IASI-NG:
IN ORBIT VALIDATION:
STRATEGY AND OBJECTIVES

JEREMIE ANSART
IASI-NG SYSTEM V&V MANAGER
IASI INSTRUMENT RESPONSIBLE

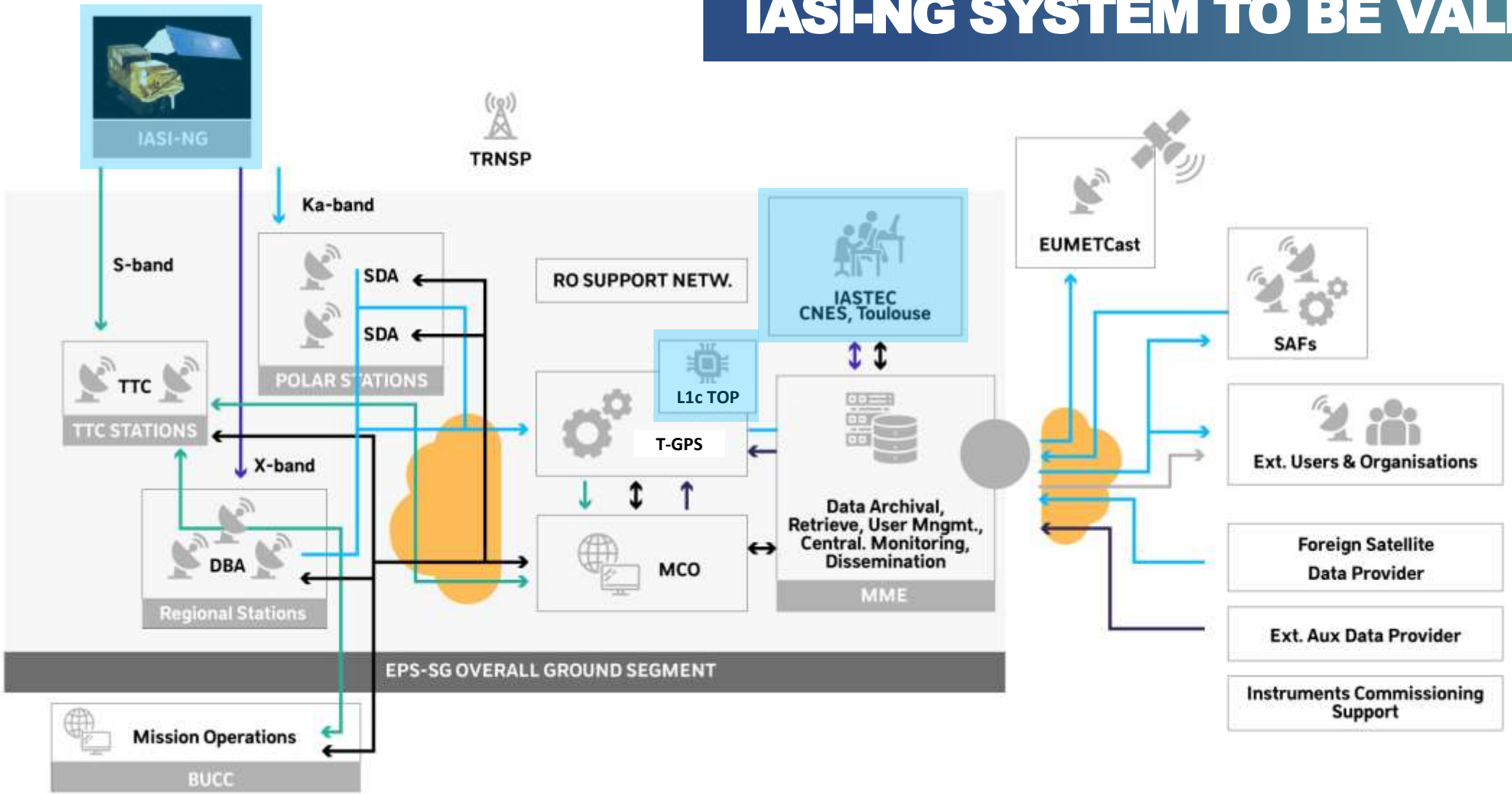
FOR IASI-NG TEAM

CENTRE NATIONAL D'ÉTUDES SPATIALES (TOULOUSE, FRANCE)

IASI CONFERENCE

DECEMBER 3 – 2025 • NANCY

IASI-NG SYSTEM TO BE VALIDATE



SIOV/CALVAL GLOBAL OVERVIEW

Launch | 1st Spectra | Start of L1 early dissemination | Level 1 nominal dissemination

