



CENTRE NATIONAL D'ÉTUDES SPATIALES

**32nd Scientific Committee  
Institut D'Astrophysique Paris  
May 19th, 2009**

**COROT : Mission & Project STATUS at CNES**



- **Mission Status**
- **Operations & Mission schedule**
- **Some project points**

## Mission Status

### ■ Mission :

- ◆ 874 days in space
- ◆ 9 Runs completed – the 10th (LRc03) is on-going
- ◆ 776 days of Sismo data collected so far
- ◆ 747 days of Planet search data collected

### ■ LRa02 amount of science data

- ◆ A1 115 days / E1 112 days
- ◆ A2 118 days / E2 115 days
- ◆ A1, E1 science stopped the 8th of March due to malfunctioning => under investigation
- ◆ A2, E2 science stopped the 11th of March with passivation of DPU1
- ◆ The initial list of oversampled windows has been already updated twice

### ■ Status of LRc03 (1673.8)

- ◆ A2 92 days / E2 90 days (foreseen)
- ◆ Seismology : 5 TM enlarged Starmasks (Imagettes 35x35), 5 Light Curves
- ◆ Planet Search : Nb of TM Starmasks increased to 40 + usual nb of Light Curves
- ◆ Update of the Oversampling list of Exo stars : achieved 4 times so far
- ◆ Rotation around LOS = +16° => high CCD temperature at beginning

## Status of the system

### ■ Satellite : **Nominal**

### ■ Instrument

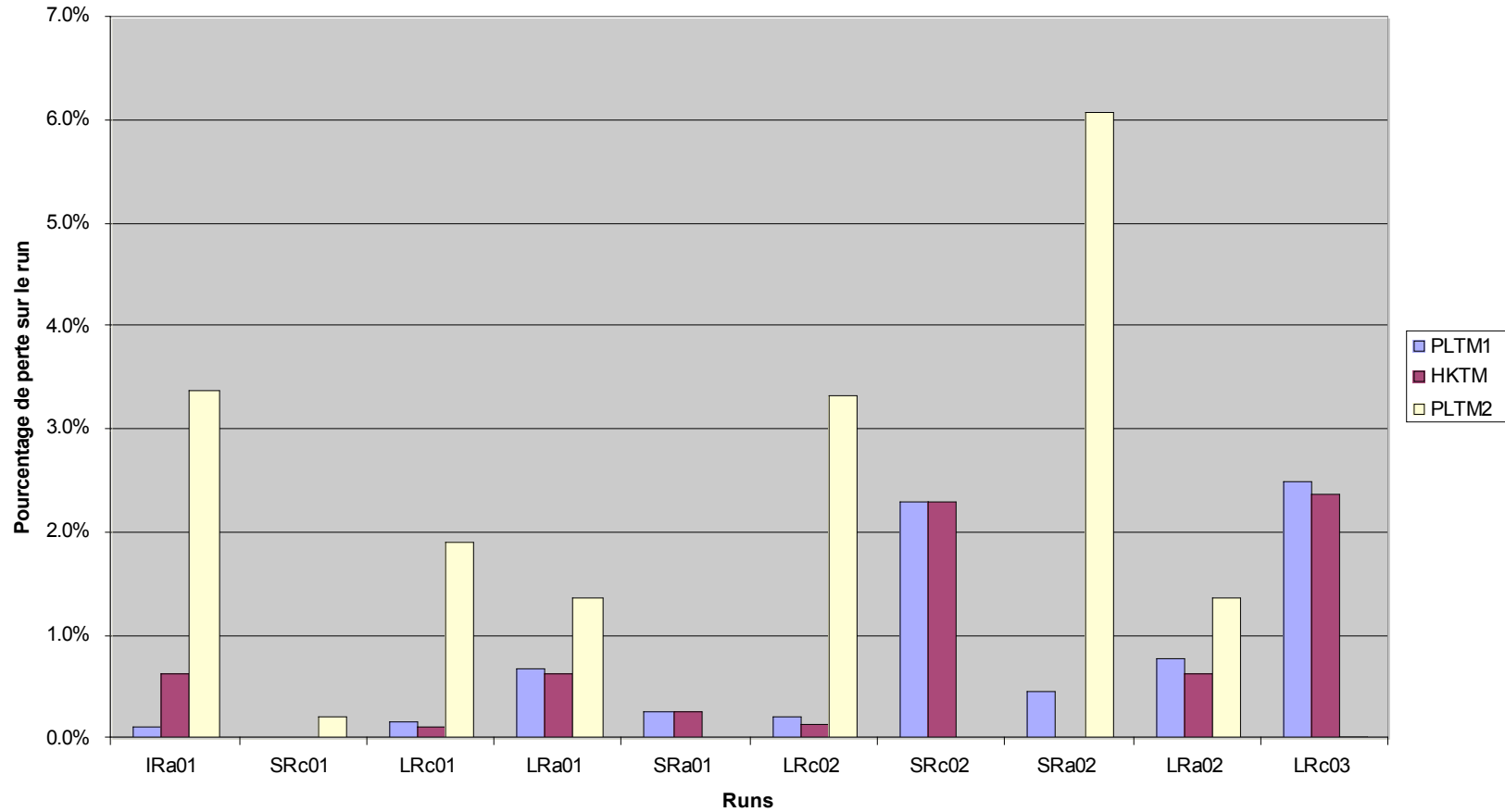
- ◆ Chain 2 (Sismology A2 CCD & Planet Search E2 CDD) : **Nominal**
- ◆ Chain 1 : **Off due to anomaly**
- ◆ On-going inquiry
  - Formal “ACA” analysis on the whole photometric chain of the instrument
  - Recent analysis by CNES & ESA of the schematics of the DPU equipment provided new information, new actions for further investigation
- ◆ **Notice for change on the software instrument under preparation to raise the number of oversampled Exo windows up to 2000 in chromatic case, 500 in monochromatic**

