Minutes of Meeting

Date(s) Meeting held	**:**	03-04/06/2025	
Location	**:**	EUMETSAT (in-person)	
Minuted by	**:**	Pierre Dussarrat	
Participants	**:**	Chairs:	Herve ROQUET (Meteo-France)
			Dorothee COPPENS (EUMETSAT)
		MAG members:	Nadia FOURRIE (Meteo-France)
			Nigel ATKINSON (UK Met Office/NWP-SAF)
			Pierre COHEUR (ULB)
			Zsofia KOCSIS (Hungarian Met Service)
			Christina KOPKEN-WATTS (DWD)
		ESA:	Daniel LAMARRE
			Tobias GUGGENMOSER
		EUMETSAT:	Pierre DUSSARRAT
			Guillaume DESCHAMPS
			Fabian MULLER
			Domenico SCHIAVULLI
			Stefan STAPELBERG
			Olivier SAMAIN
			Stephan BOJINSKI
			Marc CRAPEAU
			Harshitha BHAT
			Jochen GRANDEL

Purpose of Meeting

The 18th IRS MAG meeting aims at giving an overview of the MTG-IRS space and ground segment developments as well as related studies.

The members report their preparation and plan to calibrate, validate and operationally use IRS data.

Meeting Agenda

Tuesday 3rd June

Topic	Presenter	Title	Time	Durati
MTG Mission status				
	Alexander Schmidt	MTG mission status	13:30 - 13:50	20min
	Nana Bach	Processor status	13:50 - 14:10	20min
Commissioning				
	Daniele Innorta	Commissioning Preparation and Schedule - EUM	14:10 - 14:30	20min
	Tobias Guggenmoser	Instrument and Commissioning status - ESA	14:30 - 14:50	20min
	Pierre Dussarrat	Special Scan Laws	14:50 - 15:10	20min
			30min break	
	Nigel Atkinson	IRS-PP	15:40 - 16:00	20min
	Zsofia Kocsis	IRS at HungaroMet	16:00 - 16:30	30min
L2 Workshop				
	Stephan Bojinski	IRS L2 products workshop for nowcasting	16:30 - 17:00	30min
			Dinner at EUMETSAT 17:30 - 21:00	

Wednesday 4th June

Topic	Presenter	Title	Time	Durati
L2 Applications				
	Pierre Coheur	Super-sampling	09:00 - 09:15	15min
	Guillaume Deschamps	IRS PSF analysis	09:15 - 09:30	15min
	Miguele Martinez	sSHAI_ES service (recording)	09:30 - 10:00	30min
Discussions				
	MAG members	Feedback on Science plan	10:00 - 10:30	30min
			30min break	
	MAG members	Feedback on PUG	11:00 - 11:30	30min
	MAG members	MAG organization during commissioning	11:30 - 12:00	30min
	Marc Crapeau	MAGIC Campaign	12:00 - 12:15	15min
			Lunch 12:30	

Review of actions from past meeting:

#	Action item description	Actionee	Outcome
M16.A7	Upon reception of the list of references, Herve R. will merge the different chapters and references, and share the full science plan to the MAG members	**HR**	See mail from Pierre D. on 26/05/2025 → **Closed**
M16.A6	MAG members to review the whole science plan and provide feedback by email.	**MAG members**	See agenda point "Feedback on Science Plan" → **Closed**
M16.A4	EUM to share by email to the MAG members when the L1B test dataset is available	**PD**	See mail from Pierre D. on 05/02/2025 → **Closed**

M17.A1	EUM to update the PUG to document the "enumerate" variables, explain how to read the files.	**EUM**	Added warning in PUG and shared by email on 19/05/2025, to be discussed in agenda point "Feedback on PUG" → **Closed**
M17.A2	Get in contact with Szofia K. to investigate the abnormal surface pressure in the L2 dataset.	**EUM**	→ **Closed**
M17.A3	ULB to provide feedback on possible impacts of the FOV diversity on AC applications and needs of information.	**ULB**	See agenda point "Super-sampling" → **Closed**

1. MTG-S mission and processor status (Alexander Schmidt & Nana Bach)

- **MTG-I (Meteosat 12):**

MTG-I1 is fully recovered since the end of 2024 and will become EUM prime mission on the 16th of June 2025.

MTG-I2 launch is planned for June 2026, TVAC was performed in February 2025.

