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EUMETSAT HSAF AVHRR-Based Fractional Snow Cover Products

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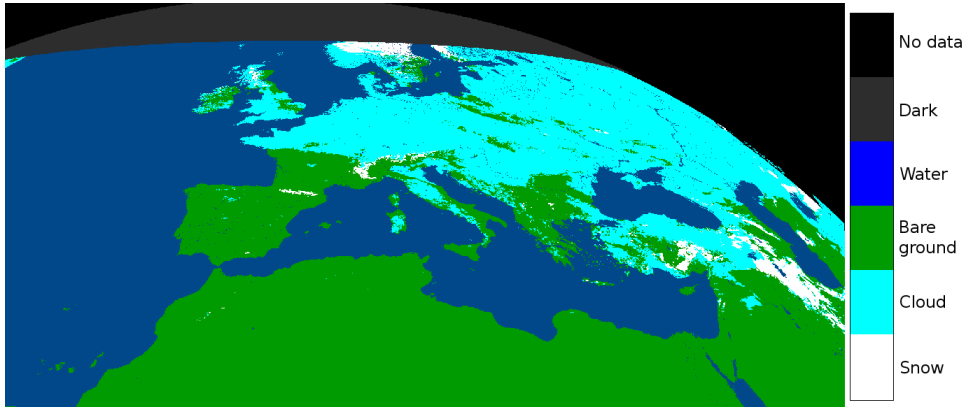
HSAF Snow Cover Products

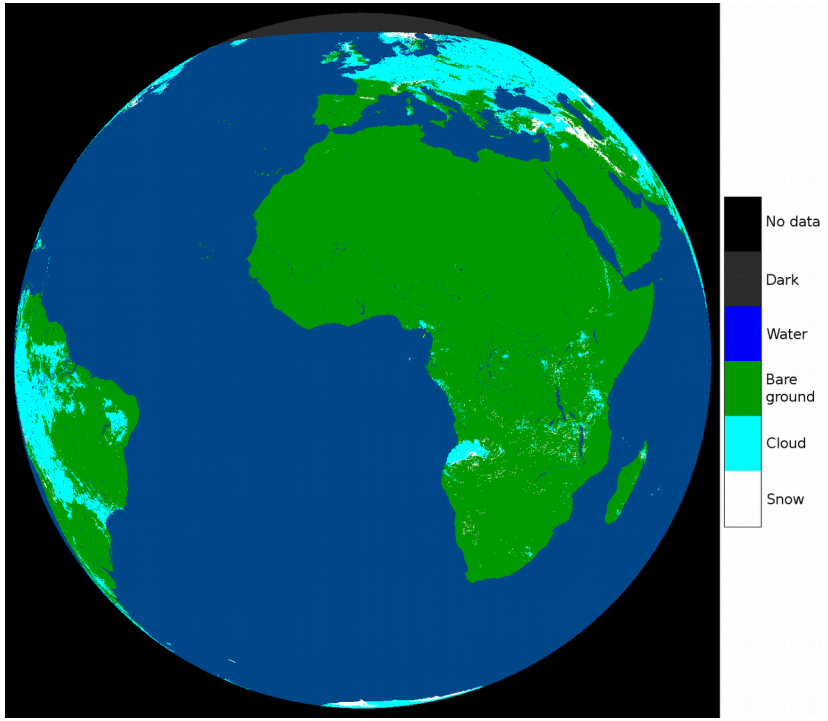
Operational

- H10, H11, H12, H13, H31, H32

In Development

- H34, H35, H43, H65





HSAF FSC Products – H12, In short

- Daily operational product
- Based on multi-channel analysis of AVHRR on NOAA and Metop
- Lat/Lon grid with 0.01 degree resolution
- Covering latitudes [25, 75] and longitudes [-25, 45]

