

CRYOSAT-2 DORIS

DORIS on CryoSat-2



Contents

- Timeline of Events
- Use of DORIS on CryoSat-2
- Early behaviour
- Medium term behaviour
- Conclusions and outstanding activities

DORIS on CryoSat-2



Timeline of Events from Launch

- 08 April 14:57z Launch from Baikonur
- Day 1 Operations
 - Separation On-Board Control Procedure to initiate AOCS
 - CDMU post-separation hardware and software configuration
 - Star Tracker Switch on (3 STRs)
 - Transition from Coarse Pointing to Fine Pointing Mode
- Additional Activities
 - Star Tracker anomaly resulted in fall-back to Coarse Pointing Mode
 - Recovery to Fine Pointing Mode
 - Investigations into Star tracker behaviour and performance

DORIS on CryoSat-2



Timeline of Events from Launch

- Day 2 Operations (DOY 99)
 - DORIS switch on : 14:41z
 - DORIS Time Synchronisation : 16:53z (DIODE s/w started)
 - DORIS Navigation Coarse Convergence : 17:50z
 - DORIS Navigation Fine Convergence : 100.03:26

- Commissioning Operations
 - DORIS Jamming mode enabled : 28 April – 03 May
 - Verification of USO stabilisation and Quality of Datation
 - Use of DORIS Datation by the CDMU enabled : 22 April

DORIS on CryoSat-2



Use of DORIS on CryoSat-2

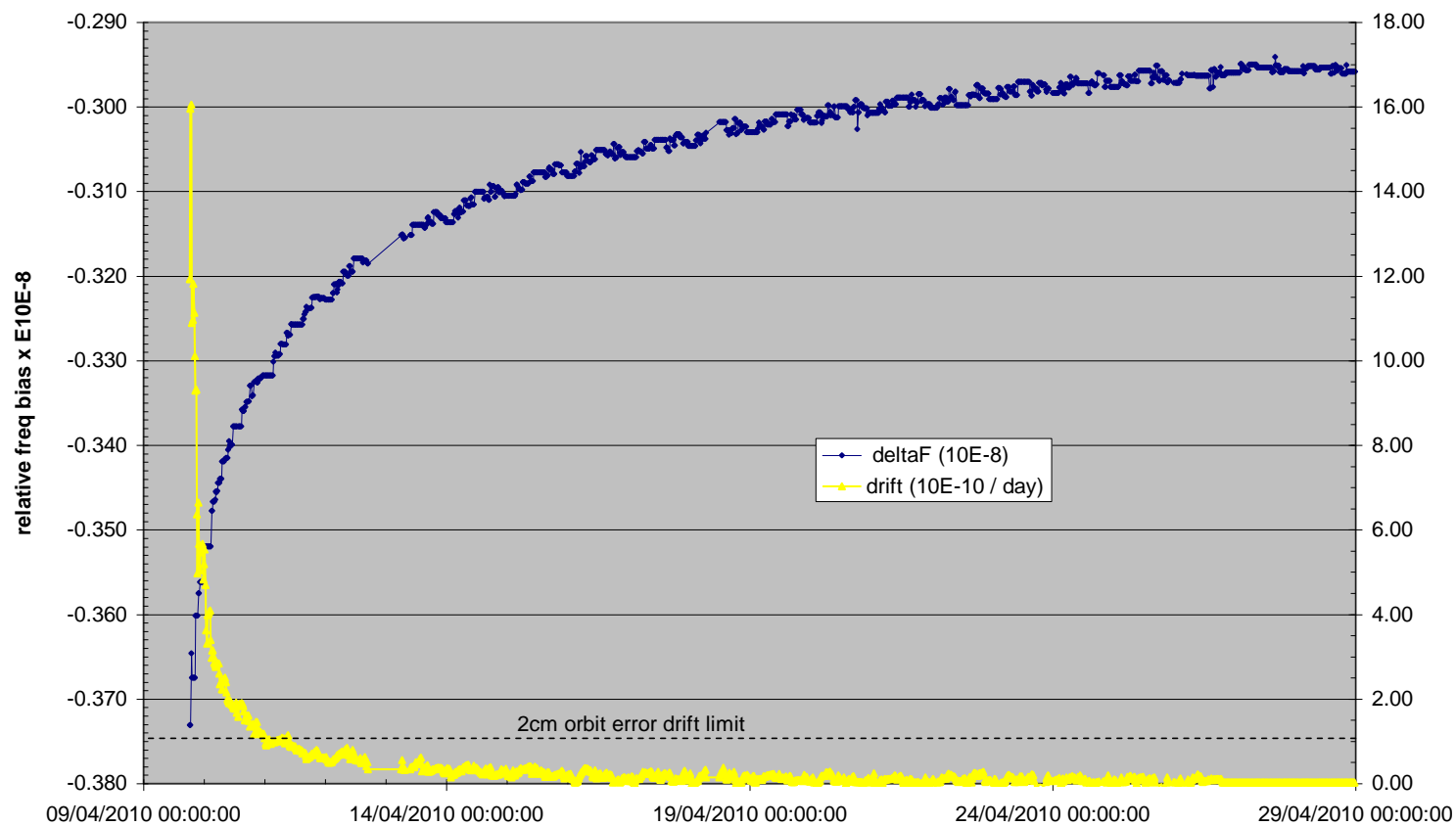
- CDMU
 - Generates Fine Datation
 - Used to provide Datation to CDMU, which is distributed to all packet terminals
 - CDMU triggers generation of DORIS OBT via the Pulse per Second (PPS)
- AOCS
 - Generates Navigation packets
 - Navigation packets used for Science data post-processing, both medium and precise orbit determination
 - Used by the AOCS software to provide Navigation solution

