The field of geodesy involves the measurement and representation of the Earth's shape, orientation, and gravity field. Geodetic data, such as those obtained from satellites, ground-based stations, and other instruments, are crucial for understanding the Earth's dynamics and for various applications, including navigation and climate monitoring.

### Purpose

In 2001, the LEGOS/CLS Analysis Center for the International DORIS Service (IDS) has processed at the DORIS data available since January 1993 with a new computation model based on the TOPO-2K coordinates and parameters as input values, and the TPS/VGMS1 gravity model, among others. This new model can be used for the determination of the geocentric positions and velocities of the permanent emitting ground stations and the on-board instruments on the SPOT-2, -3, -4, and Topex/Poseidon satellites. In addition to the geodetic parameters station accelerations and velocities, Earth Orientation Parameters, dynamical (drag, solar pressure) and propagation (tropospheric zenithal delay) parameters are estimated. We display also six or seven processing results (daily, monthly, number of satellites, number of passes, number of stations) and a time series of the main results. Some information were plotted: 6-s per second for the satellites, 12-s per second for the beacon (and the sensors) of GALA has been replaced by a 2.0 one in January 2001. Note that for this station, the values by default are not always realistic: in the case of the pressure of TRIA, the first data were collected during the first days of emission and the vertical component of 2 cm.

### Solar pressure and drag coefficients, Hill’s parameters

These plots show the following dynamic parameters with monthly averaged superimposed:
- Solar pressure coefficients
- Drag coefficients
- Atmospheric drag coefficients (and standard deviations (in green))
- Constant / arc for Spots and Topex
- Constant / 5 hours and 2 at orbital period for Spots
- Constant / 5 hours and 2 at orbital period for Topex
- Dry and wet components (m) of the zenithal delay from the CNET1 tropospheric model
- The zenithal bias (m) estimated over each satellite pass
- The dry and wet components (m) of the orbital period in normal direction for Spots (W) and Topex
- The time series of the daily solar flux (10.7 cm) and the data preliminary geomagnetic noise (AP)

### Meteorological data and tropospheric zenithal delay estimation

The plots beside illustrate this effect. The blue curve of the top plots gives the vertical monthly position as we determined in our routine computation. The red curve is obtained after removing the effect induced by the beacon frequency offset determination. For YARA, the first step of +5 cm (replacement in April 1996) disappears. For SAKA, the first step of +10 cm (following the beacon's replacement in January 1995) follows a time-alternance between the chained and unchained mode. For TOPEX, the step in January 1995 follows a time-alternance between the chained and unchained mode. The beacon frequency offset determination impact on vertical position determination is illustrated in the plots. The blue curve of the top plots gives the vertical monthly position as we determined in our routine computation. The red curve is obtained after removing the effect induced by the beacon frequency offset determination. For YARA, the first step of +5 cm (replacement in April 1996) disappears. For SAKA, the first step of +10 cm (replacement in January 1995) follows a time-alternance between the chained and unchained mode. For TOPEX, the step in January 1995 follows a time-alternance between the chained and unchained mode.

### On-board oscillators' drift

A large part of these errors are absorbed by the estimated tropospheric bias, but we observe now an unusual time scale for the residuals.