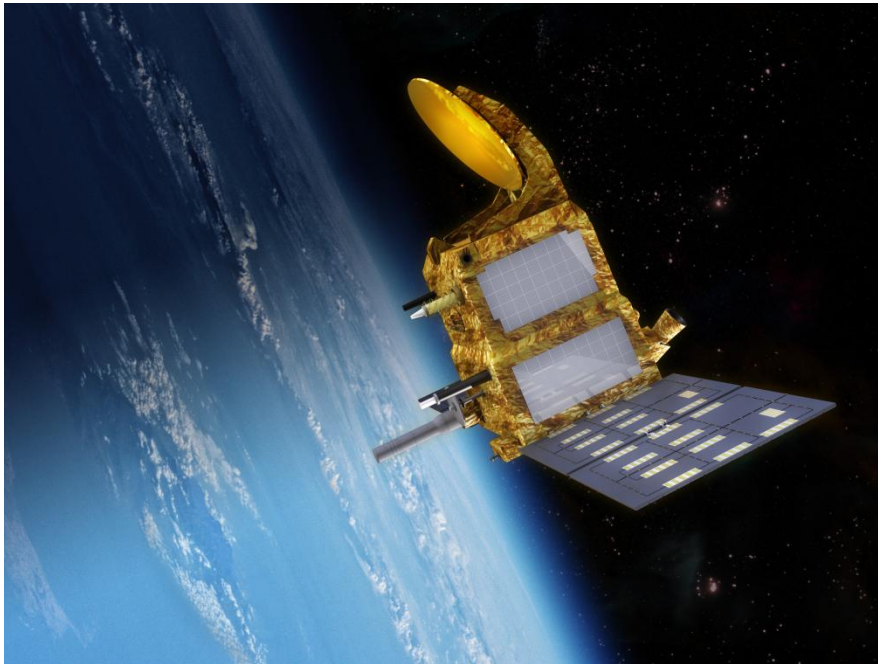


# SARAL / ALTIKA

## 1<sup>ST</sup> VERIFICATION WORKSHOP

### INTRODUCTION

Pierre SENGENES



# SARAL PROGRAM

**SARAL Program is a joint mission conducted by ISRO and CNES dedicated to the environmental, mainly oceanic, survey.**

**Two missions are on-board the SARAL satellite**

ALTIKa mission }  
ARGOS-3 mission } **SARAL ⇔ Satellite with ARgos and Altika : *also means “simple” in Hindi***

## **Scientific objectives of the ALTIKA mission**

- Ocean meso-scale variability study with an improvement in vertical and spatial measurement resolution thanks to Ka-band altimeter
- Providing geophysical data assimilation in a global ocean model
- contribution to :
  - ◆ coastal altimetry, continental waters and inland ice sheet monitoring, light rainfall and clouds climatology,
  - ◆ Geodetic reference system determination thanks to Doris and LRA

## **Objectives of the ARGOS-3/SARAL mission**

- to improve and to expand the capabilities (availability, performance, data latency) of the ARGOS Data Collection System
  - ◆ ARGOS-3 constellation: ARGOS-3 payloads on board METOP-A (Oct. 2006), NOAA N' (Feb. 2009), METOP-B ( Sept. 2012) *and METOP-C (2016)*
  - ◆ ARGOS users segment : ~ 20 000 beacons spread all over the world

# MILESTONES OF THE SARAL PROGRAM

## ❑ 1<sup>st</sup> semester 2005

- first discussions between CNES and ISRO: ALTIKA on-board OCEANSAT3

## ❑ 2006 => SARAL S/C : PIM (CNES) & SSB (ISRO)

- ALTIKA and ARGOS-3 integrated on-board PIM

## ❑ February 2007

- Signature of ALTIKA and ARGOS-3/SARAL MOU between CNES and ISRO



## ❑ August – October 2009

- Delivery of Doris, ARGOS-3 package and ALTIKA FMs to THALES AS-F PIM AIT
- End of 2009 : formal agreement of EUMETSAT to take part to the SARAL mission

