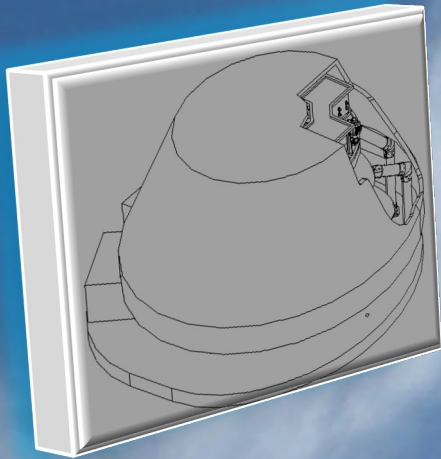
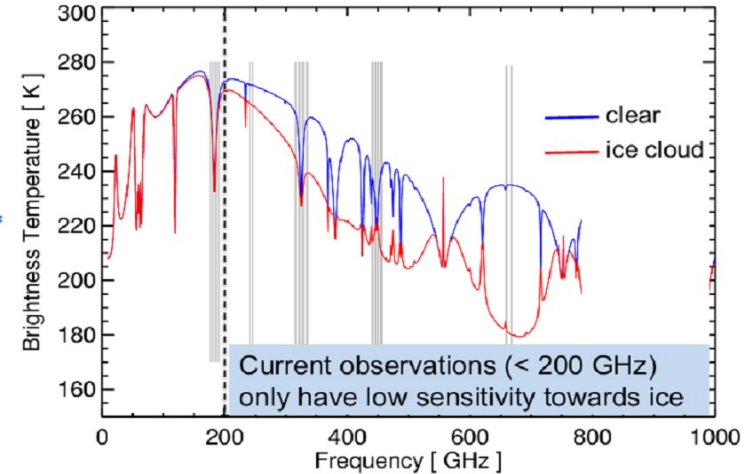
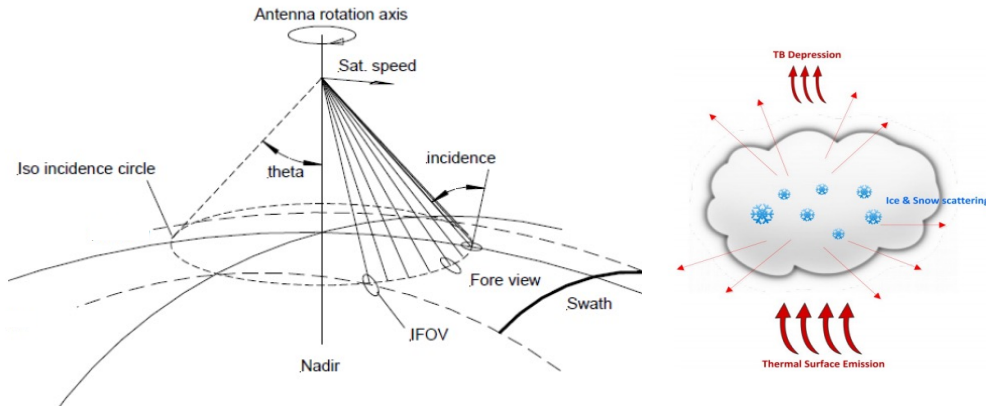


The ICI instrument onboard MetOp Second Generation

U. Klein, A. Graziani, M. Loiselet, G. Mason (ESA/ESTEC)
M. Bergada-Pujades, J. Martinez-Cengotitabengoa, A. Andres-Beivide, M. Gotsmann (Airbus-SAU / FDH)
P. Colucci (EUMETSAT)



- Introduction
- ICI instruments status
- ICI performance and processing
- Conclusions



- Scan speed 45 rpm
- Incidence angle ~ 52 deg.
- Swath ~ 1600 km

- Mix of sounding and quasi-window channels
- H & V polarization for 2 channels

ICI high level Products:

- Cloud ice retrieval
- Emphasis on cirrus clouds
- Cloud ice mean altitude
- Cloud ice water path
- Cloud ice effective radius

