Processing DORIS data in a multi-satellite mode: Time scale issues

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Summary

- Why should we care?
- Description of the method
- Results
  - T/P, JASON orbits
  - Stations positions
  - EOP
- (preliminary) conclusions
Objectives

- Process simultaneously TOPEX and JASON orbits (at the data level)
- Tandem phase (several common stations in visibility)
Estimating biases per pass (4) or clock drifts (3)?

<table>
<thead>
<tr>
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<th>Biases</th>
<th>Clock reset</th>
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<tbody>
<tr>
<td><strong>TOPEX</strong></td>
<td>TA</td>
<td>A</td>
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<td>1-channel</td>
<td>TB</td>
<td>B</td>
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<tr>
<td><strong>JASON</strong></td>
<td>JA</td>
<td>J</td>
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<tr>
<td>2-channel</td>
<td>JB</td>
<td>-</td>
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</tbody>
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Common parameters

- Stations coordinates
  - fixed or constrained
- EOP
  - fixed or constrained
- Satellites and stations clocks
  - Or bias per pass
- Tropospheric corrections
  - fixed or estimated
- Drag, empirical parameters?
JASON daily orbit overlaps
(RMS over 6-hour)

JASON mean = 1.88 cm
JASON dual mean = 2.06 cm
TOPEX daily orbit overlaps (RMS over 6-hr)

TOPEX mean = 1.74 cm
TOPEX dual mean = 2.13 cm
Biases in JASON ground station positioning?

June 13-14, 2002 IDS Workshop, Biarritz
Ground stations locations
Significant difference detected between TOPEX-derived and JASON-derived position
Current EOP DORIS determination with Gipsy/Oasis
Direct comparison with IGS/GPS series
Polar Motion Y-component

RMS (in mas)
(no mean removed)
Conclusions

- Demonstration of the method using actual JASON/TOPEX data
- Helped finalized new format and preprocessing strategy at CNES
- Slight improvement in orbit determination (but not a robust method)
- Possible bias seen in SAA region for JASON
- Better results for stations positions and EOP determination
- Need to be confirmed when more SPOT2&4 data are available (+ ENVISAT +SPOT5)