HSAF FSC Products – H12, Algorithm

Two different algorithms for two parts to be merged,

1) Flat and forested areas
   - Developed by Sari Metsämäki, SYKE (Metsämäki et al. 2005)
   - Using visible and near infrared and based on a semi-empirical reflectance model
   - Transmissivity map used

2) Mountainous areas
   - Developed by METU

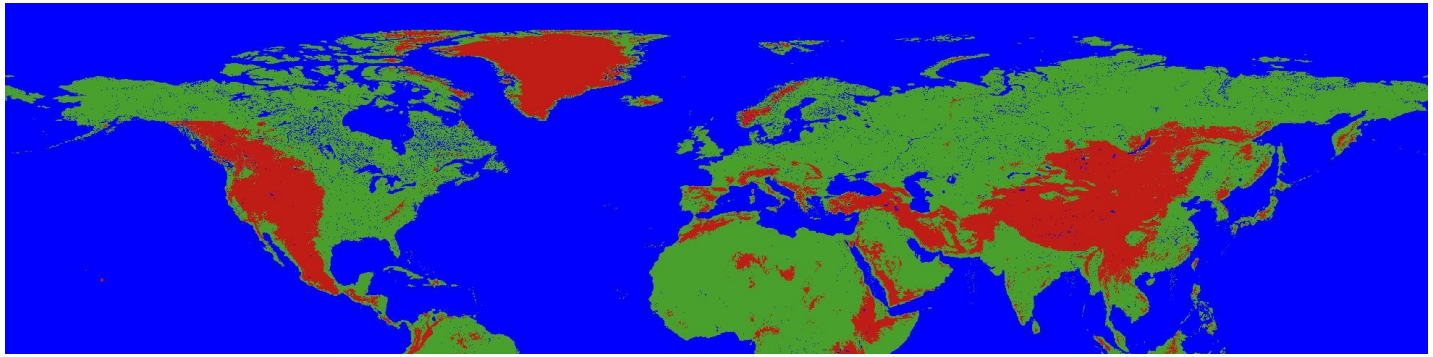


Fig. 1. H35 mountain mask

HSAF FSC Products – H12, Coverage

- Covers HSAF area which is defined as latitudes [25, 75] and longitudes [-25, 45]



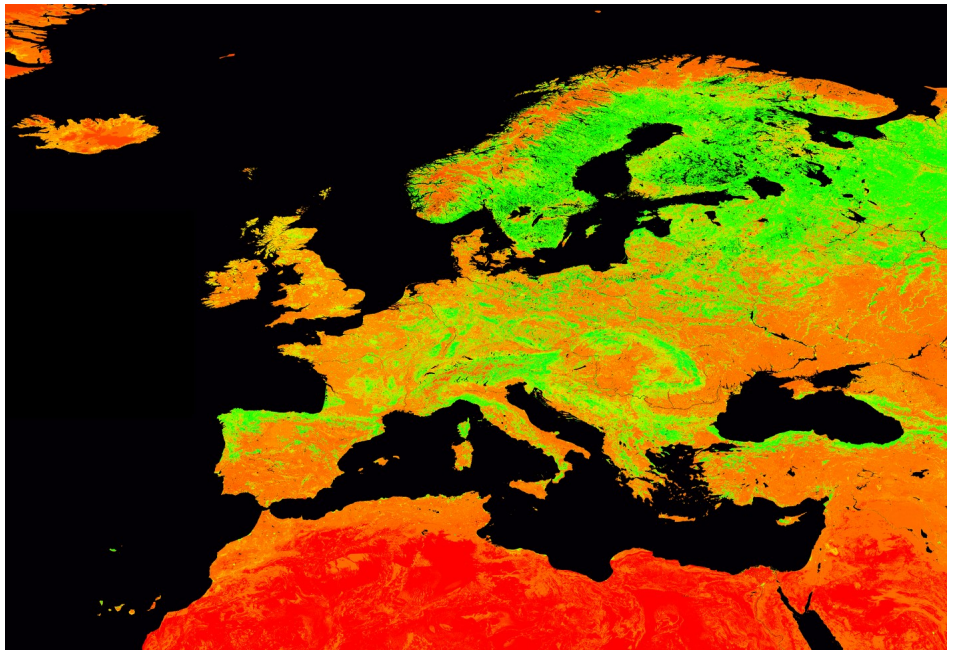


Fig. 2. H12 merged product from 24.04.2019 on the left, transmissivity map on the right

