

FINAL REPORT



6th SALGEE Workshop: MSG Land Surface Applications: Connection of climate and biosphere

Darmstadt (Germany), EUMETSAT Head Quarter
14 October 14:00 - 17 October 12:00 2019

November 2019

1) Introduction

The 6th SALGEE2019 Workshop “**MSG Land Surface Applications: Connection of climate and biosphere**” was held at the Head Quarter of EUMETSAT, in Darmstadt, Germany, on 14-17 October 2019, and being hosted by EUMETSAT.

The Workshop is supported by EUMETSAT in the frame of SALGEE (Satellite Applications for Land surface analyses Group for Eastern Europe) Project. This is an advanced thematic Workshop, providing a forum and framework to develop strategic objectives and collaborations to maximize the uses of EUMETSAT LSA SAF products for the long term to be prepared for the MTG mission, as well as to initiate collaborative work with CM SAF and H-SAF.

2) 6th SALGEE Workshop objectives

The 6th SALGEE2019 Workshop is organized in line with the LSA SAF CDOP-3 phase strategic goals to reflect contemporary needs and capabilities of satellite technology using multiple sensors for monitoring and forecasting land surface state and processes as related to the biogeophysical and biogeochemical cycles, as well as to be prepared for the MTG mission.

The specific goals were:

- To continue the traditions from preceding Workshops in: Widespread interdisciplinary approach in application of LSASAF products in the context of the main life cycles.
- To support studies on the connection Climate-Biosphere by using satellite data and products in conjunction with meteorological models, NWP models and ground observations so to reflect: Main aspects of biogeophysical cycle and related meteorological extremes - drought, fire risk, heat waves; Main aspects of biogeochemical cycle related processes of NPP, GPP, crops yield, biomass burning and

fire emissions; Main problems in Agrometeorology; The problem of forest sustainability and disturbances.

- To make a bridge with Climate Monitoring SAF and Hydrological SAF.
- To make a bridge with related institutions & projects: EC- JRC, Deutsche Wetterdienst, DWD, Univ. Sheffield experienced in Carbon cycle and climate relations; ESA LST CCI; DISARM INTERREG Project
- To raise new problems for the SALGEE community on using satellites in the field of: Agrometeorology in its physical context; Climate and Forest relations; Forest sustainability; Vegetation and Carbon cycle.
- To inform the user community about current knowledge, methods, and available satellite information related to climate-biosphere connection.
- To promote the LSA approach beyond the SALGEE areas of interest inviting participants from Middle East.

3) Administrative organization of the 6th SALGEE

- The Workshop was hosted by EUMETSAT
- Jose Prieto was the responsible training officer from EUMETSAT for the Salgee Workshop.
- For all administrative and logistic aspects of Workshop organization the responsible person from EUMETSAT was Ms. Rosa Ullucci (*User training administrator and User Support and Climate Services*) from EUMETSAT. Thanks are due to her perfect work taking care about these issues.
- The Workshop was held at the EUMETSAT Head Quarter in Darmstadt, Germany. The opening was at 14:00 hr on Monday, 14 October 2019. The closure was at 12:00 h on Wednesday, 17 October.
- Logistics: All participants were staying at "Moxy Hotel" close to the lecture Hall in the HQ. Because most of the lecturers have a very busy schedule their attendance was considered with the dates of corresponding talks. All SALGEE presentations were given as oral talks using technical equipment for PowerPoint presentations.
- Social event was organised for participants, this was a Workshop dinner on 15 October 2019 hosted by EUMETSAT was organised.
- Finances: The workshop was sponsored by EUMETSAT.

4) Scientific program of the 6th SALGEE

- The scientific program of the Workshop was developed in the frame of WP 5 of the implementation of the SALGEE Project 2019 in accordance to EUMETSAT PO Number/Date 4500017699/22-January-2019.
- Two internet talks were organised to discuss the
- Lecturers are selected and invited by Dr. Julia Stoyanova from NIMH Bulgaria, the SALGEE Secretary.

