EARS Network – Overview and the New VIIRS Day Night Band Service

Anders Soerensen (EUMETSAT)

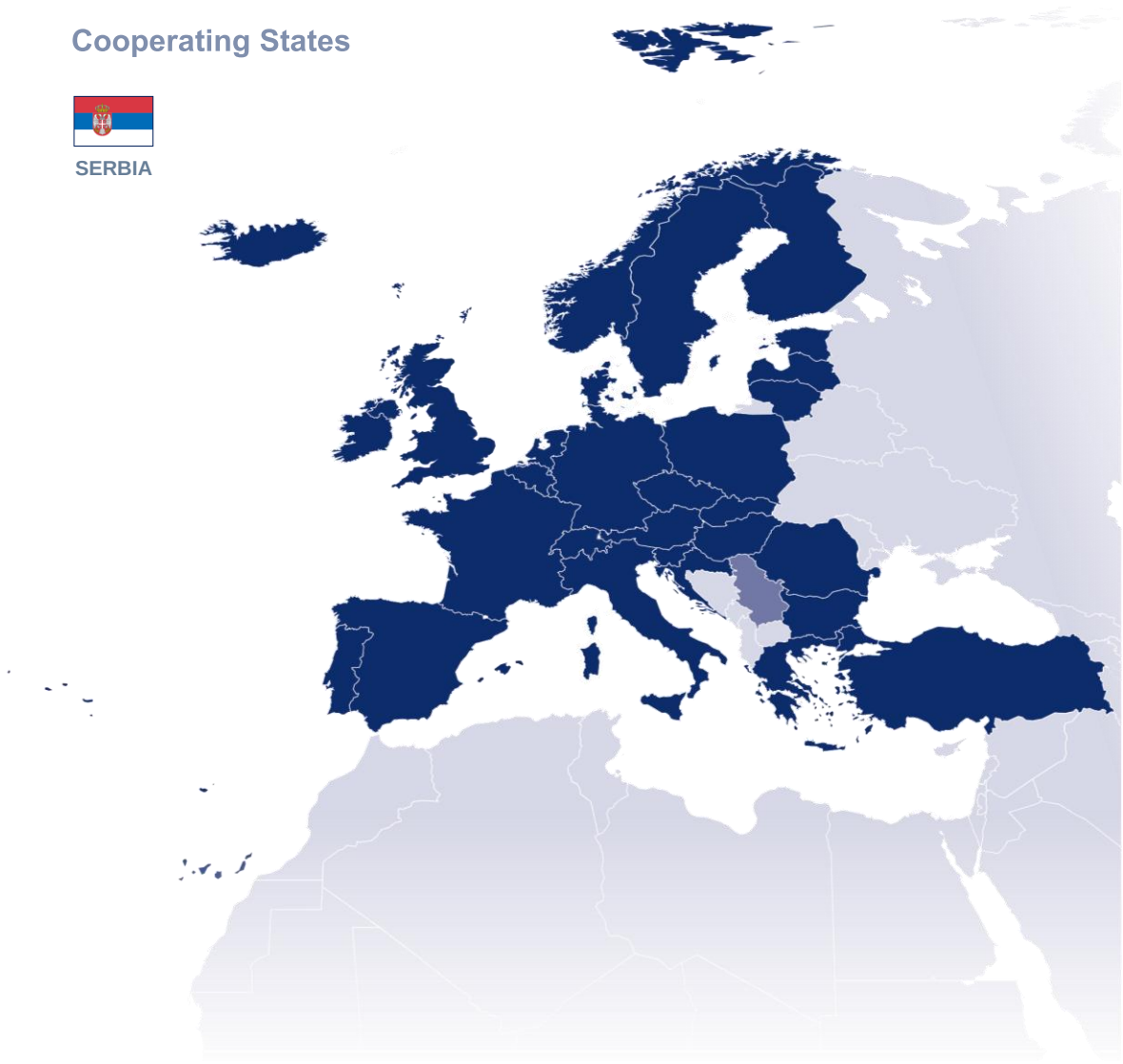
EUMETSAT is an intergovernmental organisation with 30 Member States and 1 Cooperating State

Member States

AUSTRIA
BELGIUM
BULGARIA
CROATIA
CZECH REPUBLIC
DENMARK
ESTONIA
FINLAND
FRANCE
GERMANY
GREECE
HUNGARY
ICELAND
IRELAND
ITALY
LATVIA
LITHUANIA
LUXEMBOURG
THE NETHERLANDS
NORWAY
POLAND
PORTUGAL
ROMANIA
SLOVAK REPUBLIC
SLOVENIA
SPAIN
SWEDEN
SWITZERLAND
TURKEY
UNITED KINGDOM

Cooperating States

SERBIA



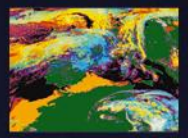
EUMETSAT

EUMETSAT headquarters – Darmstadt, Germany

EUMETSAT SAF network across Europe

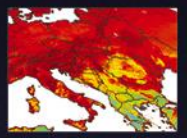
30 YEARS 1986-2016

EUMETSAT NETWORK OF SATELLITE APPLICATION FACILITIES



NWC SAF

Support to Nowcasting and Very Short Range Forecasting
Led by Agencia Estatal de Meteorologia, Spain

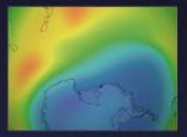


LSA SAF

Land Surface Analysis
Led by Portuguese Meteorological Institute

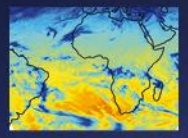
OSI SAF

Ocean and Sea Ice
Led by Météo France



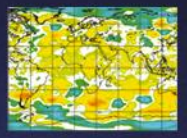
O3M SAF

Ozone and Atmospheric Chemistry Monitoring
Led by Finnish Meteorological Institute



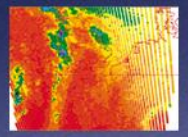
CM SAF

Climate Monitoring
Led by Deutscher Wetterdienst, Germany



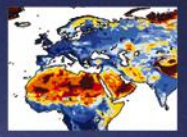
ROM SAF

Radio Occultation Meteorology
Led by Danish Meteorological Institute



NWP SAF

Numerical Weather Prediction
Led by Met Office (UK)

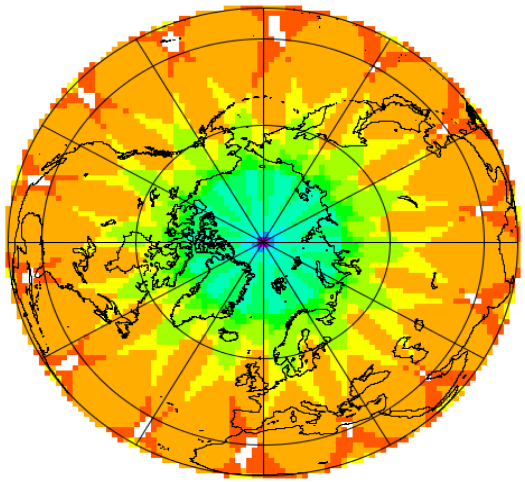


H SAF

Support to Operational Hydrology and Water Management
Led by Italian Meteorological Institute

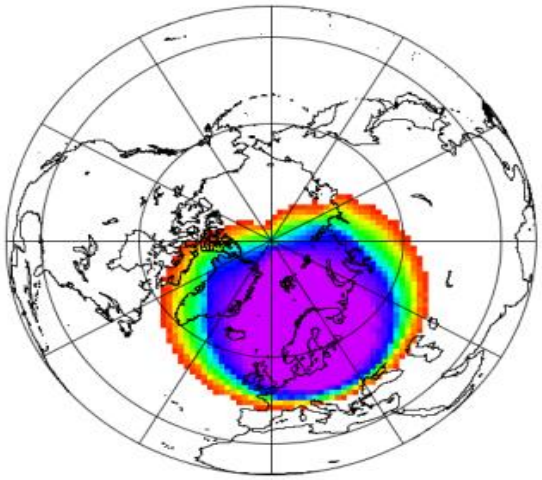
EUMETSAT's challenge of timely access to LEO satellite data