SIOV	CAL/VAL PART A TECHNICAL EVALUATION + EARLY VALIDATION OF L1 PRODUCTS	CAL/VAL PART B IN DEPTH VALIDATION OF L1 PRODUCTS
		IASI TANDEM FLIGHT
9 WEEKS	**16 WEEKS**	**15 WEEKS.**
SYSTEM IN ORBIT VERIFICATION MAIN OBJECTIVES : • Instrument Set Up : cryostat decontamination, mechanisms deployment, beam splitter alignment… • First instrument health checks in orbit **End of the SIOV activities : 1st IASI-NG spectra**	**CAL/VAL PHASE A MAIN OBJECTIVES :** • Update of the on board parameters • Preliminary instrument performances • L1 processing parameters test and update **End of phase A : start of early dissemination of L1 products to selected users**	**CAL/VAL PHASE B MAIN OBJECTIVES :** • Final assessment of the instrument performances • Fine-tuning the L1 processing parameters • Stability assessment • Intercalibration between IASI and IASI-NG tandem Flight **End of phase B : Conclusion of IASI-NG Cal/Val activities and start of the nominal dissemination of data**

SIOV STEP BY STEP

Launch

1st Spectra

Start of L1 early dissemination

Level 1 nominal dissemination

SIOV

CAL/VAL PART A
TECHNICAL EVALUATION + EARLY VALIDATION OF L1 PRODUCTS

CAL/VAL PART B
IN DEPTH VALIDATION OF L1 PRODUCTS

DECONTAMINATION

➔ 21 days at 300 K

MECHANISMS DECLAMP & DETECTOR COOL-DOWN

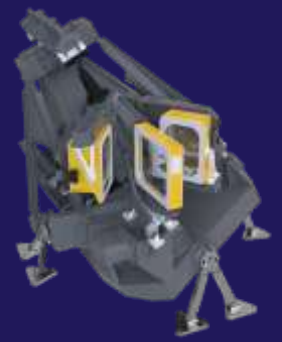
➔ 2 days: thermal convergence
➔ Mechanical check

FIRST HEALTH CHECK

➔ 2 days: First science acquisition
➔ First check mode acquisition

BEAM SPLITTER ALIGNEMENT

➔ 8.5 days
➔ Several tuning grids necessary
➔ Fine check of the alignement included



SET-UP PHASE

➔ 5 days only if necessary
➔ Metrology and Science detectors tuning

FIRST PERFORMANCE ASSESSMENT

➔ 3 days: science acquisition
➔ First IASTEC processing
➔ 2.5 days in check mode

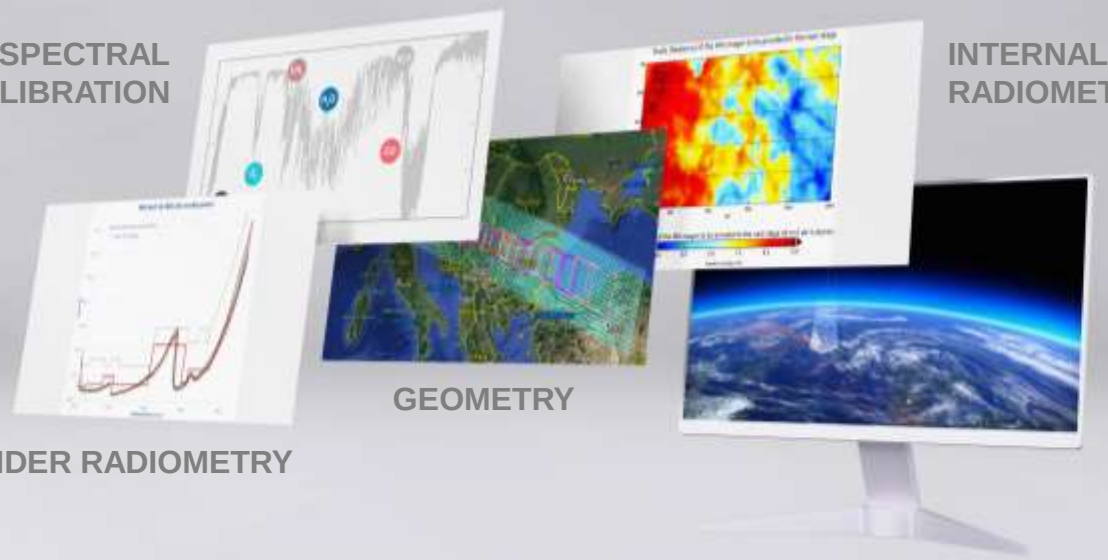
CALVAL STEP BY STEP

Launch	1st Spectra	Start of L1 early dissemination	Level 1 nominal dissemination
SIOV	CAL/VAL PART A TECHNICAL EVALUATION + EARLY VALIDATION OF L1 PRODUCTS	CAL/VAL PART B IN DEPTH VALIDATION OF L1 PRODUCTS	