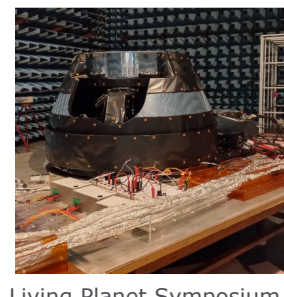
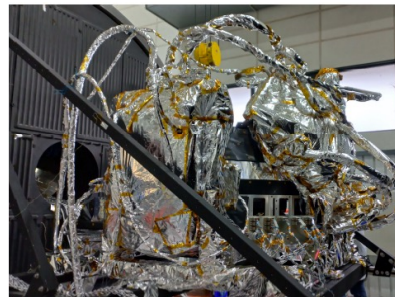
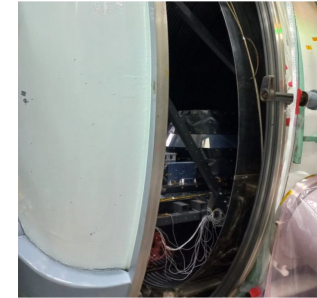
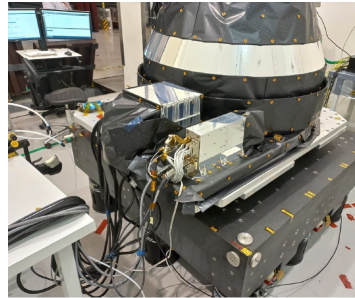
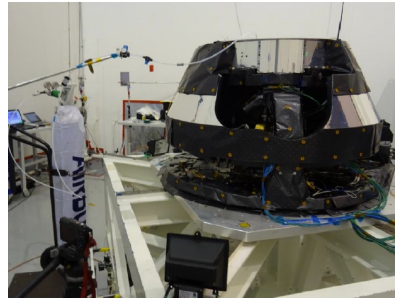
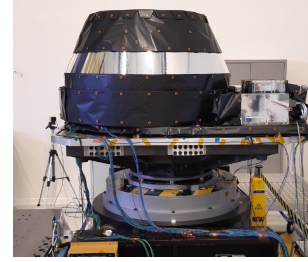
Level 1b Product:

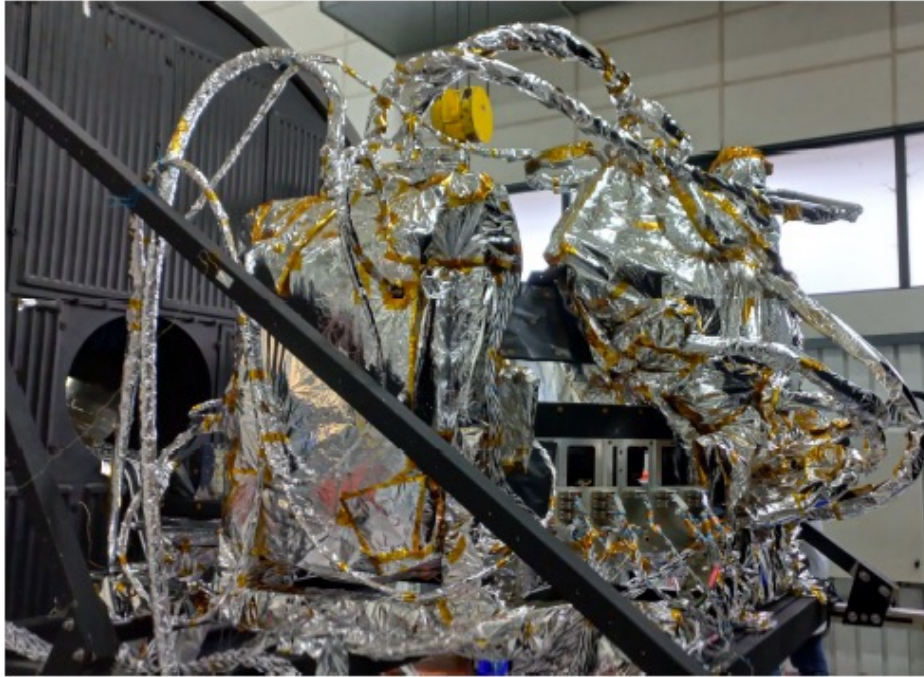
- Calibrated and geo-located scene brightness temperature

Channel	Frequency (GHz)	Bandw. (MHz)	Simplified Utilization
ICI-1	183.31±7.0	2×2000	Water vapor profile and snowfall
ICI-2	183.31±3.4	2×1500	
ICI-3	183.31±2.0	2×1500	
ICI-4	243.20±2.5	2×3000	Quasi window, cloud ice retrieval, cirrus clouds H&V pol.
ICI-5	325.15±9.5	2×3000	Cloud ice effective radius
ICI-6	325.15±3.5	2×2400	
ICI-7	325.15±1.5	2×1600	
ICI-8	448.00±7.2	2×3000	Cloud ice water path and cirrus
ICI-9	448.00±3.0	2×2000	
ICI-10	448.00±1.4	2×1200	
ICI-11	664.00±4.2	2×5000	Cirrus clouds, cloud ice water path H&V pol.

PFM tests successfully completed.