- A presenter from DWD was invited by Dr. Christine Traeger-Chatterjee, EUMETSAT; unfortunately his attendance was cancelled close to the opening date due to well-founded reasons.
- Some participants from Middle East (Iran, Palestine) were invited by EUMETSAT.

The work on the EUMETSAT P.O. 2019 was framed in 5 Work Packages, aimed to contribute the development of the workshop agenda, and to illustrate by case study examples practical use of LSA SAF products in quantification a variety of aspects Climate-Biosphere interactions, including:

Work Package 1: Climatic characteristic of terrestrial ecosystems derived by using satellite data from EUMETSAT geostationary satellites

Work Package 2: Climatic assessment of terrestrial ecosystems state by using satellite data from EUMETSAT geostationary satellites.

Work Package 3: MSG data as input for model forecasting of the biosphere.

Work Package 4: Monitoring forest disturbances from space.

Work Package 5: SALGEE workshop preparatory work, and webpage configuration

5) 6th SALGEE Workshop structure

The agenda of the 6th SALGEE Workshop covers a broad scale of MSG LSA SAF products applications related to different aspects of biogeophysical and biogeochemical relations between climate and biosphere. For better characterizing drought reveals and related effects on biosphere, H-SAF products and CM SAF products are for first time introduced. The agenda (see **Appendix 1**) included four general sessions based to the following respective topics, including also an Introduction session, and finalizing the work with a General Discussion:

Introduction: The Workshop was opened by Julia Stoyanova with an introduction to the SALGEE objectives and the foreseen topics of the Workshop. Overview lectures from LSASAF, CMSAF and EUMETSAT on the activities in LSA SAF, the role of satellites in climate monitoring, climate data records, and preparation for MTG satellite missions were accent.

Topic 1: Satellite products for land surface state & anomalies analyses

A general overview of LSA SAF and CM SAF products in current use and expected evolution is presented. The last versions of the LSA SAF and H-SAF products related to energy and water cycles are presented /evapotranspiration, soil moisture/; it is accent on the developed climate data records of land surface temperature in the frame of CCI project.

Topic 2: Terrestrial drought monitoring

For characterizing drought the accent is given on the components of the ecosystem water balance and their reveals during drought extremes. In this connection, the accent is given on soil moisture as a main indicator of terrestrial drought; the HSAF soil moisture product is introduced and its application for drought assessment is illustrated. Evapotranspiration

(according LSASAF ET product) signals for agricultural drought are presented. The application of land surface temperature, characterized by the LSA SAF LST product as a climatic index of drought monitoring is proposed and illustrated.

The problem of forest health and disturbances, new needs and new opportunities for monitoring by satellites is put in consideration. Variety of aspects related to drought impact on vegetation are presented: vegetation activity; forest drying and disease; crop productivity.

Specific applications of drought monitoring in the region of Eastern Europe are presented.

Topic 3: Fires: Risk assessment, Detection, Emissions

Accent is given on fire detection capabilities with Meteosat using the updated version of MPEF FIR product, and using the advantages of LSASAF FRP product. Fire activity and fuel consumption, global aspects in agricultural fire trends are important problems in terms of climate-fire relations that were touched (all in six talks are presented).

Two talks are given on prevention of fires by using fire risk indexes, and one talk on the use of satellite data in studying atmosphere environment of wild fires.

As far as fires contribute to the global carbon cycle, a special accent is given on the link between carbon cycle and climate. The role of the land surface in the Earth's carbon cycle: observation by satellites and modeling with accent on Gross Primary Productivity, Net Primary Productivity, and drought impact on productivity is framed in a separate session comprising five lectures. A special attention should be given on the attendance of Prof. Shaun Quegan, who is chairing this session.

Topic 4: Regional Applications

6 participants presented specific regional applications of MSG data and LSA SAF products for Armenia, Greece, Cyprus, Slovenia, Jordan, Iran, and Palestine during the last session of the Workshop. Results from the Interreg/Balkan-Mediterranean project DISARM (Drought and fire observatory and early warning system) that covers the region of Bulgaria, Greece, Cyprus was presented in three talks.