- **MTG-S:**

MTG-S1 has arrived in Florida early May 2025

MTG-S1 launch is foreseen early July 2025 (confirmation expected end of June)

Instrument commissioning should end in July 2026, at the same time as the system commissioning

- **IRS Processor:**

System version: v3.1 installed (covering all 3 satellites)

- Level-1 operational processing:

IDPF-S v2.5.3 is now deployed on all platforms and is the launched version

Navigation and registration updates are expected in summer (following IQT-S evolutions)

In-field straylight correction, scene analysis (cloud/dust) and additional monitoring are expected next year (hopefully in H1 2026)

- Level-2 operational processing:

L2PF v5.2 is the current version. The launched version will contain the removal of the Optimal Estimation Method with the new way of providing the covariance matrices.

Some L1-L2 compatibility issues are to be fixed

M18.R1: Recommendation for IDPF-S to include straylight correction, scene analysis, additional flagging/monitoring as early as possible during commissioning to have this version fully validated in place at last for the operational dissemination in July 2026

An integrated team has been appointed to perform fast patching during commissioning, First release of L1 data is expected not earlier than April 2026, and without straylight correction, scene analysis and additional monitoring.	
2. Commissioning Preparation and Schedule – EUM (Daniele Innorta) Main satellite commissioning activities are LEOP (Launch and Early Orbit Phase, ~20 days spanning July 2025) followed by 5 weeks of IRS decontamination (spanning August 2025) Commissioning rehearsal of the instrument first activation, sun avoidance, de-pointing capabilities and handling of contingencies have been exercised in May 2025 First IRS data acquisition is foreseen early September 2025 First batch of L1 products available to MAG members is expected at launch +9 months, in April 2026, data will likely be available through the European Weather Cloud (following FCI experience). L2 products are expected in H2/2026.	
3. Instrument and Commissioning Status – ESA (Tobias Guggenmoser) Main instrument commissioning activities are the optimisation of the on-board parameters, the assessment of radiometric and spectral performances, followed by the geometric ones, using the Instrument Quality Tool (IQT-S) Activities are expected up to May 2026, followed by few additional analysis and final performance assessment running up to July 2026. EUM science team will complete performance assessments in parallel of industry, relying mostly on the same acquisition datasets. Update of IRS radiometric budgets, revealing slightly improved performances (within specifications), which takes advantage of anti-correlations between different 2 contributors (<0.4K absolute accuracy and <0.08K non-uniformity) MTG-S1 has arrived in Cape Canaveral, all mechanisms have been locked for flight, a countdown rehearsal has been realized, fuelling is expected next week Q&A: Orbital positioning is expected to vary slightly during commissioning, within less than a degree from 0 longitude.	
4. Special scan laws (Pierre Dussarrat) EUM has defined additional special scanning activities extending the industry commissioning for 3 key characterizations during commissioning: flip-in mirror (FIM), front section (FS) and in-field (IF) straylight: - **FIM**: deriving the FIM reflectivity by heating it and computing its emissivity	

- **FS**: deriving the change of FS reflectivity and emissivity as function of the scan mirror angles by performing deep space acquisitions alternating between symmetric angular positions around Earth - **IF straylight**: deriving IF straylight kernels by performing limb scanning, realizing successive views crossing the limb at different angular positions	
5. IRS-PP (Nigel Atkinson) Recap of NWP SAF development of the IRS-PP tool, Current version: v1.3 (Oct 2024) IRS-PP is made for operational processing of NRT data: - Generation of reconstructed radiances (from PCS product), on a selection of channels - Option to apply the Hamming apodisation (on top of the nominal light apodisation, so called HOTOLA) - Optional spatial thinning - BUFR encoding (either PCS or reconstructed radiances) Specialized functions are present to generate covariance matrix from radiance products (SSS) and generation of new sets of principal components. IRSPP v1.3 (released October 2024) is compatible with the latest IRS test data on the "new" IRS grid but a conversion is needed for the dataset names in the eigenvectors file (to be updated for the next version). Discussion on the channel selection provided by Meteo-France on the old grid. There is a need to get the new numbering linked to the new grid (closest channel). Q&A: In the future, the thinning could be adapted to keep the "best performing" FOV (lower noise), EUM could share a "ranking" of the FOV on demand after commissioning. Such mapping must be reversed after every yaw flips.	**M18.A8**: Nadia F to share IRS channel selection adapted on new IRS grid to all MAG members
6. IRS L2 product usage at HungaroMet (Zsofia Kocsis) Temperature, humidity profiles and instabilities indices are expected useful for the forecasters. Nonetheless retrievals are not reliable below opaque clouds and generally high uncertainty close to the surface. It is then important to account for vertically averaged errors for IASI L2 and error profiles for IRS L2. Exercising has been realized with IASI. Development of HAWK-3, for IRS data visualization, with easy comparisons between NWP and IRS indices (as CAPE) for forecasters.	
7. EUM/ESSL Expert Workshop on L2 product for Nowcasting (Stephan Bojinski) Experts from Europe, North America, China and Japan met on 20-22/05/2025 to assess the usage of IR-based sounding products in weather forecasting and to explore case studies. Example of GXS simulations, using online-offline technique to detect temperature inversions.	