- Physical Properties
- Vibration
- Acoustic
- Release (LLDs)
- Micro Vibration / Exported Torques
- Thermal Vacuum
- Rad. Performance & Calibration
- EMC
- Antenna Pattern (EM)





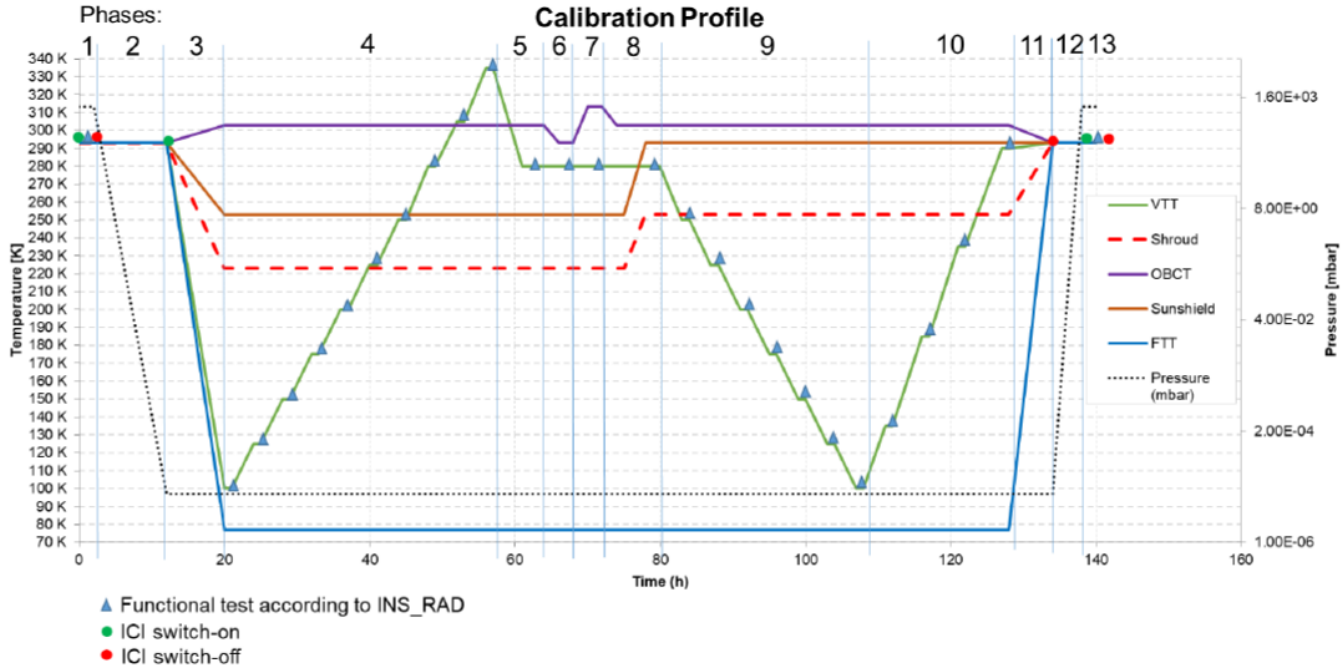
ICI PFM radiometric performance test



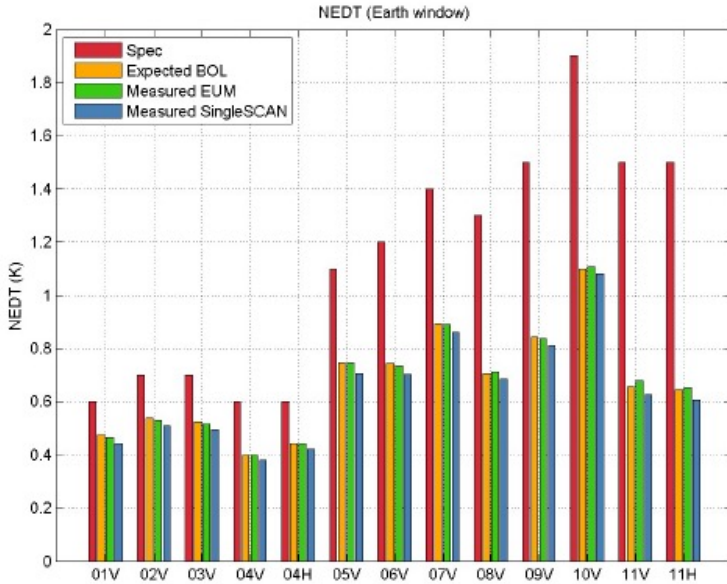
ICI EM antenna pattern test

- The ICI EM test campaign has been completed in June 2021. The performance specifications have been achieved and many times exceeded.
- The ICI Proto Flight Model (PFM) test campaign will be completed in June/July 2022. So far the results are excellent and better than for the EM. They will be presented on the following slides. Only the antenna pattern test is missing. The PFM will be delivered to Satellite-B Prime in July 2022.
- The ICI FM2 will be integrated as of September 2022. All subsystems except the Instrument Control Unit and the RF Front End have been delivered by the suppliers.
- The flight spares philosophy has been agreed and many of the flight spares have been delivered by the suppliers.

