

**Convection Working Group Meeting, 27 – 30 March 2012**  
**Chairs: Marianne König (EUMETSAT) and Martin Setvák (CHMI)**

**Workshop Agenda**

Welcome and Opening of the Workshop  
Adoption of Draft Agenda

**Session: ESSL**

*Pieter Groenemeijer:*  
The ESSL Testbed

**Session: Pre-convective Environment**

*Marianne König:*  
MSG Derived Instability Indices – Overview

*Estelle de Coning:*  
Satellite-based Nowcasting Products in the Pre-convective Phase for Southern Africa

*Ralph Petersen:*  
Why Do GEO Satellite-based Nearcasts?

**Session: MTG Lightning Imager**

*Jochen Grandell:*  
Geostationary Lightning Monitoring with the Meteosat third Generation Lightning Imager (MTG-LI)

**Session: Pre-convective Environment (resumed)**

*Takumu Egawa:*  
Development of Instability Indices for Early Detection of Severe Weather Phenomena

*José Miguel Fernández-Serdán:*  
Improvements in the Operational Intranet Webpage for Accessing MSG Data and Products

*Jochen Kerkmann:*  
Understanding Convective Clouds through the Eyes of Meteosat Second Generation

*Christo Georgiev:*  
MPEF Divergence Product Interpretation Scheme

*Dan Lindsey:*  
GOES-R Risk Reduction Project: Predicting Convective Initiation 1-6 Hours prior to Occurrence

*Jenni Rauhala:*

Pre-convective Environment – a Forecaster's Perspective

**Session: Convective Initiation**

*John Mecikalski:*

Geostationary Satellite-based Convective Initiation Nowcasting: Overview of Current Capabilities and Operational Aspects

*Mária Putsay:*

Meteosat-8 RSS Convective Initiation Product: Improvement and Radar-based Validation

*Zsófia Kocsis:*

Improvement of Convective Initiation Product for Meteosat Second Generation Satellites

*Wayne Feltz:*

Development and Application of a Satellite-based Convective Cloud Object-tracking Methodology

*Dennis Stich:*

CI Nowcasting at DLR – Snapshots of Ongoing Research

*Georg Pistotnik:*

Detection of Convective Initiation by Objective Analysis Methods and its Use for Precipitation Nowcasting

*Thomas Krennert:*

Basic Investigation of Symmetric Instability during Convective Initiation in the Alpine Region

*Takumu Egawa:*

Detection of Rapidly Developing Cumulus Areas from MTSAT-1R Short-Time Interval Images

*Steve Goodman:*

GOES-R Geostationary Lightning Mapper (GLM): Convective Initiation and Severe Storms

*Luca Nisi:*

COALITION: Merging Satellite, Radar, NWP and Orographic Information for Predicting Severe Convection

**Session: Mature Convective Storms**

*Kris Bedka:*

Objective Detection of IR Temperature Minima within Deep Convective Cloud Tops: Validation, Applications, and Relevance to Nowcasting

*Martin Setvák:*

Advanced Satellite Image Products for Monitoring and Nowcasting of (Severe) Convective Storms

*Dan Lindsey:*

BTD (WV-IR Window) – Informal Comments and Discussion

*Nataša Strelec Mahović:*

What Happens with the Weather in the Vicinity of the Overshooting Top?

*Mateja Iršič Žibert:*

Automatic Detection of Cold Ring Pattern on SEVIRI IR Satellite Images

*Mária Putsay:*

Simultaneous Observation of Above-anvil Ice Plume and Plume-shaped BTD Anomaly atop a Convective Storm

*Cecilia Marcos:*

Convective Rainfall Rate Algorithm Evolution

*Daniel Rosenfeld:*

Satellite Retrieved Cloud Microstructure Providing Insights and Adds Predictability to Severe Convective Storms

*Aydin Ertürk:*

Comparison of MSG Overshooting Top Detections and MSG Storm RGB Applications

*Ján Kaňák:*

Time and Space Distribution of Mature Convection over Europe Based on MSG Airmass Product

