

The use of satellite snow products in EFAS & EDO

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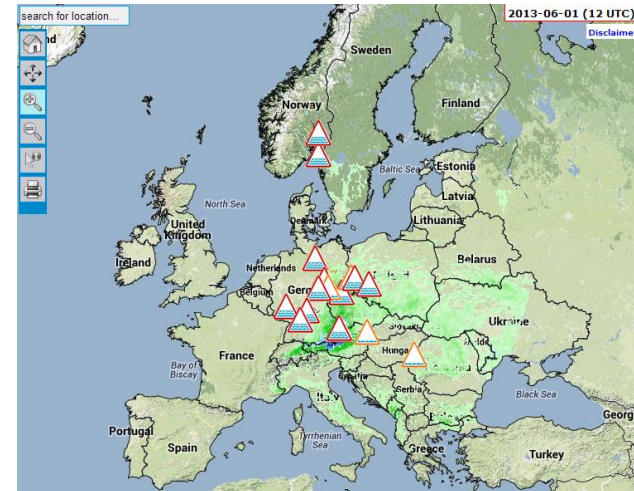
www.jrc.ec.europa.eu

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Supporting legislation*



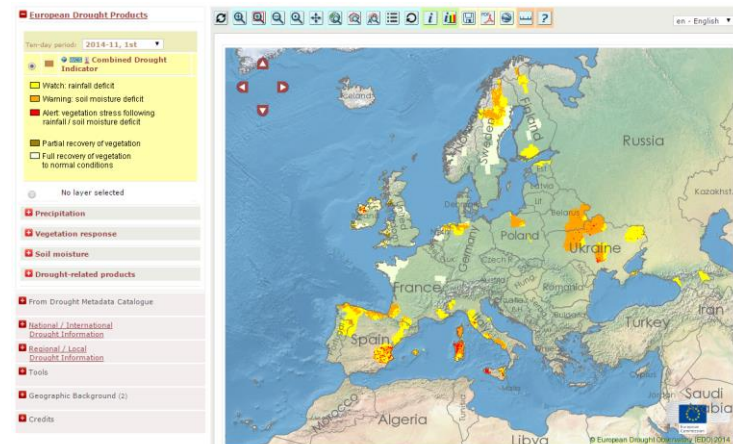
European Flood Awareness System (EFAS)

- Fully operational pan European flood forecasting system which is part of the Copernicus Emergency Management Services
- **Added value of EFAS:** better preparedness and improved disaster and crisis management in Europe with trans-national flood early warning information to EC civil protection and Member State authorities
- More info: www.efas.eu



European Drought Observatory (EDO)

- European drought information platform
- Provides a European overview of drought conditions using a variety of drought related information from different data sources (model output, satellite images, measurements)
- More info: <http://edo.jrc.ec.europa.eu/>



Current use of CryoLand products in EFAS and EDO

- 10-daily Standardized Snow Pack Indicator for Europe used in EFAS (updated daily) and EDO (updated 3 times per month)
- 30-daily Standardized Snow Pack Indicator for Europe used in EDO

