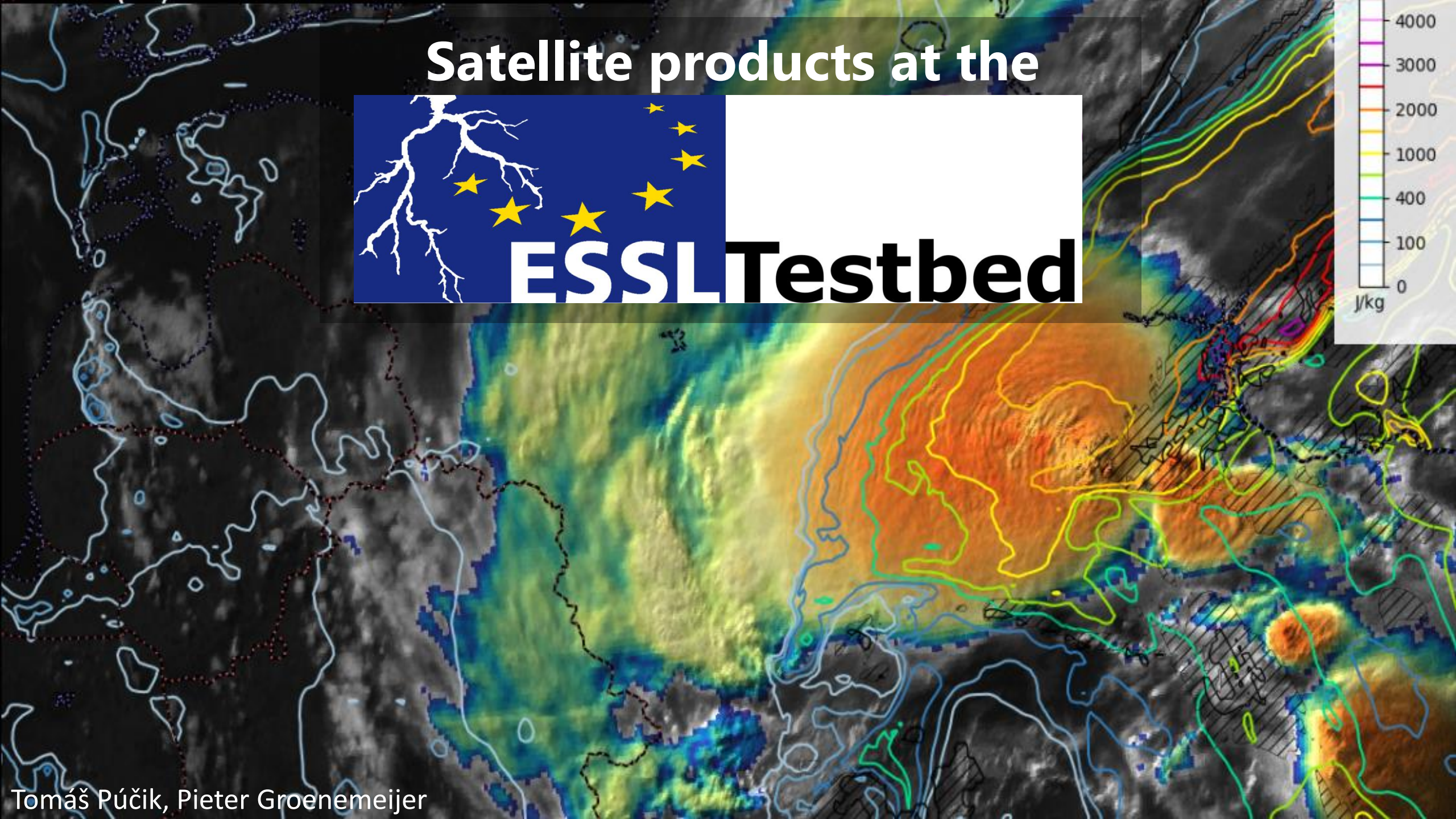
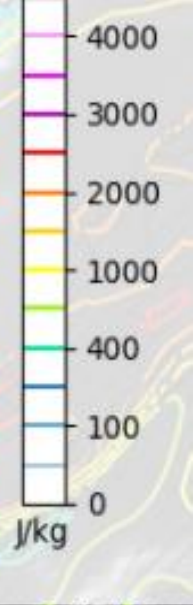


# Satellite products at the







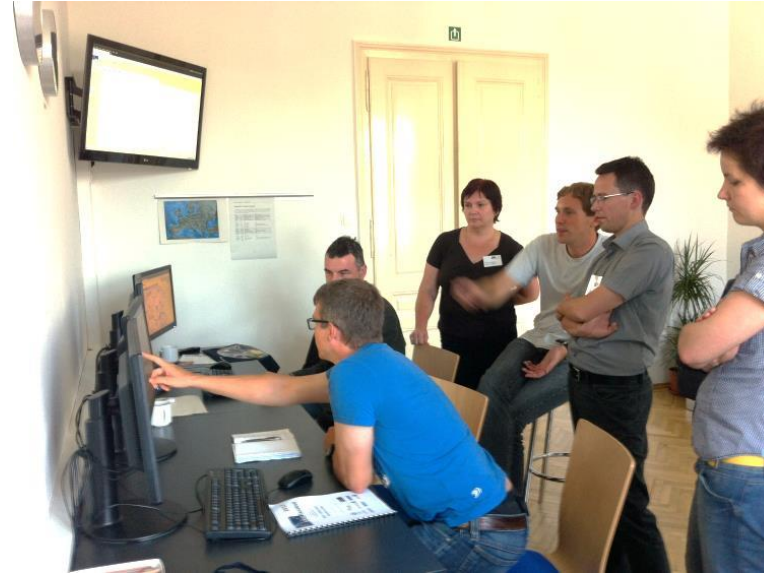
European Severe Storms Laboratory



Testbed

## Goals:

- **Evaluate** new forecast-supporting products
- **Train** Europe's forecasters in severe convective weather forecasting and nowcasting



Between 2012 and 2020 the Testbed has been supported by:



322 participants from 30 countries



# Evaluation forms

1. Does CI display bring you valuable information for identifying new convective initiation?

not at all      not so much      indecisive      yes, some      yes, a lot



If so:

- Does the number of False Alarms limit the quality of this information?
- How useful are probability levels of CI? Does it help you to identify new convection initiation?

2. Does RDT display bring you valuable information for identifying most active thunderstorms?

not at all      not so much      indecisive      yes, some      yes, a lot



If so, does the number of False Alarms limit the quality of this information?

