

# IASI 2021 CONFERENCE PROGRAM

MONDAY, December 6th

11:00	Welcome coffee and registration	
13:30	Opening session	Thomas August [EUMETSAT] Laura Le Barbier [CNES]
<b>CLIMATE STUDIES</b>		
14:00	Temperature record from IASI: retrieval, validation and applications	Marie Bouillon [LATMOS]
14:15	Detecting and assessing trends of CFCs and substitutes from IASI measurements	Hélène De Longueville [ULB]
14:30	Deriving Climate Change Signals from Hyperspectral Remote Sounding Using Spectral Fingerprinting Method	Xu Liu [NASA]
14:45	Outgoing Longwave Radiation and Atmospheric Heating Rate Profile Estimation from IASI Instrument	Yoann Tellier [LMD]
15:00	Trends in spectrally resolved OLR from 10 years of IASI measurements	Simon Whitburn [ULB]
15:15	<i>Questions + Discussions</i>	
15:35	<i>Poster introduction on Climate studies</i>	
15:45	Coffee break	
<b>IASI MISSION &amp; SERVICES</b>		
16:15	IASI instrument & performances status and IASI-A EOL tests	Olivier Vandermarcq [CNES] Jérémie Ansart [CNES]
16:45	The operational IASI L2 products at EUMETSAT, 14 years of experience and 3 IASI in space: expanding the range of applications	Thomas August [EUMETSAT]
17:00	<i>Questions + Discussions</i>	
17:15	<i>Poster introduction on IASI missions and services</i>	
<b>PROGRAMMATIC OVERVIEWS</b>		
17:30	The EPS/Metop and EPS-SG/Metop-SG Systems	EUMETSAT - Gökhan Kayal
17:45	IASI a key element in the CNES Earth Observation Program	CNES - Adrien Deschamps for Selma Cherchali
18:00	Poster viewing of the day (Climate and IASI mission & services)	
19:00	Welcome cocktail	

TUESDAY, December 7th

WEATHER FORECASTING		
8:45	IASI cloud mask comparison between global broadcast and local processing	Mathieu Asseray [CNRM]
9:00	The Assimilation of IASI Radiances in the Nordic MetCoOp Limited-area NWP System	Reima Eresmaa [FMI]
9:15	Impact of IASI data assimilation on the weather analyses and forecasts.	Nadia Fourrie [MF]
9:30	An Infrared Atmospheric Sounding Interferometer - New Generation (IASI-NG) channel selection for Numerical Weather Prediction	Francesca Vittorioso [CNRM]
9:45	<i>Questions + Discussions</i>	
10:05	<i>Poster introduction on weather forecasting</i>	
10:15	Coffee break	
ATMOSPHERIC COMPOSITION NH3		
10:45	Satellite monitoring of ammonia: from point sources to long-term trends	Martin Van Damne [ULB]
11:00	Global NH3 emissions from livestock management : Implementation of a dynamical module within a land surface model and validation of the impacts on atmospheric chemistry using NH3 columns measured by IASI	Maureen Beaudor [LSCE]
11:15	IASI and CrIS observation based county- to provincial-level ammonia emissions estimates	Enrico Dammers [TNO]
11:30	Observation of ammonium sulfate aerosols over Europe derived from IASI thermal infrared measurements	Rebecca Kutzner [LISA]
11:45	<i>Questions + Discussions</i>	
11:55	<i>Poster introduction on atmospheric composition NH3</i>	
12:10	Lunch break	
13:30	Poster viewing of the day (Weather forecasting + atmospheric composition + numerical modelling AC/AQ + IASI-NG)	
ATMOSPHERIC COMPOSITION O3		
14:10	Observing from space the changes in ozone pollution over Europe during the COVID-19 lockdown by multispectral synergism of IASI and GOME-2	Juan Cuesta [LISA]
14:25	Impact of different sources of precursors on a high-ozone event over Europe analysed with multispectral satellite measurements and models	Sachiko Okamoto [LISA]
14:40	Antarctic Ozone Enhancement During The 2019 Sudden Stratospheric Warming Event	Sarah Safieddine [LATMOS]
14:55	<i>Questions + Discussions</i>	
15:10	<i>Poster introduction on Atmospheric composition O3</i>	
NUMERICAL MODELLING AC/AQ		
15:20	Impact of accounting for IASI correlated observation error on the global ozone analysis	Mohammad El Aabaribaoune [CERFACS]
15:35	Agricultural footprint to French air quality: do IASI and CRIS help to provide improved ammonia emissions and air quality simulations?	Audrey Fortemis-Cheiney [LISA]
15:50	Assimilation of IASI volcanic SO2 product in Chemistry Transport Model MOCAGE in support to aviation	Vincent Guidard [MF]
16:05	<i>Questions + Discussions</i>	
16:20	<i>Poster introduction on Numerical modelling AC/AQ</i>	
16:30	Coffee break	
IASI-NG		
17:00	IASI-NG Program: General Status Overview	Francisco Bermudo [CNES]