## ❑ January 2010 – July 2011

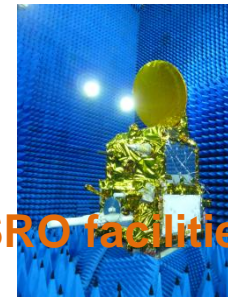
- Integration and Qualification of Payload Integrated Module in France

## ❑ July 2012

- PIM delivery to ISAC/ISRO in India (Bangalore)

## ❑ August 2012 – February 2013

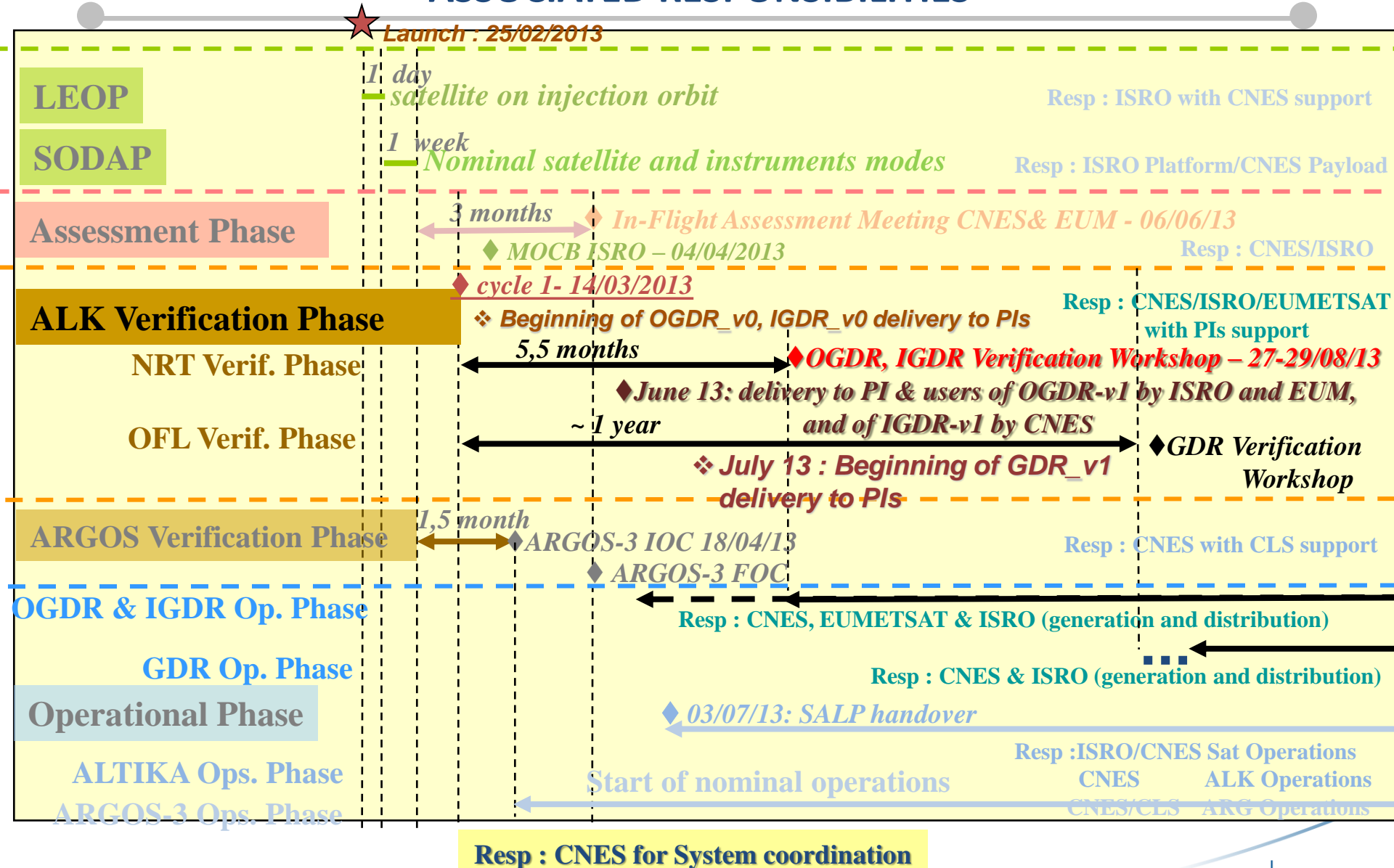
- Integration and Qualification of the SARAL S/C in **ISRO facilities**
- Launch campaign



