EUMETSAT NWC SAF
SUPPORT TO NOWCASTING AND VERY SHORT RANGE FORECASTING

Nowcasting Satellite Application Facility: software and products

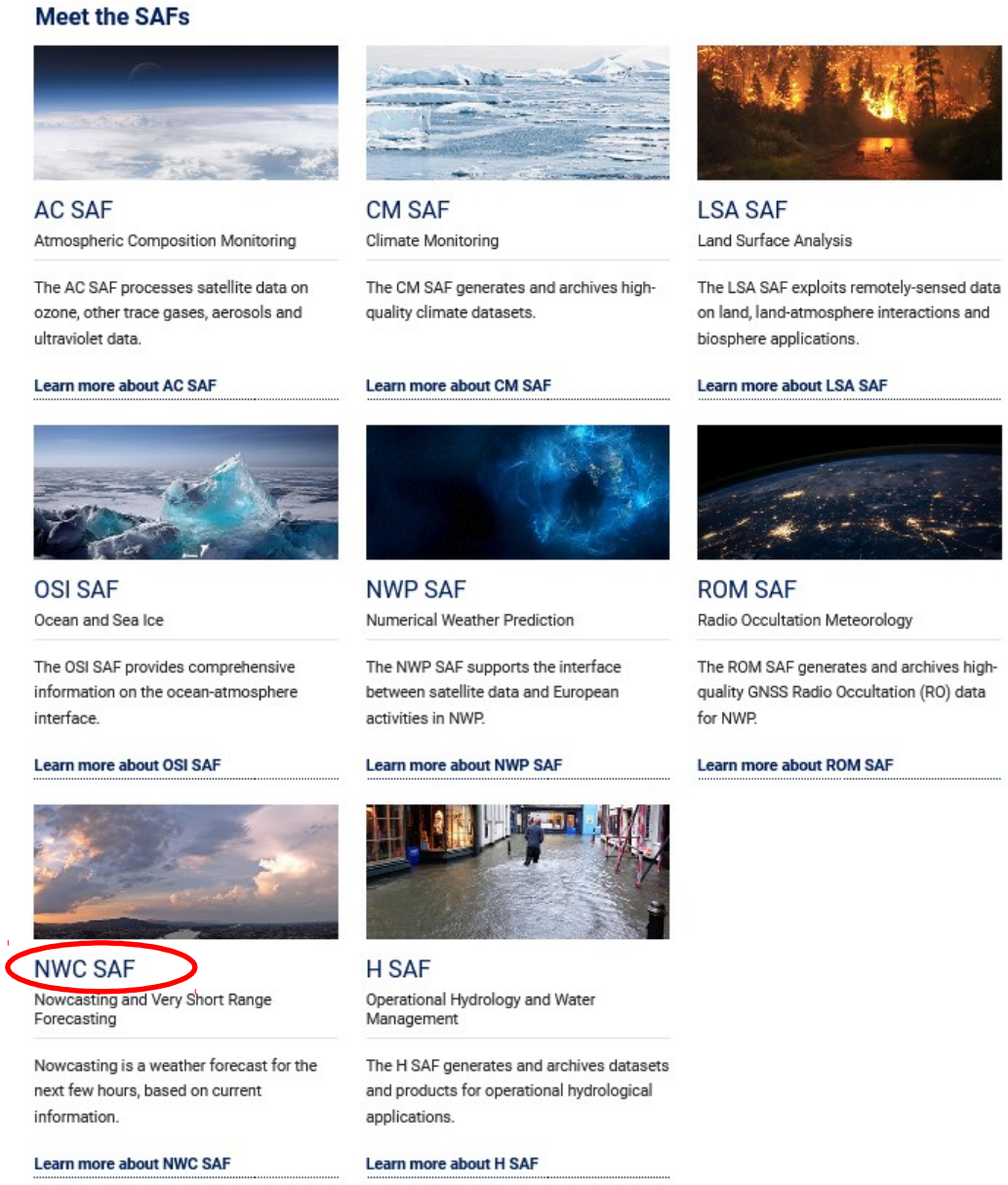
Pilar Rípodas, Xavier Calbet

NWC SAF Project Manager

Webinar Nowcasting in Africa

15 March 2022

EUMETSAT SAF Network



The eight EUMETSAT SAFs provide users with operational data and software products, each one for a dedicated user community and application area.

The SAFs are located within the National Meteorological Services (NMS) of EUMETSAT Member States, or other agreed entities linked to a user community.

https://www.eumetsat.int/about-us/satellite-application-facilities-safs

NWC SAF concept

- ✓To ensure the optimum use of meteorological satellite data in Nowcasting and Very Short Range Forecasting
- ✓The NWC SAF develops and maintains SW Packages (for GEOstationary and POLAR Satellites) freely distributed to registered users to generate satellite derived products with a direct application in Nowcasting
- ✓User support
- ✓Training

NWC SAF SW packages

Geostationary satellites

NWC SAF GEO v2018

- **MSG primary satellite**
- **MSG Rapid Scan Service** (Latitudes **15° N** - 70° N)
- **MSG IODC**
- Other stellites (Himawari 8, GOES-N and GOES-16)

