2021 Convection Working Group Meeting

6-8 April 2021, online
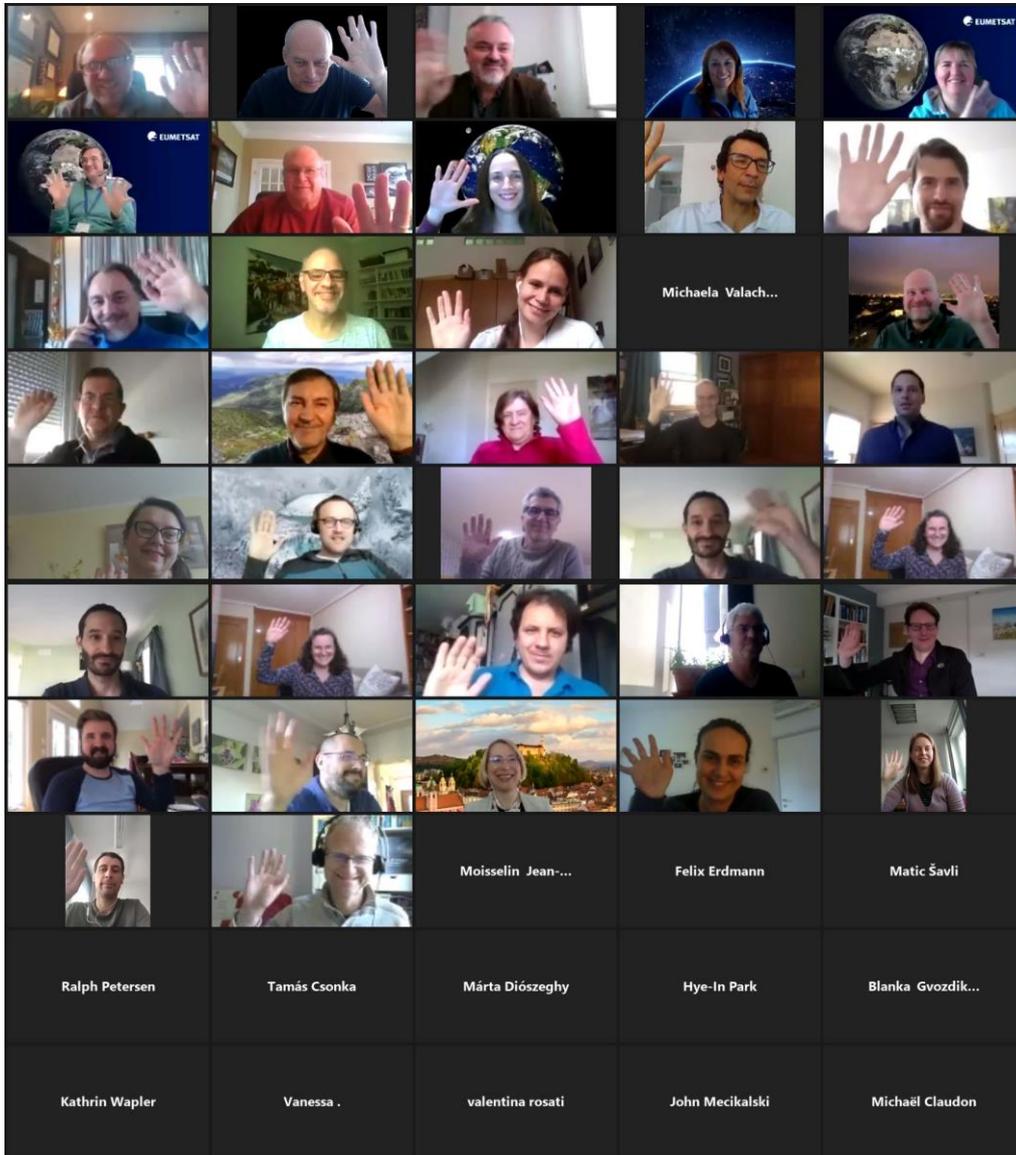
Minutes of the Meeting

Actions

6[th]CWG Action 3: CWG members are invited to share links to their most relevant scientific publications on convection, to be published on the CWG webpage. [ALL]