17:15	IASI-NG Instrument development status	Francisco Bermudo for Antoine Penquer [CNES]
17:30	<i>Questions + Discussions</i>	
17:05	<i>Poster introduction on IASI-NG</i>	
17:10	Poster viewing of the day (Weather forecasting + atmospheric composition + numerical modelling AC/AQ + IASI-NG)	
17:50	Adjourn	



WEDNESDAY, December 8th

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CLIMATE STUDIES (GHG)		
9:00	A new daily global N2O product from IASI, and its potential for long-term trend detection	Sophie Vandebussche [BIRA-IASB]
9:15	Spatio-temporal variability of the three major anthropogenic greenhouse gases CO2, CH4 and N2O as seen from IASI onboard three successive Metop platforms	Nicolas Meilhac [FX-CONSEIL]
9:30	<i>Questions + Discussions</i>	
RETRIEVAL TECHNIQUES AND SYNERGIES		
9:45	Potential of TIR+SWIR combination from space measurements for CH4 retrievals: application to IASI and S5P	Pascal Prunet [SPASCIA]
10:00	Data Fusion of IASI and GOME-2 measurements	Nicola Zoppetti [IFAC-CNR]
10:15	<i>Questions + Discussions</i>	
10:30	Coffee break	
11:00	Changes to PC compressed IASI L1C data	Tim Hultberg [EUMETSAT]
11:15	Elevated Moist Layers - Physical Retrieval of Complex Humidity Structures with IASI	Marc Prange [Universität Hamburg]
11:30	MUSICA IASI products and opportunities of Metop-SG	Matthias Schneider [KIT]
11:45	Sensitivity Study of CH4 Retrievals in the TIR	Charles Robert [BIRA-IASB]
12:00	<i>Questions + Discussions</i>	
12:15	<i>Poster introduction on retrieval techniques and synergies</i>	
12:30	Lunch break	
13:50	Poster viewing of the day (retrievals techniques and synergies + other instruments + L2 validation)	
OTHER INSTRUMENTS		
14:30	Ringing error and its correction in future FT spectrometers	Pierre Dussarrat [EUMETSAT]
14:45	Meteosat Third Generation Infrared Sounder (MTG-IRS): Bringing technology to a higher altitude	Didier Miras [TAS]
15:00	The Curious Case of the Hottest (and Coldest) FOVs	David Tobin [SSEC-WISC]
15:15	<i>Questions + Discussions</i>	
15:30	<i>Poster introduction on other instruments</i>	
L2 VALIDATION TECHNIQUES AND CAMPAIGNS		
15:45	Characterizing atmospheric vertical distributions of thermodynamic variables and trace gases with combined ground-based and airborne measurements to validate space missions: the MAGIC initiative	Cyril Crevoisier [LMD]
16:00	Independent validation of IASI/METOP-A LMD and RAL CH4 products using CAMS model, in situ profiles and ground-based FTIR measurements	Claude Camy-Peret for Bart Dils [BIRA-IASB]
16:15	Coffee break	
16:45	Comparison of thermal infrared measurements of CO2 from GOSAT/GOSAT2 and IASI over the Arctic Ocean	Sébastien Payan [LATMOS]
17:00	On the Use of Routine Airborne Observations for Evaluating IASI Profile Retrievals	Timothy Wagner [SSEC-WISC]
17:15	<i>Questions + Discussions</i>	
17:35	<i>Poster introduction on L2 validation techniques and campaigns</i>	