Polar satellites

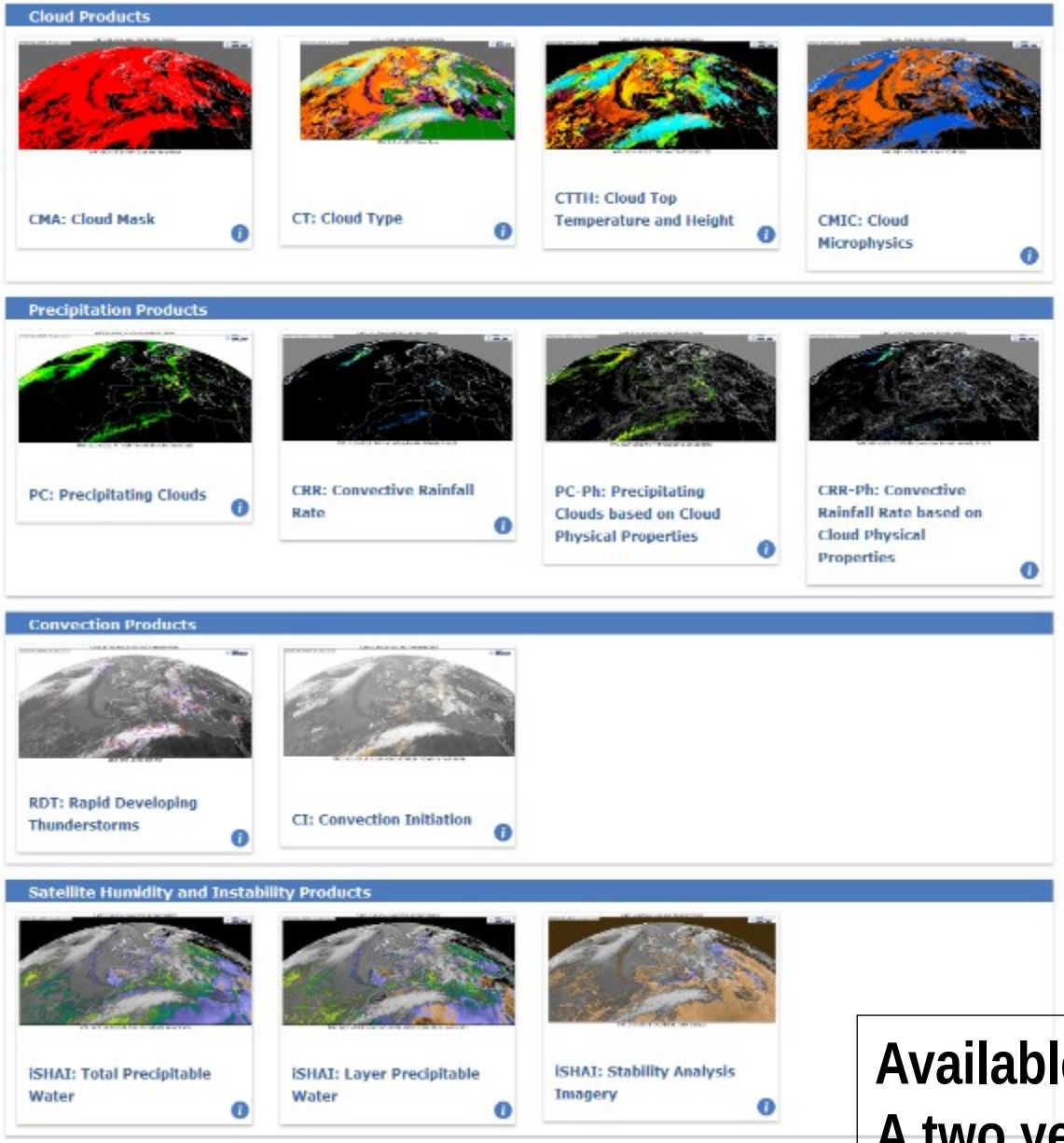
NWC SAF PPS v2018

- Metop
- NOAA
- NPP
- JPSS
- EOS
- FY-3D

Current NWC SAF Products for Geostationary Satellites

- Cloud products: CMA, CT, CTTH, CMIC (cloud phase, cloud optical thickness, liquid water path, ice water path, effective radius)
- Precipitation Products: Probability of Precipitation (PC and PC-Ph) and Convective Rainfall Rate (CRR and CRR-Ph)
- Stability Product: iSHAI (stability indices, Precipitable water in low, mid and high Layers, skin temperature, total ozone, differences with NWP)
- Convection Products: CI (probability of a cloud to become a convective cell) and RDT-CW (identification, characterization and tracking of convective cells)
- Winds: HRW (high resolution winds at various levels, trajectories)
- Image Extrapolation: EXIM (extrapolation of satellite images and NWCSAF products)
- Automatic Image Interpretation: ASII, ASII-TF (probability of presence of tropopause folding), ASII-GW (probability of presence of gravity waves)

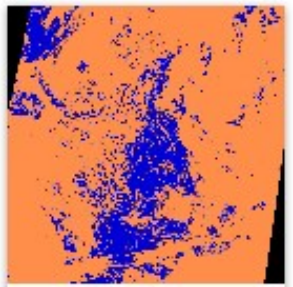
NWC SAF GEO



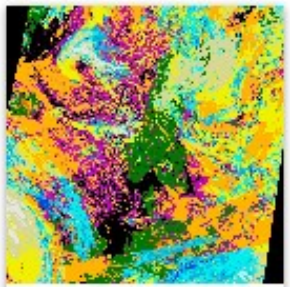
Available in NRT in nwc-saf.eumetsat.int
A two years rolling archive