The workshop was finalised with a **General Discussion** where participants expressed their impression from the 6th SALGEE, the experience gained, and expectations from the future work.

6) Workshop attendance

26 participants have attended the 6th SALGEE workshop. 15 lecturers from 11 countries representing satellite agencies of EUMETSAT, LSA SAF, CM SAF, H-SAF, NMS and Universities in Portugal, Sheffield, Maryland, Lisbon, Valencia, and Vienna Univ. of technology gave high-level lecture support to the Workshop. These are remote sensing specialists, modellers, and teachers. 7 participants from Armenia, Cyprus, Greece, Iran, Jordan, Slovenia, Palestine members of NMSs user community were attending as trainees. Invitation letters, signed by EUMETSAT were sent to all participants.

The full participants list is presented in **Appendix 2**.

7) Add value of the 6th SALGEE Workshop – some duplication with the Introduction

- To make a bridge with other EUMETSAT SAF programs: Climate Monitoring SAF (CM SAF) and Hydrological SAF (H-SAF).
- Enlarged institutional involvement in the SALGEE initiative with new members (countries) from: University of Sheffield, University of Leicester, Univ. of Technology in Vienna, Institute of Meteorology and Water Management in Poland.
- To make a bridge with relevant projects: EC- JRC, ESA LST CCI; DISARM INTERREG Project.
- To inform the user community about updated knowledge, methods, and available satellite information related to climate-biosphere connections.
- To raise new problems for the SALGEE community on using satellites in the field of: Agrometeorology in its physical context; Climate and Forest relations; Forest sustainability; Vegetation and Carbon cycle.
- To promote the LSA approach beyond the SALGEE areas of interest inviting participants from Middle East (Iran, Jordan, and Palestine).
- It is announced that the software for decoding and visualisation of S-VIIRS developed by TSMS will be available for SALGEE community after request.

8) Summary of the discussions: Expressed opinion and recommendations for the next SAGEE activities

The general Discussion of the 6th SALGEE Workshop is chaired by: Jose Prieto, Luis Pessanha, Julia Stoyanova, Christine Traeger-Chatterjee. It was opened by its Secretary, Dr. Julia Stoyanova with the question how the Workshop has met participants' expectations? What are their needs and what they expect from the SALGEE in the future?

Athanassios Karagiannidis, NOA, Greece – Paid attention on the problem with the detection of coastal fires in Greece and expect the improved FIR product to be more relevant.

Erdem Erdy, TSMS, Turkey – The workshop was very useful event for the users providing the opportunity to see new products of LSA SAF, H-SAF, CM SAF. My Decoding and Visualization Software for NPP/JPSS Active Fire Product will be available for use by the community. Regarding our future work, we will try to obtain information for real fires over Turkey and validate Fire products.

Jose Prieto, EUMETSAT – Suggested to Athanassios Karagiannidis to prepare a case study for fires over Greece. It will be also relevant Armenia to prepare a case study for fires.

Luis Pessanha, LSASAF – Proposed Athanassios Karagiannidis to prepare a Report for LSASAF about the fire products behavior.

Iannis Proestos, Energy, Environment & Water Research Center, Cyprus – I learned a lot from the workshop, especially about the products of L-SAF, H-SAF, CM SAF and would be able to use some of them in the models. I see that we need more training and I would suggest some courses to be focus on the problems of modelers.

Christine Traeger-Chatterjee, EUMETSAT – You could suggest EUMETSAT what kind of training for modelers is relevant, because we do not much experience in this matter.

Francesco Fusto, Centro Funzionale Multirischi della Calabria, Italy – We would intend to test the new applications for Fires and Drought analysis for our region. The idea is to use indexes from ground observations and satellite data as those presented during the Workshop and if possible to develop a new one for the purposes of the Multirisk Center in Calabria.

Christine Traeger-Chatterjee, EUMETSAT – This was a nice and useful SALGEE workshop with the opportunity to link the activities on promoting the use of LSA SAF and CM SAF products.