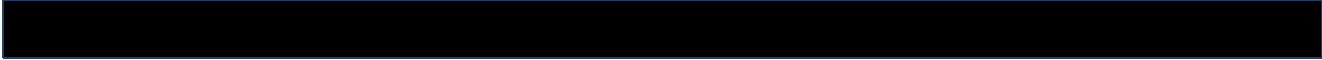
17:50	Poster viewing of the day (retrievals techniques and synergies + other instruments + L2 validation)	
18:30	Adjourn	

THURSDAY, December 9th

ENVIRONMENTAL MONITORING		
8:45	A space view of agricultural and industrial changes during the Syrian civil war	Rimal Abeed [LATMOS]
9:00	2020 : a very special year documented by IASI	Cathy Clerbaux [LATMOS]
9:15	Tracking HONO during record-breaking 2019/2020 Australian wildfires using IASI and CrIS observations	Gaëlle Dufour [LISA]
9:30	First Space Detection of Anthropogenic Point Sources of Ethylene (C <sub>2</sub> H <sub>4</sub> )	Bruno Franco [ULB]
9:45	Ammonia and PM <sub>2.5</sub> Air Pollution in Paris during the 2020 COVID Lockdown	Camille Viatte [LATMOS]
10:00	<i>Questions + Discussions</i>	
10:15	<i>Poster introduction on Environmental monitoring</i>	
10:30	Coffee break	
SPECTROSCOPY & RADIATIVE TRANSFER		
11:00	Evaluation of the spectroscopic parameters with remote sensing data: Example of the new release of GEISA-2020	Raymond Armente [LMD]
11:15	Comparison study between RTTOV-13 and 4A/OP v1.7 to simulate IASI in clear-sky over oceans	Raymond Armente for Jerome Vidot [MF]
11:30	The extended All-Sky sigma-IASI Forward Model for the Next Generation IASI-NG and FORUM Infrared Atmospheric Sounders: Towards the Analysis and Retrieval of Cloud Microphysical Properties	Guido Masiello [University of Basilicata]
11:45	<i>Questions + Discussions</i>	
12:00	<i>Poster introduction spectroscopy&amp; radiative transfer</i>	
12:10	Lunch break	
13:30	Poster viewing of Thursday and Friday (All Environmental monitoring + Spectroscopy & Radiative transfer + L1 calibration & intercomparisons + clouds and aerosols + surface properties)	
L1 CALIBRATION & INTECOMPARISONS		
14:10	A Multi-Satellite Climate Hyperspectral Infrared Radiance Product (CHIRP)	Larrabee Strow [UMBC]
14:25	Potential of the Moon as a calibration target for IASI instruments	Bojan Sic [NOVELTIS]
14:40	<i>Questions + Discussions</i>	
ENVIRONMENTAL MONITORING (VOLCANOES)		
14:50	Improved resolution of volcanic SO <sub>2</sub> emissions and plume dispersion modelling by assimilating TROPOMI, OMPS and IASI SO <sub>2</sub> measurements in an Eulerian chemistry-transport model: on the 2018 Ambrym and the 2021 Etna eruptions	Abhinna Behera [LOA]
15:05	Measurements of HCl in the volcanic plumes of Calbuco (2015) and Raikoke (2019)	Lieven Clarisse [ULB]
15:20	The AEROIASI-H <sub>2</sub> SO <sub>4</sub> Retrieval Algorithm: Quantitative Retrieval of Volcanic Sulphate Aerosols from IASI Observations	Pasquale Sellitto [LISA]
15:35	<i>Questions + Discussions</i>	
15:50	<i>Poster introduction on environmental volcanoes + clouds and aerosols + surface properties</i>	
16:10	Coffee break	
16:40	Poster viewing of Thursday and Friday (All Environmental monitoring + Spectroscopy & Radiative transfer + L1 calibration & intercomparisons + clouds and aerosols + surface properties)	
17:20	Adjourn	