### ■ Ground segment

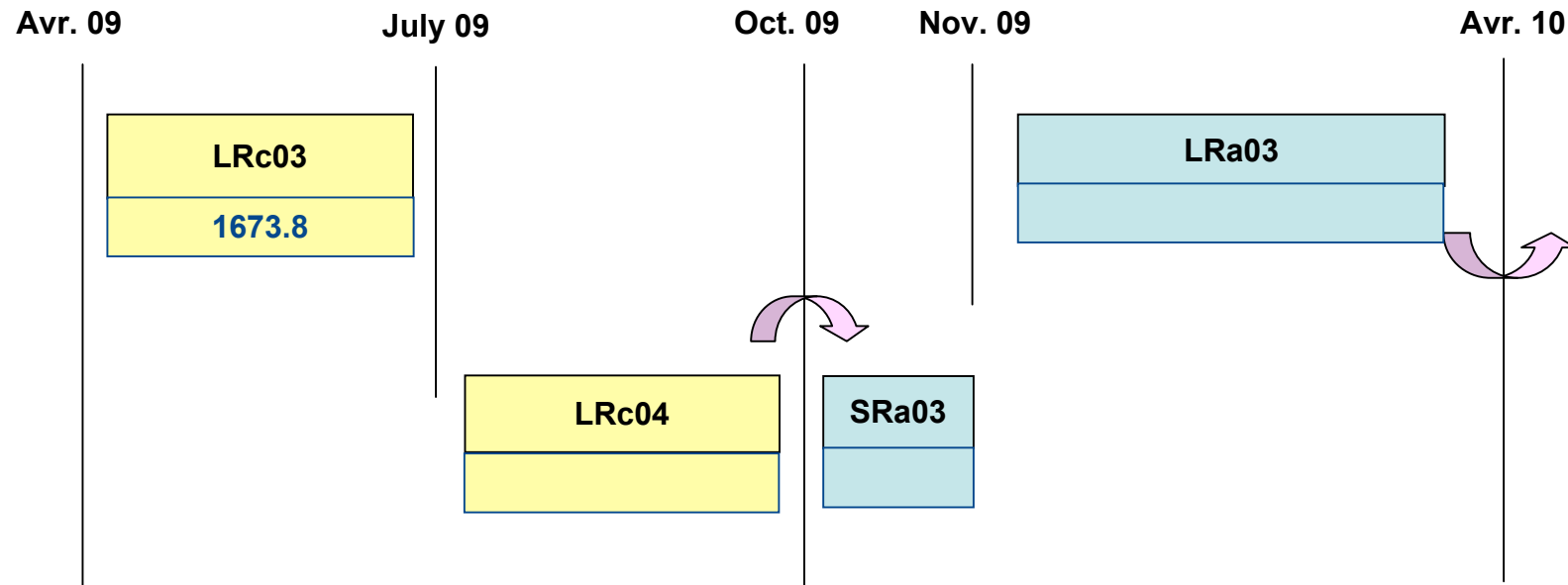
- ◆ Corot Control Center : **Nominal**
- ◆ Corot Mission Center : **Nominal**
- ◆ Data Center & Distribution : **Nominal**
- ◆ Ground stations :
  - 5 TM pass lost in April due to AUS station anomaly
  - TM downloaded with KRN station only until the anomaly is corrected