Example of GIIRS being valuable for forecasters, particularly where data are sparse, indicating for example convective storms and freezing rain. Discussions are on-going of pros and cons of model-free vs. model-blended L2 products, as most forecasters are usually against blending with forecasts.	
8. Super-sampling follow-up (Pierre Coheur) IRS's FOV will exhibit diverse noise performances, whose scaling could be shared on demand, the PC compression is not expected to be impacted. The noise performances of all FOV should remain stable (to be monitored in-flight) PSF information is required for over and super-sampling AC applications. EUM is building a PSF model to be shared on demand to users willing to perform point source detection. ULB will conduct a study, aiming at enhancing the native spatial resolution of IRS for AC applications by taking advantage of the daily orbital oscillations of the satellite and using successive shifted dwells. The unprecedented spatial and temporal revisit of IRS should allow for NH3 point source detection capabilities at the level of a day compared to 3-4 months for IASI.	
9. Point Spread Function (Guillaume Deschamps) Presentation of the latest development of an IRS straylight model by EUM (in collaboration with OHB) by ray tracing simulations and correlation with TVAC measurements, Most straylight sources have been identified, in-flight acquisitions will help finalizing the model, for a correction hopefully expected in H1 2026. EUM has also introduced the diffractive components into the PSF model (impact of corner cube), TVAC data have been processed to produce integrated PSF, revealing overall good performances and expected chromatic dependencies of the spatial resolution (main driver), PSF information will be shared on demand.	Cf. Recommendation **M17.R1**
10. NWC SAF product and services – recording (Miguel Martinez) Presentation of the NWC SAF products and services, filling gaps between EUMETSAT formats and users' tools: - Quick IRS Service (qIRS) - Sounder Satellite Humidity and Instability (sSHAI) - Sounder Satellite Humidity And Instability based on EUMETSAT Secretariat retrievals Service (sSHAI_ES), including remapping and pressure level interpolation Using as example the IRS L2 test dataset it was shown the early result of the sSHAI_ES prototype. It was shown how EUMETSAT disseminated IRS L2 dwell files could be converted to region of interest compatible with users' tools netCDF files.	