19:00

CONFERENCE DINER



## FRIDAY, December 10th

FRIDAY, December 10th		
CLOUDS & AEROSOLS		
8:30	Aerosol Chemical and $\mu$ -Physical Study from Laboratory to IASI Measurements: Application to Gobi Desert.	Perla Alalam [LOA]
8:45	Ice cloud properties retrieval from high spectral resolution measurements in the thermal infrared: Application to IASI and IASI-NG	Lucie Leonarski [LOA]
9:00	IASI-NG estimation of effective radius for ice and liquid water clouds: a regression approach based on Random Forests	Pietro Mastro [University of Basilicata]
9:15	Validation and operational monitoring of cloud products derived from IASI measurements.	Stefan Stapelberg [Hamtec]
9:30	Towards a 3D view of Tropical Upper Tropospheric cloud systems from synergistic satellite observations and Machine Learning	Claudia Stubenrauch [LMD]
9:45	<i>Questions + Discussions</i>	
10:00	Coffee break	
SURFACE PROPERTIES		
10:30	Deep learning strategies for LST and SST retrieval using IASI observations	Eulalie Boucher [LERMA]
10:45	A full physics algorithm to retrieve nighttime sea surface temperature with IASI: Toward an independent homogeneous long time-series for climate studies	Virginie Capelle [LMD]
11:00	<i>Questions + Discussions</i>	
11:15	Closing session	
11:45	Adjourn	



## POSTER INDEX

### SESSION 1: CLIMATE STUDIES

**S1- 16 - Long time series of essential climate variables from 3 successive Metop/IASI**  
CREVOISIER Cyril, CNRS-LMD

**S1- 20 - Monthly means of IASI LIC spectra: use for comparing the radiometry of the 3 IASI sounders and for climate studies**  
PAYAN Sébastien, AERIS - IPSL - LATMOS - Sorbonne Université

### SESSION 2: IASI MISSION AND SERVICES

**S2- 48 - AERIS: data and services for Atmosphere**  
BOONNE Cathy, CNRS

**S2- 49 - The IASI/AERIS portal: dissemination of atmospheric data in open access**  
BOYNARD Anne, LATMOS/IPSL

**S2- 50 - An overview of EUMETSAT's IASI Climate Data Records**  
DOUTRIAUX-BOUCHER Marie, EUMETSAT

**S2- 51 - IASI Real-Time Processing and Applications in Community Satellite Processing Package (CSPP)**  
HUANG Allen, University of Wisconsin-Madison

**S2- 53 -IASI-A End Of Life supersampled and limb acquisitions tests: processing challenges and scientific interests**  
KANGAH Yannick, SPASCIA for CNES

**S2- 55 - Principal Component Analysis of IASI measurements for the analysis of performances of IASI L0/L1 processing**  
PRUNET Pascal, SPASCIA

### SESSION 3: WEATHER FORECASTING

**S3- 117 - Assimilation of IASI L2 retrievals in the ECMWF model with scene dependent observation operators**  
SALONEN Kirsti, ECMWF

### SESSION 4: ATMOSPHERIC COMPOSITION NH3

**S4- 02- Decadal Datasets of Major Oxygenated Volatile Organic Compounds Retrieved from IASI Satellite Measurements**  
FRANCO Bruno, Université libre de Bruxelles (ULB)

**S4- 03 - 13 years of IASI CO retrievals**  
GEORGE Maya, LATMOS

**S4- 11 - Evaluation of ammonia concentrations derived from IASI using a ground-based instrument (mini-DOAS) over two different areas (urban and rural) in France**  
GUENDOUZ Nadir, LATMOS/IPSL, Sorbonne Université, UVSQ, CNRS