7th CWG Action 1: Investigate different work flows (regarding practices in warning operations in severe convective situations) within Met Services. This could be carried out as a survey. [CWG Co-Chairs]

7th CWG Action 2: Explore how we should make Nowcasting tools more accessible, including visualisation. EWC may be a solution for testing and sharing. [CWG Co-Chairs]

7th CWG Action 3: Update the CWG Convection Guidance with new products. [CWG Co-Chairs]

7th CWG Action 4: Determine CWG role in high level coordination activities such as WMO SCOPE-Nowcasting and the CGMS Cloud Working Group (severe weather topical group). [CWG Co-Chairs]

Open questions (from 2021 meeting):

- What is the role of human forecasters in the recent/future boom of available nowcasting and satellite products?
- How can forecasters effectively overview the most relevant information at their desk in real time?
- Regarding the last point: The convection guidance on the CWG webpage is very useful. Could an additional collection of useful well-tried (multi-data) (multi-panel) example visualisation help?
- Also regarding the previous point: Should this question be kept in mind when setting up the envisioned survey (see first action)?

Session summary

Opening session:

Joachim Saalmüller, Head of User Support and Climate Services, EUMETSAT welcomed the participants to the 7th CWG workshop. He stressed the importance of intercontinental workshop during COVID times as well. EUMETSAT is entering into the final phases of MTG preparation with launch end of 2022. There have been some challenges (i.e stray light issue) which had to be solved. User preparation for the new instrument has been started; collaboration with ESSL in this regard has been initiated. Special test bed will be offered for European forecasters to get familiarized with the new data. 4D weather cube from MTG will offer a unique opportunity to study convection.

New Imagers

This session included eleven presentations covering possibilities from the new generation satellites.

At the beginning of the session, thunderstorm influence on the upper troposphere was discussed. Storm activities in the troposphere generate internal gravity waves that may propagate up to the mesopause. Combining satellite data and model interpretation may provide layer information of the mesosphere.

Several talks showed the advantages of the new FCI bands and what the new RGBs using these channels will bring for convection monitoring.

MTG 4D Weather Cube has been described and possible visualization of these data has been discussed.

In the second part of the session, the focus was shifted to the products. KMA along with the NWCSAF has presented the recent developments in their convection initiation products. The NWCSAF also showed the planned activities for the upcoming CDOP 4 period. ADAGUC software as a visualization tool for the NWCSAF products has been demonstrated.

Multi-Sensor Approach

Several talks emphasized the value of using different measurements together. Some of the talks focused on combining GEO and LEO satellite data to create different precipitation products, while others combine satellite data with other measurements such as radar, lightning etc. often also using machine learning techniques to provide better nowcasting tools. The group discussed the importance of the new tools and several of open questions arise:

- What is/will be the role of the forecaster in the future?

- What are the different work flows over Europe?
- Is there a way/need to develop common tools?

Research to Operations

In this session, the main focus was shifted towards the operational usage of the products. This was a new topic for the CWG workshop. Several talks showed how to encourage new satellite data usage. The ESSL testbed concept was presented which will be used even more in MTG training.

Vertical Profiles

The upcoming MTG IRS has triggered new developments regarding hyperspectral data usage in nowcasting. Verification of IASI data with AMDAR measurements was shown. Large uncertainty in the profiles around the surface can cause problems in the calculation/usage of instability indices. There have been attempts done to reduce this problem by for example combining the satellite profiles with synop measurements but there are still open issues. Combined IR / microwave products provide advantage to fill data gaps left by hyperspectral IR instruments in either cloudy areas or where IR profile quality flags show significant partial cloud cover

