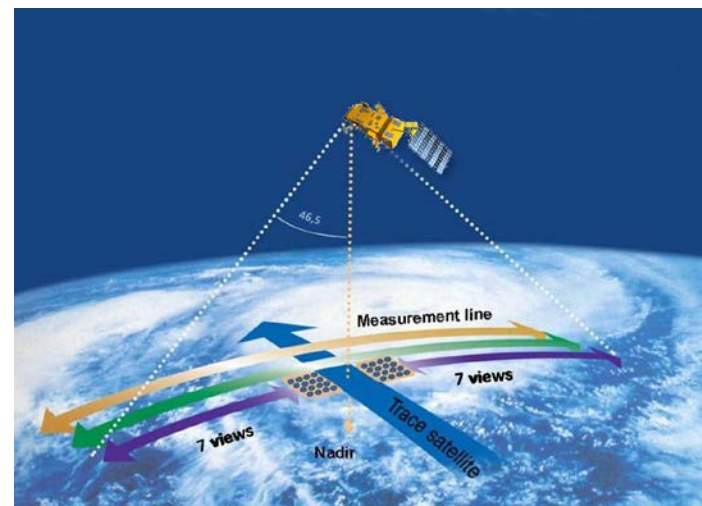
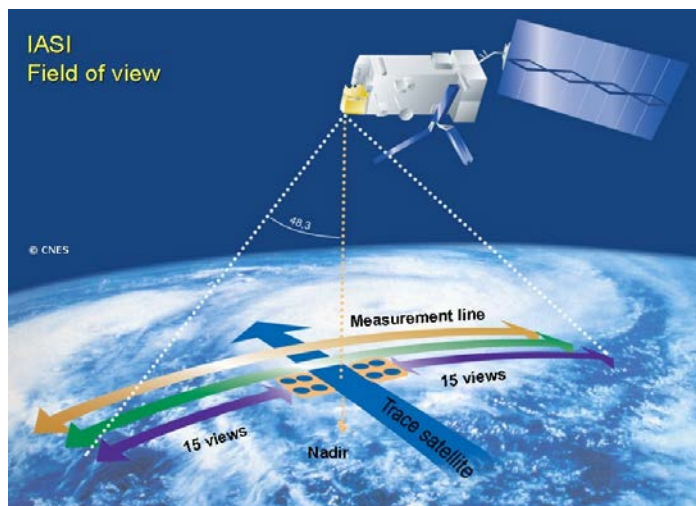