3. Do you find the trajectory erratic (0) or relevant (10)?

Please rate between 0 and 10.

0      1      2      3      4      5      6      7      8      9      10



1. Which kind of precipitation products perform better, the ones that incorporate the cloud microphysics (ending on Ph) or the other one?



the ones ending on Ph



the other one (CRR)

Please give reasons. Does this differ between day and night?

2. Which product performs better, CRR-Ph (old) or CRRPh (new)?



CRR-Ph (old)



CRRPh (new)

Does this depend on whether it is day or night? Please explain.

3. Is there any specific region where one of these two products performs better or worse? Does the performance depend on the latitude?



European Severe Storms Laboratory



# Testbed 2020

## The living room edition

Have you ever dreamt of forecasting the storms in your pyjamas and drinking the morning coffee?



# ESSL Testbed 2020



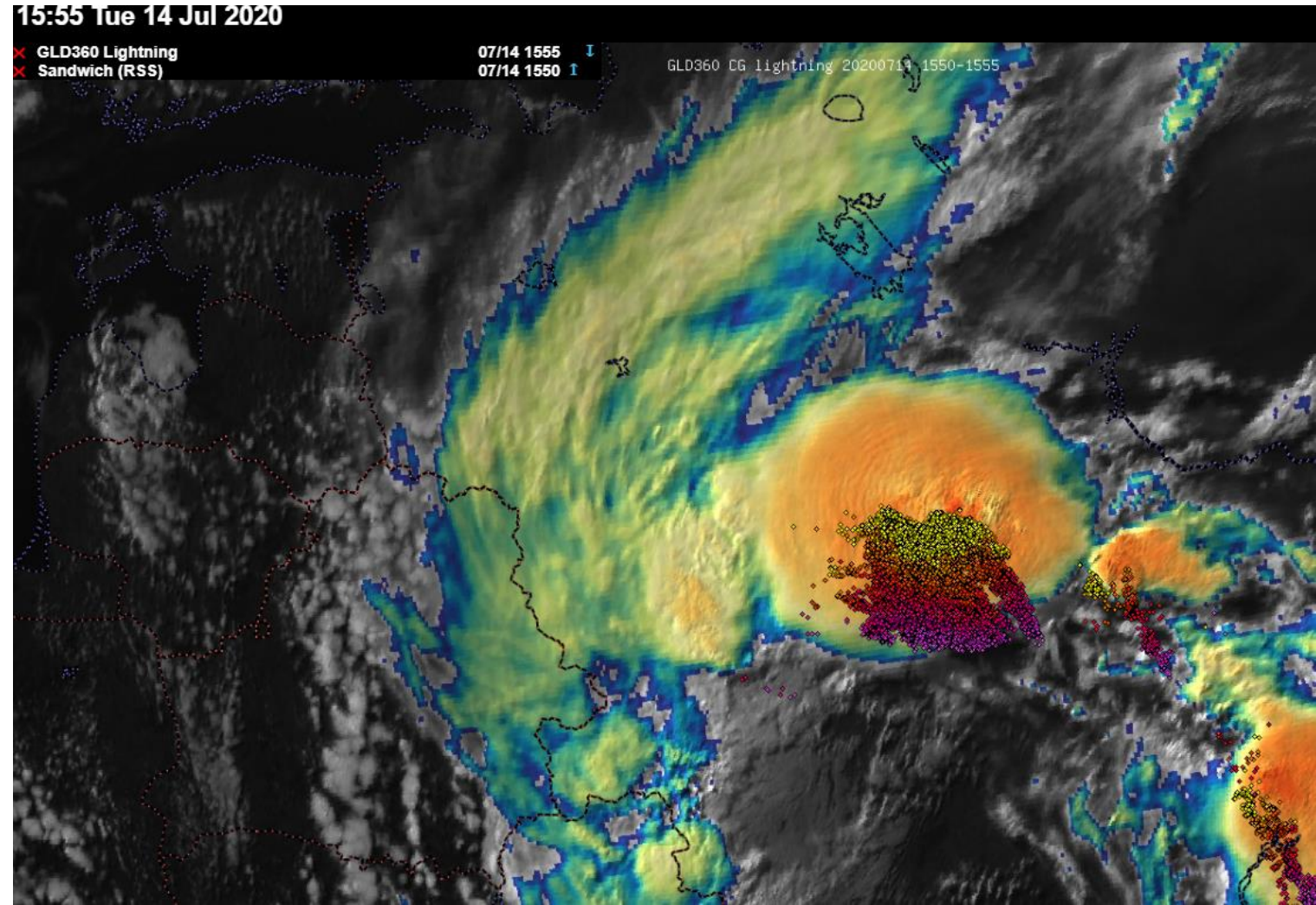


# Satellite products at Testbed

Support for forecasting/nowcasting

Products for evaluation

**Pan-European!**

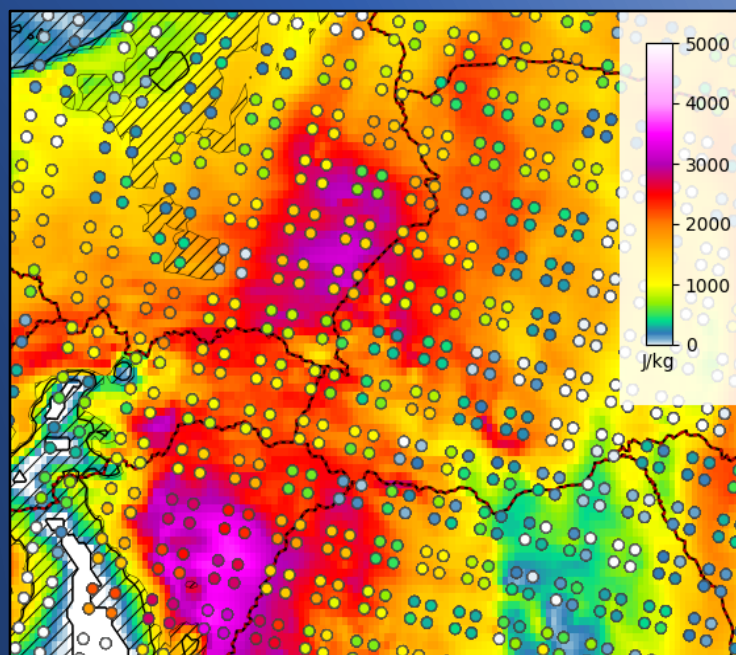
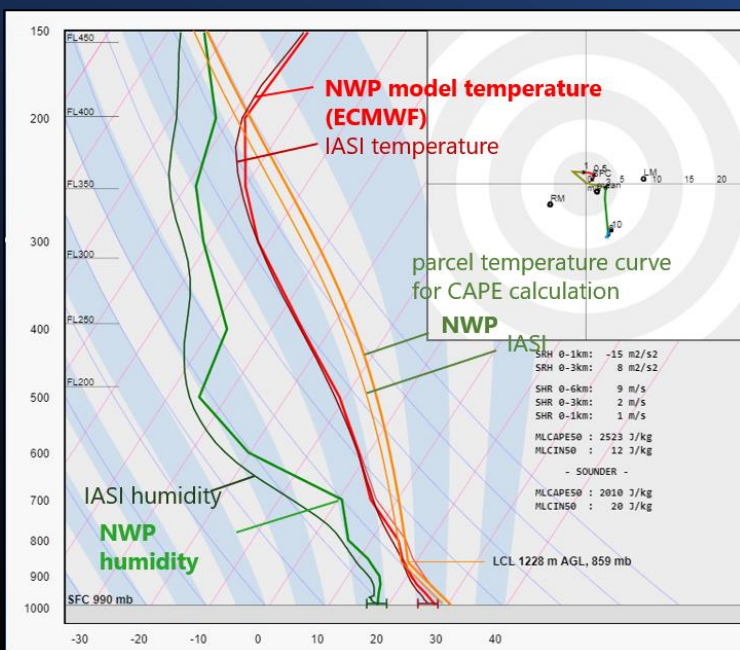


# Hyperspectral sounding for severe storm forecasting

Testbed to assess potential and practical  
requirements in Europe

Infrared Atmospheric  
Sounding Interferometer  
(IASI)