List of Participants

	Given name (First Name)	Family name (Last Name)	Country	Institution/Organization
1	Tamás	Allaga	Hungary	Hungarian Meteorological Service (OMSZ)
2	Frederic	Autones	France	Meteo-France
3	Humberto	Barbosa	Brazil	Federal University of Alagoas (UFAL)
4	Stephan	Bojinski	Germany	EUMETSAT
5	Stephanie	Bradshaw	United States of America	University of Wisconsin Madison
6	Xavier	Calbet	Spain	AEMET
7	Miria	Celano	Italy	Arpae SIMC Emilia-Romagna
8	John	Cintineo	United States of America	University of Wisconsin
9	Michaël	Claudon	France	Météo-France
10	Dóra	Cséke	Hungary	Hungarian Meteorological Service
11	Kalman	Csirmaz	Hungary	Hungarian Meteorological Service
12	Tamás	Csonka	Hungary	Hungarian Meteorological Service
13	Márta	Diószeghy	Hungary	Hungarian Meteorological Service
14	Felix	Erdmann	Belgium	Royal Meteorological Institute of Belgium
15	STEFANO	FEDERICO	Italy	CNR-ISAC (National Research Council of Italy - Institute of Atmospheric Sciences and Climate)
16	Wayne	Feltz	United States of America	University of Wisconsin - Madison SSEC/CIMSS
17	Steven	Goodman	United States of America	GOES-R Program/TGA
18	Jochen	Grandell	Germany	EUMETSAT
19	Rob	Groenland	Netherlands	KNMI
20	Blanka	Gvoždíková	Czech Republic	Czech Hydrometeorological Institute
21	Ulrich	Hamann	Switzerland	MeteoSwiss
22	Mateja	Irsic Zibert	Slovenia	ARSO
23	Ján	Kaňák	Slovakia	Slovak Hydrometeorological Institute
24	Jochen	Kerkmann	Germany	EUMETSAT
25	Zsofia	Kocsis	Hungary	OMSZ - Hungarian Meteorological Service
26	Kornél	Kolláth	Hungary	Hungarian Meteorological Service
27	Michael	Kreitz	France	Météo-France
28	Thomas	Krennert	Austria	ZAMG
29	Martina	Lagasio	Italy	CIMA Research Foundation
30	José Alberto	Lahuerta García	Spain	AEMET
31	Jussi	Leinonen	Switzerland	MeteoSwiss
32	Mounir	Lekouara	Germany	EUMETSAT
33	Dan	Lindsey	United States of America	NOAA/NESDIS
34	Llorenç	Lliso	Spain	AEMET
35	Agostino	Manzato	Italy	ARPA FVG
36	Cecilia	Marcos	Spain	AEMET (Spanish Meteorological Agency)
37	Miguel Angel	Martinez	Spain	AEMET
38	Ioannis	Matsangouras	Greece	Hellenic National Meteorological Service - HNMS
39	John	Mecikalski	United States of America	University of Alabama in Huntsville

40 Davide	Melfi	Italy	Italian Air Force Met Service - Operative Centre for Meteorology
41 Jean-Marc	Moisselin	France	METEO-FRANCE
42 Vesa	Nietosvaara	Germany	EUMETSAT
43 Monika	Pajek	Poland	IMGW-PIB
44 Ki-Hong	Park	South Korea	National Meteorological Satellite Center(NMSC) / Korea Meteorological Administration(KMA)
45 Hye-In	Park	South Korea	National Meteorological Satellite Center/KMA
46 Antonio	Parodi	Italy	CIMA RESEARCH FOUNDATION
47 Michael	Pavolonis	United States of America	NOAA/NESDIS
48 Ralph	Petersen	United States of America	University of Wisconsin-Madison, SSEC/CIMSS
49 Marco	Petracca	Italy	National Department of Civil Protection (DPC)
50 Dieter	Poelman	Belgium	Royal Meteorological Institute of Belgium
51 Silvia	Puca	Italy	National Civil Protection Department (DPC), Rome, Italy
52 Tomas	Pucik	Austria	European Severe storms Laboratory
53 Mária	Putsay	Hungary	the Hungarian Meteorological Service (retired)
54 Pilar	Rípodas	Spain	AEMET
55 Valentina	Rosati	Italy	Italian Air Force - Operative Centre for Meteorology
56 Matic	Šavli	Slovenia	ARSO
57 Benjamin	Scarino	United States of America	NASA LaRC / SSAI
58 Michaela	Seidlová	Czech Republic	Czech Hydrometeorological Institute
59 Martin	Setvák	Czech Republic	Czech Hydrometeorological Institute
60 Bhupendra Bahadur	Singh	India	Indian Institute of Tropical Meteorology
61 Ivan	Smiljanic	Germany	EUMETSAT
62 Eunha	Sohn	South Korea	National Meteorological Satellite Center(NMSC) / Korea Meteorological Administration(KMA)
63 Jindrich	Stastka	Czech Republic	Czech hydrometeorological institute
64 Natasa	Strelec Mahovic	Germany	EUMETSAT
65 Piotr	Struzik	Poland	Institute of Meteorology and Water Management - NRI
66 Rosa Claudia	Torcasio	Italy	CNR-ISAC
67 Michaela	Valachová	Czech Republic	Czech Hydrometeorological Institute
68 Daniel	Vila	Brazil	INPE
69 Timothy	Wagner	United States of America	SSEC / Univ. of Wisconsin - Madison
70 Pao	Wang	Taiwan	Academia Sinica
71 Kathrin	Wapler	Germany	Deutscher Wetterdienst
72 Christian	Wentink	Netherlands	KNMI
73 Kristopher	White	United States of America	National Weather Service Huntsville, AL / NASA SPoRT