## ❑ February 25<sup>th</sup>, 2013 at 12:31 UTC : **Take-Off !!** from SHAR



# SARAL POST-LAUNCH MISSION PHASES AND ASSOCIATED RESPONSIBILITIES



# 1<sup>ST</sup> VERIFICATION WORKSHOP OBJECTIVES

- ❑ **To give a status on the quality of the ALTIKA OGDR & IGDR products**
  - POD
  - AltiKa instrument data processing: Ka-band retracking,  $\sigma_0$  analysis, SWH and wind analysis, rain sensitivity, radiometer
  - Contribution to coastal, land and sea ice, inland waters observation
  - Data assimilation
  - CalVal
  - Ka-band *actual* improvements and drawbacks
- ❑ **Specific focus is expected on the evolutions implemented end of June : v1 version**
- ❑ **Comments on the proposed evolutions drafted by the project : v2 version**
- ❑ **To have a first feedback on the quality of GDR products released since July 2013 (v1 version)**
- ❑ **Plans for future evolutions**
- ❑ **Proposals for the outreach on the AltiKa mission**

# SARAL /ALTIKA 1ST VERIFICATION WORKSHOP AGENDA

## August 27th

**09:00 Introduction of the meeting (P. Sengenès):** purpose and objectives of the meeting

**09:10 SARAL mission status (J. Noubel):** brief overview of the mission and payload status – focusing on the data products and main milestones.

**09:30 SALP status (N. Picot/ S. Mazeau):** brief overview of the SALP processing center status – focusing on the I/GDR products. Scope of the first patch – envisaged evolutions - ...

**09:30 EumetSat status (S. Dieterle):** brief overview of the EumetSat processing center status – focusing on OGDR products, including BUFR.

**09:50 AltiKa instrument performances (N. Picot + N. Steunou):** in orbit performances, specific calibrations, workplan (calibrations, HD, ...)

10:30 – 11:00 Coffee break

**11: 00 – 12:30 POD status – Diode, MOE and POE data quality**

*C. Jayles: Diode performances comparison to MOE, laser, ...*

*L. Cerrì: MOE and POE processing, satellite model used, data quality ,laser residuals, ...*

*P. Bonnefond: Early results of the Short Arc analysis*

12:30 – 14:00 Lunch break

## August 27th

**14: 00 – 17: 30 Instrument processing – altimeter including tracking mode comparison and Ka band specific studies.**

- **14: 00 – 15:00 Ka band retracking**

*P. Callahan: Initial AltiKa Cal/Val Activities at the Jet Propulsion Laboratory*

*J.C Poisson: PEACHI Ka band retracking algorithms early results (numerical retracking – RED3 – 2 passes – LSE ...)*

*Discussion*

- **15: 00 – 16:00 Sigma0 analysis - including Ka band specific studies.**

*P. Prandi: Exploring the behavior of a Ka-band altimeter in the Arctic Ocean*

*P. Thibaut/N. Steunou: Sigma0 analysis, comparison of MLE3 and MLE4 and with Jason-2 Ku band.*

*Discussion*

16:00 - 16:30 Coffee break

- **16: 30 – 17:30 Rain sensitivity – including flagging issue and retracking and Ka band specific studies.**