### **SESSION 5: ATMOSPHERIC COMPOSITION O3**

**S5- 09- Recent Chinese ozone trends as seen from IASI and model simulations: exploring the impact from local precursor emissions reductions**

DUFOUR Gaëlle, LISA - UP/UPEC/CNRS

**S5- 12 - An ozone mini-hole associated with the record-breaking Australian bushfires 2019-2020: satellite observations with IASI and TROPOMI and the modelled impact on surface ultraviolet radiation**

SELLITTO Pasquale, LISA-IPSL

**S5- 13- Evaluation of the Stratospheric O3 Recovery and of its Radiative Effect from the 13-years IASI Record (2008-2020)**

WESPES Catherine, Université Libre de Bruxelles

**S5- 14 - Polar stratospheric nitric acid depletion surveyed from a decadal dataset of IASI total columns**

WESPES Catherine, Université Libre de Bruxelles

### **SESSION 6: NUMERICAL MODELLING AC/AQ**

**S6- 76- Progress toward the assimilation of IASI IR radiances for aerosols and ozone in a chemical transport model**

EL AABARIBAOUNE Mohammad, CERFACS

**S6- 79 - Is it worth assimilating all channels in the IASI ozone band to improve ozone analysis in MOCAGE?**

GUIDARD Vincent, CNRM, Météo-France, CNRS

### **SESSION 7: IASI-NG**

**S7- 57- IASI-NG instrument performance verifications**

BALDIT Elisa, CNES

**S7- 59 - Introduction to IASI-NG Level 1D and Level 2 IPP (In-house Prototype Processor) and the user familiarisation data**

LENTI Flavia, CLC Space

### **SESSION 8: RETRIEVAL TECHNIQUES AND SYNERGIES**

**S8- 89 - IASI gridded L3 products: an application to air quality**

DE FEIS Italia, Istituto per le Applicazioni del Calcolo "M. Picone" Consiglio Nazionale delle Ricerche

**S8- 90 - Use and impact of PCA-reconstructed radiances for atmospheric composition applications**

DE LONGUEVILLE Hélène, Université libre de Bruxelles (ULB), Spectroscopy, Quantum Chemistry and Atmospheric Remote Sensing (SQUARES)

**S8- 91 - Uncertainty estimation via Neural Networks**

DURAN GOMEZ Nuria, Magellium

**S8- 92 - Cyclone detection from IASI data using the YOLO model**

LAM Lisa, LATMOS

**S8- 93 - Retrieval of fire plume heights from IR satellite measurements**

LECOMTE Gilles, Université Libre de Bruxelles

**S8- 99 - Detection of extreme events from IASI observations**

VUVAN Adrien, LATMOS

## SESSION 9: OTHER INSTRUMENTS

**S9- 80 - First steps in the preparation for the assimilation of the future IRS sounder in NWP models**  
COOPMANN Olivier, CNRM, Université de Toulouse, Météo-France & CNRS

**S9- 83 - Doppler Shift Correction of the Cross-track Infrared Sounder (CrIS) Observed Radiances**  
TAYLOR Joe, University of Wisconsin-Madison Space Science and Engineering Center

**S9- 86 - Contribution of the MTG/IRS radiance assimilation in the characterization of the atmospheric chemical composition**  
VITTORIOSO Francesca, CNRM

**S9- 87 - EUMETSAT L2 Processor Prototype for MTG-IRS**  
GOUKENLEUQUE Cédric, Hamtec consulting Ltd

## SESSION 10: L2 VALIDATION TECHNIQUES AND CAMPAIGNS

**S10- 64 - Intercomparison between the three French IASI ozone products (IASI-FORLI, IASI-KOPRA and IASI-SOFRID)**  
BOYNARD Anne, LATMOS/IPSL

**S10- 65 - Aircraft observations of NO<sub>2</sub> and NH<sub>3</sub> over selected locations in Germany**  
CLARISSE Lieven, Université libre de Bruxelles (ULB)

**S10- 68 - Ground-based high spectral resolution infrared measurements: Applications to satellite validation**  
EL KATTAR Marie-Thérèse, Université de Lille