Global Mission



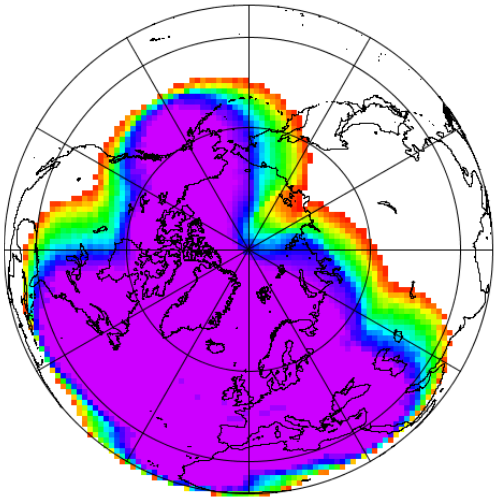
2-6 hours

Local Mission



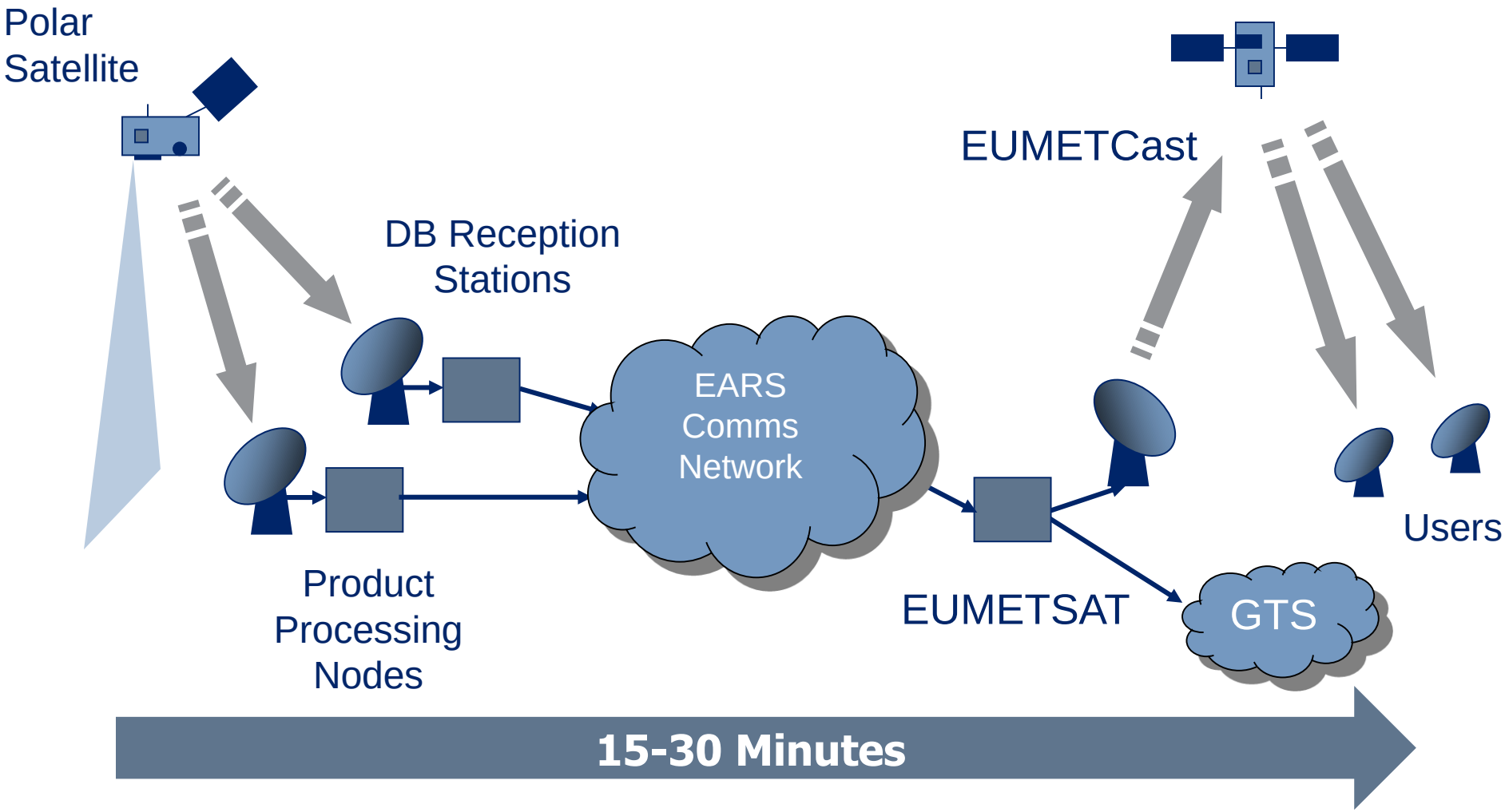
Immediate

Regional Mission

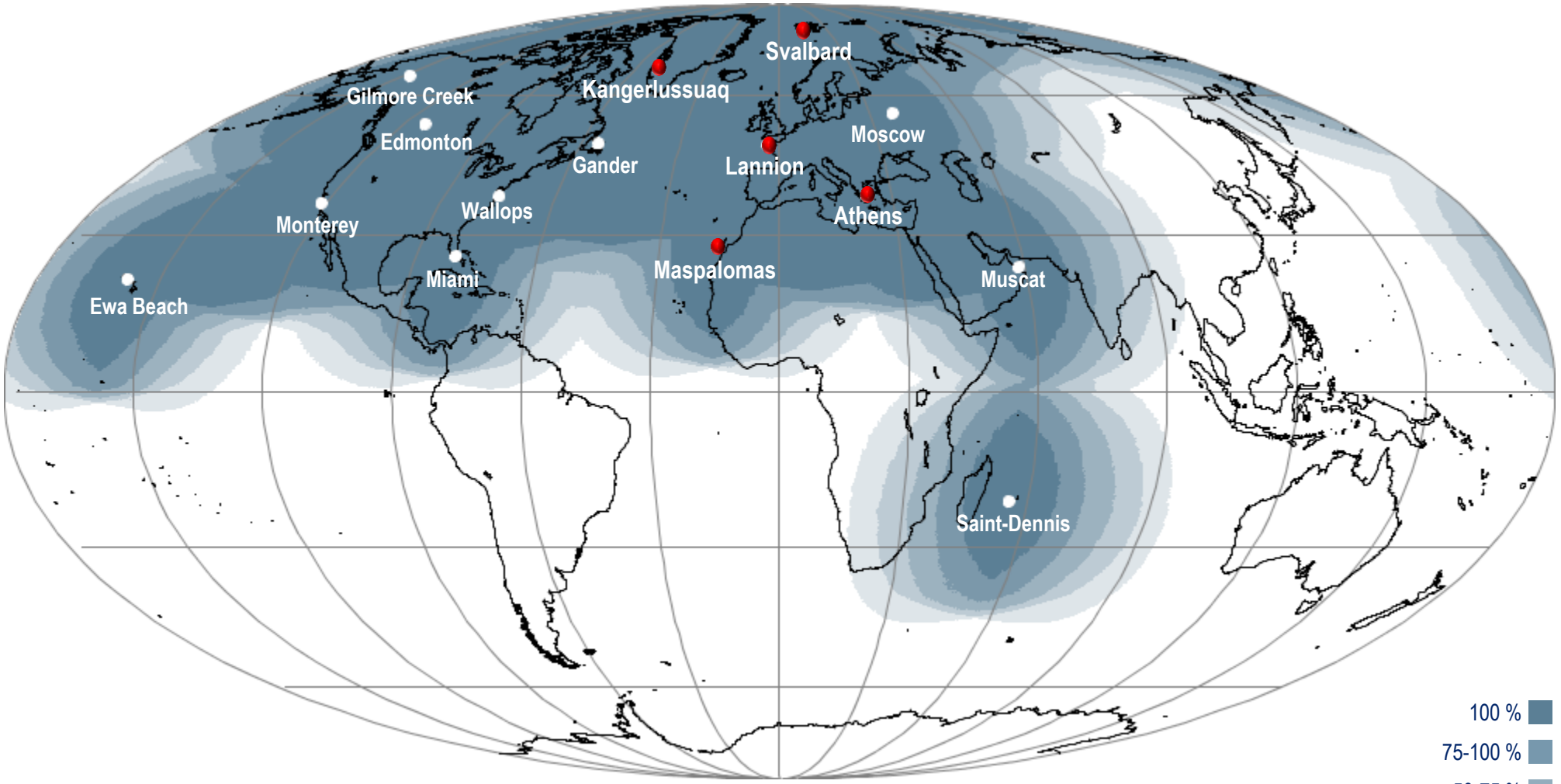


30 minutes

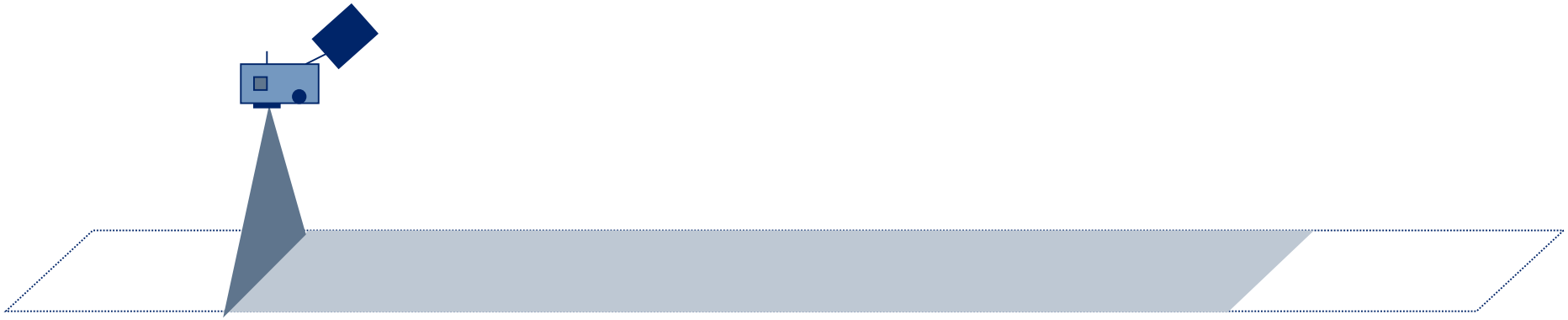