CWG Workshop Agenda, 2021

Time (UTC)	Tuesday, 6th April — New Imagers — Session Chair: Zsofia Kocsis — Discussion Lead: Natasa Strelec Mahovic	Wednesday, 7th April — New Imagers — Session Chair: Mateja Irsic Zibert — Discussion Lead: Mounir Lekouara	Thursday, 8th April
7:00-7:15	Opening, Co-Chairs	**Hye-In Park, KMA** Improvement of GK2A Convective Initiation Algorithm at NMSC/KMA	
7:15-7:30	Welcome **Joachim Saalmüller, EUMETSAT**	**Pilar Rípodas, AEMET** Plans of the NWC SAF for CDOP 4 phase	
7:30-7:45	**Pao Wang, Academia Sinica** Thunderstorm influence on upper atmosphere	**Michaël Claudon, Meteo France** NWC SAF Convection Initiation product: recent improvements as a preparation to MTG	
7:45-8:00	**Martin Setvák, CHMI** Above-anvil cirrus plumes detection in the 1.38 micron band	**José Alberto Lahuerta García, AEMET** Satellite Derived Precipitating Products Based on a Principal Component Analysis	
8:00-8:15	Break	Break	
8:15-8:30	**Mária Putsay, former OMSZ** New RGB for convection monitoring based on newly available channels in MTG	**Miguel Angel Martinez, AEMET** Preparation of MTG era: developing of imager and sounder nowcasting tools	
8:30-8:45	**Ivan Smiljanic, EUMETSAT** Platform for exchange of 'next generation' GEO satellite data knowledge and experience, on the global level.	Discussion	
8:45-9:15	Discussion	Discussion	
9:15-9:30	Break	Break	
9:30-9:45	**Stephan Bojinski, EUMETSAT** Visualising the MTG 4D Weather Cube for research and applications	**Llorenç Lliso, AEMET** Use of ADAGUC as front end of the NWCSAF products	
9:45-10:00	Discussion	Discussion	