NWC SAF PPS Products

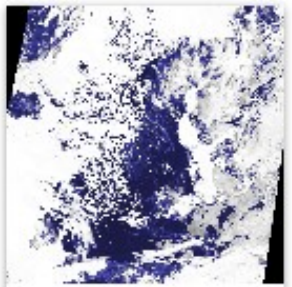
Cloud Products



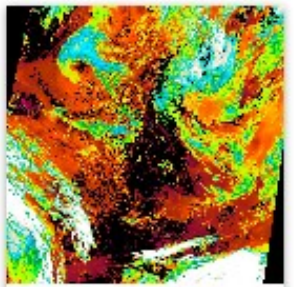
CMA: Cloud Mask



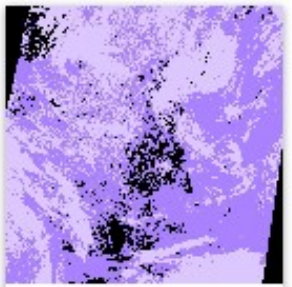
CT: Cloud Type



CMa-prob: Cloud Probability

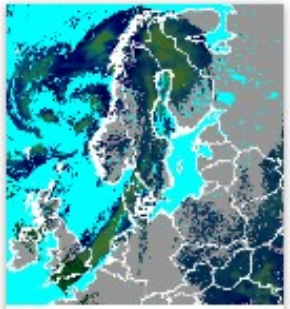


CTTH: Cloud Top Temperature and Height