Piotr Struzuik, Institute of Meteorology and Water Management, Poland, HSAF – He accents on some differences between the new and old Evapotranspiration products. Put the question about the quality of the new ET product because during the day black spots are appeared on the images.

Celia Gouveia, LSASAF – In response to this problem in ET, she suggested a comparison with the calculated reference evapotranspiration to be made. Your response on solar radiation, evapotranspiration products to LSASAF is welcome

Christo Georgiev, NIMH Bulgaria – These workshops are very useful for the metrological services and other users in the region of South Eastern Europe. Our countries are in quite different level regarding the satellite data application and we need such forums for exchange of experience through participants' presentations and discussions. All SALGEE meetings include presentations from leading scientists and product developers and help the participants to obtain essential knowledge on the land surface applications.

Yousef Abu Asad, Palestinian Meteorological Office –We cooperate with our Palestinian Authorities on the problems of drought monitoring and the participation in this workshop will help us to improve our understanding in this field. I am ready to send the data free for a case study.

Jose Prieto, EUMETSAT – In each next of the six SALGEE workshop new topics are included and this was the best SALGEE regarding the programme. The involvement of the participants is essential for the success of this project. The ideas of case studies are very promising; especially in some locations as Armenia. For Iran it would be interesting to make case study with the Indian Meteosat mission.

Piotr Struzuik, Institute of Meteorology and Water Management, HSAF – This SALGEE workshop was a wonderful time for discussion on LSA SAF, H-SAF, CM SAF applications and especially how to use this products for biophysical purposes. What was missing, these are presentations for precipitations, snow cover, frost from H-SAF. This is promising for the future in addition to the main topics of biosphere and climate applications, the use of radiation products also to be discussed.

Mahnaz Khazaei, Meteorology office of Iran – Very useful workshop, I have gained a lot of knowledge and now I have much more experience.

Luis Pessanha, LSA SAF – Thanks to Eumetsat for organization of this event. Special congratulations for Jose Prieto, who is a very special person that can motivate the people to work. The key point is to make efforts to use the products as much as possible. The level of SALGEE presenters contributes to achieving this goal and the level of the work of this user Group is increasing in each next workshop. We are really ready to use MTG data but the data volume is problem. Good idea is to involve the representatives from H-SAF, LSA SAF, CM SAF in the future SALGEE activities. I agree an overview of H-SAF will be useful to be presented in the workshop. Thanks to the participants for sharing us their experience.

Khaledatef Alsalammen, Jordan – The difference in levels between our countries in using satellite data is obvious. Attending this workshop, now it is a challenge for me to work for improvement our level to be the same as in the other countries.

Weidong Xu, Kings College UK - LSASAF – Very exciting to see Eumetsat HQ. Attending the Workshop, discussions and exchange ideas, it is a privileged to be here and to obtain feedback for our product. Thanks for give them that are very useful for us in order to improve the quality of LSA SAF FRP product.

Tianran Zhang, Kings College UK – Useful meeting, nice to look on the FRP performance over different areas (Greece, Bulgaria), also quite interesting to know how the people are interesting on CO2 emission. Really useful is the presentation for validation. Up to now we did not have the chance to see such results.

Luis Pessanha, LSA SAF – The SAF products have to be used, if not there is no a product.

Jose Prieto, EUMETSAT – Each next SALGEE workshop add a new topic and now it covers a wide scope of environmental applications.

Julia Stoyanova, NIMH Bulgaria - LSA SAF – Preparing SALGEE we make efforts each time to go more deep in a specific problem and covering a wide scope of problems related to satellite applications for land surface analyses, and thus being more useful for participants, from one side, and also in exchange of knowledge between experts. What makes impression for me is the great responsibility of both lecturers and participants in their contributions in the SALGEE work. We are a coupled system, Eumetsat and the users of satellite products that is why I consider as our responsibility to start working still now for the next SALGEE. Following the discussions we will focus our future work to a more close cooperation with H-SAF.

All presentations and materials are distributed among the participant in the 6th SALGEE workshop 2019 through a ftp link.

