

|   | GDR-B   |  | GDR-C   |  |
|---|---|--|---|--|
|   | Jason-1   | Envisat                                    | Jason-1   | Envisat  |
| <b>Time Span</b>                        | Cycle 1 to 232  | Cycle 41 (arc 171) to 67 (arc 305)         | Complete reprocessig  | Complete reprocessig   |
| <b>Reference System</b>                 |   |  |   |  |
| Polar motion and UT1                    | IERS bulletin C04 with IERS 1996 daily and sub-daily corrections                                |  | IERS bulletin C04 consistent with ITRF2005, with IERS 1996 sub-daily corrections        |  |
| Doris coordinates                       | DPOD2000  |  | DPOD2005  |  |
| SLR coordinates                         | ITRF 2000 (with minor corrections for a few SLR stations)                                       |  | SLRF2005, including station biases  |  |
| <b>Displacement of reference points</b> |   |  |   |  |
| Earth tides                             | IERS 2003 Solid Earth tides   |  | Unchanged   |  |
| Ocean loading                           | FES 1999 (SLR only)   |  | FES 2004 (SLR and Doris)  |  |
| Pole tides                              | Solid Earth Pole tide from IERS2003 (SLR only)  |  | Solid Earth Pole tide from IERS2003 (SLR and DORIS)                                     |  |
| <b>Satellite reference</b>              |   |  |   |  |
| Mass and center of gravity              | Post-Launch values + variations generated by Control Center                                     |  |   |  |
| Attitude Model                          | Quaternions from control center, completed by nominal yaw steering law when necessary           | Nominal law                                | Unchanged   |  |
| <b>Gravity</b>                          |   |  |   |  |
| Gravity field (static)                  | EIGEN-CG03C   |  | EIGEN-GL04S   |  |
| Gravity field (time varying)            | Drifts from EIGEN-CG03C, on zonal harmonics up to degree 4                                      |  | Annual+Semiannual 50x50 from EIGEN-GL04S-ANNUAL; No drift                               |  |
| Earth tides                             | IERS 2003 Solid Earth tides   |  | Unchanged   |  |
| Pole tide                               | Solid Earth Pole tide from IERS2003   |  | Solid Earth and Ocean Pole tide from IERS2003   |  |
| Ocean tides                             | FES 2004 (all principal constituents, with admittance)  |  | Unchanged   |  |
| Atmospheric tides                       | Haurwitz & Cowley   |  | Unchanged   |  |
| Atmospheric gravity                     | None  |  | NCEP-derived 20x20 field at 6 hr interval (AGRA service at GSFC)                        |  |
| Third bodies                            | Sun, Moon, Venus, Mars and Jupiter third bodies   |  | Unchanged   |  |
| <b>Surface forces and empiricals</b>    |   |  |   |  |
| Radiation Pressure model                | Thermo-optical coefficient from pre-launch box and wing model, with smoothed Earth shadow model |  | Updates in coefficients of +Y/Y and +X sides and in the value of the body-fixed X-force | Unchanged  |
| Radiation pressure scale coefficient    | Fixed to 0,97 (set to minimize the amplitude of 1/rev empiricals)                               | Adjusted, with a priori constraint         | Unchanged   | Fixed to 1,045 (set to minimize the amplitude of 1/rev empiricals) |
| Earth radiation                         | Knocke-Ries albedo and IR satellite model   |  | Unchanged   |  |
| Atmospheric density model               | MSIS86 model, with best available solar activity  | DTM 94, with best available solar activity | Unchanged   |  |
| Drag coefficients                       | Adjusted every two revolutions, with apriori loose constraint                                   |  | Unchanged   |  |
| 1/rev empiricals                        | Every 12 hours (depending on GPS availability)  | Every 24 hours                             | Unchanged   |  |

|  | <b>GDR-B</b>  |                | <b>GDR-C</b>   |                             |
|--|---|----------------|--|-----------------------------|
|  | <b>Jason-1</b>  | <b>Envisat</b> | <b>Jason-1</b>   | <b>Envisat</b>              |
| <b>Doris</b>   |   |                |  |                             |
| Troposphere correction   | CNET1 model, vertical bias adjusted per pass                |                | Unchanged  |                             |
| Frequency  | 1 frequency bias adjusted per pass                          |                | Unchanged  |                             |
| South Atlantic Anomaly   | SAA model applied before the instrument change              | Not applicable | SAA model applied over the entire series   | Not applicable              |
| Weight   | 1.5 mm/s (for Jason-1 : underweighting of the SAA stations) |                | Unchanged  |                             |
| Datation bias (to compensate for along-track inconsistency of Doris orbits wrt SLR/GPS measurements) | 6,0 $\mu$ sec   | 6,5 $\mu$ sec  | 6,0 $\mu$ sec before instrument change (cycle 91) and 8,8 after  | Unchanged                   |
| <b>SLR</b>   |   |                |  |                             |
| Troposphere correction   | Marini-Murray   |                | Mendes-Pavlis  |                             |
| Retroreflector correction  | Constant ranging correction                                 |                | Elevation dependent ranging correction   | Constant ranging correction |
| Biases   | Bias per pass solved for a few stations                     |                | Fixed biases consistent with SLRF2005, bias per pass solved for a few stations                                 |                             |
| Weight   | Globally 10 cm (some SLR stations underweighted)            |                | Unchanged  |                             |
| <b>GPS</b>   |   |                |  |                             |
| Constellation ephemeris and clocks   | JPL precise solution at IGS                                 | Not applicable | Before GPS week 1400, JPL solution has been aligned with IGS05; clocks remain unchanged                        | Not applicable              |
| Sampling for POD   | 5 min   | Not applicable | Unchanged  |                             |
| Phase correction diagrams  | Receiver only   | Not applicable | Emitter / Receiver , updated   | Not applicable              |
| phase windup correction  | Applied   | Not applicable | Unchanged  |                             |
| Phase ambiguity  | Floating ambiguity adjusted per pass                        | Not applicable | Unchanged  |                             |
| Receiver clock   | Adjusted at every epoch                                     | Not applicable | Unchanged  |                             |
| Weight   | Phase: 1 cm / Code: 1 m                                     | Not applicable | In order to have a more continuous solution even after GPS failure, GPS weight has been reduced by a factor 10 | Not applicable              |