**S10- 69 - Evaluation of IASI Level2 data with in-situ data acquired during the MAGIC campaigns**  
GUEDJ-VIDALENC Axel, CNRS

**S10- 70 - Worldwide validation of MetOp-A/IASI SOFRID and FORLI CO retrieval with IAGOS vertical profiles on 2008-2020**  
LOICQ Pierre, Laboratoire d'aérodologie

**S10- 72 - Validation of weighted columns of CH<sub>4</sub> and CO<sub>2</sub> retrieved from space observations with balloon-borne AirCore**  
STAUFER Johannes, Thales Services Numériques

**S10- 73 - Validation of IASI-NH<sub>3</sub> measurements**  
VAN DAMME Martin, Université libre de Bruxelles

**S10- 119 - Monitoring, validation, commissioning... How the EUMETSAT IASI L2 products are maintained?**  
CRAPEAU Marc, EUMETSAT

## SESSION 11: ENVIRONMENTAL MONITORING

**S11- 35 - Investigating tropospheric moisture pathways with MUSICA IASI water isotopologue data**  
DIEKMANN Christopher, Karlsruhe Institute of Technology

**S11- 37 - Principal Component Analysis of IASI measurements for the detection of extreme events: methodology and application to the detection of rare spectral signatures**  
PRUNET Pascal, SPASCIA

**S11- 40 - Evaluation of emissions and long-range transport from wildfires using IASI observations**  
TURQUETY Solene Marie-Thérèse, Sorbonne Université, LMD-IPSL

## **SESSION 12: SPECTROSCOPY & RADIATIVE TRANSFER**

**S12- 103 - The 4A/OP radiative transfer model: new developments and validation results within the frame of international space missions like IASI**

ARMANTE raymond, LMD/CNRS/IPSL

**S12- 105 - The nu2 band of nitric acid (HNO<sub>3</sub>) at 5.8 μm**

PERRIN Agnes, Sorbonne Université, Laboratoire de Meteorologie Dynamique LMD UMR CNRS 8539

**S12- 106 - TThe nu4 linelist for HONO at 11 μm**

PERRIN Agnes, Laboratoire de Meteorologie Dynamique LMD UMR CNRS 8539

**S12- 107 - The new nitrogen dioxide (NO<sub>2</sub>) linelist in the GEISA database**

PERRIN Agnes, Laboratoire de Meteorologie Dynamique LMD UMR CNRS 8539

## **SESSION 14: ENVIRONMENTAL MONITORING (VOLCANOES)**

**S14- 43 - Study of the sulphur cycle in volcanic plumes from the joint analysis of polar-orbiting POLDER, OMI and IASI satellite observations.**

PANDA Smita, Laboratoire d'Optique Atmosphérique, Université de Lille

## **SESSION 15: CLOUDS & AEROSOLS**

**S15- 25 - Alternative Level 1 IASI cloud flag based on sub-pixel imagery radiance clustering**

PRUNET Pascal, SPASCIA

**S15- 29 - A long time series of Metop/IASI observations of Saharan aerosols distribution**

CAPELLE Virginie, LMD/Ecole Polytechnique

**S15- 30 - A Decadal Data Set of Global Atmospheric Dust Retrieved from IASI Satellite Measurements**

CLARISSE Lieven, Université libre de Bruxelles (ULB)

**S15- 31 - Three-dimensional pathways of dust over the summertime Sahara revealed by IASI**

CUESTA Juan, LISA Laboratoire Interuniversitaire des Systèmes Atmosphériques - CNRS/UPEC/UP

**S15- 32 - Mineral Aerosols Profiling from Infrared Radiances (MAPIR): Update of dust and ash vertical profile retrievals from IASI**

VANDENBUSSCHE Sophie, Royal Belgian Institute for Space Aeronomy

## **SESSION 16: SURFACE PROPERTIES**

**S16- 111 - Skin temperature from IASI: agriculture and urban heat islands monitoring**

SAFIEDDINE Sarah, LATMOS/CNRS