Sofia

28 November 2019

SALGEE Secretary: 

/Assoc. Prof. Dr. Julia Stoyanova (Georgieva)/
NIMH-Bulgaria

06th SALGEE Workshop 2019 Agenda

MSG Land Surface Applications: Connection of climate and biosphere

Darmstadt (Germany), EUMETSAT Head Quarter

14 October 14:00 - 17 October 12:00 2019

14 October 2019

13:30

14:00

Registration at EUMETSAT HQ

INTRODUCTION

Chair: Luis Pessanha

14:00

14:10

SALGEE towards biogeophysical and biogeochemical connection between climate and biosphere

Julia Stoyanova, NIMH Bulgaria - LSA SAF

14:10

14:20

LSA-SAF Program during CDOP-3 Phase and preparedness for MTG

Luis Pessanha, LSA SAF

14:20

14:30

The role of satellite data in climate monitoring

Christine Traeger-Chatterjee, EUMETSAT, CM SAF

14:30

14:40

EUMETSAT Satellite missions - Preparation for MTG

Jose Prieto, EUMETSAT

Topic 1: Satellite products for land surface state & anomalies analyses

General Overview

14:40

15:10

LSA-SAF operational products characteristics, performance, and expected evolution

Luis Pessanha, IPMA - LSA SAF

15:10

15:40

CM SAF products for land surface analyses

Anke Duguay-Tetzlaff, Meteo Swiss -CM SAF

15:40

16:10

Break

Chair: Christine Traeger-Chatterjee

Energy & Water cycles related products

16:10	16:30	Development of CDRs within the Land Surface Temperature CCI project <i>Darren Ghent, NCEO, Univ Leicester, UK</i>
16:30	17:00	Evapotranspiration and surface fluxes products <i>Françoise Meulenberghs, RMI Belgium – RMI Belgium - LSA SAF,</i>
17:00	17:20	The H-SAF Soil Moisture product overview and discussion on its practical use <i>Piotr Strużuk, Institute of Meteorology and Water Management Poland, HSAF</i>
17:20	17:50	Thematic discussion <i>Chairs: Jose Prieto, Luis Pessanha, Julia Stoyanova, Christine Traeger-Chatterjee</i>

15 October 2019

Topic 2: Terrestrial drought monitoring

Chair: Julia Stoyanova

Assessment and monitoring agricultural & ecological drought

		H SAF soil moisture data services <i>Wolfgang Wagner, TU Wien</i>
09:00	09:20	
09:20	09:50	Agrometeorological consulting in Germany - methods and products by <i>Thomas Leppelt, DWD, Germany</i>
09:50	10:10	LST as a climatic index of drought monitoring and impact assessment <i>Julia Stoyanova, NIMH Bulgaria – LSASAF</i>
10:10	10:30	Use of Satellite data for drought monitoring in Armenia <i>Zara Petrosyan, Service of the Hydrometeorology, Armenia</i>
10:30	11:00	Break
11:00	11:40	Applications of H SAF soil moisture data <i>Wolfgang Wagner, TU Wien</i>
11:40	12:00	Extreme heat and drought in summer in Germany – signs in early spring <i>Christine Traeger-Chatterjee, EUMETSAT CM SAF</i>
12:00	12:10	Using Satellite data for Crop Monitoring in Armenia <i>Hasmik Panyan, Service of the Hydrometeorology and Active Influence on the Atmosphere Phenomena, Armenia</i>

		Assessing Agricultural Droughts by Combined Satellite Vegetation Evapotranspiration Signal from LSA SAF <i>Bostjan Muri, Slovenian Environment Agency - LSASAF</i>
12:10	12:30	
12:30	14:00	Lunch Break
		Monitoring European Forest (sustainability and disturbances) using satellites <i>Chair: Celia Gouveia</i>
14:00	14:20	Spectral response of the forest cover under drought and thermal stress <i>Jose Prieto, EUMETSAT</i>
		Forest health and disturbance monitoring through Earth Observation, needs and new opportunities <i>Piter Beck, EC-JRC, Italy</i>
14:20	15:00	
		Assessing drought impacts on vegetation activity and productivity using remote sensing data Monitoring vegetation conditions and disturbances using satellite derived Climate Data Records <i>Celia Gouveia, IPMA – LSASAF</i>
15:00	15:20	
15:20	15:40	Break
		Monitoring of forest cover disturbances during natural hazard meteorological satellites (to be transferred after L.Giglio talk)
15:40	16:00	<i>Julia Stoyanova, NIMH Bulgaria - LSASAF</i>

