



# **IASI-NG PROGRAM STATUS**

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**IASI CONFERENCE 2024** 

**December 02 > 06 2024 NANCY** 



# **IASI-NG CNES PROGRAM**

- 3 infrared sounder instruments (Dynamic Fourier Transform Interferometer) to be flown on the series of Metop-SG A Satellites (2025-2032-2039)
- Level 1 Operational Processor: processing instrument data up to Calibrated Infrared Atmospheric Spectra
- Technical Expertise Center (IASTEC): Cal/Val activities and performances monitoring in orbit

**Cooperation with EUMETSAT** in the frame of EUMETSAT"Polar System Second Generation

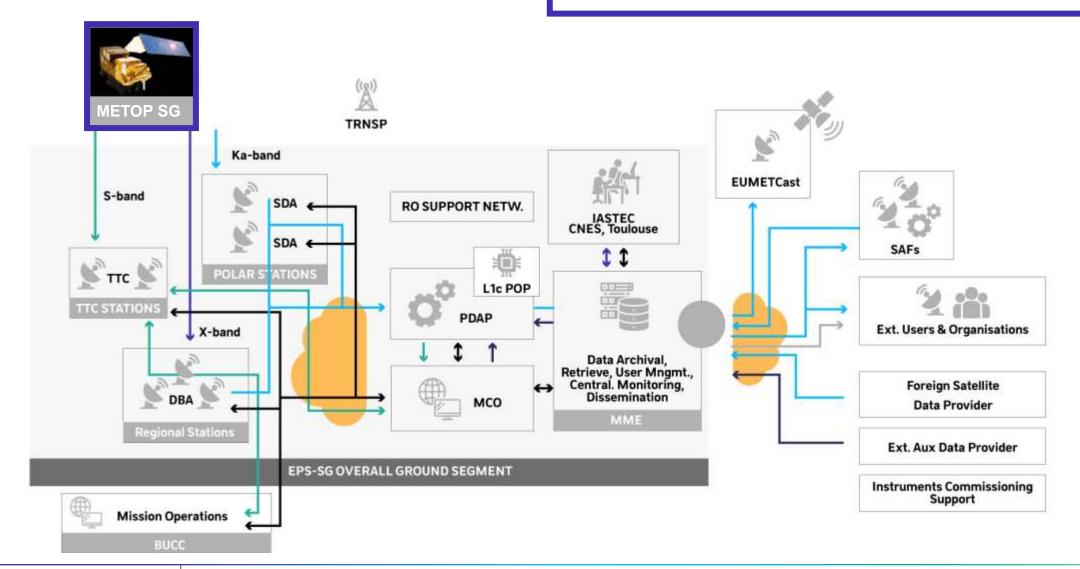






# **IASI-NG IN EPS-SG**

#### IASI-NG INSTRUMENT ON BOARD METOP SG A SATELLITES



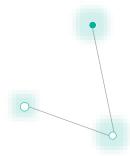




# IASI-NG INSTRUMENT PERFORMANCES AND CONCEPT

- Significant performances improvement : factor 2 on spectral and radiometric performances compared to IASI 1<sup>st</sup> generation
- Allowed by innovative instrumental concept proposed by Airbus Defense and Space : Mertz Interferometer

 First implementation in space of a Mertz Interferometer









#### **IASI-NG INSTRUMENT CURRENT STATUS**

- IASI-NG Proto-Flight Model (PFM) was integrated and tested in 2022 but an issue affecting the B4 band data was found
- PFM was nevertheless delivered and mounted on the Metop SG A1 Satellite in fall 2022 to give priority to qualification campaign tests at Satellite level
- After successful thermal and mechanical qualification at Satellite level in 2023, PFM instrument was dismounted for B4 issue investigation







#### **IASI-NG INSTRUMENT CURRENT STATUS**

- Integration and tests were performed on FM2 instrument In 2023/2024: no B4 band issue on FM2 Instrument!
- IASI-NG is back on MetOp SG A 1
  - ✓ Handover and integration of FM2 performed in September 2024
  - ✓ FM2 will be the first IASI-NG instrument to fly
- Functional and ElectroMagnetic Compatibility tests performed successfully in October/November 2024
- Remaining activities:
  - System Satellite Validation Test to validate Flight
     Operation procedures in January 2025
  - Participation to the Launch campaign in summer 2025







#### Metop-SG LAUNCH CAMPAIGN OVERVIEW

#### PART 1 (POS) – Standalone satellite operations phase (#5 weeks)



Teams arrival and safety trainings

S/C post transport inspection

GSE & S/C unboxing

**GSE** installation and validation



S/C & instruments GHC, instruments ASW flight configuration, S/C propulsion tests