# TM Loss by Run

Pourcentage des pertes de chaque type de TM par Run



## Schedule for the Operations



## LRc03 to LRc04 transition

### ■ Schedule

- ◆ End of LRc03 + pointing for LRc04 : Thursday the 2nd of July 2009
- ◆ Start of the observation for Seismology : Friday, the 3rd of July
- ◆ Start of the observation for Planet finding : Tuesday, the 8th of July

### ■ Pointing issues

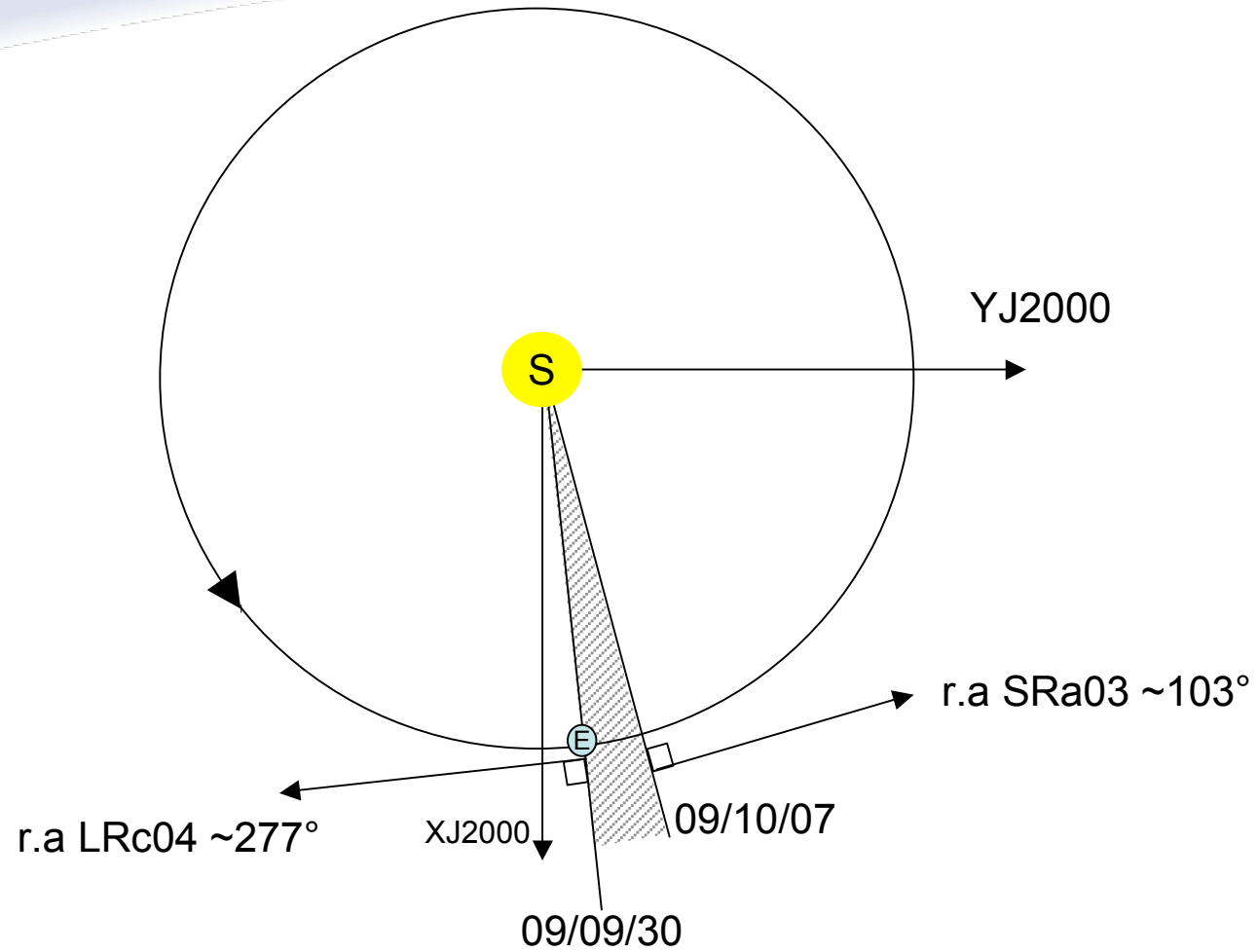
- ◆ CCD Temperature for LRc04 : rotation around LOS  $>0$  to be preferred to lower the temp. of the CCDs
- ◆ Right ascension :
  - Ra for LRc04 Ra defines the end of observation at the latest
  - Assuming ra for LRc04 is close to LRc03 ( $\sim 277^\circ$ )  $\Rightarrow$  run to be stopped before the 30th of Sept.