Future mission : IASI-new generation

Signal/noise \leftrightarrow Spectral resolution \leftrightarrow Pixel size



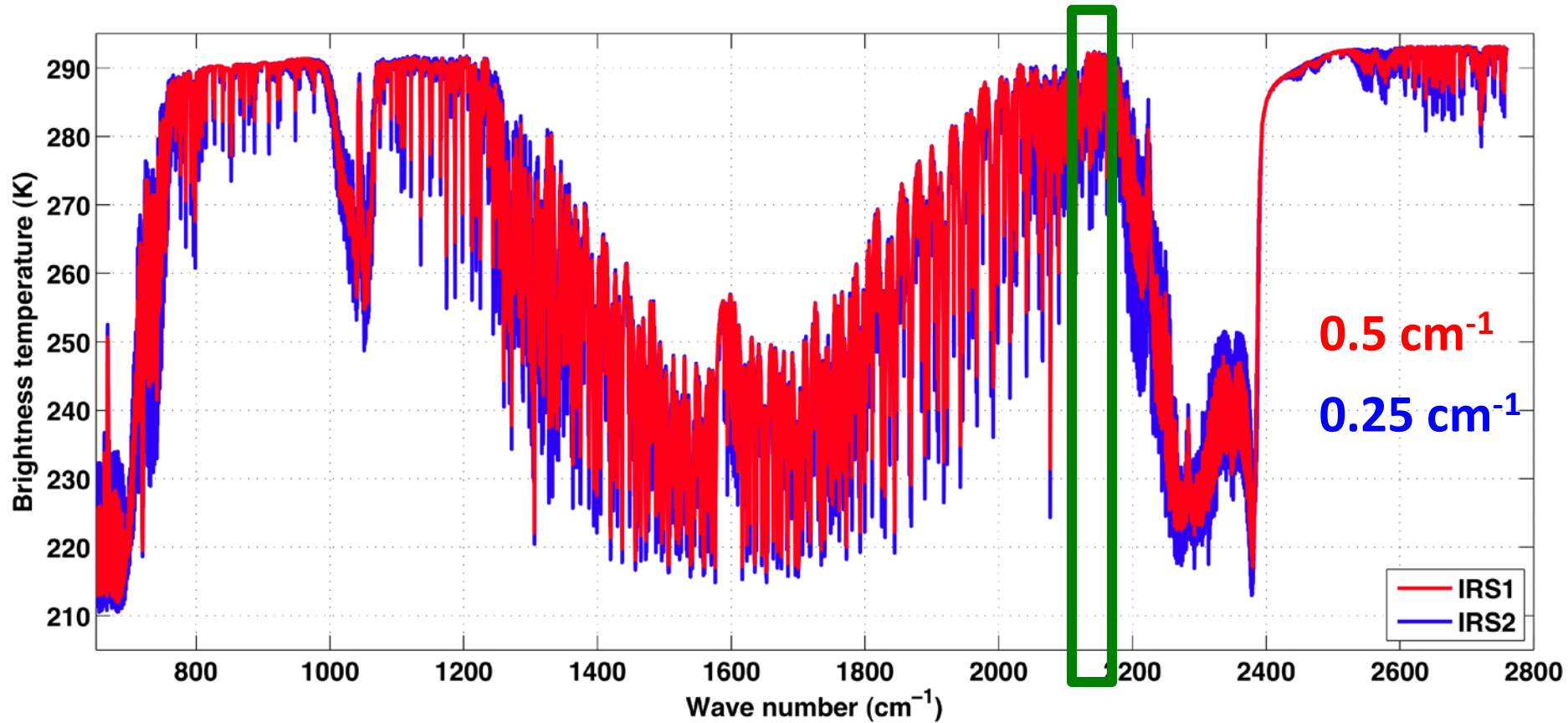
What's next?

IASI-NG (IASI-New Generation)

IASI and IASI-NG spectrum

Averaged over the whole tropical TIGR situations

Computation with the 4A/OP RT code, using the GEISA-11 spectroscopic database



Courtesy Cyril Crevoisier (LMD)