The EARS System

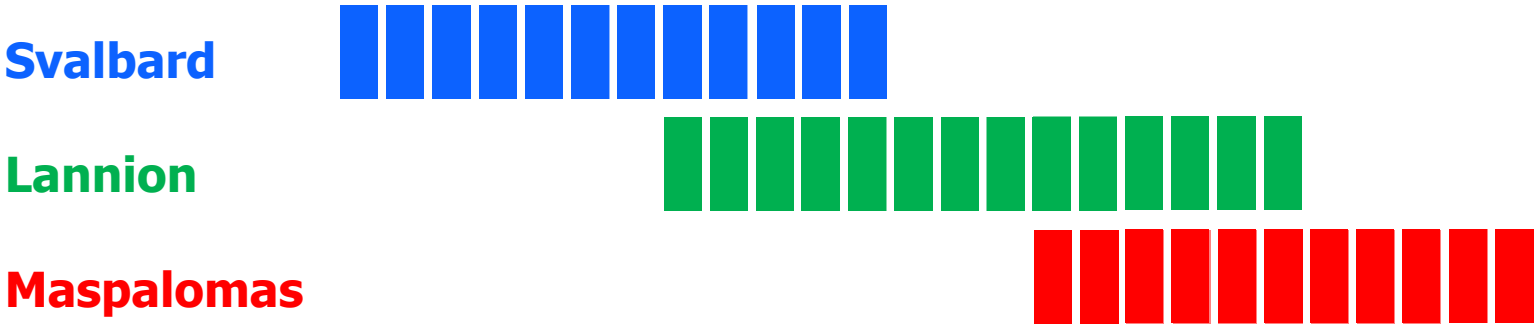


The EARS Ground Station Network



Data Segmentation and Selection

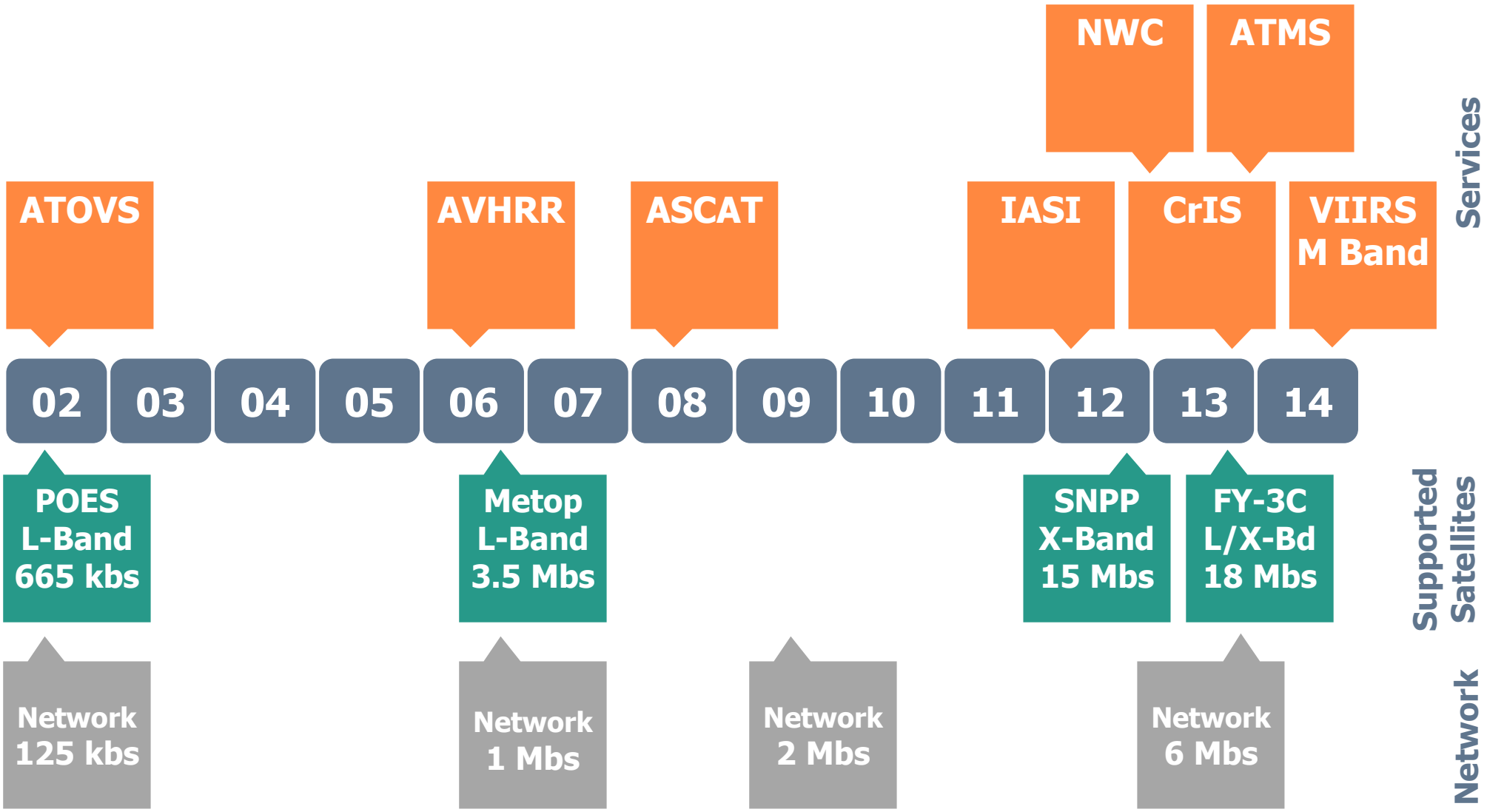




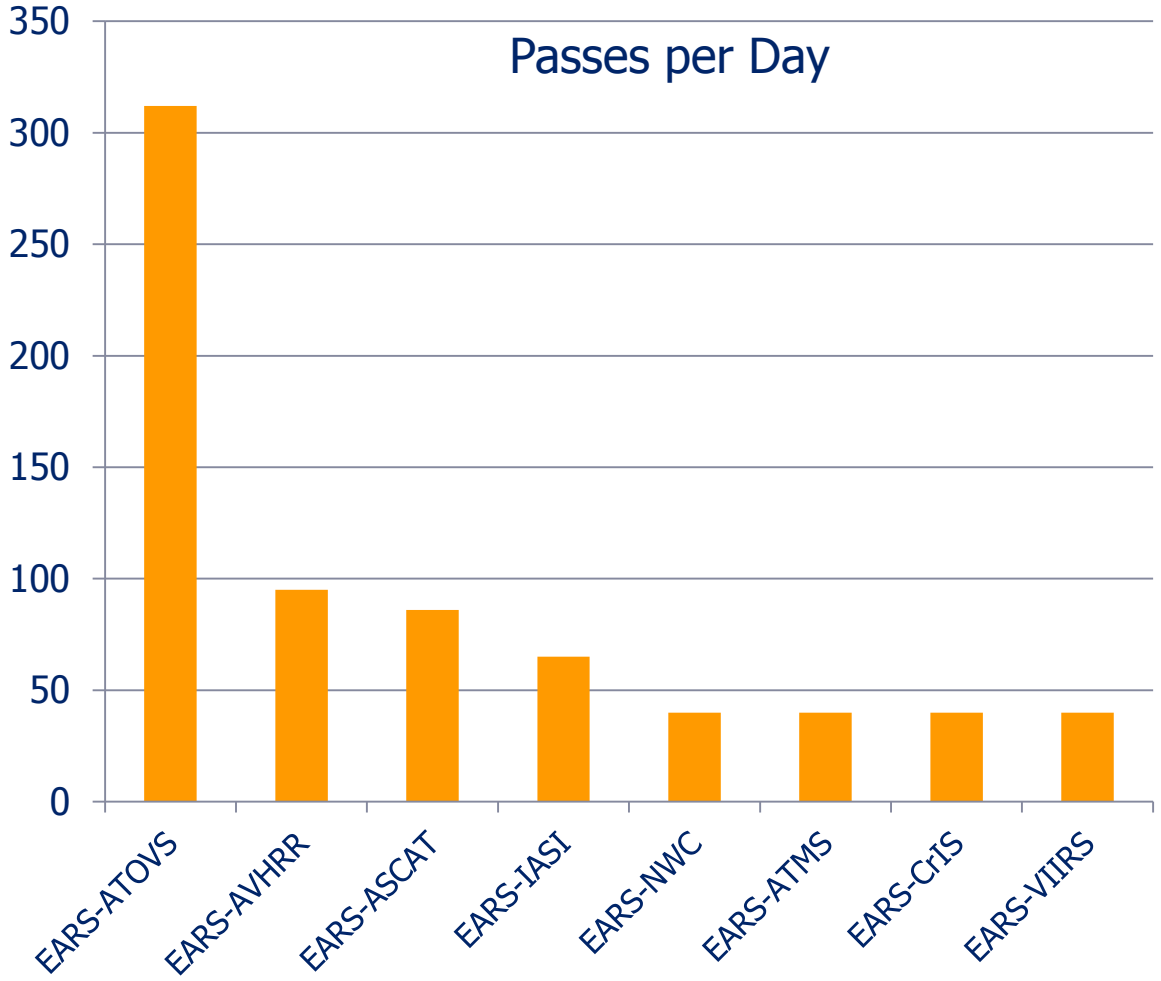
EUMETCast User Station

Timeliness 15 Minutes

