

Variable	Description
<i>data_01/altitude</i>	Value from source OGDR is replaced with higher accuracy GPS-based orbit ephemeris.
<i>data_01/rad_wet_tropo_cor</i>	Value from source OGDR is replaced with computation of radiometer wet troposphere correction that accounts for spacecraft attitude.
<i>data_01/rad_wet_tropo_cor_interp_qual</i>	Value from source OGDR is replaced with value associated with recomputed value of <i>data_01/rad_wet_tropo_cor</i> .
<i>data_01/ku/ssha</i>	Value from source OGDR is replaced with value using recomputed values of <i>data_01/altitude</i> and <i>data_01/rad_wet_tropo_cor</i> .
<i>data_01/ku/ssha_mle3</i>	Value from source OGDR is replaced with value using recomputed values of <i>data_01/altitude</i> and <i>data_01/rad_wet_tropo_cor</i> .
<i>data_20/altitude</i>	Value from source OGDR is replaced with higher accuracy GPS-based orbit ephemeris.
<i>data_01/altitude_ogdr</i>	Value copied from <i>data_01/altitude</i> in source OGDR.
<i>data_01/rad_wet_tropo_cor_ogdr</i>	Value copied from <i>data_01/rad_wet_tropo_cor</i> in source OGDR.
<i>data_01/rad_wet_tropo_cor_interp_qual_ogdr</i>	Value copied from <i>data_01/rad_wet_tropo_cor_interp_qual</i> in source OGDR.
<i>data_01/ku/ssha_ogdr</i>	Value copied from <i>data_01/ku/ssha</i> in source OGDR.
<i>data_01/ku/ssha_mle3_ogdr</i>	Value copied from <i>data_01/ku/ssha_mle3</i> in source OGDR.
<i>data_20/altitude_ogdr</i>	Value copied from <i>data_20/altitude</i> in source OGDR.