Tool to Estimate Cloud Top Height Based on Sun Illumination and Cloud Shadows

*Oleksij Kryvobok:*

Combination of Satellite Data and Instability Indices for Estimation of the Storm Severity

*Inna Sobchenyuk:*

Possibility of a Use of the Cold Ring Indicator on Satellite Images in Operational Nowcasting/Forecasting of Severe Weather

*Rachel Albrecht:*

CHUVA Project: 2010-2011 and Perspectives for 2012-2014

*José Miguel Fernández-Serdán:*

Nowcasting Severe Weather Experiment 2011

**Session: Other Convection Related Topics**

*Davide Melfi:*

Satellite Rainfall Estimation

*Sung-Rae Chung:*

Rainfall Detection through COMS in KMA

*Monika Pajek:*

Long Data Series Analysis – Satellite Climatology of Thunderstorms – Poland Experiences

*Humberto Barbosa:*

Training Experiences from the South American Group of EUMETCast Operators (SAGEO)

*Hartwig Deneke:*

Contribution to DWD's Hans Ertel Research Centre (HERZ): Object-based Analysis and Seamless Prediction (OASE)

*Dennis Stich (on behalf of Caroline Forster):*

Summer Campaigns at MUC

*Pilar Fernández:*

SAF in Support to Nowcasting and Very Short Range Forecasting CDOP-2

## List of Actions

CWG noted the presentations on the MSG instability product. In order to better assess the performance of this product, the following action was agreed:

1. CWG members are invited to provide the instability product (e.g. as done by the SAF module PGE13) with different background model input. Actionees: Monika Pajek, Luca Nisi, Ralph Petersen, Pierre Fritzsche, and Marianne König. Mária Putsay agreed to support Monika Pajek on the PGE13 results if necessary.

CWG sees the value of the Nearcast Product as presented by Ralph Petersen. The following two actions were agreed concerning this product:

2. It would be good to have such a product available in the ESSL testbed activities. EUMETSAT, ESSL, and Ralph Petersen are tasked to explore the possibility to provide this product to the testbed in 2013. Ralph Petersen will provide some case studies identified by EUMETSAT and ESSL for training activities.
3. It would also be good to explore the performance of this product over the Lake Victoria Region, noting the general WMO interest and involvement in the forecast demonstration project for this region. Marianne König, Ralph Petersen, and Estelle de Coning are tasked to provide some case studies over this region and provide datasets.

Concerning the Convective Initiation products, the following actions were agreed:

4. The CI / Cloud Top Cooling product developers, together with EUMETSAT, shall explore ways of how to provide this product to the ESSL testbed.
5. The relation between the CI product (or some specific product aspects, especially cloud top microphysics) to the storm “severity” shall be explored, e.g. through scientific studies with EUMETSAT. Mária Putsay, John Mecikalski and Daniel Rosenfeld will be the scientific points of contact for these studies.
6. JMA is invited to describe their version of early Cu detection as a contribution to the CWG Best Practice document. Agreed deadline for this contribution is 31 December 2012.

The long discussion on the value of the WV – IR window brightness temperature difference (BTD) product led to the following actions:

7. Marianne König shall make the EUMETSAT Technical Memorandum on the theoretical background of this BTD available to CWG, e.g. by posting the link to it ([http://www.eumetsat.int/groups/ops/documents/document/pdf\\_tm14\\_interp\\_warm\\_wat\\_vap.pdf](http://www.eumetsat.int/groups/ops/documents/document/pdf_tm14_interp_warm_wat_vap.pdf)) on the CWG website.
8. More theoretical research, e.g. through detailed RTM simulations as well as by detailed observational studies, should be done to better understand the physics behind this BTD. Dan Lindsey and Marianne König (PoC: Phil Watts) are asked to further study this issue.