HSAF FSC Products – H12, Validation-1

- Case study with digital imagery
  - Using camera network that is established under MONIMET project, providing about 30 cameras over Finland.
  - Images classified to 13 classes of fractional snow cover by an expert.
  - Total RMSE is between optimal and target requirement.

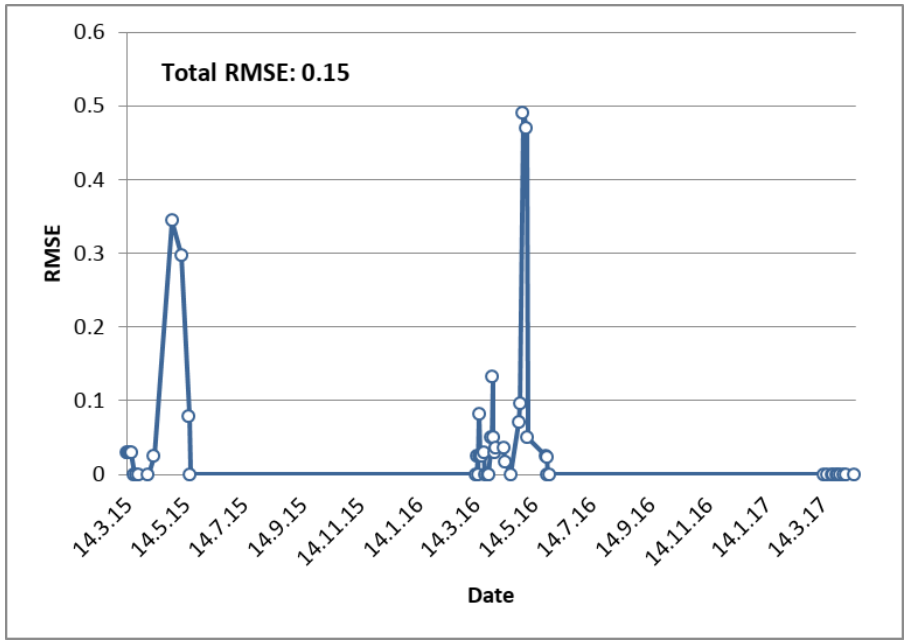


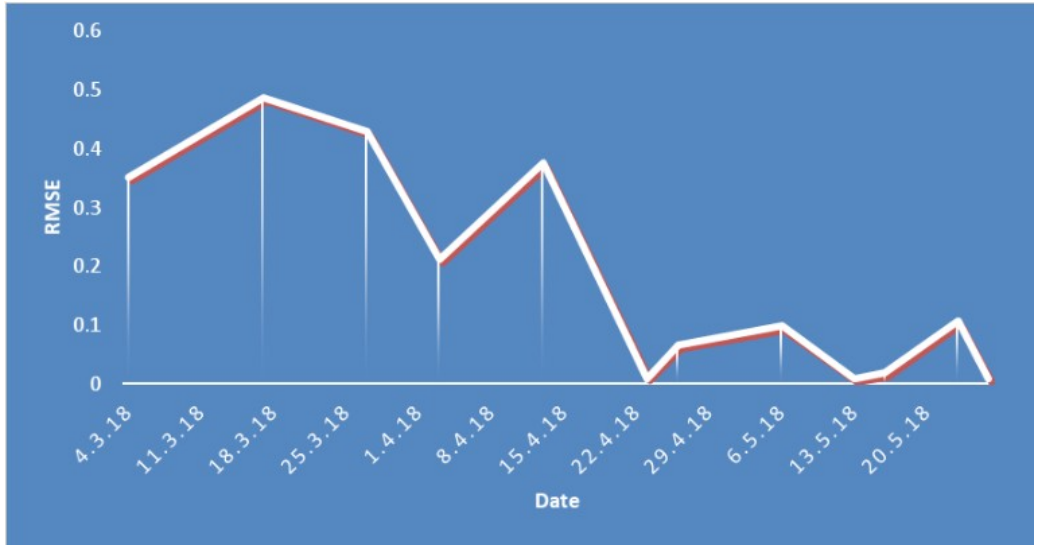
Fig. 3. Results for the first case study

