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Improving the TOPEX/Jason Orbits using DORIS Tracking

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The DORIS radial accuracy Mission objective for TOPEX/POSEIDON (T/P) has been satisfied, with 2-3 cm NASA Precision Orbit Ephemeris (POE) orbits routinely produced. However, with refined measurement modeling it may be possible to take greater advantage of the dense tracking DORIS has to offer to further improve the accuracy of the POE. Several new POD strategies, which promise significant improvement, are evaluated over one year of T/P data. Altimeter collinear analysis results suggest that the DORIS+SLR reduced-dynamic orbits are competitive with if not superior to the GPS reduced-dynamic orbits produced at JPL. Improvement shown with the ITRF2000 station set allows an improved SLR/DORIS weighting strategy which gives DORIS more weight in the solution. Other tests include using time correlated troposphere estimation, and possibly combining DORIS data from both T/P and Jason in one solution. The preliminary, but very promising Jason POD results suggest T/P level orbit accuracy. Jason SLR and DORIS data are processed. The accuracy of these orbits is evaluated using several tests, including SLR, DORIS, altimeter crossover residual analysis, and direct orbit comparison.