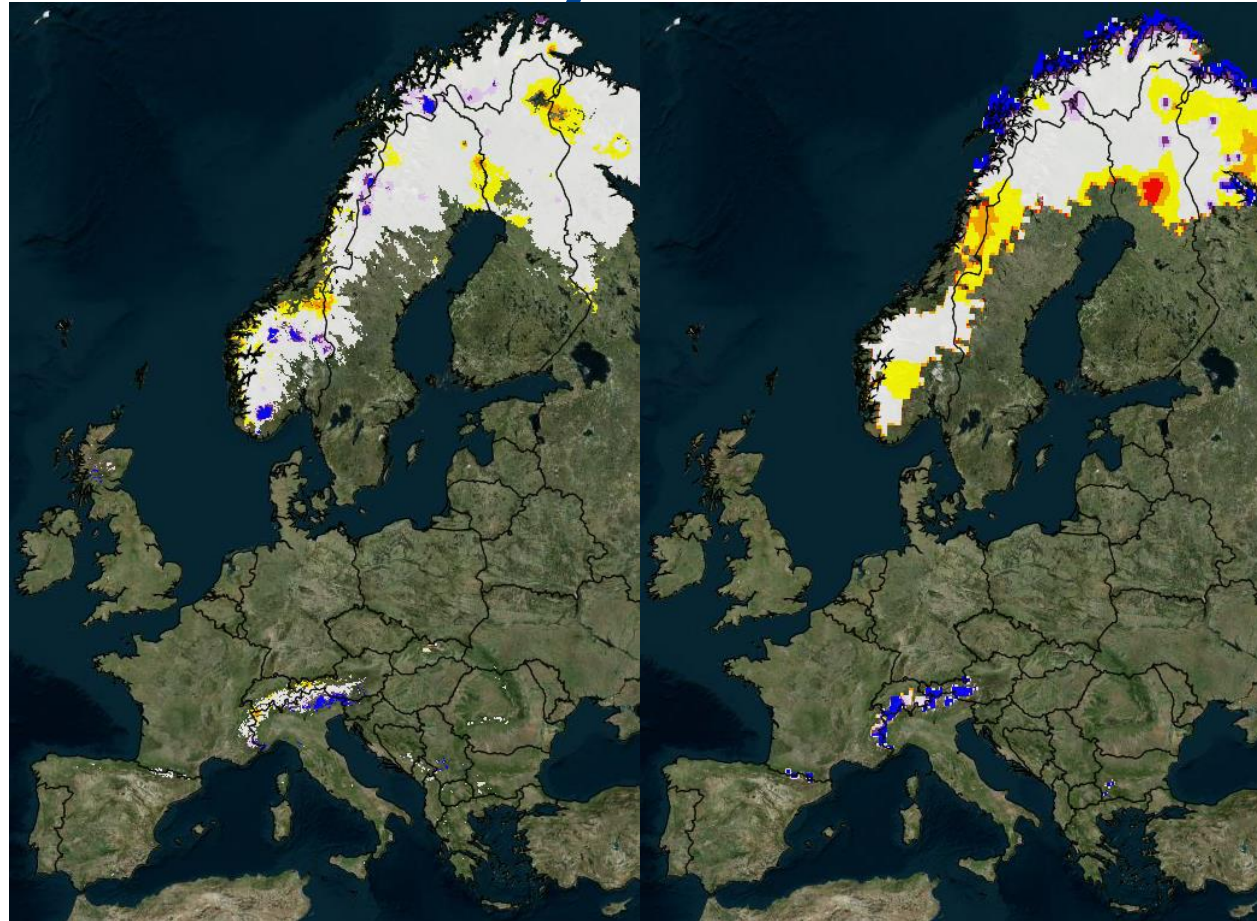
Use of other satellite snow products in EFAS and EDO

- Snow Water equivalent product from H-SAF in EFAS (updated daily)

Main purpose of the use of satellite snow products in EFAS & EDO:

- Visualization of products to provide added value to the end-user
- Near real time model validation through visual comparison between model output and satellite product (EFAS only)

EFAS & 10 day SSPI:



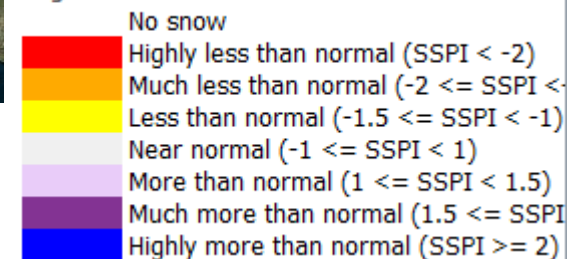
**10 day SSPI anomaly
LISFLOOD 28 Apr. 2014**

