**Introduction**

The main goal of EUMETSAT Satellite Application Facility in Support to Operational Hydrology and Water Management (H-SAF) is to provide satellite-based products for operational hydrology. Products of H-SAF concerns precipitation, soil moisture and snow cover parameters. Among them, the H-SAF precipitation products based on both passive microwave sensors (AMU and MIR) and IR sensors calibrated by MW have been operationally available for meteorological and hydrological users.

In the poster, the quality of mentioned above H-SAF precipitation products in precipitation detection and estimation is analyzed. The analysis was performed using data from both rain gauges and radar data from Polish ground measurement networks. The quality of the satellite products was studied using continuous and categorical statistical parameters within appropriate precipitation classes.

**H-SAF Consortium**

The main objectives of H-SAF are:

a. to provide new satellite-derived products from existing and future satellites with sufficient time and space resolution to satisfy the needs of operational hydrology; identified products:
   - precipitation (liquid, solid, rate, accumulated);
   - soil moisture (at large-scale, at local-scale, at surface, in the roots region);
   - snow parameters (detection, cover, melting conditions, water equivalent);

b. to perform independent validation of the usefulness of the new products for fighting against floods, landslides, avalanches, and evaluating water resources, the activity includes:
   - downscaling/upscaling modelling from observed/ predicted fields to basin level;
   - fusion of satellite-derived measurements with data from radar and range-gauge networks;
   - assimilation of satellite-derived products in hydrological models;
   - assessment of the impact of the new satellite-derived products on hydrological applications.

More information at H-SAF web page: www.hsafoosmeteoam.it

**H-SAF TOVS based precipitation product**

All 15-km pixels with brightness temperatures at 183.7 GHz that are below a threshold T1 are flagged as potentially precipitating, where

T1 = 0.667(T0 + 248) = 252 + 6°C

and where T0 is the satellite zenith angle and T0 is the spatially filtered limb-corrected 53.6 GHz brightness temperature obtained by selecting the warmest brightness temperature within a 7×7 array of AMU-B pixels. This T1 threshold was determined empirically and can vary with atmospheric temperature. The 183.7 GHz channel can become sensitive to surface variability in very calm, dry atmospheric conditions. When T0 is less than 248 K, the 183.6 GHz brightness temperature is compared to a threshold T1

T1 = 242 + 5°C

The thresholds T1 and T1 are slightly colder than a saturated atmosphere would be, implying the presence of a microwave absorbing or scattering cloud. It is possible for the 183±3 GHz and the 183±1 GHz channels to be sensitive to microwave absorbing or scattering cloud. It is possible for the 183±3 GHz and the 183±1 GHz channels to be sensitive to microwave absorbing or scattering cloud. It is possible for the 183±3 GHz and the 183±1 GHz channels to be sensitive to microwave absorbing or scattering cloud.

**Summary H-SAF performance:**

- **Status:** Operational
- **Coverage:** 540 km swath crossing the H-SAF area (25°N–75° N, 20° E–45° E) long in direction approximate 5 km or 6 km
- **Cycle:** Up to six passes/day (if one Met-Op-A and two NOAA satellites are available) at approximately 09:30, 01:30, 03:00 ECT (descending mode) and 21:30, 13:30, 15:00 ECT (ascending mode)
- **Spatial Resolution:** Corresponds to the nominal resolution of MW, varying with the viewing scan angle from 16 x 16 km2 / circular at nadir to 26 x 52 km2 / swath at scan edge
- **Accuracy:**
  - **Precipitation range:** 0 mm/h
  - **Threshold target:**
    - 0 to 5 mm/h
    - 5 to 10 mm/h
    - > 10 mm/h
  - **Accuracy requirements for product:**
  - **Pressure:** 0.1 hPa
  - **Temperature:** 0.1°C
  - **Humidity:** 3% relative humidity
  - **Dispersion:** By dedicated lines to centers connected by GPS - by EUMETCast to most other users, especially scientists
  - **Formats:** JPEG or similar for quick-look images

**References**

- **H-SAF ATOS based precipitation products over Poland**
- Bozenna Lapeta, and Danuta Serafin-Rek
- Satellite Remote Sensing Department, Institute of Meteorology and Water Management
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