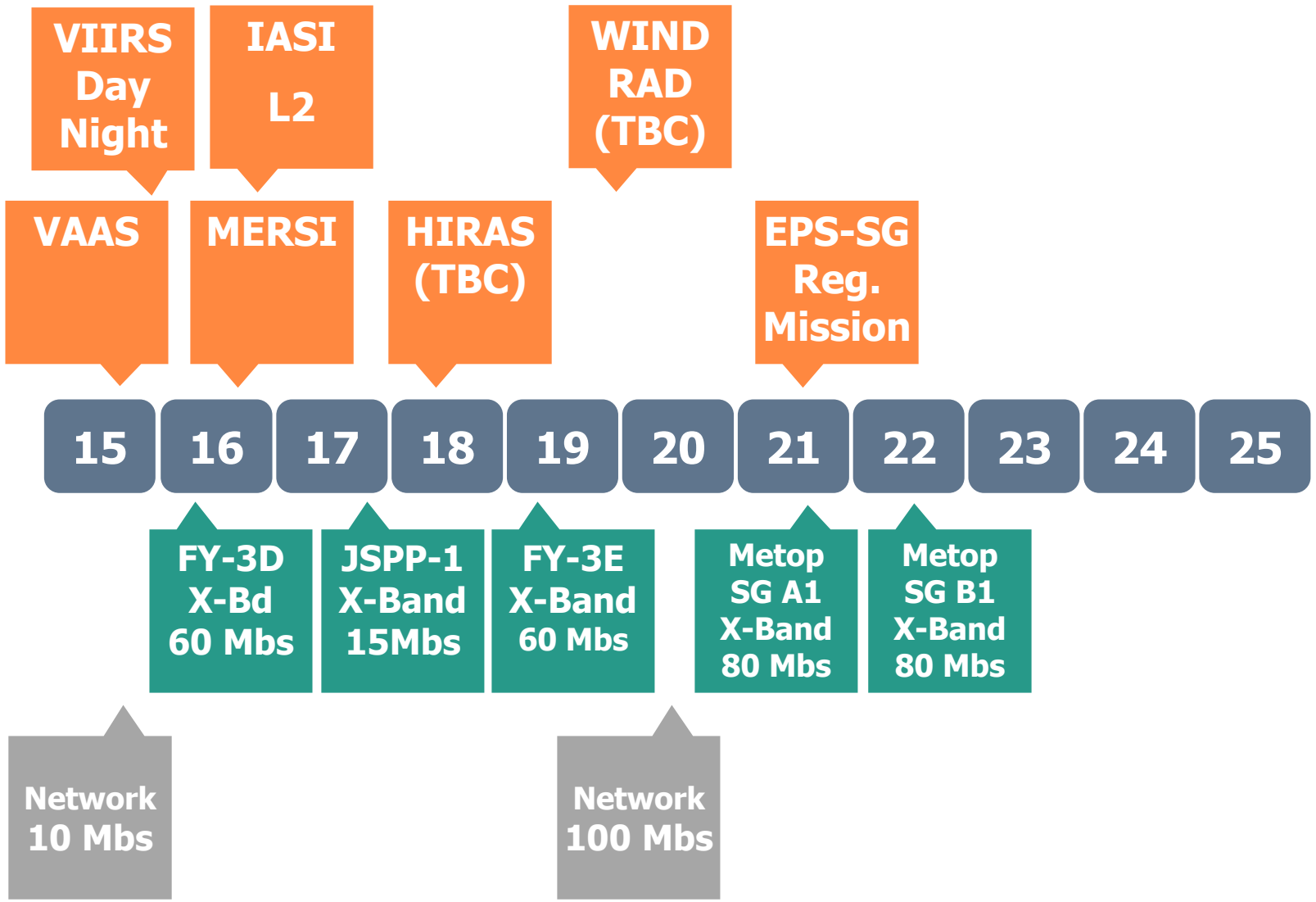
Past Evolution 2002-2014



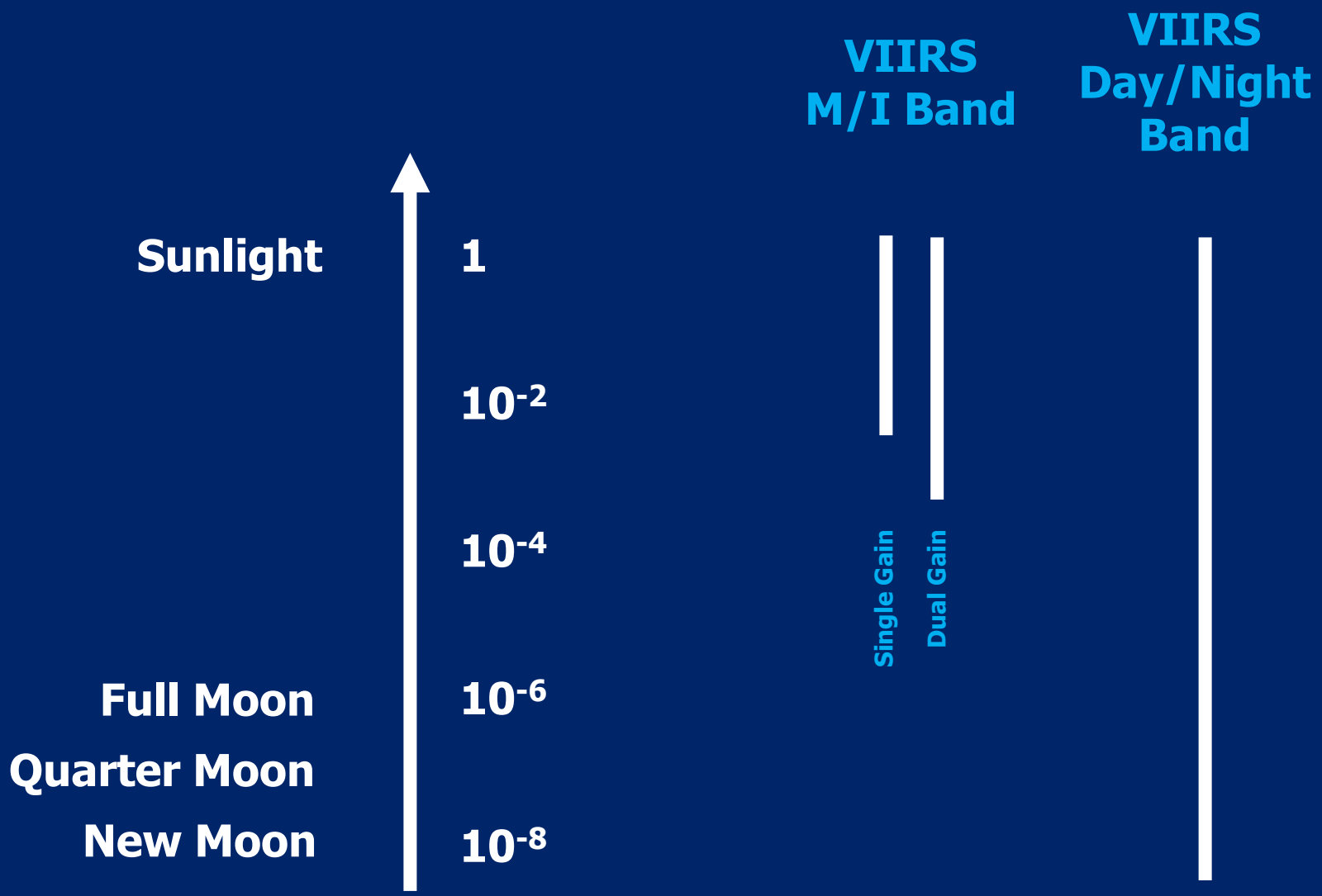
EARS – Acquired Passes Per Day



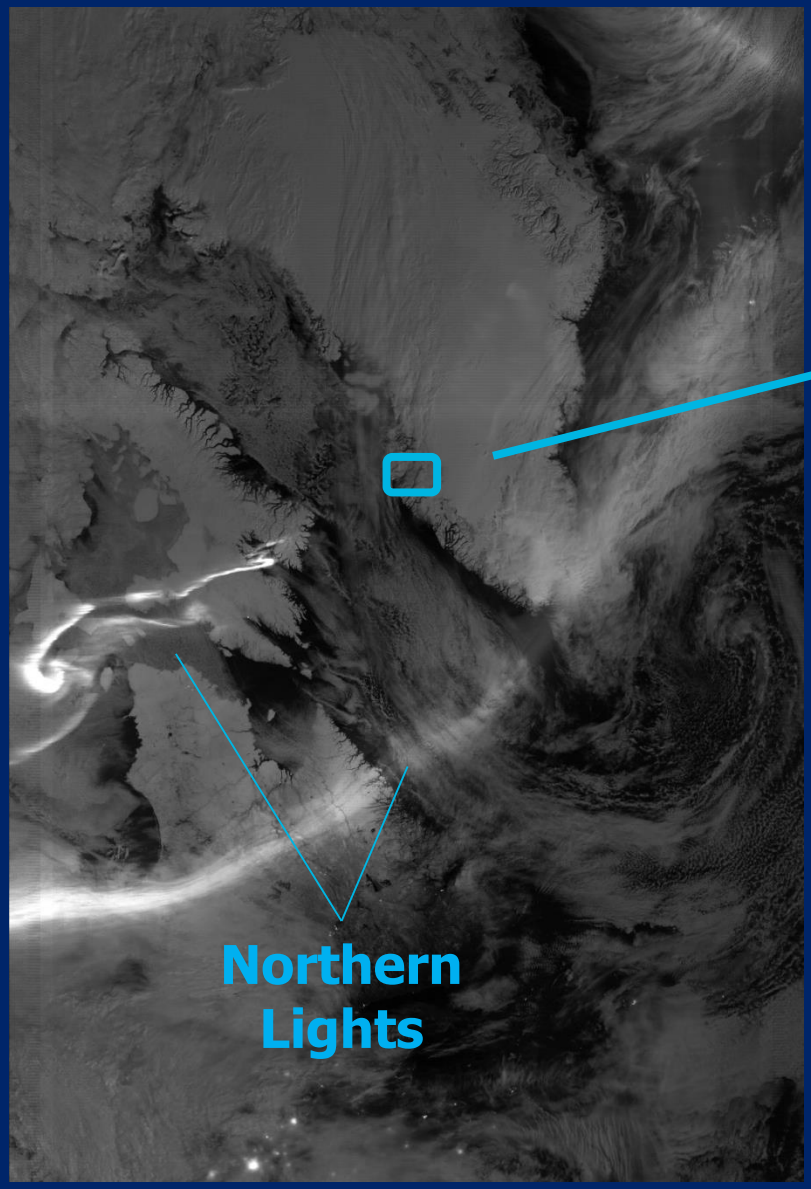
Future Evolution 2015-2025

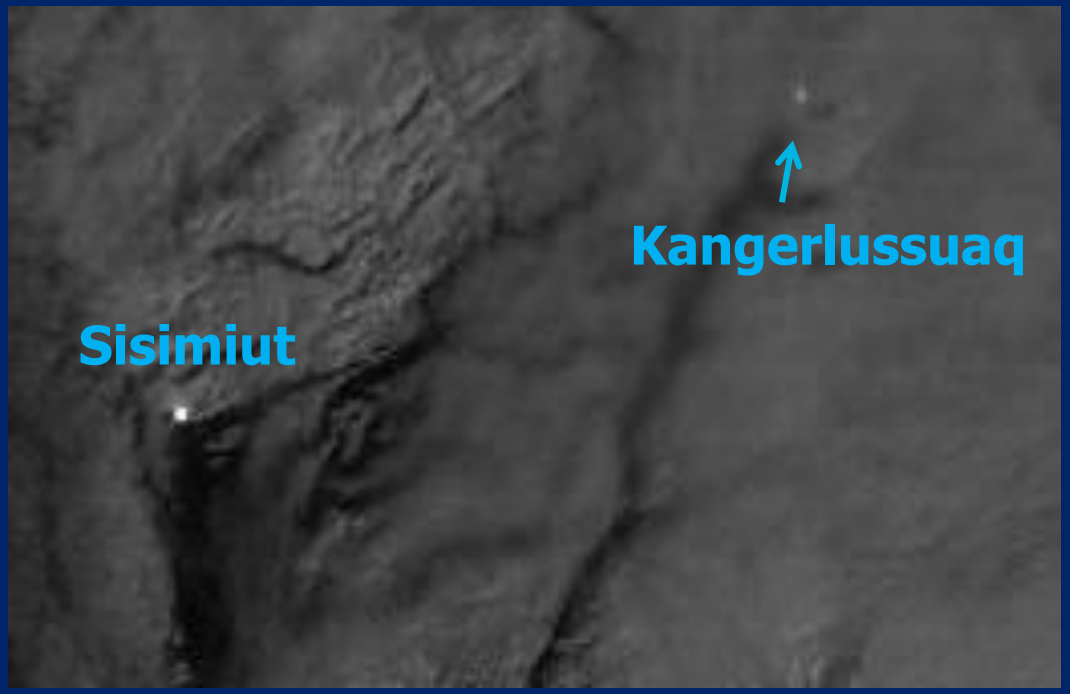