**10 day SSPI anomaly
CryoLand/FMI 28 Apr. 2014**

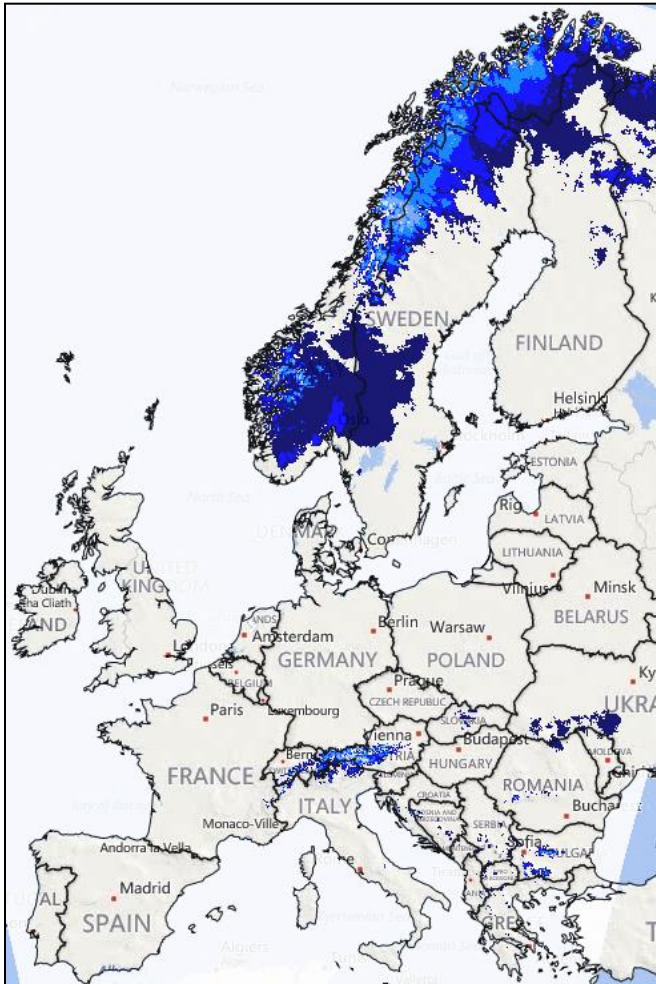
Comparing model and satellite anomalies in near real time

- **10 day SSPI**
- **Derived from LISFLOOD snow water equivalent output**
- **Updated daily**
- **Note: different reference periods (EFAS 1990 – 2012; SSPI 1979 - 2010)**

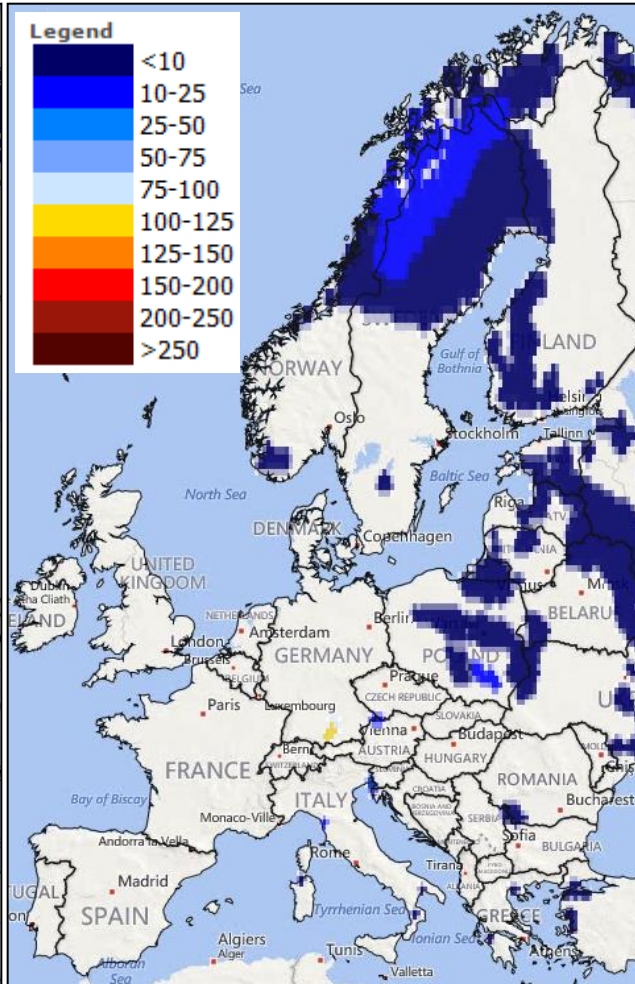
Legend



EFAS & H-SAF data:



**Snow water equivalent
LISFLOOD 31 Oct. 2014**



**Snow water equivalent
H-SAF 31 Oct. 2014**

Comparing model and satellite snow water equivalent in near real time

- **Purpose I: added value information for the forecaster**
- **Purpose II: model validation in near real time**
- **Problem: accuracy of satellite SWE (40 mm RMSE)– quality of the product is dependent on the surface characteristics**

Feedback & Suggestions for improvements regarding CryoLand products:

- Operational provision of data with high delivery reliability is of very high importance for EFAS & EDO
- Use of current SWE product available in CryoLand is not possible in EFAS because of “no data” in mountains
- An increase in resolution and accuracy for SSPI as well as SWE is always welcome 😊
- If feasible: operational, pan European river ice product would be highly valuable for EFAS end-users
- Daily Pan-European fractional snow cover product in combination with wet snow cover information as part of the Copernicus Services would be of very high interest for EFAS and EDO