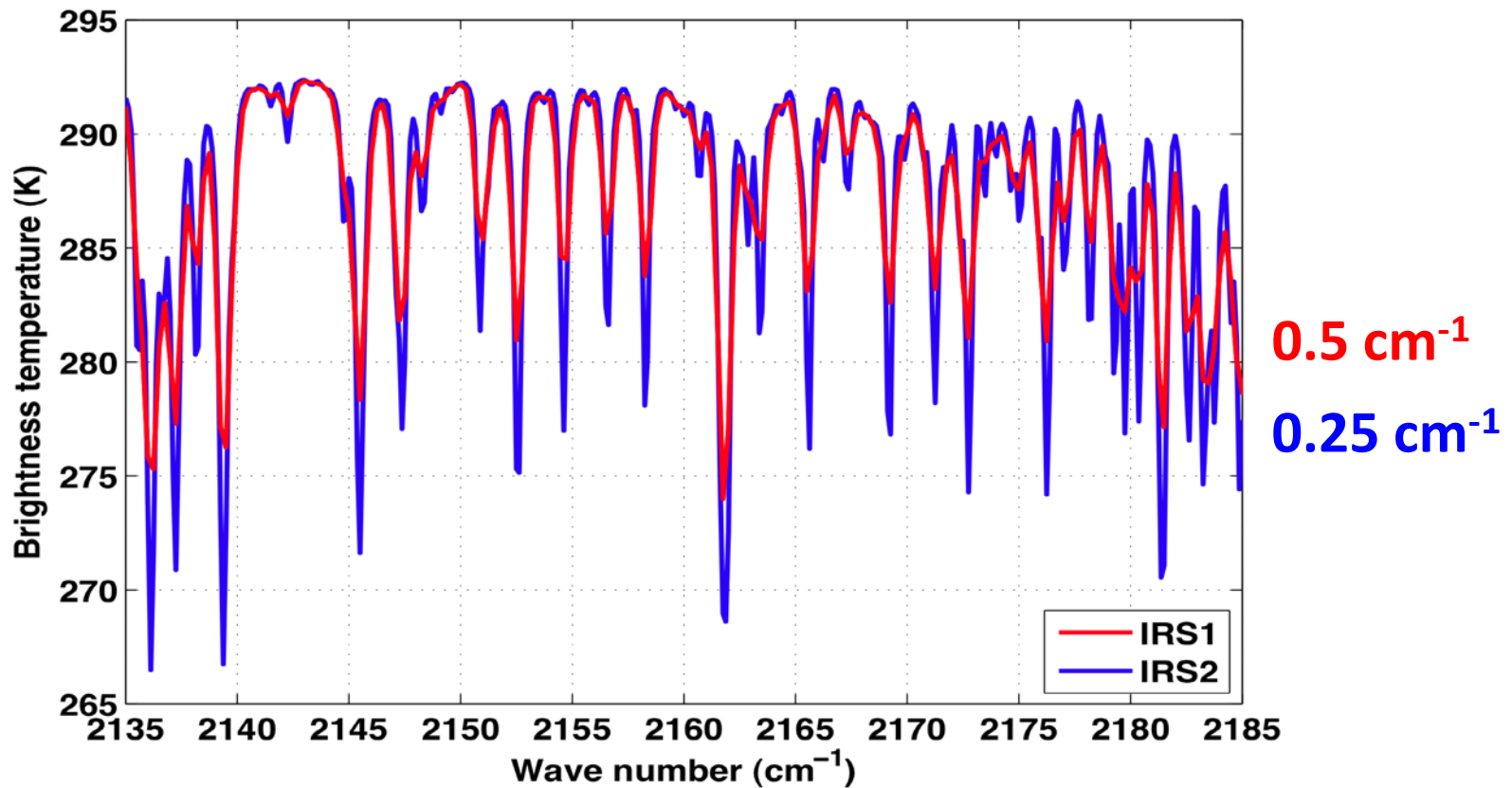
What's next?

IASI-NG (IASI-New Generation)

IASI and IASI-NG spectrum

Averaged over the whole tropical TIGR situations

Computation with the 4A/OP RT code, using the GEISA-11 spectroscopic database



Courtesy Cyril Crevoisier (LMD)

What's next?

IASI-NG (IASI-New Generation)

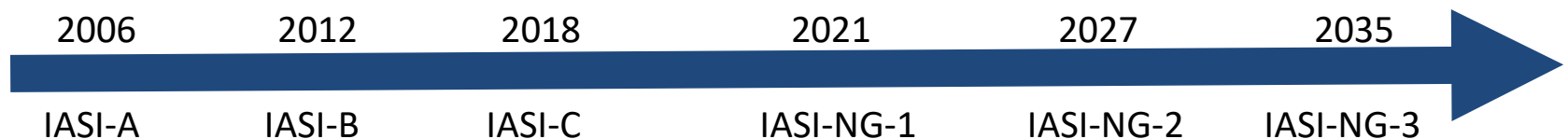


•Objectives of the mission:

- To assure the **continuity** of IASI for NWP, atmospheric chemistry and climate applications.
- To **improve the characterization of the lower part of the troposphere, the UT/LS region and, more generally, of the full atmospheric column.**
- To **improve the precision** of the retrievals and to allow the detection of new species.



•Characteristics:

- Improvement by a factor of 2 of the spectral resolution and a factor 2 to 4 of the radiometric noise.
- Designed by CNES, in cooperation with EUMETSAT, and built by AirbusDS.
- To be launched on Metop-SG-A 1/2/3 in 2021/2028/2035, together with MetImage, 3MI, ATMS and UVNS/Sentinel5.