HSAF FSC Products – H12, Validation-2

- Case study with Sentinel-2 L2A
  - Intercomparison by assuming Sentinel-2 L2A SC as ground truth
  - Over one S2 tile(T34VFN) in Finland for 2017-2018 validation period
  - Stays below 50% RMSE threshold which is the product requirement.

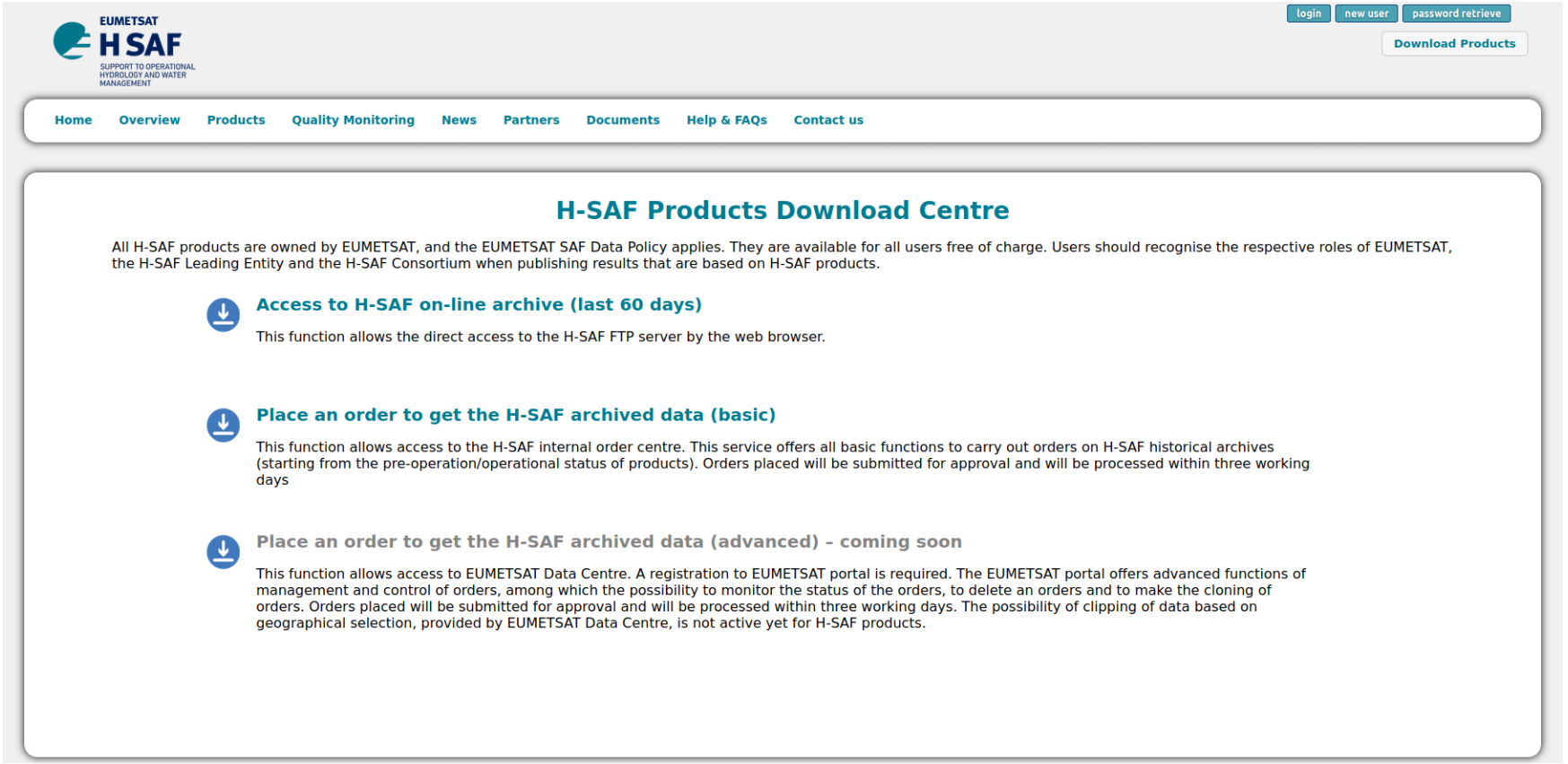
Date	RMSE	Number of Observations
04-03-2018	0.35	189
18-03-2018	0.48	1438
27-03-2018	0.43	1309
03-04-2018	0.21	3028
13-04-2018	0.37	8653

