H SAF

The EUMETSAT Satellite Application Facility (SAF) on support to operational hydrology and water management (H SAF) was established by the EUMETSAT Council in July 2005 and the Development phase started on 1st September 2005.
H SAF membership includes 12 EUMETSAT member or cooperating States (Austria, Belgium, Bulgaria, Finland, France, Germany, Hungary, Italy, Poland, Romania, Slovakia and Turkey) and ECMWF. The **H SAF is hosted by the Italian Met Service.**

In the framework of the H SAF the interest for new satellite products focuses on:

- Precipitation rate and cumulate precipitation, including liquid/solid discrimination;
- Soil moisture in the surface layer and possibly in the roots region;
- Snow parameters such as effective cover, wet/dry discrimination, water equivalent.

ECMWF is a contributor to the core soil moisture product and is represented in the H SAF Steering Group and the Project Team.

ECMWF H SAF products:

- SM-DAS-2 (H14): Metop ASCAT NRT Root Zone Soil Moisture Profile Index 25 km sampling description and previews: EO:EUM:DAT:MODEL:SM-DAS-2
- RZSM-ASCAT-NRT-10 (H26): Metop ASCAT NRT Root Zone Soil Moisture Profile Index 10 km sampling description and previews: EO:EUM:DAT:0600
- RZSM-DR2019-10 (H141): Scatterometer Root Zone Soil Moisture (RZSM) Data Record 10 km resolution (1992-2018): doi.org/10.15770/EUM_SAF_H_0008
- RZSM-DR-EXT-10 (H142): Offline scatterometer Root Zone Soil Moisture (RZSM) Data Record extension (2019-2021), 10 km resolution:
- Powerpoint presentation of current near-real-time products and climate data records, and future H SAF root-zone soil moisture products
- Powerpoint presentation about downloading and visualizing products with metview-python
- How to read and plot RZSM products
- Converting grib to netCDF with CDO
- RZSM-DR2019-10km (H141) documentation and offline extension (H142):
  - Product User Manual (H141_PUM_R02.pdf)
  - Algorithm Theoretical Baseline Document (H141_ATBD_R02.PDF)
  - Product Validation Report (H141_PVR_R02.PDF)
  - Product Validation Report (H141_H142_DGCDD.pdf
  -)
- SM-DAS-2 (H14) documentation:
  - Product User Manual (SAF_HSAF_PUM-14.pdf)
  - Algorithm Theoretical Baseline Document (SAF_HSAF_ATBD-14_0_2.pdf)
  - Product Validation Report (SAF_HSAF_PVR-14.pdf)
  - Data Output Format (SAF_HSAF_DOF_H14_v1.2.pdf)
- RZSM-ASCAT-NRT-10 (H26) documentation
  - Product User Manual (ATBD)
  - Algorithm Theoretical Baseline Document (PUM)
  - Product Validation Report (PVR)

References:

- Aires, F., Weston, P., de Rosnay, P. and Fairbairn, D., 2021. Statistical approaches to assimilate ASCAT soil moisture information—I. Methodologies and first assessment. *Quarterly Journal of the Royal Meteorological Society*, *147*(736), pp.1823-1852.
- Fairbairn, D., Weston, P. and de Rosnay, P., 2019: Revision and evaluation of ASCAT soil moisture bias correction parameters for IFS cycle 47r3. *ECMWF research memorandum*.
- Gruhier C., Albergel C., de Rosnay P., Hasenauer S., Zeiner B., 2010: "Comparison between H SAF large scale surface soil moisture, H SAF assimilated soil moisture and SMOS level 2 soil moisture". (H SAF_CDOP_VS11_02.pdf)
- Pellarin T., de Rosnay P., Albergel C., Abdalla S., Al Bitar A., 2013: "Root-zone soil moisture index complementary validation at global scale based on triple collocation method. Comparison with State-Of-The-Art global scale root-zone soil moisture products." (H SAF_CDOP2_VS12_02.pdf)