		Topic 3: Fires: Risk assessment, Detection, Emissions <i>Chair: Jose Prieto</i>
		Fire detection and Biomass burning effects
		Insights from two decades of developing satellite-based fire climate data records and their use and abuse (<i>Internet talk</i>) <i>Louis Giglio, Univ.Maryland, USA</i>
16:00	17:00	
19:00		Social event

Topic 3: Fires: Risk assessment, Detection, Emissions

Chair: Weidong Xu

Fire detection and Biomass burning effects (continue)

09:00 09:20

Fire detection capabilities with Meteosat

Jose Prieto, EUMETSAT

09:20 09:40

Major advances of LSASAF FRP products

Weidong Xu, Kings College UK - LSASAF

09:40 10:00

New LSASAF Fire Emission product

Tianran Zhang, Kings College UK - LSASAF

10:00 10:15

Fire activities and fuel consumption

Weidong Xu, Kings College UK - LSASAF

10:15 10:30

Decoding and Visualization Software for NPP/JPSS Active Fire Product

Erdem Erdy, TSMS, Turkey

10:30 11:00

Break

11:00 11:20

Global agricultural fire trends analysis using MODIS and VIIRS, with focus on China and India

Tianran Zhang, Kings College UK - LSASAF

Fire Risk

Chair: Christo Georgiev

11:20 11:50

Susceptibility to forest fire triggering and propagation in the region of Calabria, south Italy

Francesco Fusto, Centro Funzionale Multirischi della Calabria, Italy

11:50 12:10

Quality monitoring of the new LSA SAF Fire Risk Map product over southern and eastern Europe

Julia Stoyanova, Christo Georgiev, NIMH Bulgaria - LSASAF

12:10 12:30

Detection of dry intrusions as fire risk indicators and increased ozone concentrations in the environment of wild fires

Christo Georgiev, NIMH Bulgaria

12:30 14:00

Lunch Break

Carbon cycle and Climate: Vegetation as a carbon sink

Chair: Shaun Quegan

14:00	14:40	The role of the land surface in the Earth's carbon cycle: observations and modelling <i>Shaun Quegan, Univ Sheffield, UK</i>
14:40	15:10	The new 10-day LSA SAF Gross Primary Production (MGPP) product: Its use for global drought monitoring <i>Beatriz Martínez Díaz, Univ Valencia, Environmental Remote Sensing Center, Spain – LSASAF</i>
15:10	15:30	On the modeling of Net Primary Productivity <i>Julia Stoyanova, NIMH Bulgaria – LSASAF</i>
15:30	16:00	Break
16:00	16:20	Assessing drought impacts on vegetation activity and productivity using satellite remote sensing data <i>Celia Gouveia, IPMA, Portugal – LSASAF</i>
16:20	17:00	New prospects for measuring forest biomass from space <i>Shaun Quegan, Univ Sheffield, UK</i>
17:00	17:30	Thematic Discussion <i>Chairs: Jose Prieto, Shaun Quegan, Luis Pessanha, Julia Stoyanova, Christine Traeger-Chatterjee</i>

17 October 2019		Topic 4: Regional applications
Chair: Piotr Strużuk		
09:00	09:15	Overview of The Drought and Fire Observatory and Early Warning System (DISARM) project <i>Athanassios Karagiannidis, National Observatory of Athens</i>
09:15	09:45	Practical use of H-SAF and Land-SAF products in agriculture sector <i>Piotr Strużuk, Institute of Meteorology and Water Management HSAF</i>
09:45	10:00	Monitoring and Forecasting Fire hazard and drought in the Eastern Mediterranean and Cyprus <i>Iannis Proestos, Energy, Environment & Water Research Center, Cyprus</i>