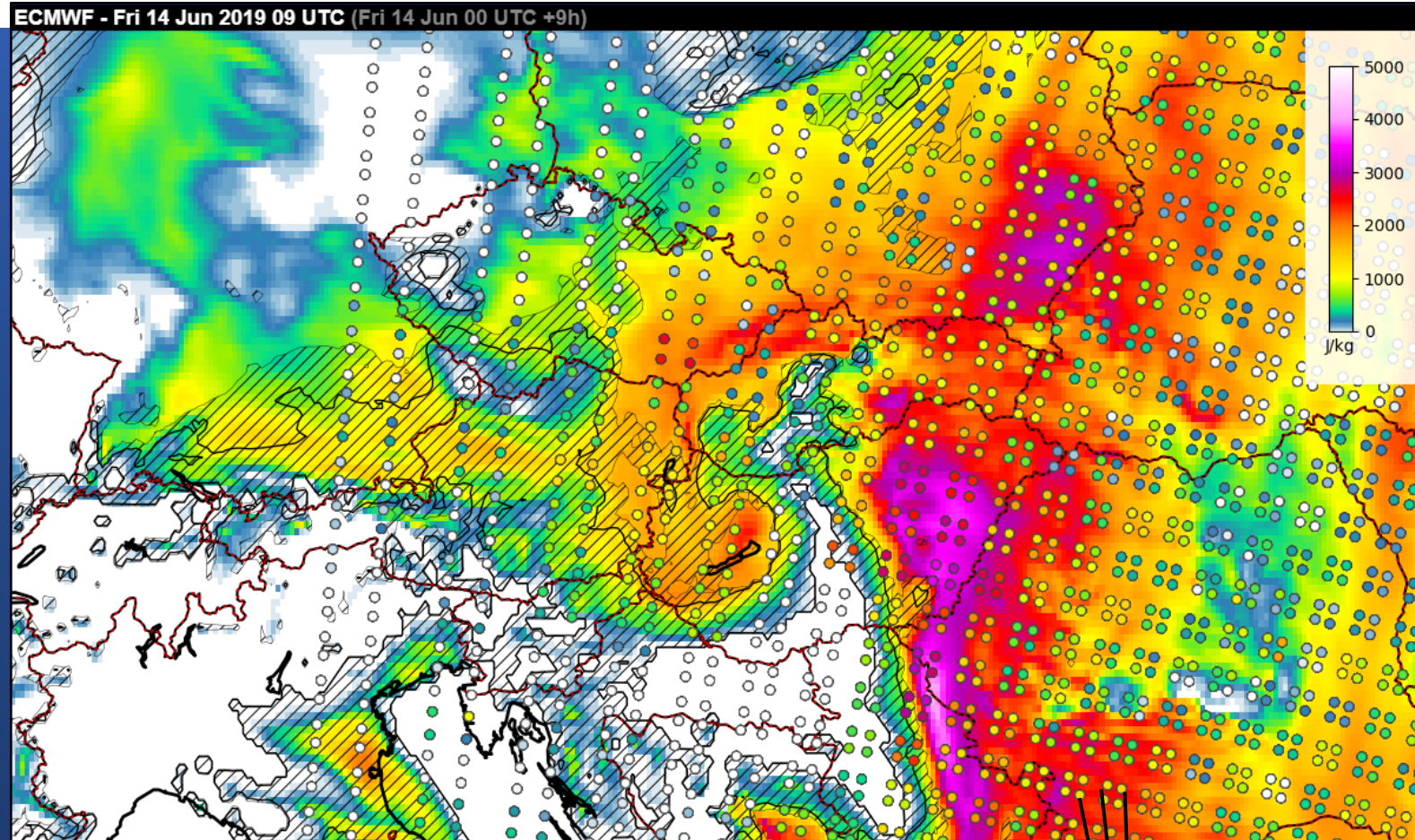
Metop





# Comparison of convective parameters

**Example  
visualization:**



**50 mb mixed-layer CAPE**

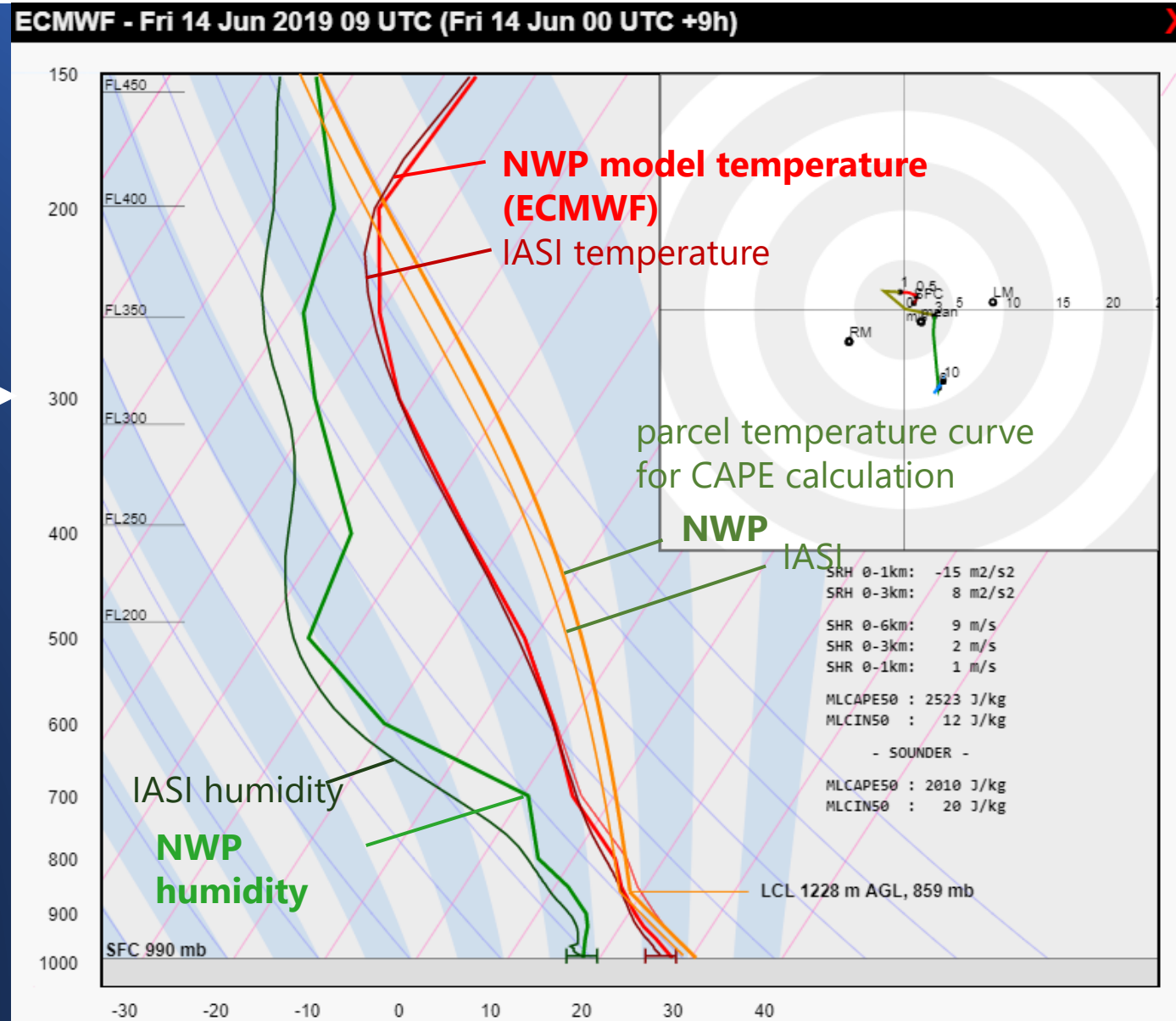
background: values derived from +9 h  
model forecast (ECMWF IFS)

dots indicate  
IASI-derived  
values



# Comparison of IASI with NWP

“Roaming sounding”  
diagram from the  
Testbed data  
interface



# Testbed evaluation

## Main outcomes:

1. most (80%) of participants found the data useful in principle
2. forecasters would welcome a higher (spatio-) temporal availability
3. IASI profiles should stay completely independent of the model data
4. There was concern about the accuracy of the near-surface humidity data