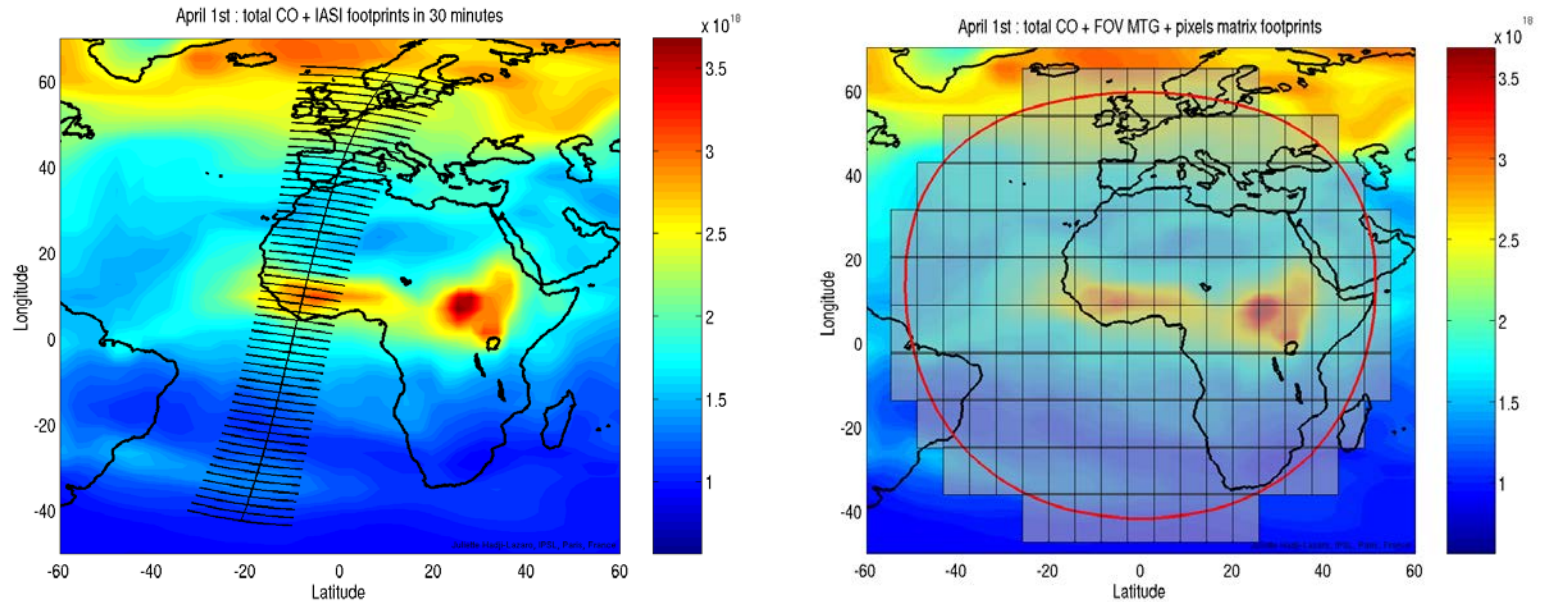


Expected improvement with IASI-NG



	IASI		IASI-NG		
Chemistry	DOFs	Error (%)	DOFs	Error (%)	What the 'NG' brings
O ₃	3-4	PBL : 60% Tropo : 11%	4-5	PBL : 40% Tropo : 8%	More information in PBL
CO	1-2	PBL : 16%	2-3	PBL : 10%	More information in PBL
HNO ₃	<p>Atmos. Meas. Tech., 7, 4367–4385, 2014 www.atmos-meas-tech.net/7/4367/2014/ doi:10.5194/amt-7-4367-2014 © Author(s) 2014. CC Attribution 3.0 License.</p>  <p>Atmospheric Measurement Techniques</p> 				nd strato
NH ₃ ^a					tal noise
Methano					tal noise
C ₂ H ₄ ^a					tal noise
SO ₂ -volcar					the plume
Climate	<p>Towards IASI-New Generation (IASI-NG): impact of improved spectral resolution and radiometric noise on the retrieval of thermodynamic, chemistry