10:00	10:10	Jordan vulnerability and water resources <i>Khaled atef Alsalammen, Jordan</i>
10:10	10:20	Needs and expected benefit for Palestinian meteorological office from using satellite information <i>Yousef Abu Asad, Palestinian Meteorological Office</i>
10:20	10:30	I.R. of Iran meteorological organization studies in the fields of workshop subjects <i>Mahnaz Khazaei, Meteorology office of Iran</i>
10:30	11:00	Break
11:00	12:00	General Discussion <i>Chair: Jose Prieto, Luis Pessanha, Julia Stoyanova, Christine Traeger-Chatterjee</i>



List of lecturers & participants 06th SALGEE Workshop 2019 MSG Land Surface Applications: Connection of climate and biosphere

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14 October 14:00 - 17 October 12:00 2019

1. Assoc. Prof. Dr. Julia Stoyanova (Georgieva)

SALGEE Secretary
National Institute of meteorology and Hydrology
Sofia
Bulgaria

2. Dr. Luis Pessanha, LSA SAF

IPMA – LSASAF, SALGEE Steering Group
Lisbon
Portugal

3. Dr. Christine Traeger Chatterjee

Training Officer
EUMETSAT

4. Prof. Shaun Quegan

University of Sheffield
United Kingdom

5. Dr. Louis Giglio

Research Professor
University of Maryland
USA

6. Prof. Christo Georgiev

National Institute of meteorology and Hydrology
Bulgaria

7. Celia Gouveia

Célia marina Pedroso Gouveia
Senior Researcher IPMA
Invited Assistant Professor: IDL, University

8. Beatriz Martínez Díaz

PhD Researcher
University of Valencia
VALENCIA, SPAIN

9. Dr. Weidong Xu

Kings College
London
United Kingdom
United Kingdom

10. Dr. Tianran Zhang

King's College, London

11. Anke Duguay- Tetzlaff

Federal Office of Meteorology and Climatology MeteoSwiss – CM SAF
Switzerland

12. Dr. Darren Ghent

National Centre for Earth Observation (NCEO)
University of Leicester
United Kingdom

13. Prof. Wolfgang Wagner

Vienna University of Technology (TU Wien)
Vienna,
Austria

14. Dr. Thomas Leppelt, DWD - cancelled

Deutscher Wetterdienst
Frankfurter Str. 135
Offenbach am Main
Germany

15. Dr. Franvoise Gellens- Meulenberghs

Royal Meteorological Institute
Brussels
Belgium

Pietr Beck

European Commission
Joint Research Centre, JRC
Italy

16. Francesco Fusto

Centro Funzionale Multirischi della Calabria
Catanzaro
Italy

17. Piotr Struzik

Dr. Eng. Piotr Struzik
Institute of Meteorology and Water Management, H-SAF
Krakow
POLAND

18. Athanassios Karagiannidis

Institute of Environmental Research & Sustainable Development, National Observatory of Athens
Lofos Koufou, P.Penteli
Athens
Greece

19. Khaled atef Alsalammen

Jordan Amman Airport
Meteorological Department
Jordan

20. Iannis Proestos, PhD

Energy, Environment & Water Research Center (EEWRC)
The Cyprus Institute
Nicosia
Cyprus

21. Zarmandukht Petrosyan

Service of the Hydrometeorology and Active Influence on Atmosphere Phenomena
Yerevan
Armenia

22. Hasmik Panyan

Service of the Hydrometeorology and Active Influence on Atmosphere Phenomena
Yerevan
Armenia

Yousef Abu Asad

Palestinian Meteorological Office
Ramallah - Palestine

23. Erdem Erdy

Turkish State Meteorological Service
Ankara
TURKIYE

24. Bostjan Muri

Slovenian Environment Agency, ARSO
Ljubljana,
Slovenia

25. Mahnaz Khazaei

Kermanshah meteorology office
Kermanshah
I.R. of Iran

26. José Prieto

Training Officer
EUMETSAT