CPP: Cloud Physical Properties

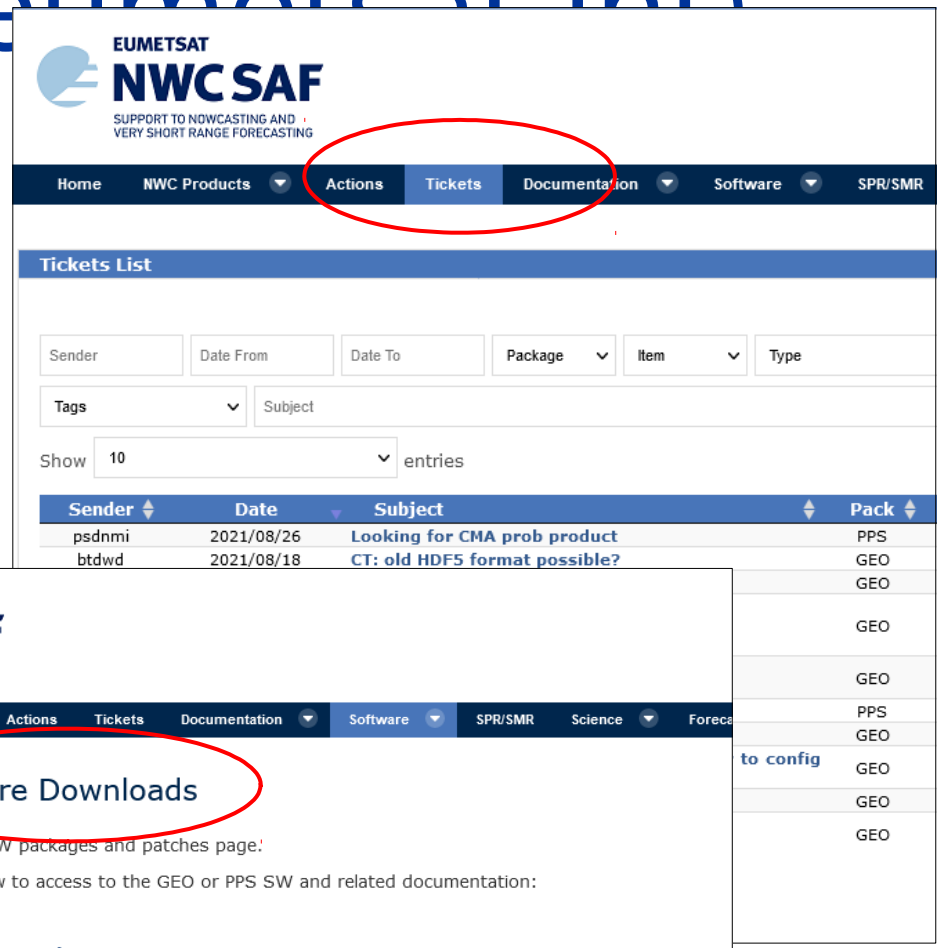
Precipitation Products

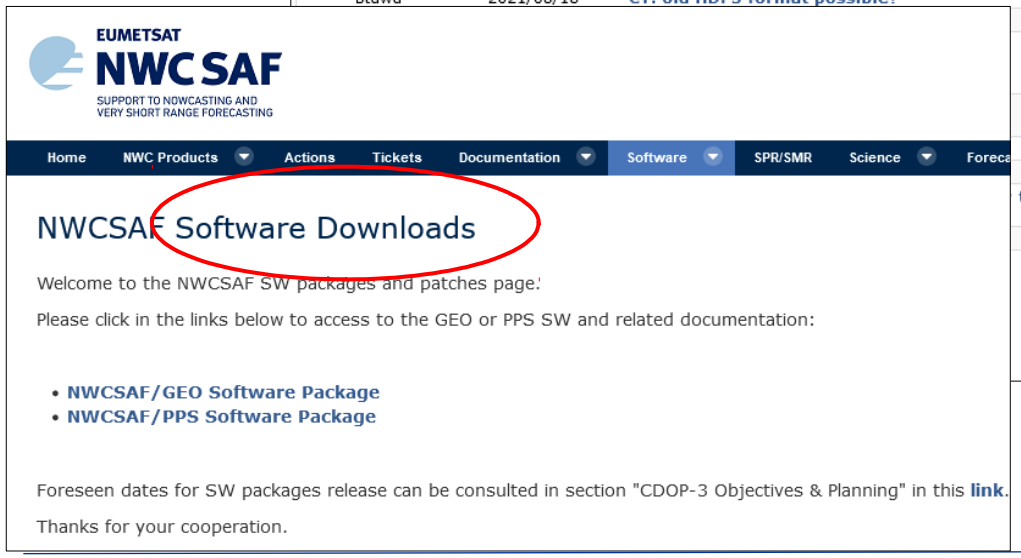


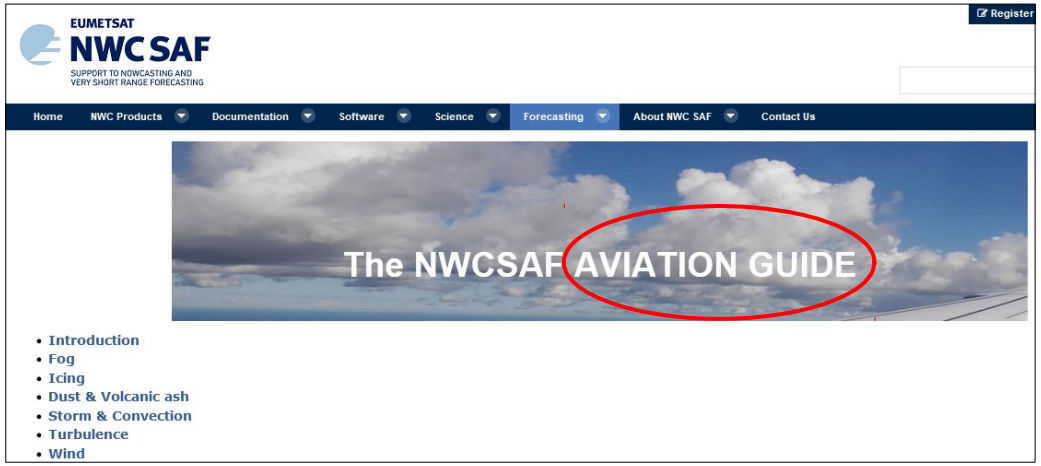
PC: Precipitating Clouds

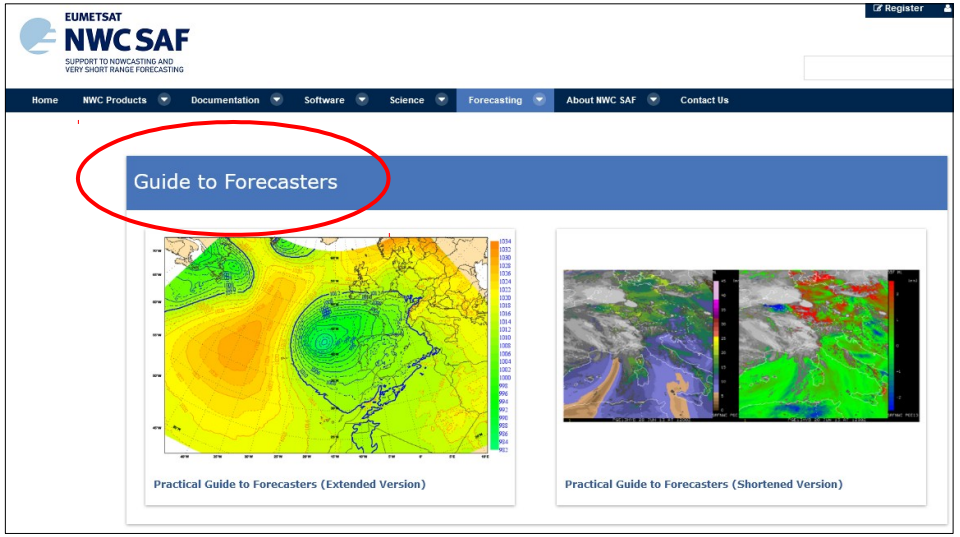
Available in NRT in nwc-saf.eumetsat.int

NWC SAF services. (nwc-saf.eumetsat.int)









