Parameter	GFZ REF (VER11) orbit	GSFC std1504 orbit	GRGS orbit
Terrestrial reference frame	ITRF2008 (Altamimi et al., 2011), SLRF2008 (Pavlis, 2009), DPOD2008 (Willis et al., 2015)	ITRF2008, SLRF2008, DPOD2008	ITRF2008, SLRF2008, DPOD2008
Polar motion and UT1	IERS EOP 08 C04 (IAU2000A) series with IERS diurnal and semi-diurnal variations	IERS bulletin A daily (consistent with ITRF2008), diurnal, and semi-diurnal variations	IERS EOP 08 C04
Precession and nutation model	IERS Conventions (2010)	IAU2000	IERS 2010 using non-rotating origin
Station displacements due to annual geocentre variations	None	Ries (2013)	None
Non-tidal atmospheric loading effect on stations	Based on ECMWF ERA-Interim data	None	None
Ocean loading effect on stations	FES2004 (Lyard et al., 2006)	GOT4.10 (Ray, 2013)	FES2012 (Carrère et al., 2012)
Static Earth's gravity field model	EIGEN-6S4 (Förste et al., 2016) degree/order (d/o) 81–90	GOCO2S (d/o > 5; Goiginger et al., 2011)	EIGEN-6S2 (Rudenko et al., 2014)
Earth's time-variable gravity field model	EIGEN-6S4 degree 2: yearly value and drift term; d/o 1–80: periodic (semi-) annual variations; from 15 August 2002: yearly values, drift terms and (semi-) annual variations for d/o 1–80	Updated harmonic piecewise fit weekly solutions (Lemoine et al., 2016) up to d/o 5	EIGEN-6S2 degree 2: yearly value and drift term; d/o 2–50: periodic (semi-) annual variations; from 1 January 2003: yearly values and drift terms for d/o 2–50
Solid Earth tide	IERS Conventions (2010)	IERS Conventions (2004)	IERS Conventions (2010)
Ocean tide model	EOT11a (Savchenko and Bosch, 2012) up to d/o 80	GOT4.10 up to d/o 50	FES2012 up to d/o 50
Non-tidal atmospheric and oceanic gravity	GFZ AOD1B RL05 up to d/o 100 (Dobslaw et al., 2013), including ECMWF 6-hourly fields and OMCT	ECMWF 6-hourly fields up to d/o 50	3-hourly ERA-Interim and TUGO R12 up to d/o 50
Atmospheric density model	MSIS-86 (Hedin, 1987)	MSIS-86	DTM 94, with the best available solar activity data
Earth radiation and albedo	Knocke et al. (1988)	Knocke et al. (1988)	Albedo and IR pressure values interpolated from ECMWF 6hr grids
Radiation pressure model	Tuned eight-panel (Cerri and Ferrage, 2016)	Tuned eight-panel	Thermo-optical coefficient from pre-launch box and wing model, with smoothed Earth shadow model
Tracking data	SLR, DORIS	SLR, DORIS	SLR, DORIS
SLR tropospheric correction model	Mendes and Pavlis (2004)	Mendes and Pavlis (2004)	Mendes and Pavlis (2004)
DORIS tropospheric correction model	Vienna Mapping Functions 1 (Boehm and Schuh, 2004)	Vienna Mapping Functions 1	GPT2/Vienna Mapping Functions 1
DORIS modelling	DORIS beacon frequency bias modelling	DORIS beacon phase centre	DORIS beacon phase centre
DORIS system time bias	Estimated once per arc	Estimated once per arc	None
Drag coefficients	Estimated every 6 h	Estimated every 8 h	Estimated every 12 h
Along- and cross-track empirical accelerations (once per revolution)	Estimated every 24 h	Estimated every 24 h	Estimated once per arc (3.5 days)
SLR antenna reference	LRA model (see note below)	LRA model (see note below)	X: 1.2429, Y: −0.0012, Z: 0.8783 in metres
DORIS antenna reference	Pre-launch	Pre-launch	Pre-launch
SLR/DORIS observation weight	3 cm/0.05 cm s^{-1}	10 cm/0.2 cm s^{-1}	1 cm/0.03 cm s^{-1}

Note: https://ilrs.cddis.eosdis.nasa.gov/missions/satellite_missions/past_missions/topx_com.html.