Time (UTC)	Tuesday, 6th April **Multi-sensor Approach** **Session Chair: Kathrin Wapler** **Discussion Lead: Ralph Petersen**	Wednesday, 7th April **Research to Operations** **Session Chair: Martin Setvak** **Discussion Lead: Vesa Nietosvaara**	Thursday, 8th April **Vertical Profiles** **Session Chair: Maria Putsay** **Discussion Lead: Dan Lindsey**
13:00-13:15	**Stefano Federico, CNR-ISAC** Impact of lightning data assimilation on the short-term rainfall forecast over Italy	**Humberto Barbosa, UFAL** Validation of Satellite (TMPA and IMERG) Rainfall Products with the IMD Gridded Dataset	**Xavier Calbet, AEMET** Sounding MTG-IRS products from EUMETSAT's NWC SAF
13:15-13:30	**Daniel Vila, INPE** Dynamic machine learning applied to merged GEO-IR and LEO-microwave data to improve the analysis and nowcasting of severe convection	**Tomas Pucik, ESSL** Evaluating satellite products at the Testbed: recent experience and future outlook	**Zsofia Kocsis, OMSZ** Combination of IASI L2 profiles with synop measurements
13:30-13:45	**Valentina ROSATI, Italian Air Force Met Service** Treatment of convection by H-SAF precipitation products	**Cecilia Marcos, AEMET** EO-ALERT project	**Ralph Petersen, CIMSS** A Multi-satellite Platform Approach to providing Short-term Guidance of Significant Weather Potential
13:45-14:00	**Michael Pavolonis, NOAA NESDIS** An Overview of the NOAA/NESDIS ProbSevere Product Portfolio	**Steven Goodman, GOES-R Program/TGA** MTG Nowcasting for Africa	**Timothy Wagner, SSEC / Univ. of Wisconsin** On the Use of Routine Airborne Observations for Evaluating IASI Profile Retrievals
14:00-14:15	Break	Break	Break
14:15-14:30	**Benjamin Scarino, NASA LaRC / SSAI** Analysis of Deep Convective Storms and Severe Hail Detection Through Remote Sensing Data Fusion and Machine Learning	**Kristopher White, National Weather Service Huntsville, AL / NASA SPoRT** Examples of GOES-16/17 usage in the operational NWS environment	**John Mecikalski, University of Alabama** Dual GOES-16 and ground-based analysis of convective clouds toward improving NWP.
14:30-14:45	Discussion	Discussion	Discussion
14:45-15:15	Discussion	Discussion	Discussion
15:15-15:30	Break	Break	Break
15:30-15:45	**Dan Lindsey,NOAA/NESDIS** NOAA's operational geostationary satellite missions	**Ján Kaňák, SHMU** Three years of dual MSG image data from operational, user and scientific perspective: possibilities and limitations.	CWG Actions
15:45-16:00	Discussion	Discussion	Announcements and Closing

Location and time of next meetings

Next workshop is foreseen in Spring 2022 if possible in Budapest. Regular, short online meeting is planned between the workshops.

Terms of Reference of the Convection Working Group

Purpose

The main purpose of the Convection Working Group is to stimulate efficient utilization of satellite data in operational meteorology for detection, analysis and prediction of deep moist convection and associated phenomena.

Objectives

Developing a body of knowledge in monitoring convection through satellite observations.

Offering a meeting point for researchers, developers and operational users, for exchanging experiences and feedback on practices and operational and experimental applications aimed at convection processes in the atmosphere.

Activities

Coordination of development and enhancement of techniques for early detection and prediction of convective storms.

Stimulation of research activities for better understanding and description of processes in the convective environment and their footprints on satellite data.

Support to development of training materials and fostering the technology transfer necessary for introduction of newly developed methods and techniques into operational meteorology.

Exchange of information on an international level for leading scientist and experts in satellite meteorology, active in development and operations of nowcasting techniques.

Fostering the use of satellite data in conjunction with other available data (NWP / Radar etc.) for detection, analysis and prediction of deep moist convection and associated phenomena.

Cooperation with the specialised institutions, such as storm laboratories, which have a particular role in contributing to the CWG and robustly testing new products and algorithms for operational application. ESSL has a particular role in facilitating this in Europe.

Promote collaboration with similarly aimed groups, organizations or individuals worldwide. Therefore, CWG is open to all interested parties – individuals and organisation. No formal membership is required to attend CWG events (workshops and meetings) or to use various material available on the CWG website.

The coordination of the group will be done by co-chairing the CWG by representative(s) of EUMETSAT and appointed specialist(s). To facilitate CWG activities, a CWG secretary (individual or institution) will be appointed by EUMETSAT.

The CWG will aim to hold meetings every two years for planning and reporting on progress, in between the group will interact via Internet and teleconference and at splinter meetings, when suitable.

The CWG will maintain a web site for efficient information exchange and provision of documentation. For the exchange of information and documentation the web site should be operated under guidance of the secretary of the CWG.