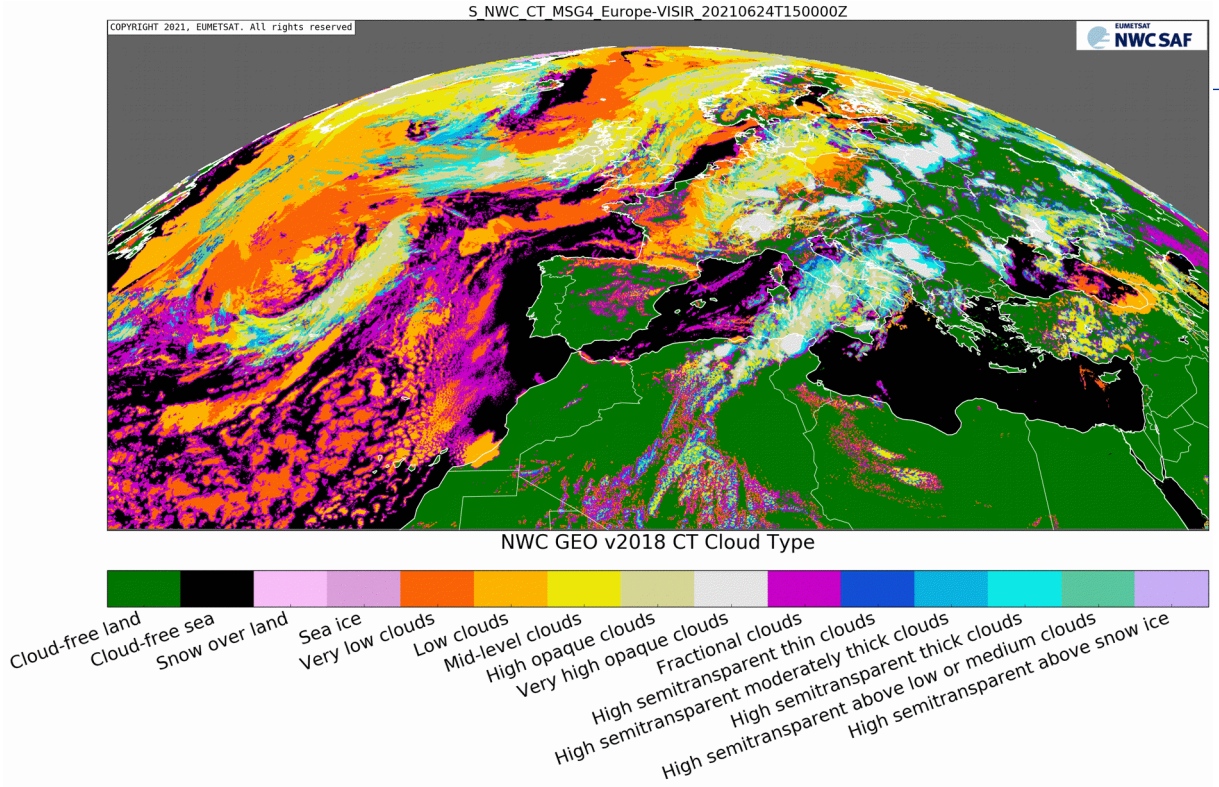
How to run NWC SAF GEO SW at your site

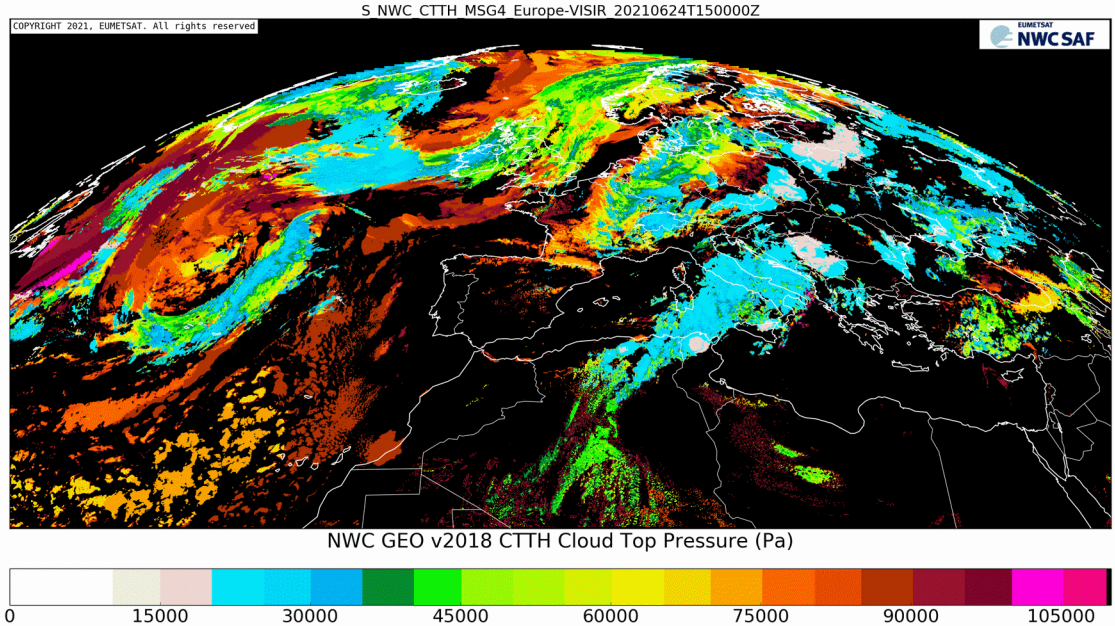
- Register as a user (it is free and can be done online)
- Download the software from the web site (nwc-saf.eumetsat.int)
- Install the software
- Set the configuration of your interest
  - Satellite to be used
  - Products to be generated
  - Geographical area where to generate the products
- Input data needed
  - Satellite data (HRIT MSG files)
  - A numerical model (ECMWF or GFS for example)

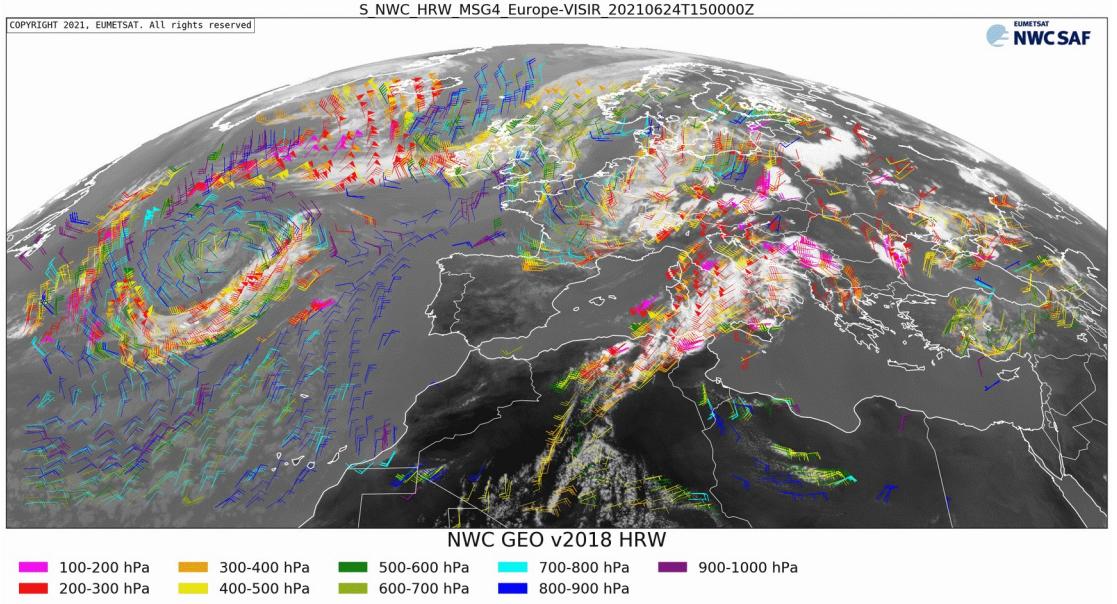
The NWC SAF Team offers support if you encounter any problem

The software is meant to be run in NRT operationally but also allows the generation of products in offline mode.