VIIRS Instrument Dynamic Range



USA/Canada/Greenland/Iceland - 11 Nov 2015



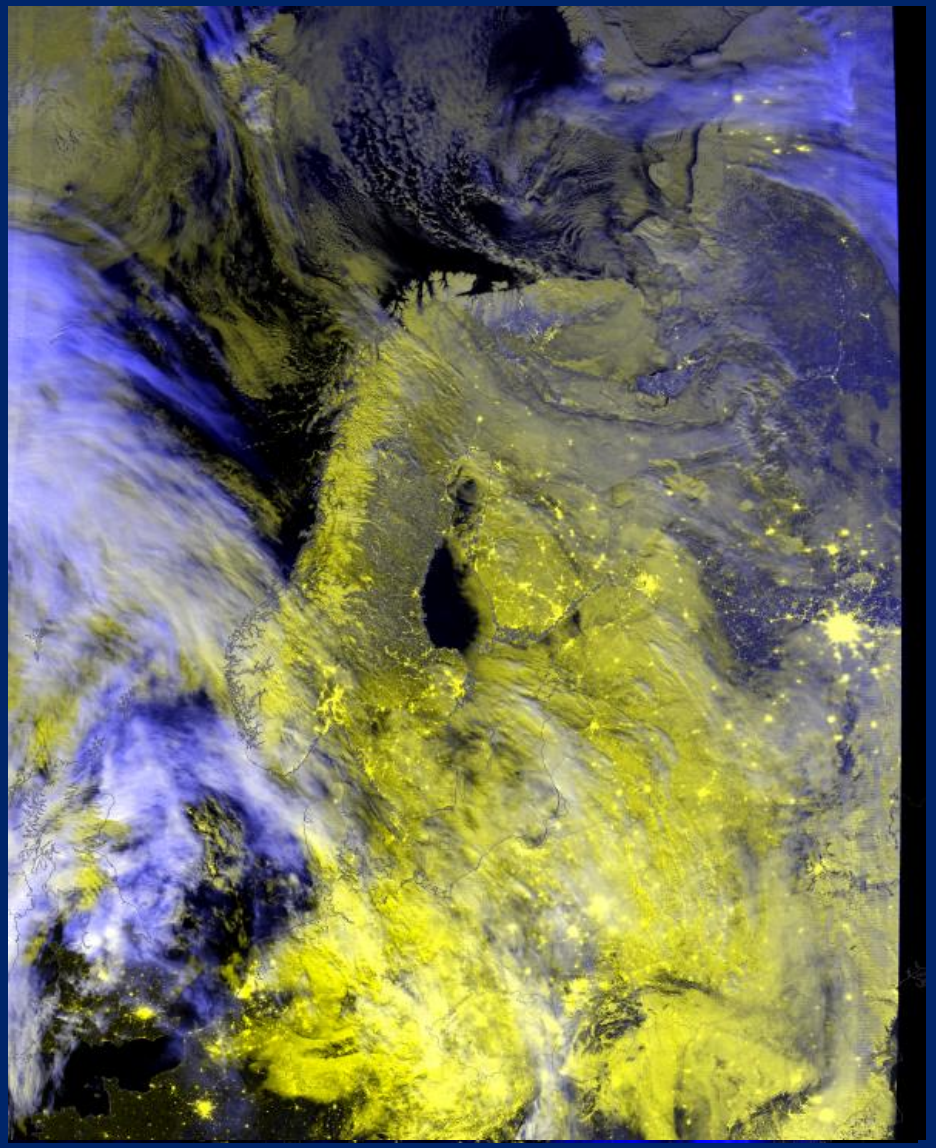


DMI in Kangerlussuaq is hosting one of the EARS ground stations

Norwegian Meteorological Institute – 25 Jan 2016

Trygve Aspenes, Norwegian Meteorological Institute:

"The main reason for use of the DNB is to have a visual at night. For example low clouds/fog, it is difficult to see the difference in the brightness temperature of low clouds and ground. The DNB can help the forecasters to see this…"