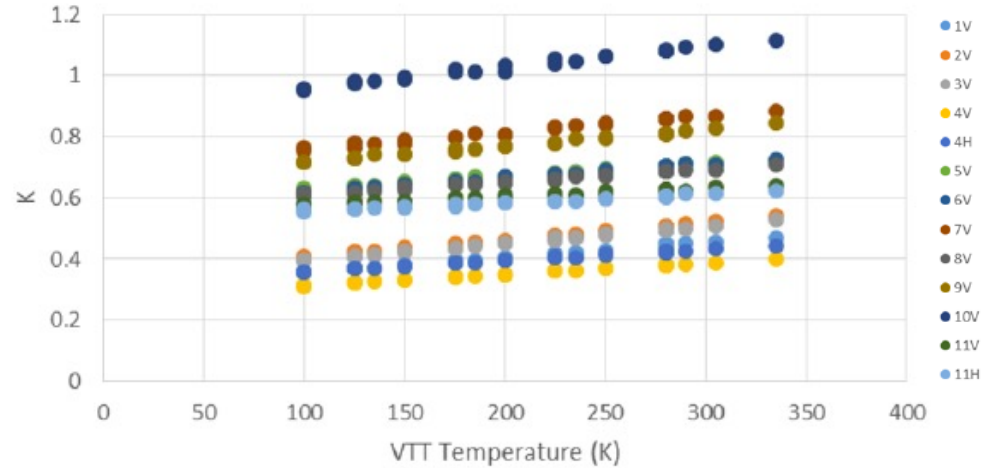
ICI Performance



ICI calibration profile

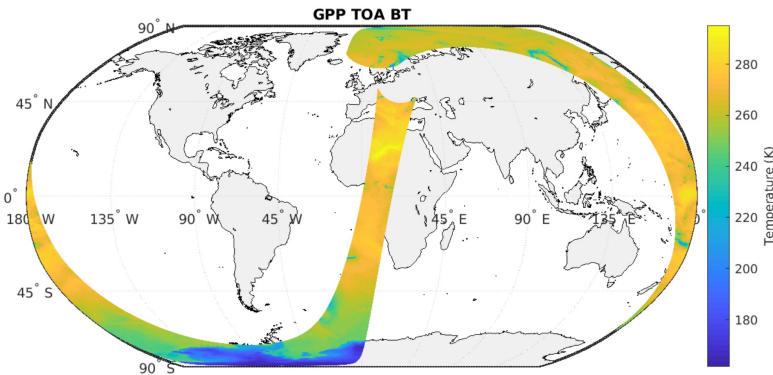


NEDT @ 280K scene temperature

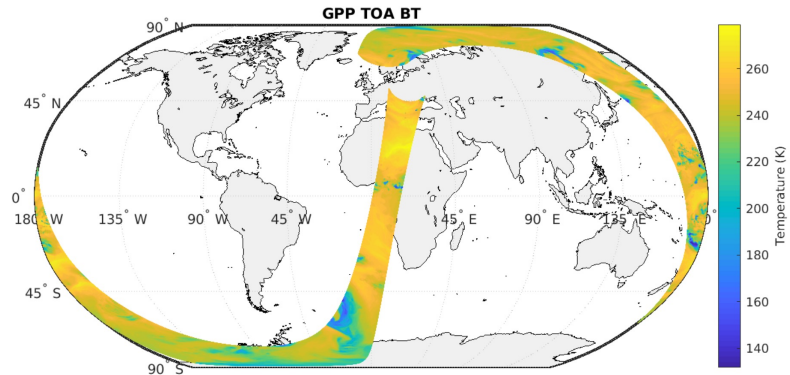


NEDT vs. scene temperature

- Ground Prototype Processor (GPP): Ingests raw instrument data, auxiliary data (Instrument Calibration Data Base) and ancillary data (S/C Navigation and Attitude data)
 - Two main modules: Geometric and Radiometric
 - in-orbit data during commissioning phase
 - on-ground data in test phase
- Output: Geolocated and calibrated Brightness Temperatures (L1b)
- Performance Assessment Tool (PAT) for manipulation and visualization of the data



ICI-1 (V) @ 183 GHz



ICI-11 (V) @ 664 GHz

Orbit 4655 from MetOp-A on 12/09/2007 from 08:43 to 10:22