The formation of longer-lived cold cloud top rings is a phenomenon often accompanying severe convective storms. A good database of cold ring cases is thus of high value for related studies. The following action was agreed:

9. Mateja Iršič, Michaela Radová, and Inna Sobchenyuk will work towards a comprehensive cold ring database over an agreed period (TBD), covering the processing regions of the Slovenian, Czech and Ukrainian Met Services.

Noting the high interest in overshooting tops (OTs), and noting the VIS HRV channel shadow length based method of a reliable OT height assignment, the following action was agreed:

10. Ján Kaňák and Kris Bedka are invited to collaborate on the issue of OT height assignment and the relation to the observed IR brightness temperature. Aim is to study the possibility of an IR only OT height assignment.

Noting the ongoing activities in Ukraine concerning observations of severe weather led to the following action:

11. Oleksij Kryvobok and Pieter Groenemeijer are invited to collaborate in the framework of the ESSL Severe Weather Database.

Actions regarding the Best Practice Document:

12. Davide Melfi will provide a description of the Nefodina method for the CWG website.
13. ESSL and EUMETSAT shall provide some guidelines for the CWG website and the Best Practice document (guidelines for both content and technical realisation).
14. All CWG members are invited to contribute to website with dedicated case studies and examples.
15. Aiming at a publication of version 2.0 of the Best Practice document by end of July 2012, contributors are asked to send in their contributions by mid June 2012 at the latest. A review process shall be established by CWG.

A specific action on the ESSL testbed activities was agreed:

16. The NWC-SAF and ESSL will explore ways of getting NWC-SAF products into the testbed.

### **List of Recommendations**

1. CWG sees the potential of combining the Nearcast product with the CI/SATCAST method; respective developers are encouraged to collaborate on this and propose a way forward (John Mecikalski and Ralph Petersen).
2. For the CI processing, the developers are encouraged to take into account multiple datasets like lightning, NWP, etc.

3. CWG sees the BTD (WV – IR window) product as a not unique identification of Overshooting Tops. CWG thus expresses certain doubts of the usefulness of this product. The nature of the possible reasons behind the observed temperature differences above storms are interesting and should be further studied (compare Action 8).
4. CWG sees the ambiguity of the MSG Storm RGB product interpretation and recommends that it should be used operationally with caution and together with the respective single channel data, as the product signature can result either from small cloud top ice particles or from very low IR10.8 brightness temperatures (or both). CWG also recommends looking for an alternative RGB combination that better splits the two contributors to the product.
5. CWG expresses high interest in 2.5 min MSG scans for CI purposes as well as for studies of the dynamics and microphysics of cloud tops of convective storms. CWG notes the planned 60 second scans to be done by GOES-14 in August 2012, together with the phased array radar scans.
6. CWG expresses high interest in the Brazilian CHUVA campaign and recommends that an update on the results of this campaign should be presented by INPE to CWG in one of the future meetings.
7. CWG Members are encouraged to participate and present their CWG related work in the 2013 ECSS, 3-7 June 2013 in Helsinki and in the EUMETSAT conference, 16-20 September 2013, Vienna (together with AMS), and possibly also in the WSN-12 conference in Rio de Janeiro in August 2012 (abstract submission deadline is 15 May).
8. HERZ – OASE project is encouraged to report back to CWG-2014 on the progress of their project (POC is Hartwig Deneke).
9. Collaboration on the CHUVA data is encouraged.
10. Humberto Barbosa is invited to establish and main contact to the relevant research community in Brazil, also aiming at possible contributions to the CWG website.

### **Location and Time of Next Meetings**

It was decided that the next full CWG workshop should take place in spring 2014 in Croatia; a duration of a full week is planned. The group thanks Nataša Strelec Mahović for her kind offer to host the meeting.

It was also decided to have a short (2-3 hours) splinter meeting during the 2-12 EUMETSAT Conference in Sopot/Poland. Aim here is to provide a short action review.

## List of Participants

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