S/C Transfer to Hazardous **Preparation Facility** 



**S/C &** instruments main protections removal

S/C fuelling and pressurization

Day -35

Day -30

Day -25

Day -20

Day -15

11111111

Day -10

Day 5

Open working days

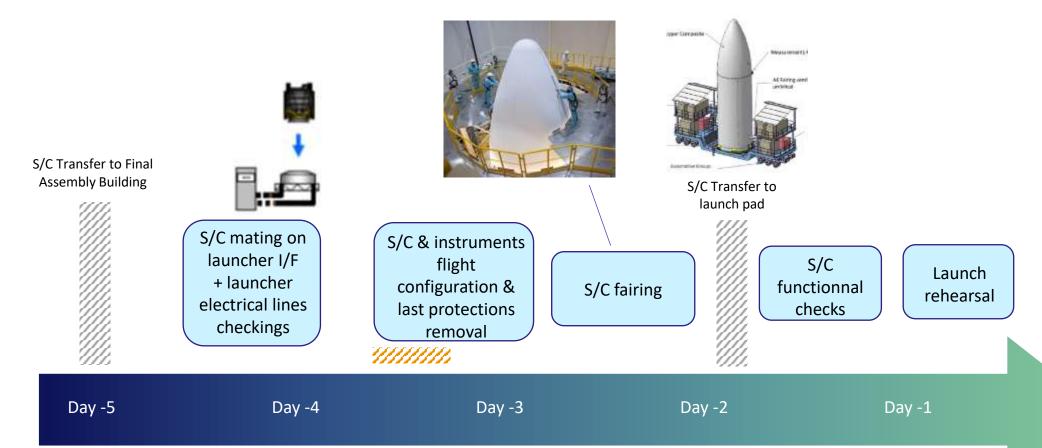
////////// IASI-NG team activities





# Metop-SG LAUNCH CAMPAIGN OVERVIEW

#### PART 2 (POC) – Combined (satellite and launcher) operations phase



Open working days

//////// IASI-NG team activities

RÉPUBLIQUE FRANÇAISE Liberté Égalité



**Summer 2025** 

#### **IASI-NG INSTRUMENT CURRENT STATUS**





- B4 anomaly investigation was performed allowing to progress on the root cause analysis (detector) and phenomenon description and mitigation.
- Baseline to deliver again PFM in 2025



#### FM3 status :

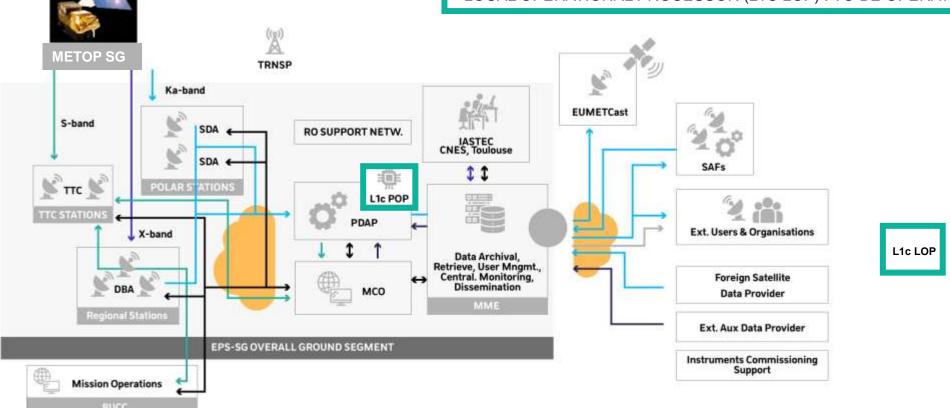
- AIT progressing with sub system completed
- Instrument AIT started recently
- Objective to deliver FM3 In S1 2026



#### IASI-NG IN EPS SG

L1C PRODUCTS OPERATIONAL PROCESSOR : TO PROCESS GLOBAL MISSION DATA TO BE OPERATED BY EUMETSAT

LOCAL OPERATIONAL PROCESSOR (L1C LOP): TO BE OPERATED BY LOCAL USERS



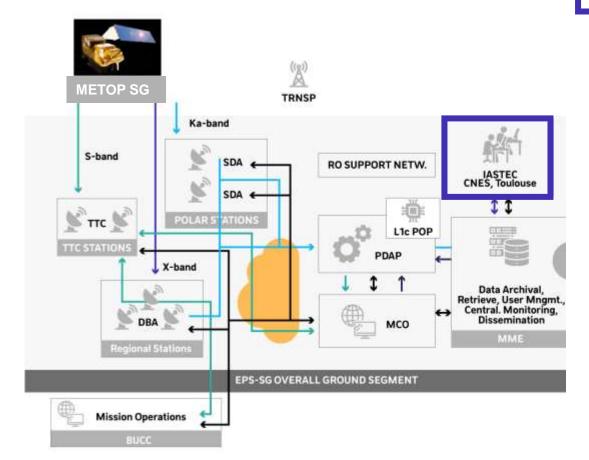
- L1C processor's Version with complete processing algorithms provided and tested by EUMETSAT in 2024
- L1C processor's Version for commissioning phase under development for delivery in 2025
  - L1C TOP in Temporary Ground Segment to perform the Cal/Val and then L1C POP in the PDAP for Routine Operation





#### IASI-NG IN EPS SG

IASTEC: IASI-NG EXPERTISE CENTER TO PERFORM COMMISSIONING AND SUPPORT NOMINAL OPERATION





- Under final development: first version with basic framework and some Cal/Val expertise tools delivered in 2024
- Version for commissioning phase expected in T1 2025 for performing the SIOV rehearsal and Cal Val Operational Procedures Validation in T2 2025





# 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 Switch On: cryostat decontamination, alignment of the interferometer beam splitter ...
- First instrument health checks in orbit
  - End of the SIOV activities : 1st IASI-NG spectra

#### **CAL/VAL PHASE A MAIN OBJECTIVES:**

- Update of the Instrument 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
- To perform the intercalibration between IASI and IASI-NG (tandem Flight with Metop C)
- End of phase B: Conclusion of IASI-NG Cal/Val activities and start of the nominal dissemination of data





# **2025 OVERVIEW**

Metop SG A
FAR

**EPS SG LORR** 



1st Spectra



SATELLITE FLIGHT ACCEPTANCE REVIEW

EPS SG SYSTEM VALIDATION AND OPERATION READINESS

LAUNCH CAMPAIGN

SYSTEM IN ORBIT VERIFICATION

CAL/VAL...

JAN FEB MARCH APRIL MAY JUNE JULY AUG SEPT OCT NOV DEC





# NOMINAL OPERATION AND DATA DISSEMINATION EXPECTED SOON









# THANK YOU FOR YOUR ATTENTION