Example 24 June 2021

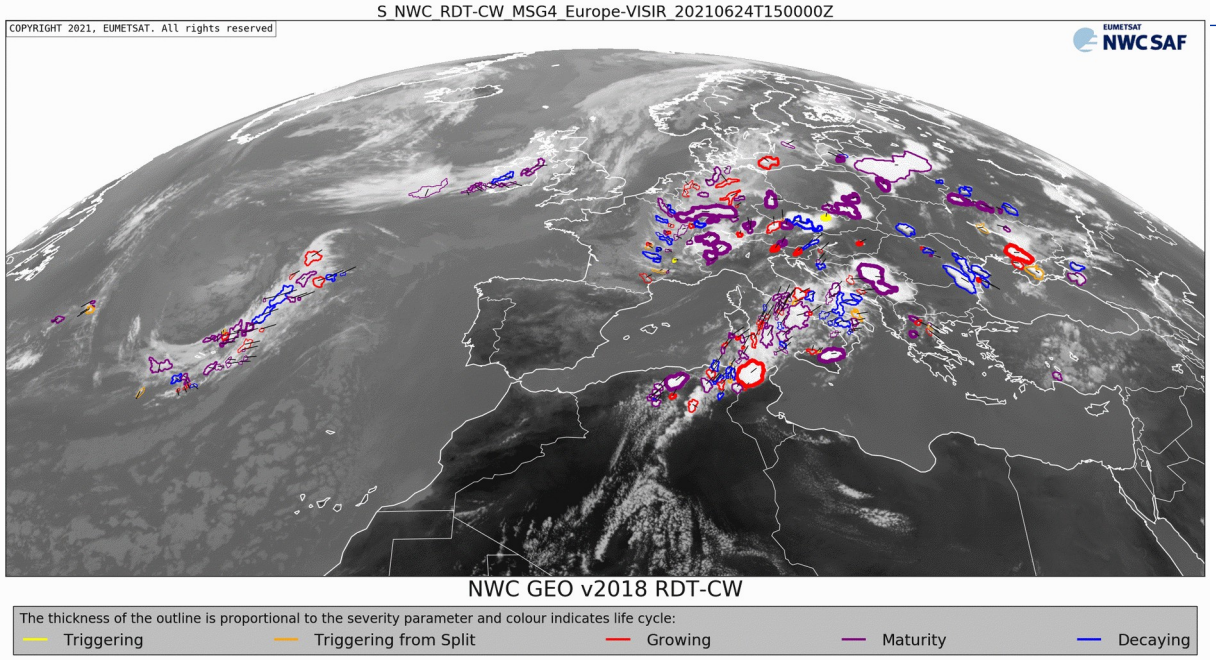


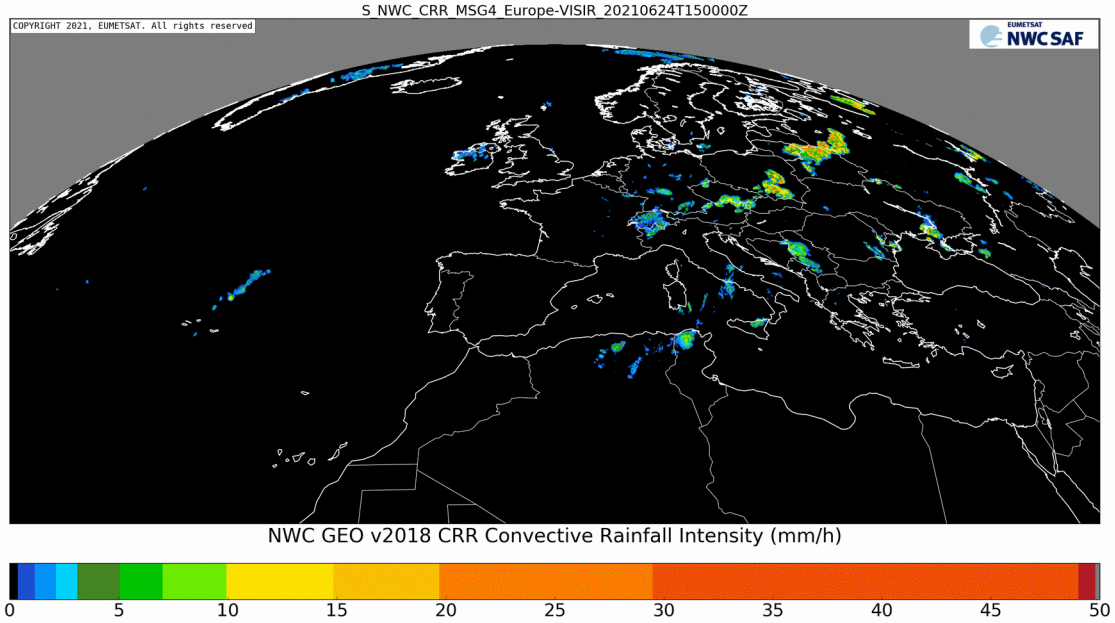


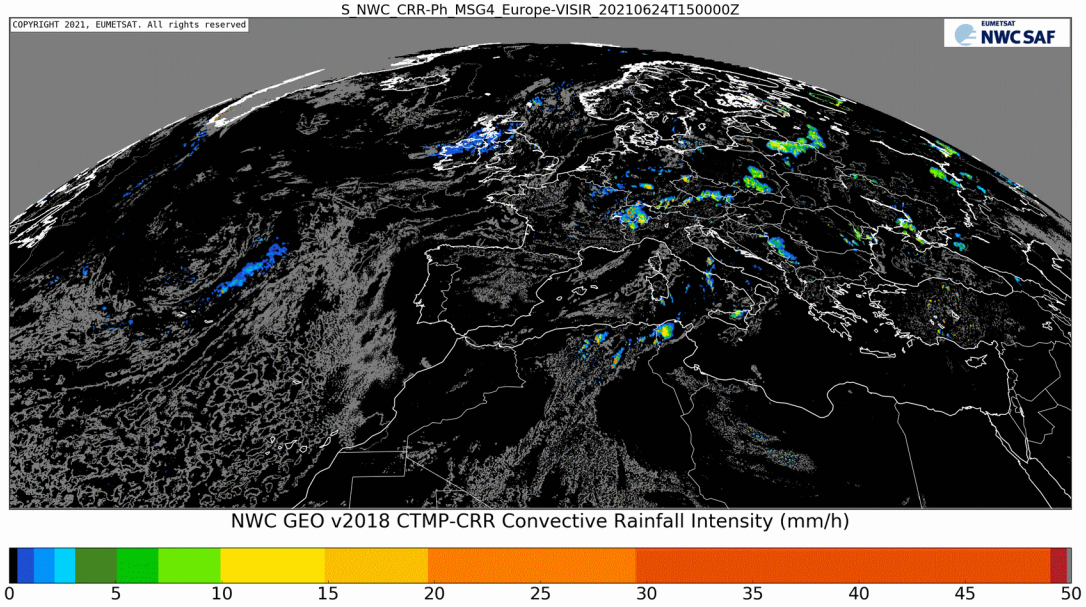