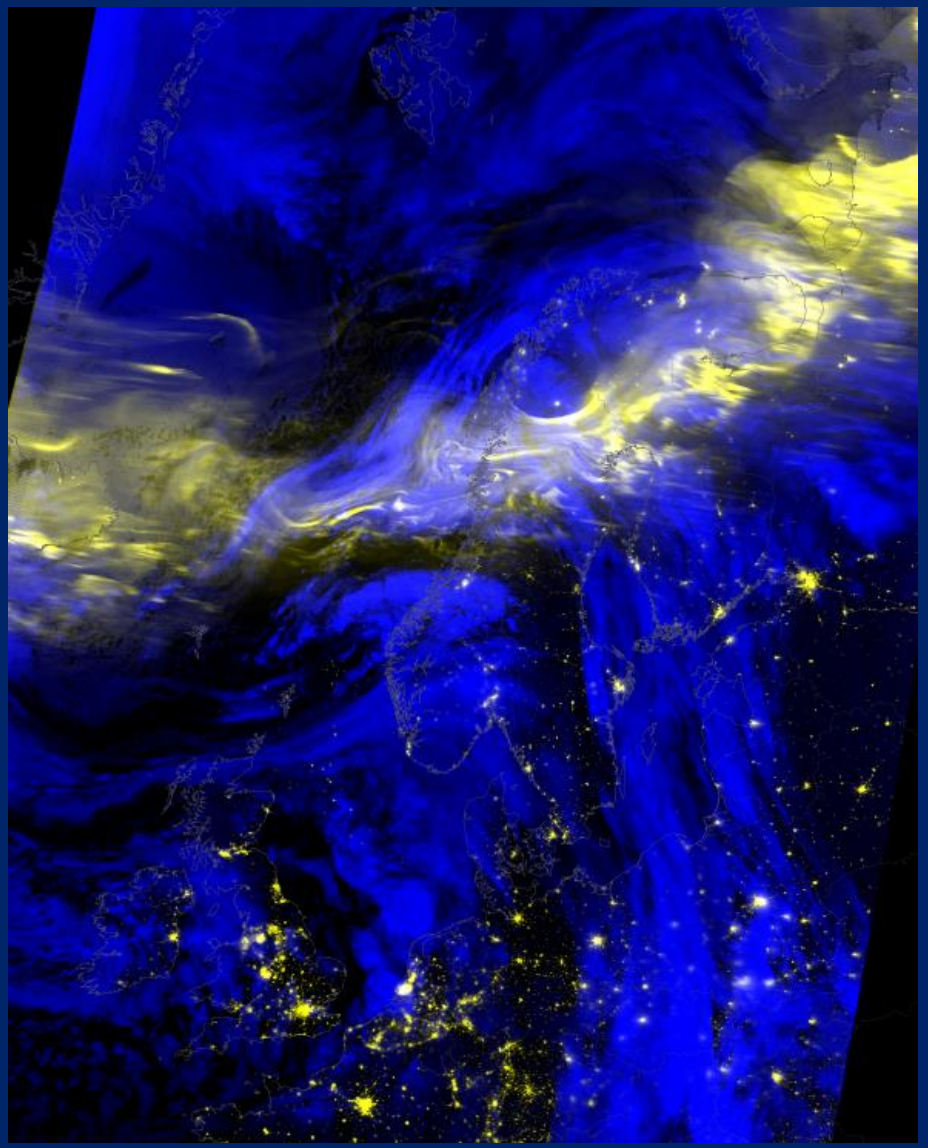
Full Moon

RGB
(DNB, DNB, -M15)
M15 = 10.8 μm

Norwegian Meteorological Institute – 25 Jan 2016

Trygve Aspenes, Norwegian Meteorological Institute:

"…. But at new moon it is difficult to get any meteorological information."



New Moon

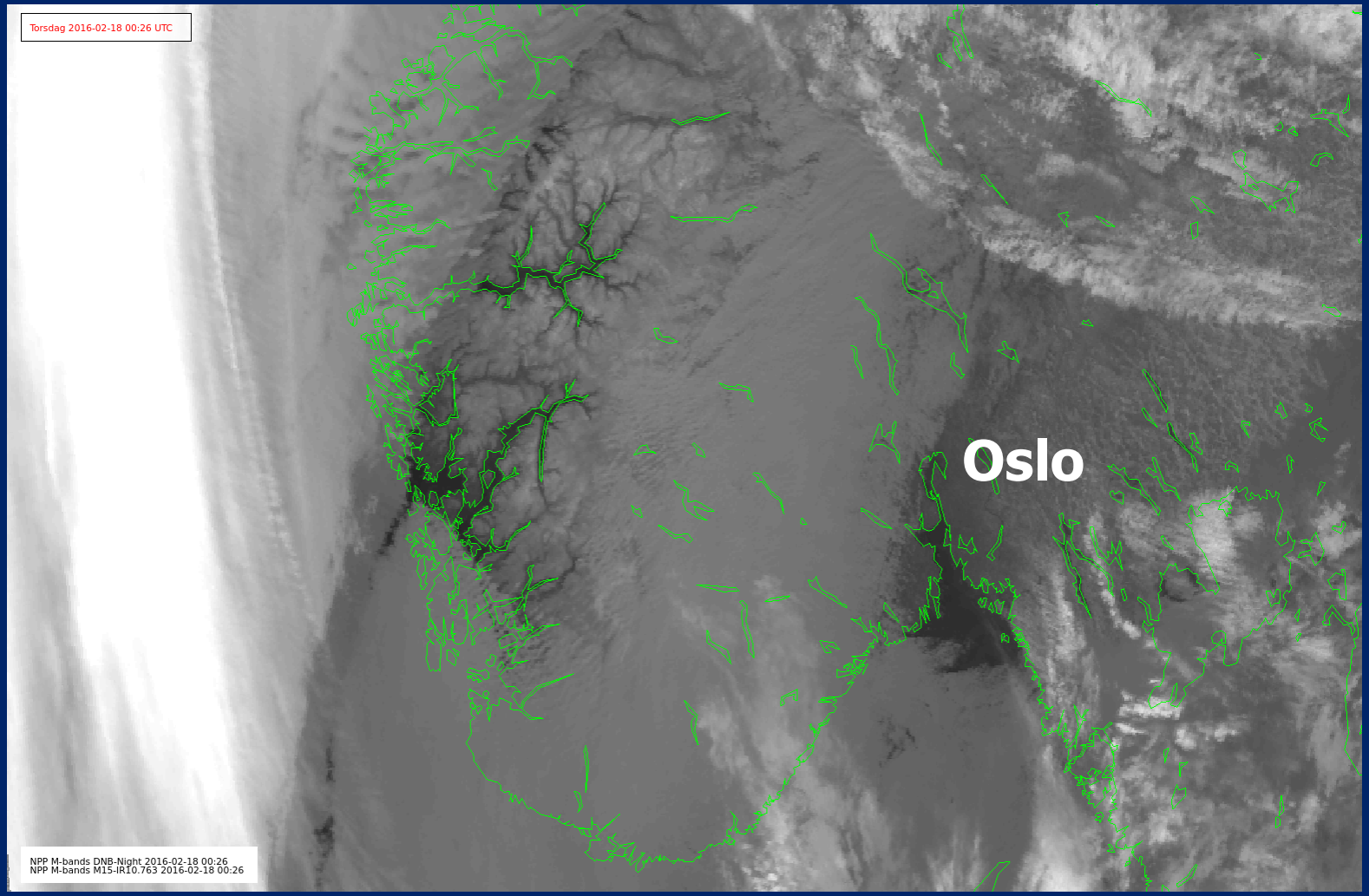
Northern Lights

RGB
(DNB, DNB, -M15)
M15 = 10.8 μm

Norwegian Meteorological Institute – 18 Feb 2016
IR Channel M15

Trygve Aspenes, Norwegian Meteorological Institute:

"The distinction between cloud and surface can be difficult in the IR channel alone…"