### ■ DPU1 Switch on test issue

## LRc04 to SRa03 transition : pointing and planning

- Assuming r.a LRc04  $\sim 277^\circ$  (same as LRc03)
  - => Run to be stopped the 30th of Sept. 2009 at the latest
- Assuming r.a SRa03  $\sim 103^\circ$  (same as IRa01)
  - => Pointing of SRa03 cannot be achieved before the 07th of Oct. 2009 at the earliest
- With both assumptions => a 7 day gap between end of LRc04 observation and pointing of SRa03
  
- To reduce the gap :
  - ◆ Increase r.a for LRc04
  - ◆ Decrease r.a for SRa03





## LRc04 to SRa03 transition : impact of SMOS Launch

### ■ SMOS Operations

- ♦ LEOP consist of 24h/24h operations during one week
- ♦ LEOP starts immediately after launch
- ♦ Launch of SMOS planned September, the 9th

### ■ Impact of SMOS on COROT

- ♦ Control Center means and staff monopolized to perform LEOP operations for SMOS
- ♦ No Extended Corot operations during the SMOS LEOP
- ♦ Small margin to prepare and achieve Corot Operations
- ♦ Situation can become difficult to manage in case the date for launch of SMOS drifts

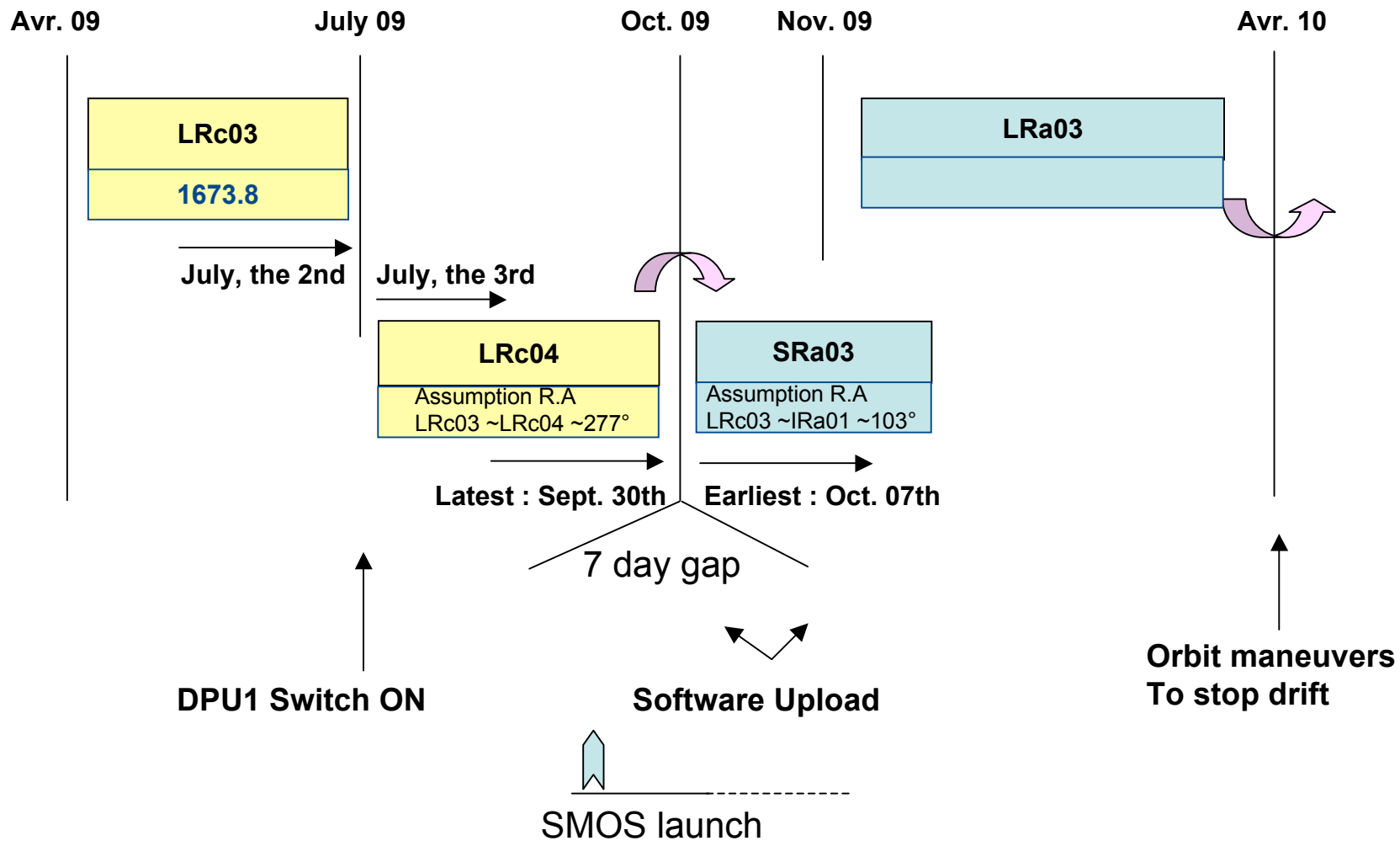
### ■ Preparation of SRa03, LRa03 needed ASAP

- ♦ Pointings, stellar lists, ...
- ♦ Priorities, planning, minimum duration of the observations, what is essential to keep, what can be postponed, can be accepted

## Some more operations to come

- **DPU1 switch ON : July 2009 TBC**
- **Flight software upload : Oct. or Nov. 2009 TBD**
- **Orbit maneuvers to stop the drift**
  - ◆ **Drift of the orbit plane is  $\sim -3^\circ/\text{year}$**
  - ◆ **Prediction of Omega at the Ascending node**
    - Omega =  $11.12^\circ$  (2009/10/01)
    - Omega =  $9.85^\circ$  (2010/04/01)
  - ◆  **$\sim 1$  week of specific operation needed to stop the drift**
  - ◆ **Planning to be defined**

# Schedule for the Operations



## Corot events

- **CNES Review of Exploitation (REVEX): postponed to June 17-18**
- **Presentation at CNES (REX), June the 9th : main scientific results after the symposium, experience from the instrument behavior**
- **Preparation of the extension**