DORIS on CryoSat-2



Early Behaviour - USO

DCY2 USO behaviour



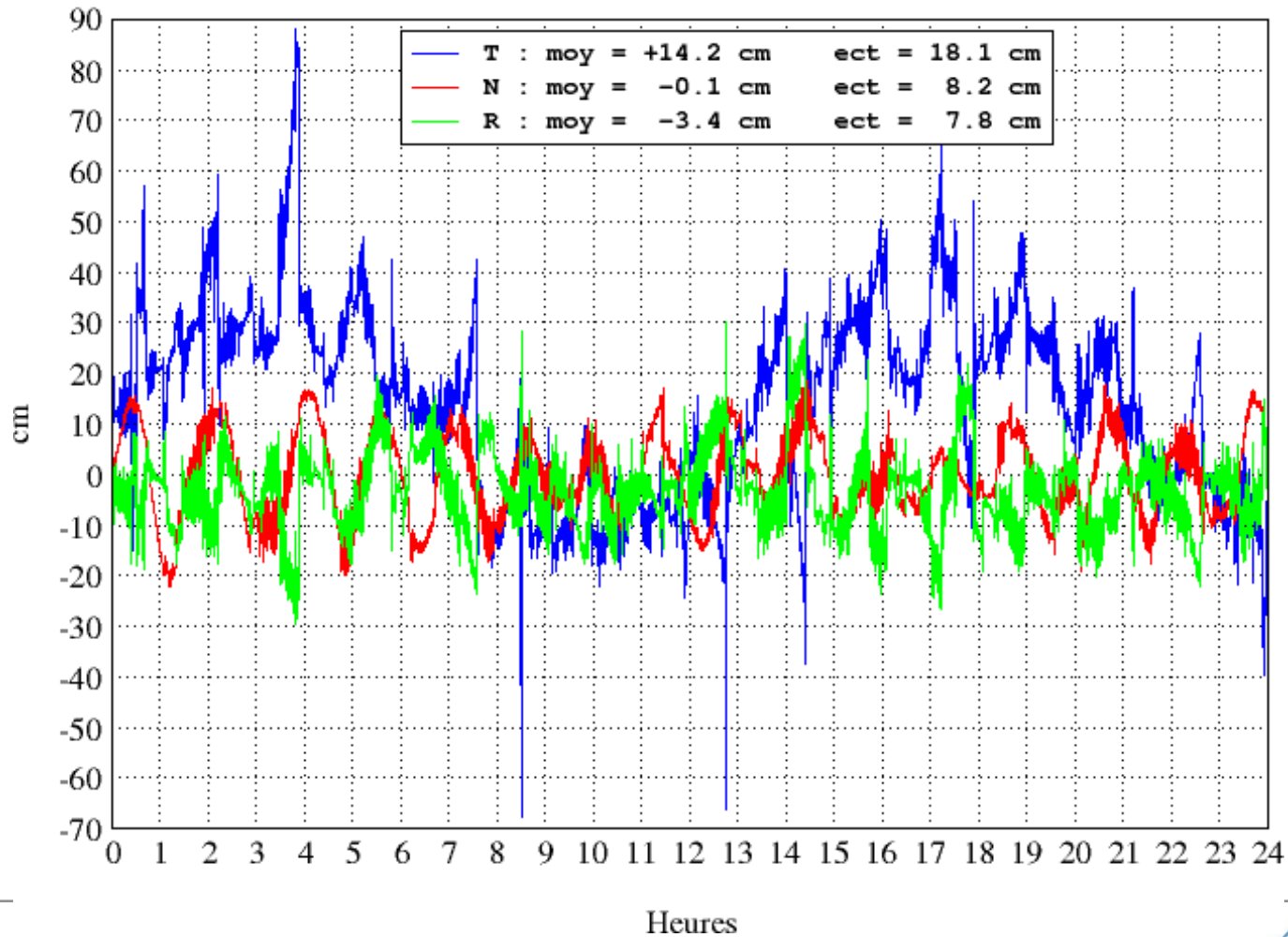
DORIS on CryoSat-2



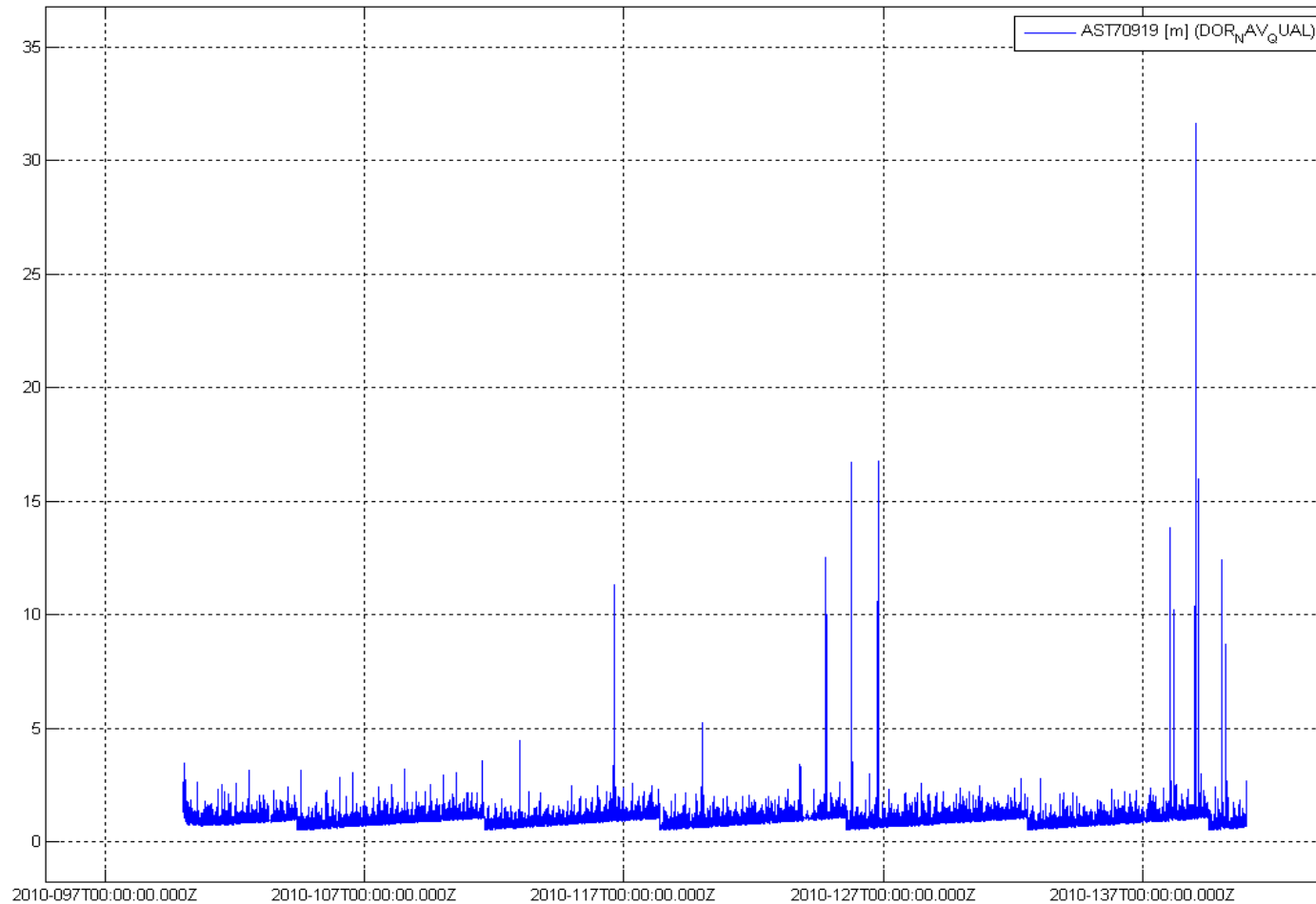
Early Behaviour - Navigation

Ecart NAV-MOE Cryosat-2

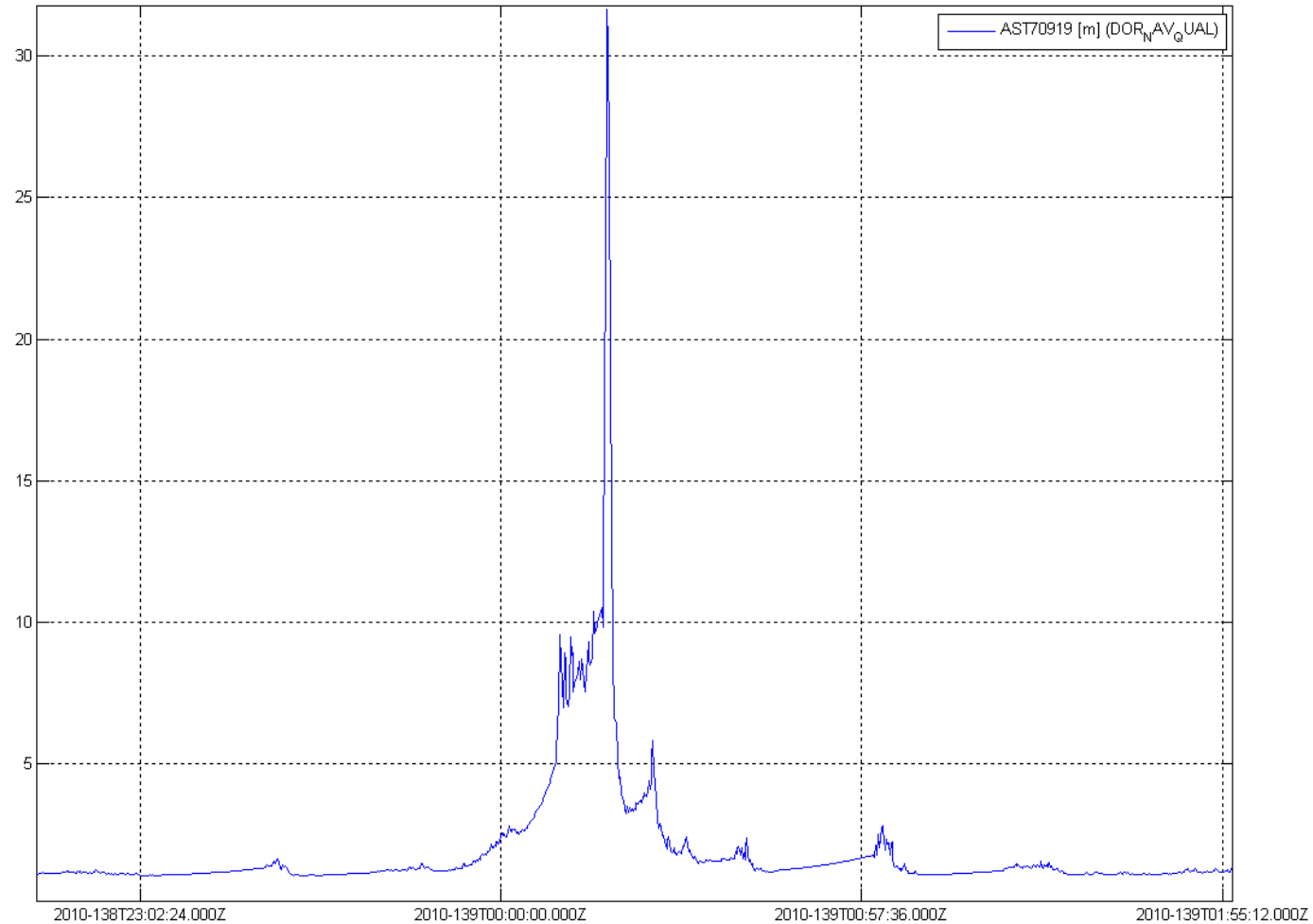