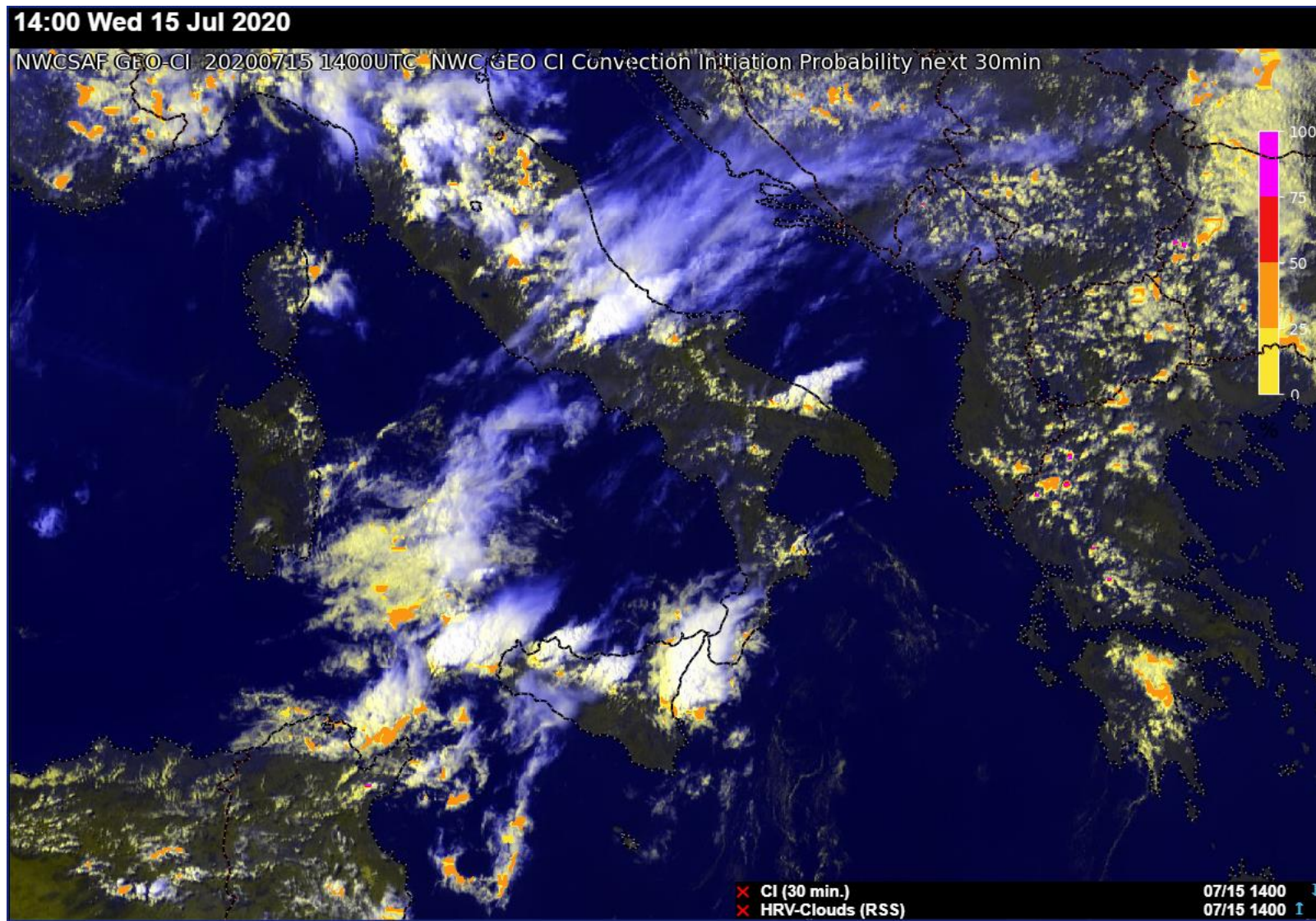




# NWCSAF at the Testbed

- ✓ CI and RDT
- ✓ Precipitation products
- ✓ iSHAI

CI: large amount of false alarms



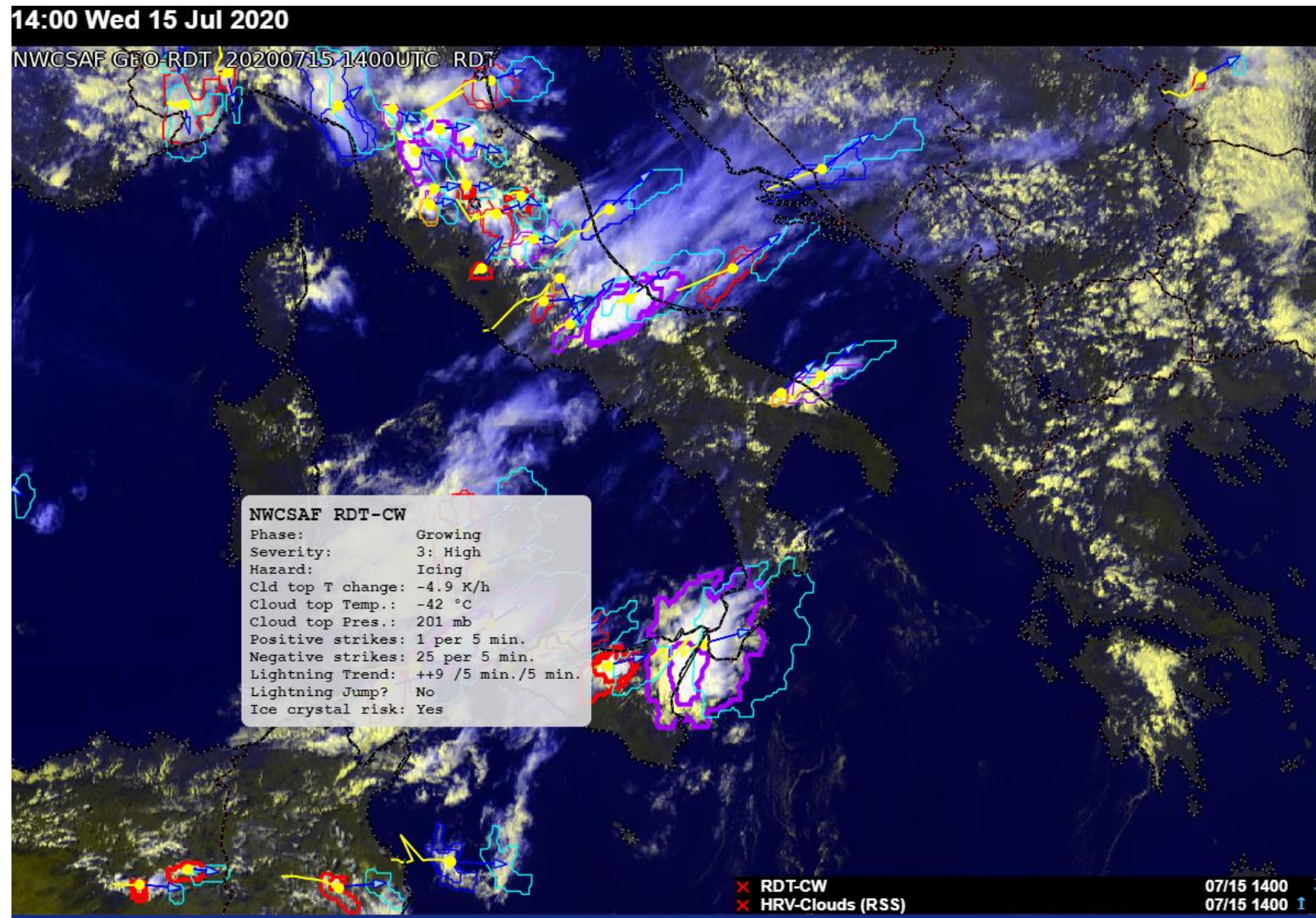


# NWCSAF at the Testbed

- ✓ CI and RDT
- ✓ Precipitation products
- ✓ iSHAI

CI: large amount of false alarms

