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Precise Orbit Determination for Altimetry Missions : Current Status and Prospects for the Future

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CNES Precise Orbit Determination (POD) Team delivers precise orbit solutions for the needs of reference radar altimeter missions including Jason-1, Envisat, Jason-2, Cryosat-2. This activity was initiated with the launch of TOPEX-Poseidon back in 1992, while work is in progress in preparation of forthcoming missions like Saral-AltiKA and HY2A.
CNES solutions are currently characterized by the use of all available tracking data from DORIS, SLR, GPS instruments, depending on availability and with appropriate weighting. We adopt a dynamic rather than reduced-dynamic approach in order to reduce the dependency from the time-varying quantity and quality of the data, accepting that a certain amount of dynamic models errors is left in the final solution. In general, the retained models are applicable throughout the multiple missions lifetimes and available within the time constraints imposed by the operational delivery of the Geophysical Data Record (GDR) products. This poster presents the models and processing techniques that have been retained in the current standards (also known as GDR-C standards) and outlines the prospects for the next generation of orbits, that will rely on ITRF2008 reference frame and on the latest GRACE-derived time-varying gravity models.