jour : 11/04/2010



Navigation performance since convergence

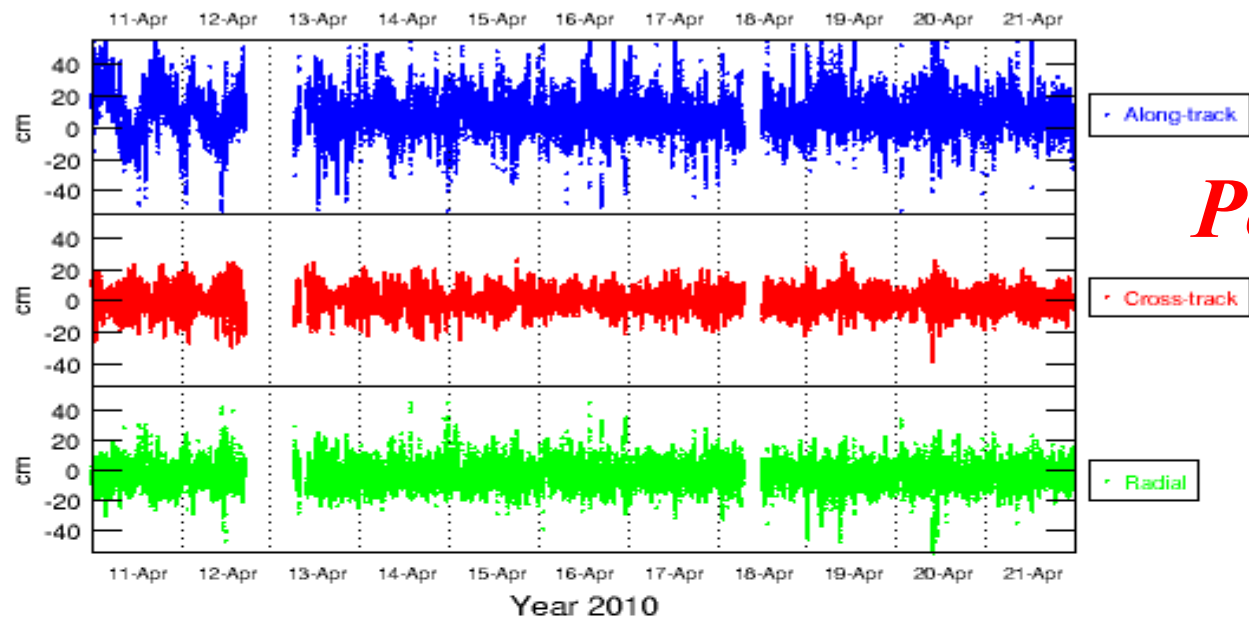


Navigation performance during manoeuvres



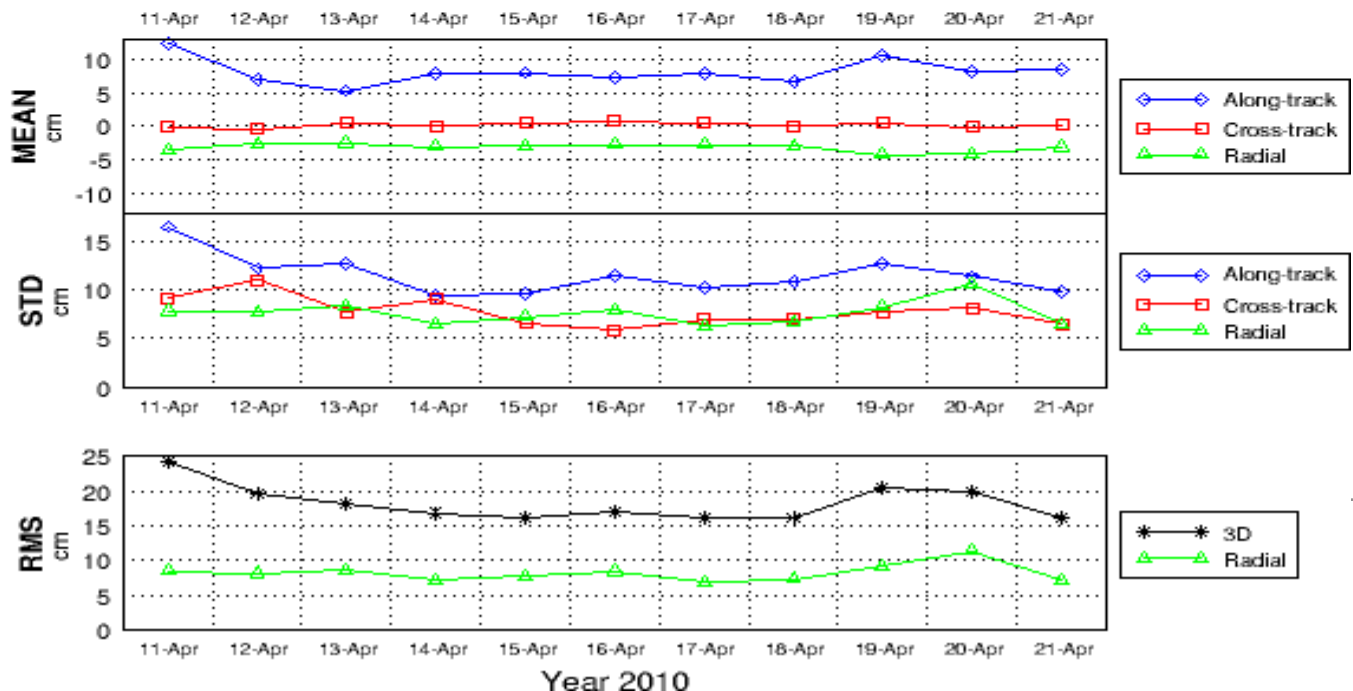
CRYOSAT-2 : NAV-MOE comparison

10s-bulletin differences



Navigation Performance Post Processed

daily statistics



Outstanding Activities

- Generation of Precise Orbit Determination products
- Long term verification of PoD
- Enable use of Navigation by the AOCS

DORIS on CryoSat-2



Pre-Launch Configuration

- S-Band : Both Transmitters OFF, both Receivers always powered
 - Ranging relay on, Coherent relay off
- X-Band : OFF
- EPS : Launch mode
 - Thruster Overwrite straps set to STRAPS (NO OVERWRITE)
 - Battery Hold Current ON (to prevent launch vibration “shaking” battery connection loose)
- TCS : OFF
 - Software disabled,
 - LCL for Survival Thermostats On (hardware protection always available)
- DORIS : OFF (DORIS NOT used for Datation or Navigation)
- SIRAL : OFF

DORIS on CryoSat-2