*JC Poisson: Matching pursuit algorithm*

*G. Quartly: Effective rain-flagging*

*Discussion*

**17: 30 – 18:00 Instrument processing – Radiometer**

*ML Frery: AltiKa Radiometer: early in-flight calibration and validation of geophysical products*

*Discussion*

**18:00 End of day 1**



## **August 28th**

**09:00 – 10:00 CalVal over ocean including tracking mode comparison and Ka band specific studies.**

*S. Philipps: Global SARAL Data Quality Assessment of IGDR and GDR data over ocean*

**09:20 ISRO status (TBC):** brief overview of the Isro processing center status – focusing on OGDR products.

*S. Aich Bhowmick: Calibration and Validation of geophysical products from SARAL/AltiKa*

**10:00 – 10:40 Insitu CalVal.**

*P. Bonnefond: Absolute calibration of SARAL/AltiKa in Corsica*

*F. Durand (J. Verron): AltiGlidEx*

10:40 – 11:00 Coffee break

**11:00 – 12:30 SWH and wind analysis**

*P. Queffeuou (P. Thibaut): SARAL/AltiKa SWH validation*

*J. Lillibridge: One and Two-Dimensional Wind Speed Models for Ka-band Altimetry*

*(+updated results of S. Abdalla)*

*L. Aouf: SARAL/AltiKa wave validation*

12:30 – 14:00 Lunch break

## **August 28th**

**14:00 – 16:30 Land and Sea ice including tracking mode comparison and Ka band specific studies.**

*A. Kouraev (F. Remy): Radar altimetry and radiometry and in situ observations for study of ice cover of Eurasian water bodies and rivers*

*E. Zakharova (K. Guerreiro): Multi-band radar altimetry to study hydrology of boreal wetlands and estuaries*

*A. Michel: SARAL/AltiKa performance assessment over ice sheets: presentation of the validation tool and preliminary analysis with comparison with Icesat and Envisat*

*JC Poisson: Ice2 retracking improvements*

*D. Blumstein: Analysis of AltiKa waveforms data over Antarctica*

*F. Remy: SARAL/Altika for ice sheet survey*

16:30 - 17:00 Coffee break

**17:00 – 17:30 Coastal including tracking mode comparison and Ka band specific studies.**

*G. Valladeau: Considering SARAL/AltiKa altimeter data for coastal zones and hydrology: the PEACHI project*

**18:00 End of day 2**

20:00 – 21:30 Social event

## **August 29th**

### **09:00 – 10:30 SARAL assimilation**

*J. Richman: Monitoring the SARAL/AltiKa altimeter performance in the global ocean forecast system*

*D. Griffin: Use of AltiKa NRT sea level anomaly in the Australian multi-mission analysis*

*Y. Faugere: AltiKa in DUACS*

*E. Remy: operational use of SARAL/AltiKa data in the Mercator Ocean data assimilation systems*

10:30 – 10:50 Coffee break

### **10:50 – 12:30 Inland water including tracking mode comparison and Ka band specific studies.**

*S. Calmant: retrieval of river levels from AltiKa measurements on-board SARAL*

*P. Maillard: Spatial processing techniques for Saral/Altika altimetry of the Sao Francisco River, Brazil*

12:30 – 14:00 Lunch break

## August 29<sup>th</sup>

### 14: 00 Meeting conclusion

- 14:00 – 15:30 : discussion on the official release of O/I/GDRs in 'D' version – foreseen evolutions  
Refer to the list of know anomalies and/or foreseen evolutions– **to be provided to all participants before the meeting**
- 15:30 – 16:00 : Round table discussion on outreach – AVISO newsletter, ...
- 16:00 – 16:15 : Meeting conclusion by project.
- 16:15 – 16:30 : Closing speech (J. Verron)

### 16:30 End of day 3 and end of the meeting