and climate variables</p> <p>C. Crevoisier¹, C. Clerbaux², V. Guidard³, T. Phulpin⁴, R. Armante¹, B. Barret⁵, C. Camy-Peyret⁶, J.-P. Chaboureaud⁵, P.-F. Coheur⁷, L. Crépeau¹, G. Dufour⁸, L. Labonnote⁹, L. Lavanant¹⁰, J. Hadji-Lazaro², H. Herbin⁹, N. Jacquinet-Husson¹¹, S. Payan², E. Péquignot⁴, C. Pierangelo⁴, P. Sellitto^{8,4}, and C. Stubenrauch¹</p>				G' brings
H ₂ O					ed by 1.5
T					ERROR improved by 2.5
CO ₂	1 or less	~1%	1-2	<1%	Low troposphere
CH ₄	1 or less	~3%	1-2		Less interferences
N ₂ O	detected	-	measured	-	
Aerosols	dust				More types
Emissivity		0,04 @4μm		0,02 @4μm	

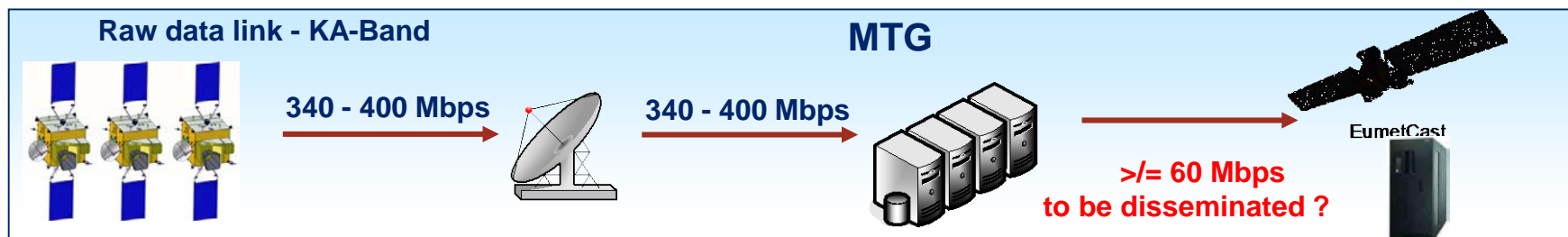
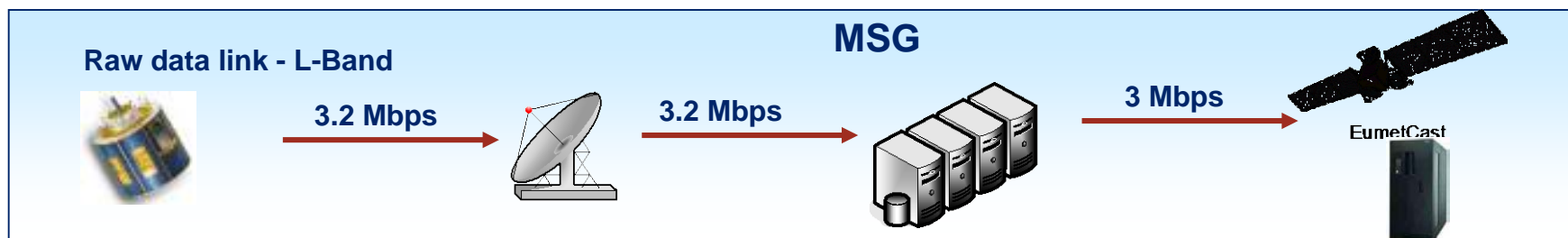
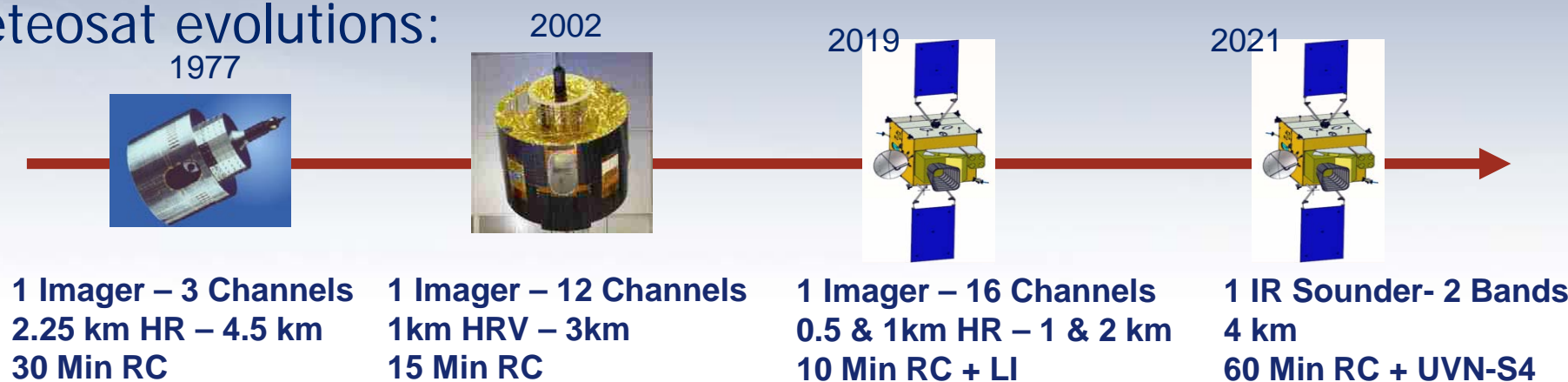
Future mission : IRS/MTG



