

New POE-G orbit standards

The differences between the new POE-G orbit standards and the previous POE-F orbit standards are summarized in the table below:

	POE-F	POE-G
Surface forces	<p>Atmospheric model: DTM-13 for Sentinel-6A</p> <p>Calibrated solar radiation pressure model</p> <p>Knocke & Ries Earth radiation pressure model</p>	<p>Atmospheric model: NRLMSIS 2.0</p> <p>Calibrated solar radiation pressure model with satellite-dependent updates</p> <p>Earth radiation pressure model from ERA5 hourly fluxes (ECMWF climate reanalysis)</p>
Geopotential	<p>EIGEN-GRGS.RL04-v1.MEAN-FIELD</p> <p>Non-tidal TVG: two annual, two semiannual, one bias and one drift terms for each year up to deg/ord 90</p> <p>Atmospheric gravity: 3hr AOD1B RL06</p>	<p>CNES_GRGS.RL05MF_2024_08 with DORIS+SLR mascons from January 1993 to March 2002</p> <p><i>Unchanged</i></p>
Geocenter	<p>Full non-tidal geocenter motion derived from DORIS analysis, for DORIS/SLR/GNSS data</p> <p>Tidal: FES2014b ocean loading and S1-S2 atmospheric pressure loading correction</p>	<p>Non-tidal annual and semi-annual geocenter motion model from ITRF2020</p> <p>S1-S2 atmospheric pressure loading correction no more applied (IGS20 feedback)</p>
Loading	<p>Ocean loading: FES2014b</p> <p>S1-S2 atmospheric pressure loading, implementation of Ray & Ponte (2003)</p>	<p><i>Unchanged</i></p> <p>Canceled (IGS20 feedback)</p> <p>Non-tidal annual and semi-annual loading deformations from ITRF2020</p>
Pole tides	<p>Pole tide: solid Earth and ocean pole tides (Desai, 2002)</p> <p>Linear mean pole (UAW 2017)</p>	<p><i>Unchanged</i></p>

GNSS constellation	GRG/IGS solution with fixed ambiguity Fully consistent with IGS14	GRG/IGS CM-based (full seasonal loading corrections) solution with fixed ambiguity Fully consistent with IGS20 IGS satellite attitude quaternions (ORBEX)
DORIS system		Relativistic corrections for the on-board frequency (periodic terms only, no drift) Carrier phase wind-up modeling
Others	DORIS station coordinates in DPOD 2014 SLR station coordinates in SLRF2014	DORIS station coordinates in ITRF2020 SLR station coordinates in SLRF2020
Earth Orientation Parameters	EOP 14 C04 products (Paris Observatory) Diurnal and semidiurnal tidal variations in polar motion from Desai and Sibois (IERS 2003)	EOP 20 C04 products (Paris Observatory) Diurnal and semidiurnal tidal variations in polar motion from Desai and Sibois (2018)

Reference:

Moyard et al. (2023). CNES preliminary POE-G precise orbit performances for the Sentinel-6 MF mission. 2023 Ocean Surface Topography Science Team Meeting. DOI: [10.24400/527896/a03-2023.3863](https://doi.org/10.24400/527896/a03-2023.3863)

POE-G related studies:

Banos Garcia et al. (2023). In-flight GNSS phase map calibration modelling with Zernike polynomials. 2023 Ocean Surface Topography Science Team Meeting. DOI: [10.24400/527896/a03-2023.3850](https://doi.org/10.24400/527896/a03-2023.3850)

Cherrier et al. (2023). Assessment of Jason-3 and Sentinel-6 MF residual radiation pressure modeling errors. 2023 Ocean Surface Topography Science Team Meeting. DOI: [10.24400/527896/a03-2023.3851](https://doi.org/10.24400/527896/a03-2023.3851)

Katsigianni et al. (2023). Introduction of 2/rev harmonics in the empirical forces model for Sentinel altimetry satellites. 2023 Ocean Surface Topography Science Team Meeting. DOI: [10.24400/527896/a03-2023.3688](https://doi.org/10.24400/527896/a03-2023.3688)

Nocet-Binois et al. (2023). Enhancing satellite orbit accuracy for sea level monitoring through Earth radiation pressure modeling. 2023 Ocean Surface Topography Science Team Meeting. DOI: [10.24400/527896/a03-2023.3869](https://doi.org/10.24400/527896/a03-2023.3869)

Saquet et al. (2023). Impact of ITRF2020 on DORIS, GNSS, and SLR observations for the CNES altimeter satellite orbits. 2023 Ocean Surface Topography Science Team Meeting. DOI: [10.24400/527896/a03-2023.3856](https://doi.org/10.24400/527896/a03-2023.3856)