RDT: well-received



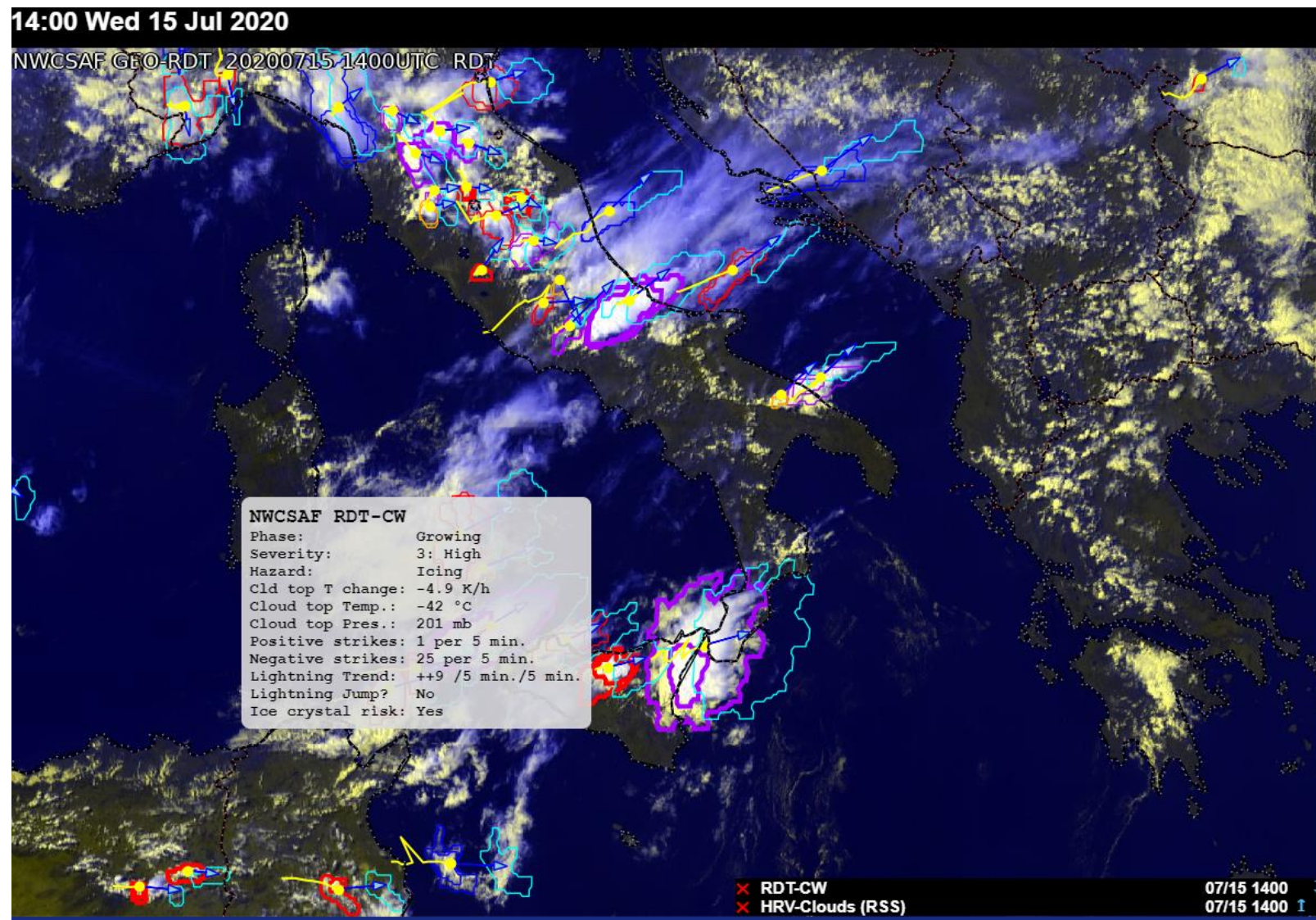


# NWCSAF at the Testbed

- ✓ CI and RDT
- ✓ Precipitation products
- ✓ iSHAI

CI: large amount of false alarms

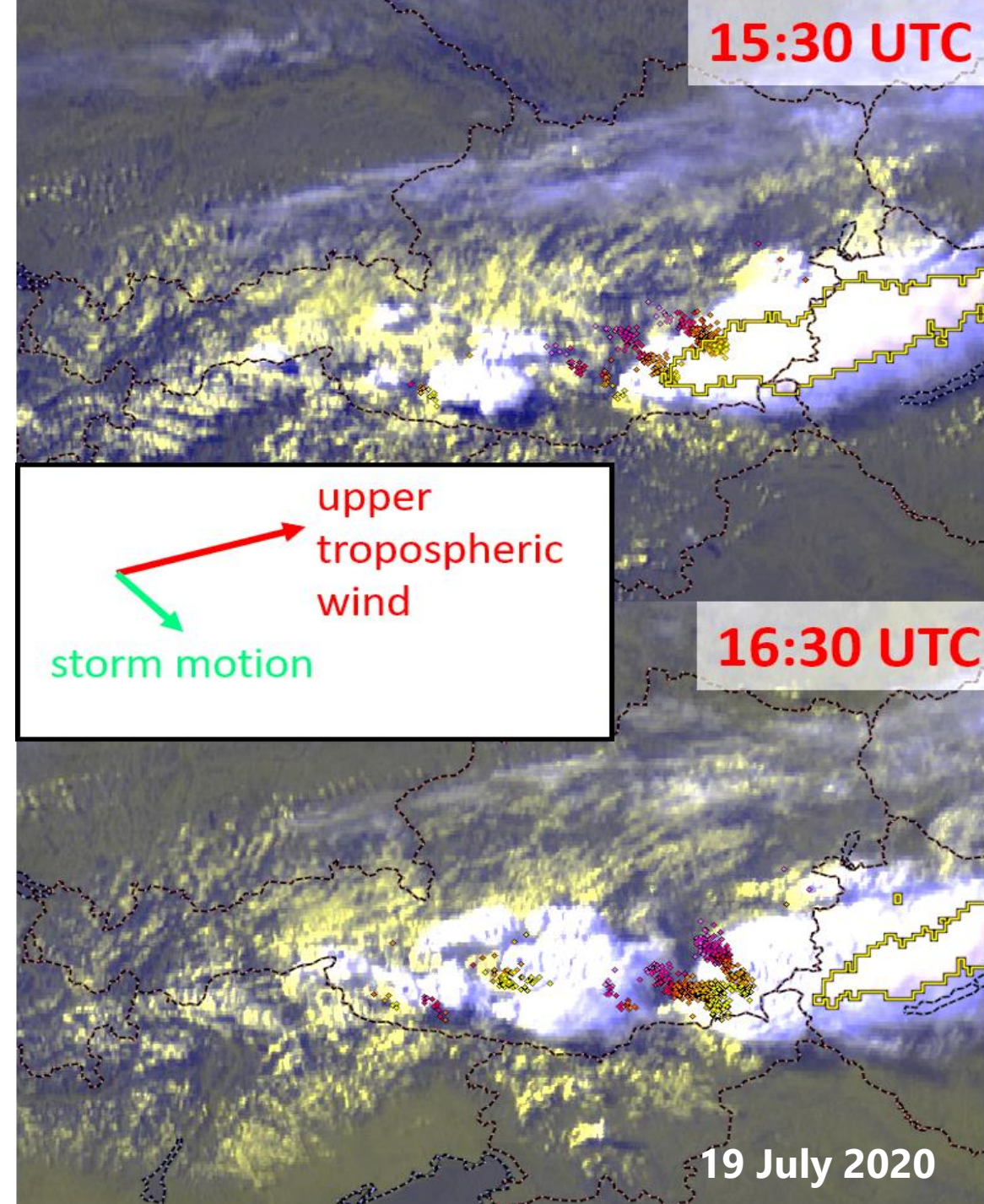
RDT: problem with motion vector