THE CALVAL ACTIVITIES ARE SPLIT IN 5 MAIN DOMAINS:

SOUNDER SPECTRAL CALIBRATION

INTERNAL IMAGER RADIOMETRY



GEOMETRY

INTERCALIBRATION

SOUNDER RADIOMETRY

CALVAL STEP BY STEP

Launch

1st Spectra

Start of L1 early dissemination

Level 1 nominal dissemination

SIOV	CAL/VAL PART A TECHNICAL EVALUATION + EARLY VALIDATION OF L1 PRODUCTS	CAL/VAL PART B IN DEPTH VALIDATION OF L1 PRODUCTS

GENERAL COMMENTS:

➔ Most of the activities will start during Phase A and finish during the Phase B

➔ All Cal/Val activities have two parts: the acquisition of the needed data (instrument operation), and the processing and analysis of these data.

➔ The data acquisition can be necessary:

- Only once
- Several times
- Once at the beginning and one at the end of the timeline

➔ The data processing can be done:

- Only once at the end of the acquisition
- Several times for stability analysis
- Once at the beginning for preliminary analysis and one at the end for the final assessment

CALVAL STEP BY STEP PHASE A

Launch | 1st Spectra | Start of L1 early dissemination | Level 1 nominal dissemination

SIOV	CAL/VAL PART A TECHNICAL EVALUATION + EARLY VALIDATION OF L1 PRODUCTS	CAL/VAL PART B IN DEPTH VALIDATION OF L1 PRODUCTS

TO SUMMARIZE PHASE A:

- **Phase A dedicated to:** Radiometry for imager and sounder / Sounder spectral calibration / Sounder Geometry
- **Mode acquisition:** OPER / Various OPER_EXTCAL / All CHCK
- **Acquisition duration:**
  - ✓ 35 days for the first acquisition
  - ✓ 7 days for the second acquisitions
  - ✓ 10 days for the moon acquisition
- **Total duration:** 16 Weeks

CALVAL STEP BY STEP → PHASE B

Launch | 1st Spectra | Start of L1 early dissemination | Level 1 nominal dissemination

SIOV	CAL/VAL PART A TECHNICAL EVALUATION + EARLY VALIDATION OF L1 PRODUCTS	CAL/VAL PART B IN DEPTH VALIDATION OF L1 PRODUCTS

TO SUMMARIZE PHASE B:

- **Phase B dedicated to:** Sounder radiometry / Sounder spectral calibration / Sounder Geometry / Intercalibration
- **Mode acquisition:** OPER / Various OPER_EXTCAL / All CHCK
- **Acquisition duration:**
  - 15 days for the three acquisitions
  - 1 month for the intercalibration
- **Total duration:** 15 weeks

CALVAL STEP BY STEP → ZOOM ON PARTICULAR ACTIVITIES

Launch | 1st Spectra | Start of L1 early dissemination | Level 1 nominal dissemination




SIOV	CAL/VAL PART A TECHNICAL EVALUATION + EARLY VALIDATION OF L1 PRODUCTS	CAL/VAL PART B IN DEPTH VALIDATION OF L1 PRODUCTS

IASI TANDEM FLIGHT

MOON ACQUISITION (CS1 / CS2)

IASI-NG / IASI TANDEM FLIGHT

➔ **Tandem filght duration:** 1 month / beginning Phase B

➔ **Intercalibration done between:** IASI-NG and IASI on Metop-C

➔ **Mode used:** OPER

➔ **Objective of the intercalibration:**

- Spectral Calibration
- Radiometric Intercalibration

MOON ACQUISITION:

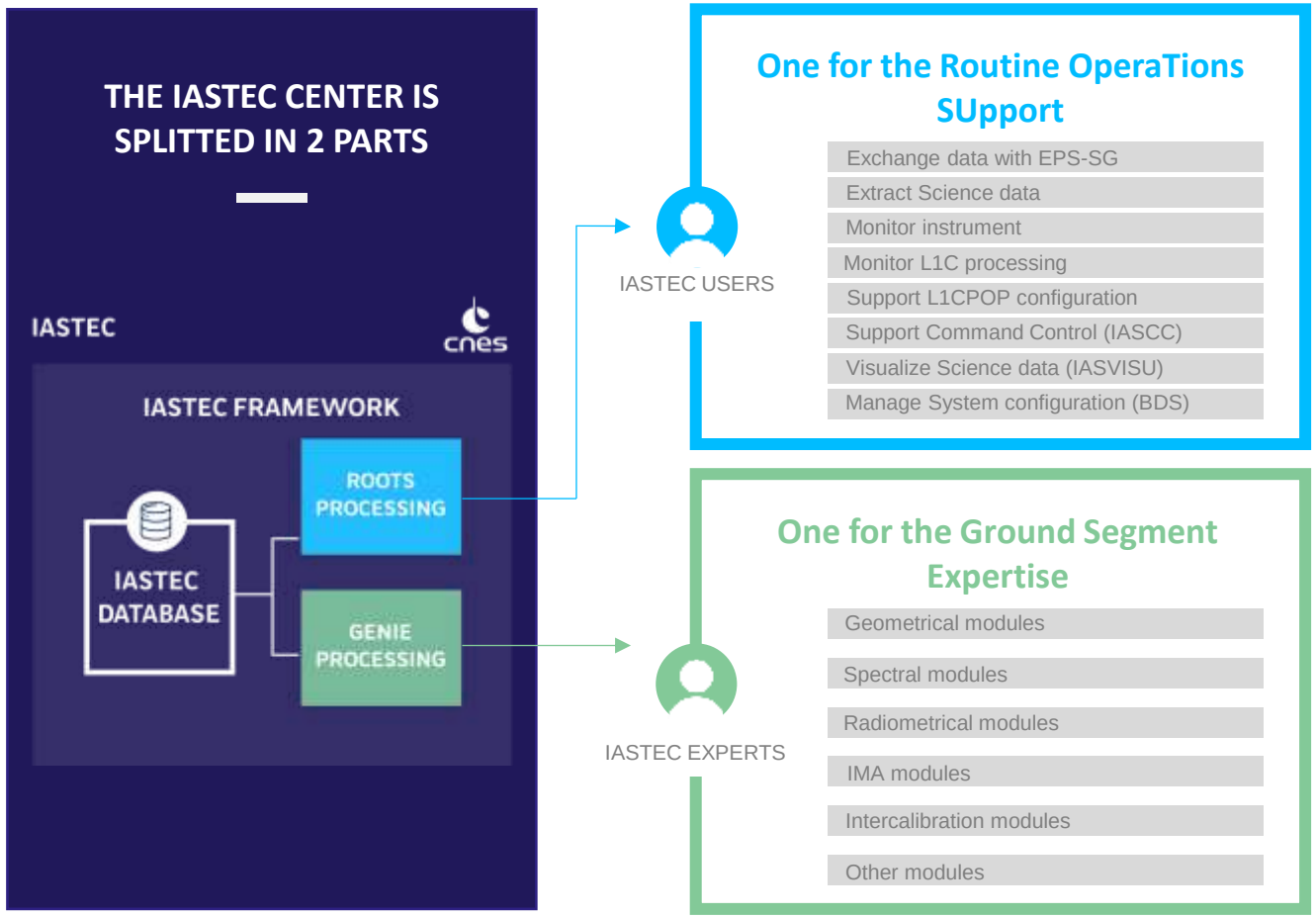
➔ **Type of acquisition:** done in Phase A and Phase B:
- 1 day of acquisition on CS2 every month
- 1 day of acquisition on CS1 every 3 month

➔ **Description of the acquisition:** Each day when the moon is visible in the CS view several transits are observed

➔ **Mode used:** OPER_EXT_CAL CS1 or CS2

➔ **Objective of the Moon acquisition:**
- Intercalibration IASI / IASI-NG
- CS1 and CS2 radiometric stability
- Crosstalk evaluation
- Interpixel radiometric calibration

IASTEC : THE CENTER USED FOR SIOV / CALVAL ACTIVITIES



- The IASTEC will be installed on CNES infrastructure
- It will be available for all users during SIOV/CALVAL but also routine phase

CONCLUSION

The in orbit validation of the IASI-NG system onboard Metop SG will be an important task:

- 3 months for the SIOV
- 6 months for the CALVAL (split in 2 Phases)
- Around 60 validation activities
- More than 100 days of data to be analysed
- More than 15 people involved in these activities

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