As sSHAI_ES is installed and executed locally on user side of EUMETCast there are not bandwidth constraints and could be added some optional post-processing processes. It was shown as example of this optional post-processing the normalization of 4D arrays of T/q/ozone on the IRS L2 test dataset. One problem with 3D temperature, humidity and ozone arrays is the large range differences between low and high levels when users need to display them. Using 4D normalized arrays, users can display several 2D at different levels and vertical cross sections for normalized quantities like temperature and humidity to inspect the 4D performance of IRS L2. If this technique is used also with equally normalized NWP 4D arrays, it would be possible to inspect IRS L2 performances. Remapped sSHAI_ES field could be used as input to future hybrid with FCI products. Then, using TPW as example it was shown like in MTG era it will be possible to get several TPW estimation with different spatial (from 1x1 km2 to 4x4 km2), temporal (from 10 to 30 minutes and all time or only during day), coverage (only on clear pixels or all pixels), etc. It is a challenge to be able to generate all of them, integrate them if possible and that the forecasters be able to choose what it is the optimal to use depending on the situation. To complement the slides shown on "EUM/ESSL Expert L2 Workshop" with GXS simulation example online-offline technique for detecting temperature inversions, it was remembered case on inversion over Finland in 2013 made with real IASI data. In Finland case it was compared spectra inside/outside inversion. In that occasion Paul Menzel and Justin Sieglaff call this technique as finger-emperor (up/down thumb finger). Finally, two NWCSAF events related to IRS were discussed: • NWCSAF Workshop held in February 2025. Presentation of Niobe Peinado and Xavier Calbet on sSHAI product and Miguel-Angel Martinez presentation on "qIRS service" and "sSHAI_ES service". Presentations are available at this link • EUMETrain NWCSAF GEO-S Event 2 June 2025 with presentations by Niobe Peinado, Xavier Calbet and Miguel-Angel Martinez. Recordings and presentations are available at this link.	
11. Science plan feedback Discussion of the difference between chunk and dwell numbers in the Product User Guide and science plan figures, to be discussed in the PUG. Two successive publications of the science plan are expected, first on EUM website (July 2025) and later a shorter version in BAMS (2026), Pending final remarks from the MAG members (expected for mid-June), Herve R will merge all feedback, and Pierre D will share the EUM template, For publication in the BAMS journal, the document needs a harmonization of the chapters, balanced references, limited number of figures (to be compared to IASI manuscript), Christina K, Herve R, Pierre C and Marc C will form a sub-group dedicated to the revision of the science plan.	**M18.A1**: MAG members to provide additional feedback on the science plan to Herve R **M18.A3**: PD to share EUM template for the science plan **M18.A4**: HR to re-work the science plan for publication on EUM website

	M18.A6: Science plan chapter book captain and MAG members to send selection of figures
12. Product User Guide feedback Several topics to be added to the PUG: - The PSF (Point Spread Function) and spatial resolution information, mentioning the marginal impact of sub-pixel deselection - The inter-band co-registration, the geolocation shift between band is expected small (<800m) with limited impact on applications, its knowledge can be shared on-demand. - Sub-satellite positioning daily oscillations MAG members are expected to send final feedback to Pierre D. by the end of June 2025, Pierre D. will merge all comments into a final version for publication on EUM website in July 2025.	**M18.A2**: MAG members to provide additional feedback on PUG to PD **M18.A5**: PD to re-work the PUG for publication on EUM website
13. Commissioning organization First batch of data is expected to be shared on the European Weather Cloud, by April 2026 (H0+9months) using specific credentials EUM requests the MAG members to perform quality assessment – deadline one month before the end of commissioning (H0+11months) Pre-operational data, disseminated through nominal channels are expected at the end of commissioning by July 2026 (H0+12months) MAG members feedback: - Analysis of a static batch remains limited - Even if the data quality is not optimal, early data flow tests are very valuable for users	
14. MAGIC-AVALON campaign (Marc Crapeau) The MAGIC-AVALON (Airborne VALidation Of New-generation satellites) campaign will gather many in-situ, ground and airborne sensors in June 2026, over France, Germany and the Netherlands. It is an opportunity to support IRS and IASI-NG product validations (Level-1 and 2). Relatively continuous IRS acquisitions are expected in June 2026, nonetheless the L1 processing may not be fine-tuned and later re-processing may not be feasible.	

15. Conclusions Next IRS-MAG is expected late November 2025 or early December 2025, the meeting will cover 1 or 2 afternoons (to accommodate for US colleagues) and will be held fully on-line.	

List of Recommendations and Actions			
#	**Recommendation description**		
M18.R1	Recommendation for IDPF-S to include straylight correction, scene analysis, additional flagging/monitoring as early as possible during commissioning to have this version fully validated in place at last for the operational dissemination in July 2026		
#	**Action item description**	**Due date**	**Actionee**
M18.A1	To provide additional feedback on the science plan to Herve R	15/06/2025	MAG Members
M18.A2	To provide additional feedback on PUG to Pierre D	29/06/2025	MAG Members
M18.A3	PD to share EUM template for the science plan	05/06/2025	Pierre D.
M18.A4	To re-work the science plan for publication on EUM website	07/2025	Herve R.
M18.A5	To re-work the PUG for publication on EUM website	07/2025	Pierre D.
M18.A6	Science plan chapter book captain and MAG members to send selection of figures	09/2025	MAG Members
M18.A7	Nadia F to share IRS channel selection adapted on new IRS grid to all MAG members	09/2025	Nadia F.