CT, CTTH and HRW

Example 24 June 2021





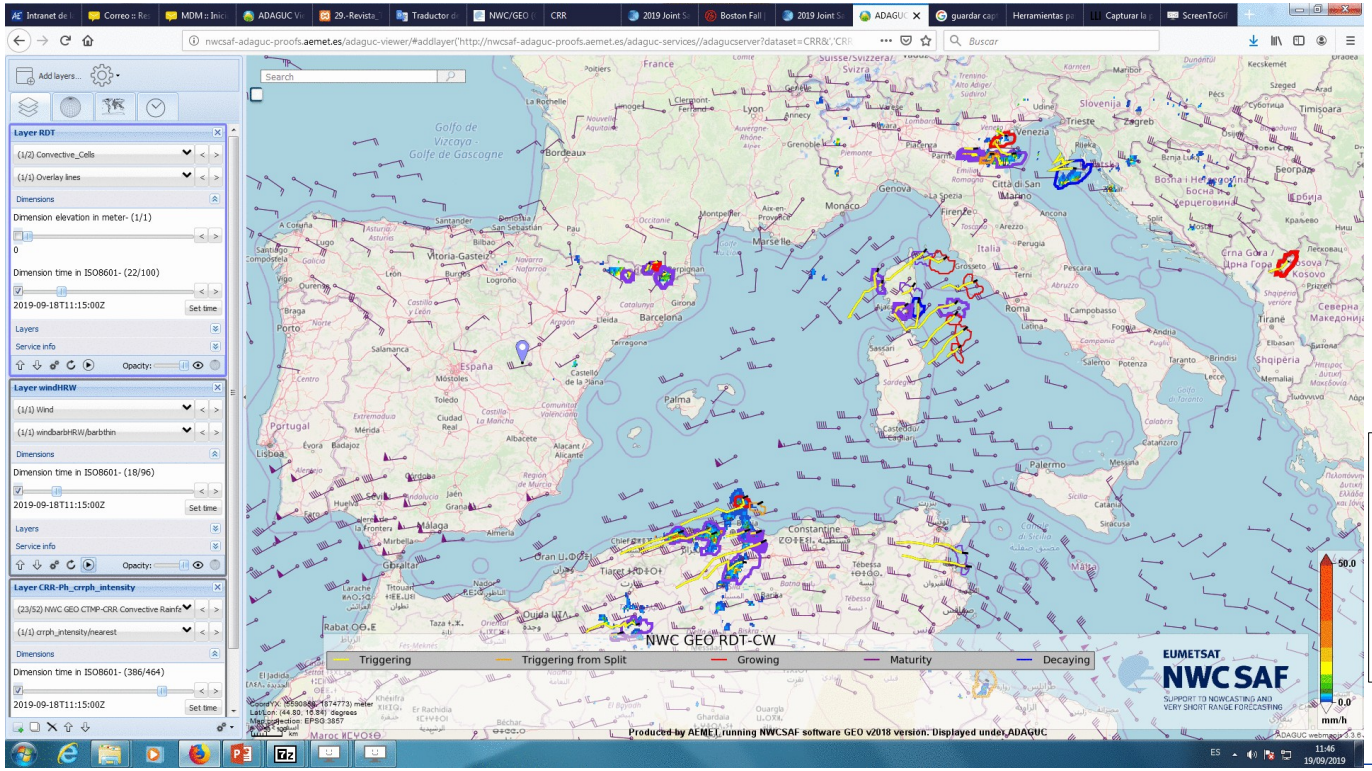


RDT-CW (left), CRR(top right) and CRRPh (bottom right)