# NowcastSAT (DWD)

**Difference in motion between storm top and rest of the storm leads to incorrect forecast of storm motion**



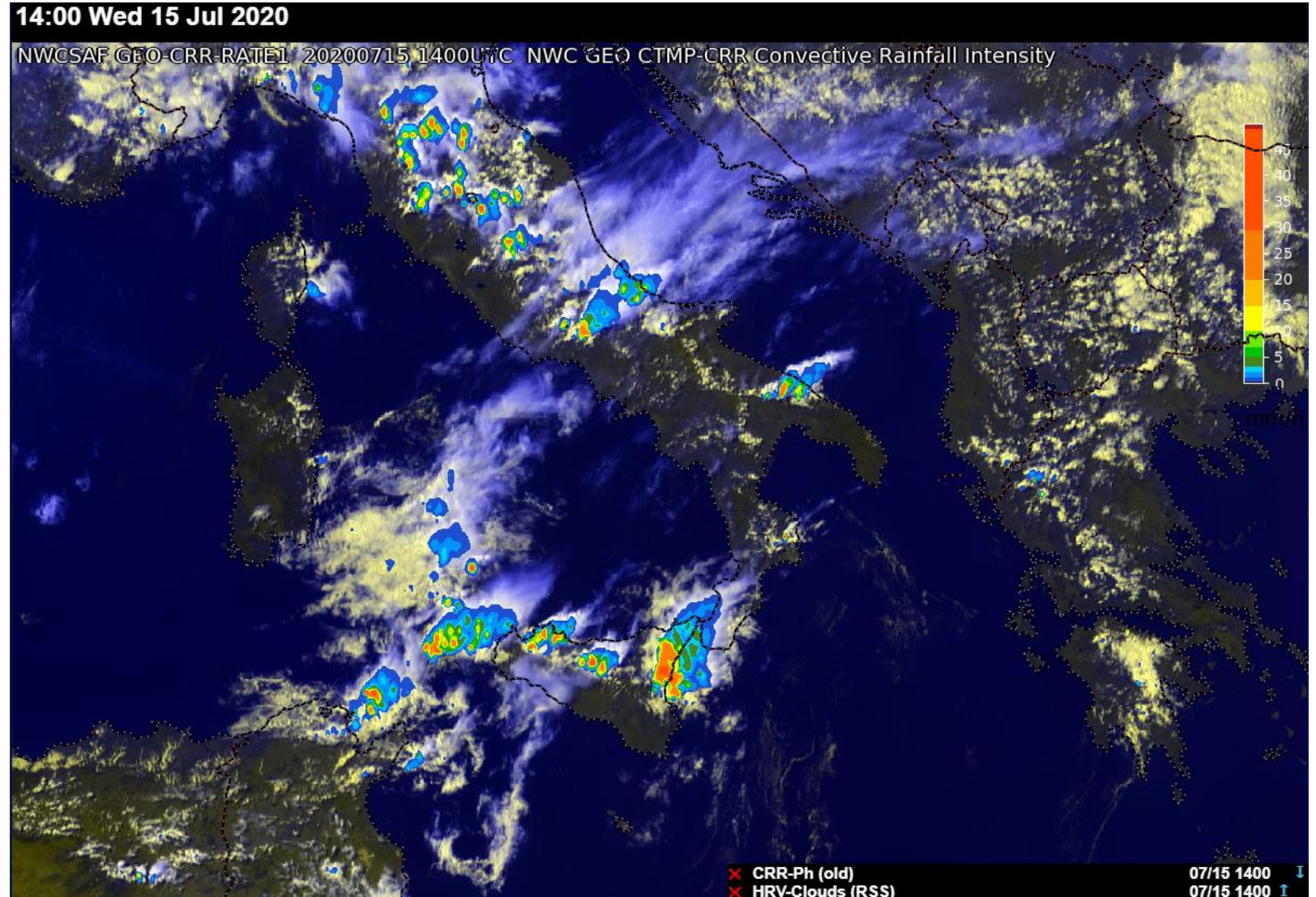
19 July 2020



# NWCSAF at the Testbed

- ✓ CI and RDT
- ✓ Precipitation products
- ✓ iSHAI

Performance different for convective and stratiform precipitation