Fig. 4. Results for the second case study, showing melting period results (above) and the whole period results (on the right).



HSAF FSC Products – H12, Access

- You can view and download the products after registering at hsaf.meteoam.it



HSAF FSC Products – H35 (In Development)

- Extension of H12 to Northern Hemisphere
- Everything except the coverage is same as H12.

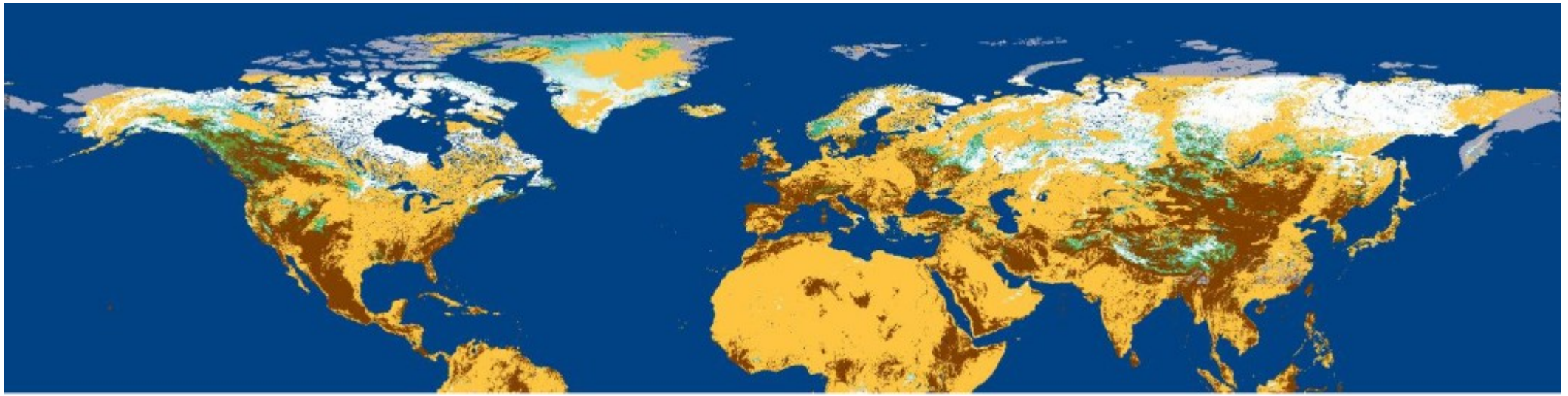


Fig. 5. H35 merged product from 28.03.2019

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Thank you for listening