Visualization of the products

We provide:

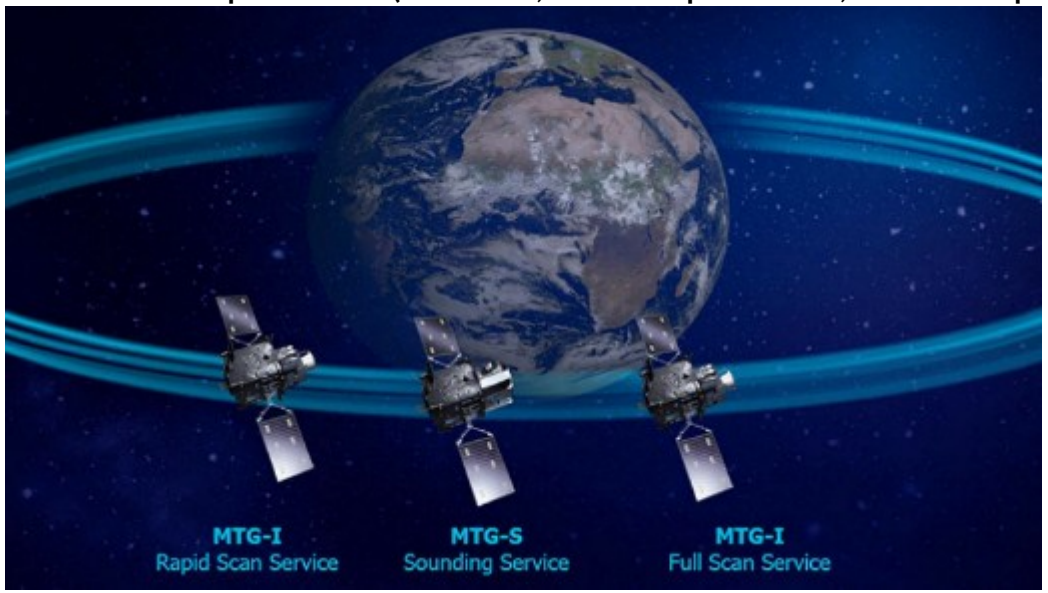
- Python script (nwcpy) to generate images from the NetCDF output file
- A software suite that makes possible the connection between NWCSAF and ADAGUC. We can provide support to install it.



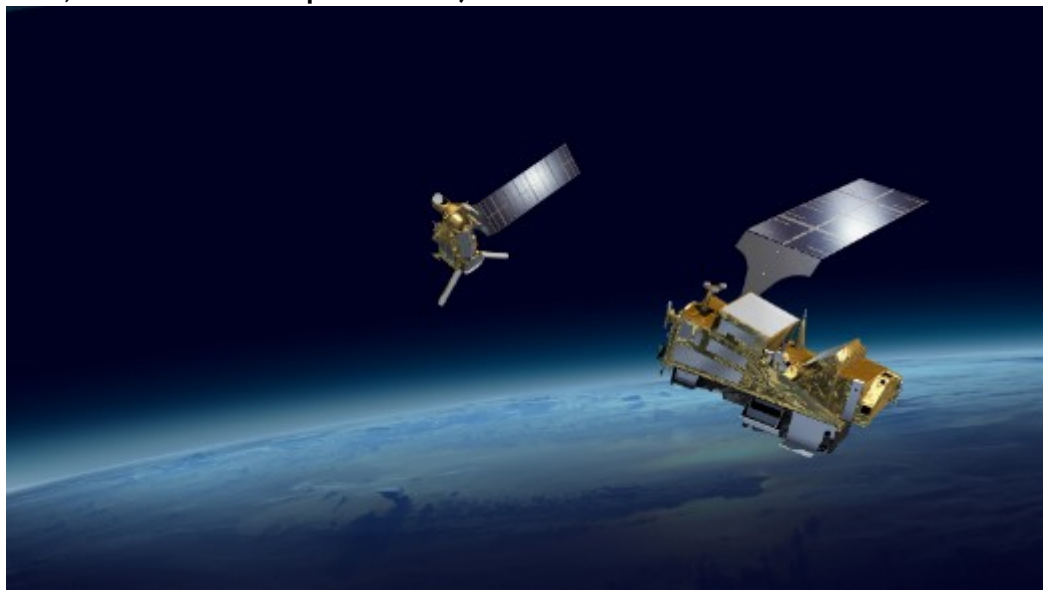
ADAGUC example of NWCSAF software outputs: geolocalized, zoomable, several products simultaneously (CRR, RDT, HRW), data picker.

Future Plans

- Adapt the products to the new era EUMETSAT Satellites (MTG-I, MTG-S, EPS-SG A, EPS-SG B) ensuring continuity
- Full exploitation of the capabilities of the new satellites:
  - improve current products
  - new products (ASII-ICE, MTG LI products, MTG IRS products, EPS SW MW products)



MTG-I and MTG-S Satellites, EUMETSAT



EPS-SG A and EPS SG B Satellites, EUMETSAT

Africa Dissemination

The baseline now for MTG is that there will be TWO ways to obtain the NWC SAF products (netCDF4 files):

- ALL NWC SAF products: they can be generated locally receiving MTG L1 data via EUMETCast Africa Terrestrial
- ONLY CMA, CT, CTTH, CRR, RDT-CW: available via EUMETCast Africa Satellite. Also precipitation rain estimates from the H SAF (H03B).

Thank you very much for your attention!
More information in www.nwcsaf.org
You can contact us at
pripodasa@aemet.es or safnwchd@aemet.es