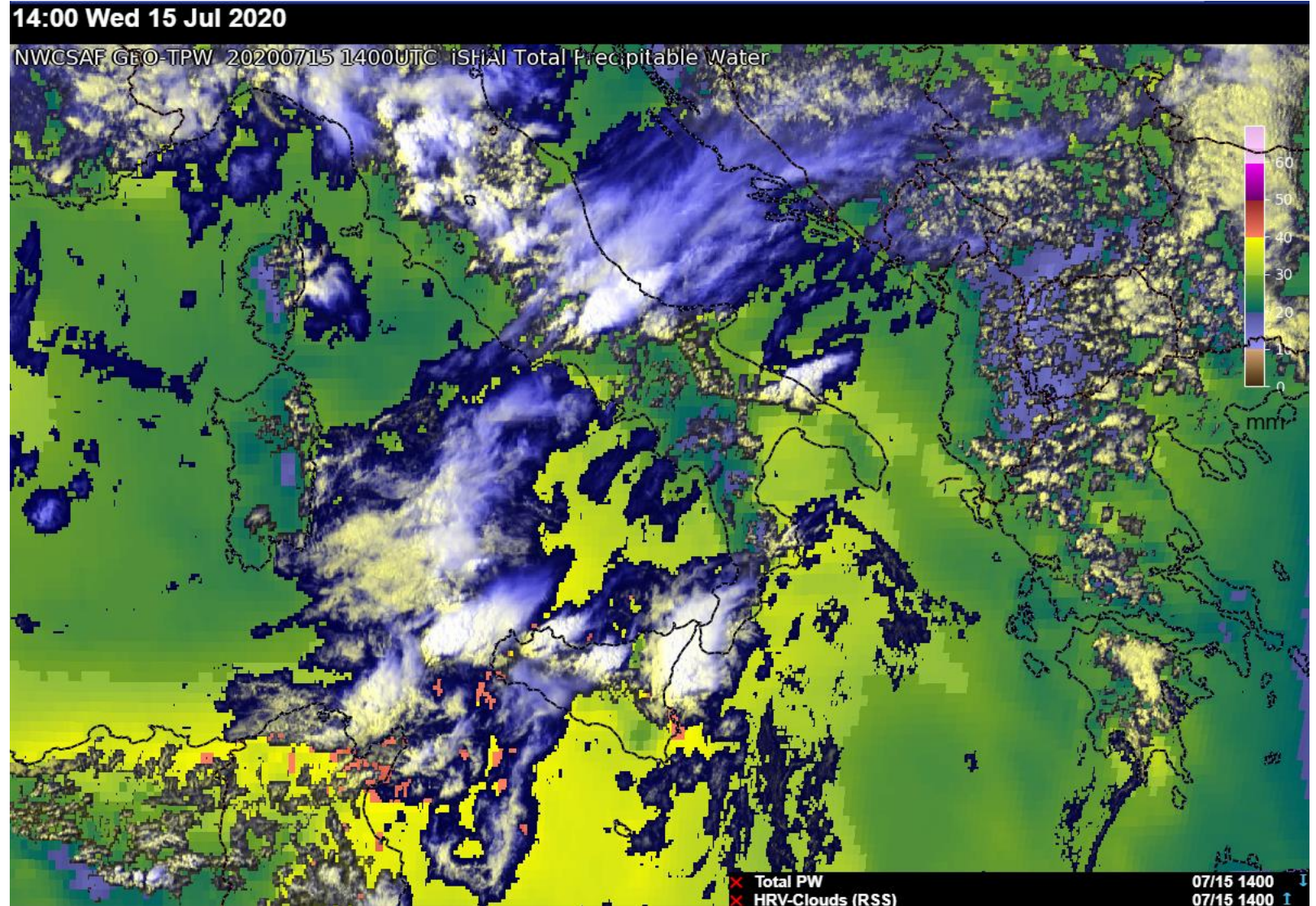




# NWCSAF at the Testbed

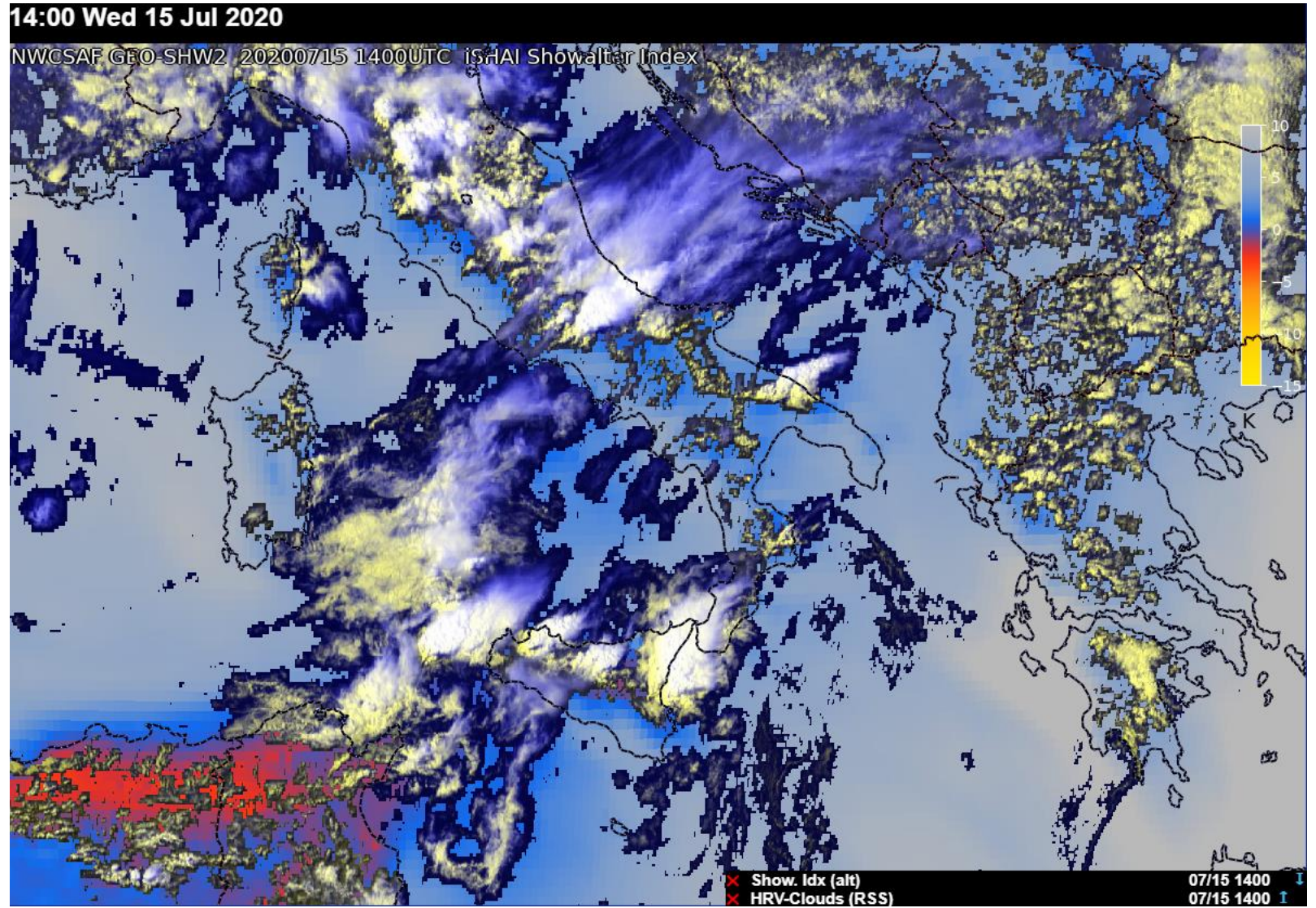
- ✓ CI and RDT
- ✓ Precipitation products
- ✓ iSHAI

Only small differences in usefulness  
of these products





- ## Participants sometimes drew unsubstantiated conclusions





# NWCSAF at the Testbed

ESSL report and NWCSAF reply can be found here:

<https://www.essl.org/cms/essl-testbed/essl-testbed-2020/nwcsaf/>





# Future outlook

Pan-European aspect of Testbed allows for quick testing of new products over a variety of situations

MTG data at the ESSL Testbed?