Signal/noise \leftrightarrow Spectral resolution \leftrightarrow Pixel size

MTG – New challenges in Information Technology

Meteosat evolutions:





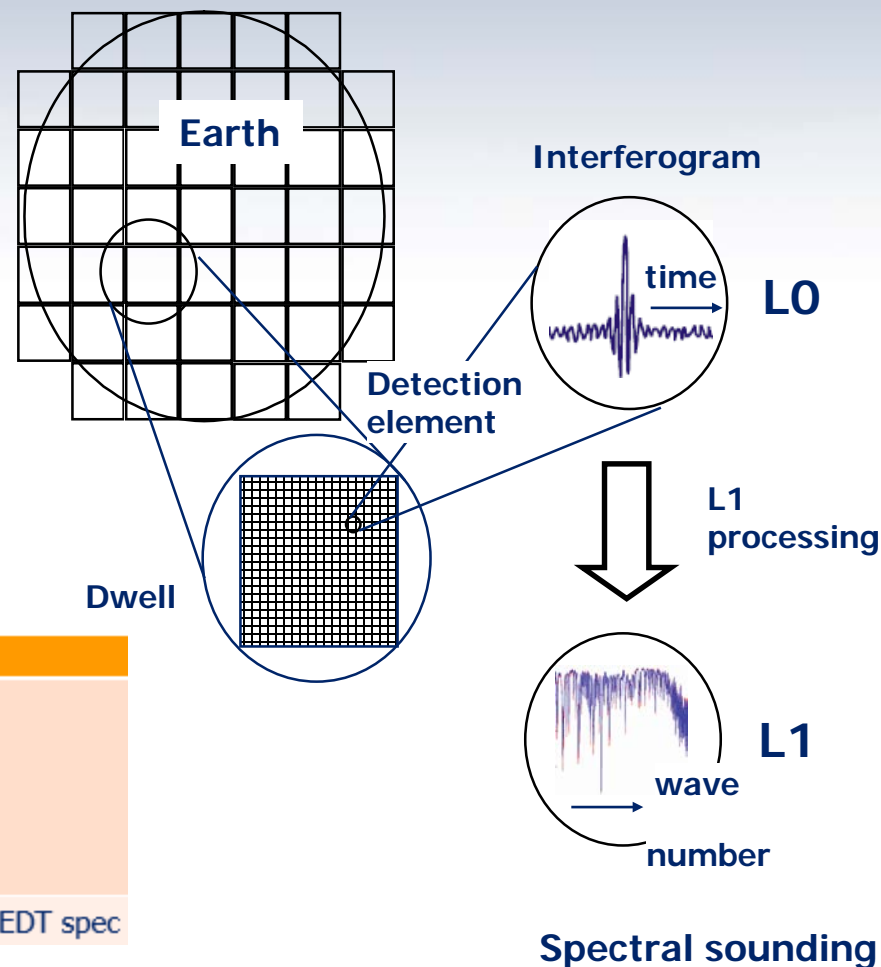
MTG System Concept: Space Segment

MTG Space Segment Configuration

- Twin Satellite Concept, based on 3-axis platforms
 - Imaging Satellites (MTG-I) (MTG-I1/I2/I3/I4 : 20 years of operational service)
 - Sounding Satellites (MTG-S) (MTG-S1/S2 : 15.5 years of operational service)
- The payload complement of the MTG-I satellite consists of
 - The Flexible Combined Imager (FCI)
 - The Lightning Imager (LI)
 - The Data Collection System (DCS) and Search and Rescue (GEOSAR)
- The payload complement of the MTG-S satellite consists of
 - The Infrared Sounder (IRS)
 - The Ultra-violet, Visible and Near Infrared Sounder (UVN).

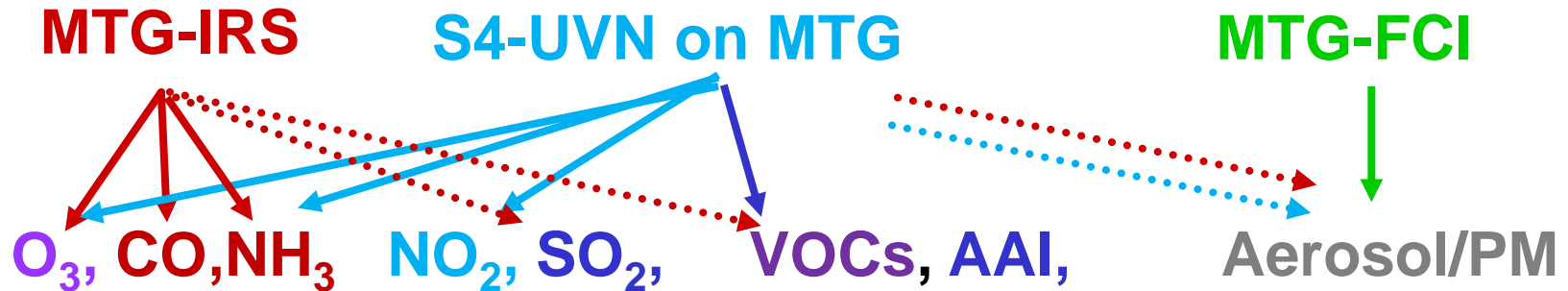
IRS working principle

- The instrument works in a step-and-stare mode, with the Earth disc covered through a sequence of contiguous square sub-images
- With the current design, each sub-image (a dwell) takes 10s and covers about $650 \times 650 \text{ km}^2$ (at SSP, the sampling being equiangular)



Spectral	Spatial	Radiometric
Two spectral ranges: LWIR: 700 -1210 cm^{-1} MWIR: 1600 -2175 cm^{-1}	4 Local Area Coverage (LAC) zones	180 to 313K
Extended range (reduced performance): 0.625 cm^{-1} spectral res.	1 LAC every 15minutes 4km at SSP	NEDT : 0.2-0.5K
		such to meet the NEDT spec

Synergies on MTG for Tropospheric Chemistry and Air Pollution Applications



MTG-IRS, MTG-UVS/S4 UVN, and MTG-FCI and LI will provide unique and relevant data for tropospheric monitoring applications

!! L2 chemistry IRS products not planned for « Day 1 » operation