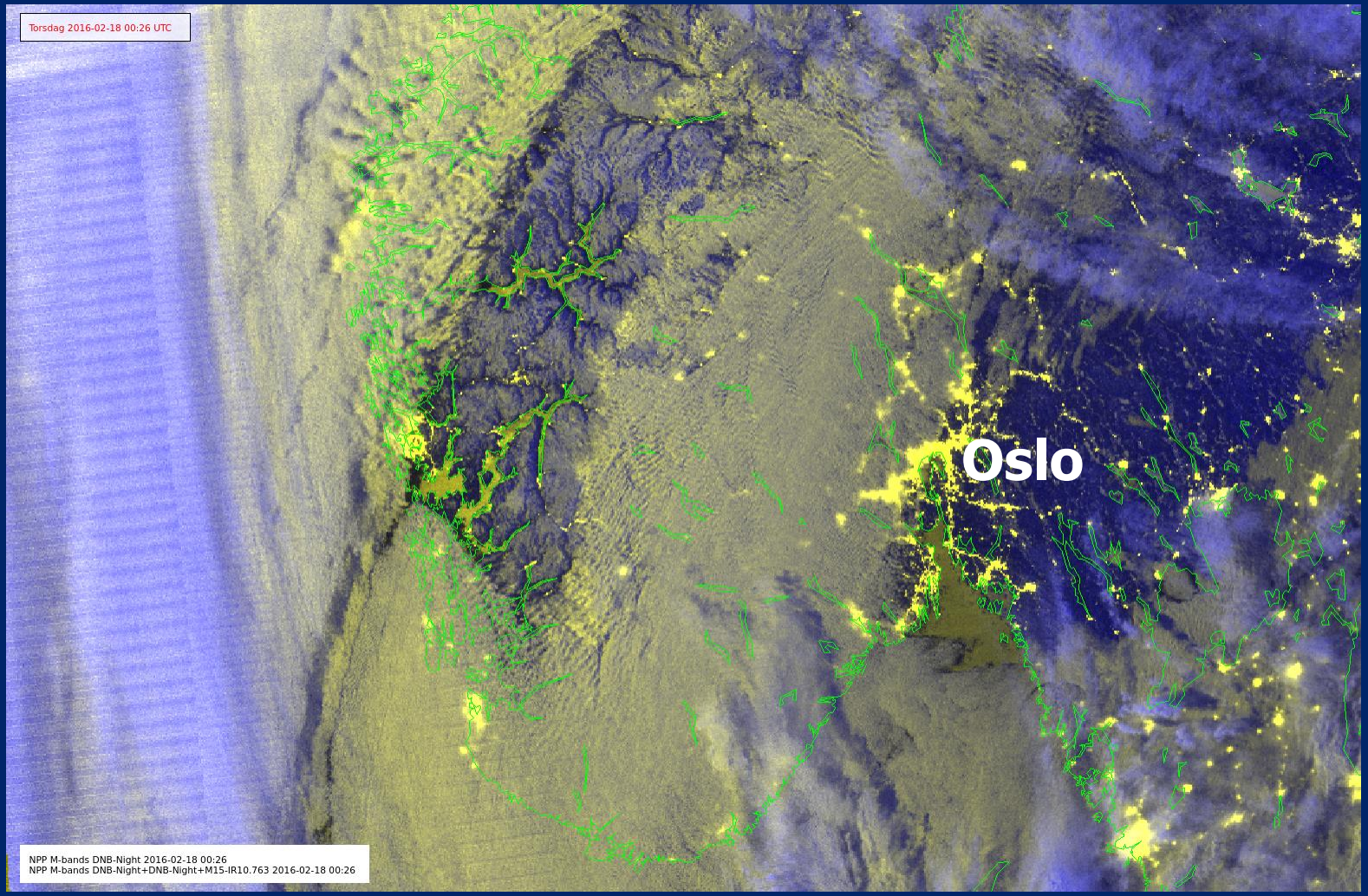


M15 = 10.8 μm

Norwegian Meteorological Institute – 18 Feb 2016
Day/Night Band + IR Channel M15

Trygve Aspenes, Norwegian Meteorological Institute:

"…but adding the Day/Night band makes the boundaries clearer."

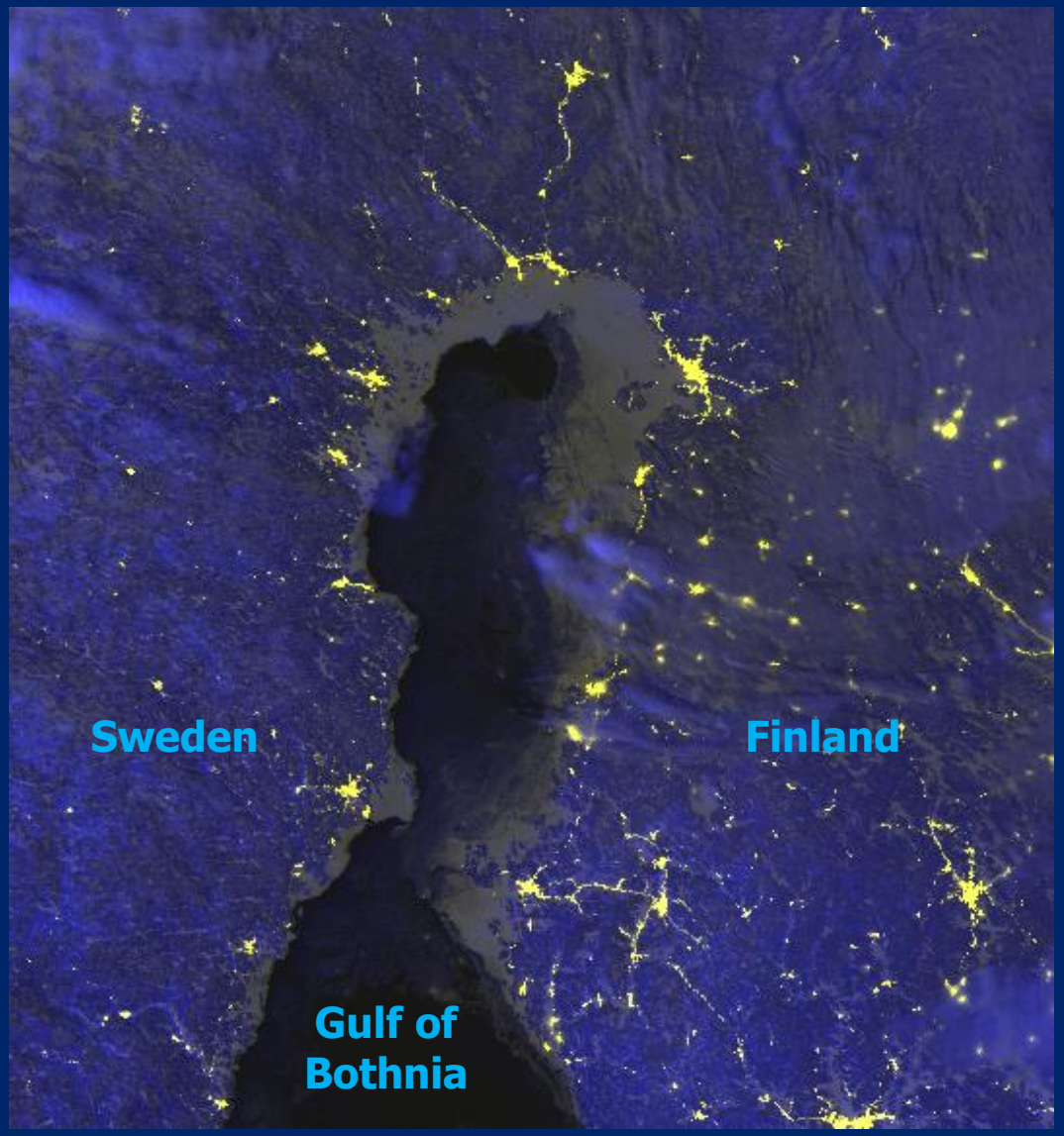


RGB (DNB, DNB, -M15) M15 = 10.8 μm

Swedish Meteorological and Hydrological Institute Ice Charting Application

Adam Dybbroe, Swedish Meteorological and Hydrological Institute :

"The SMHI Ice Charting Group is currently a regular user of VIIRS Day/Night Band images"



Data acquired locally by SMHI

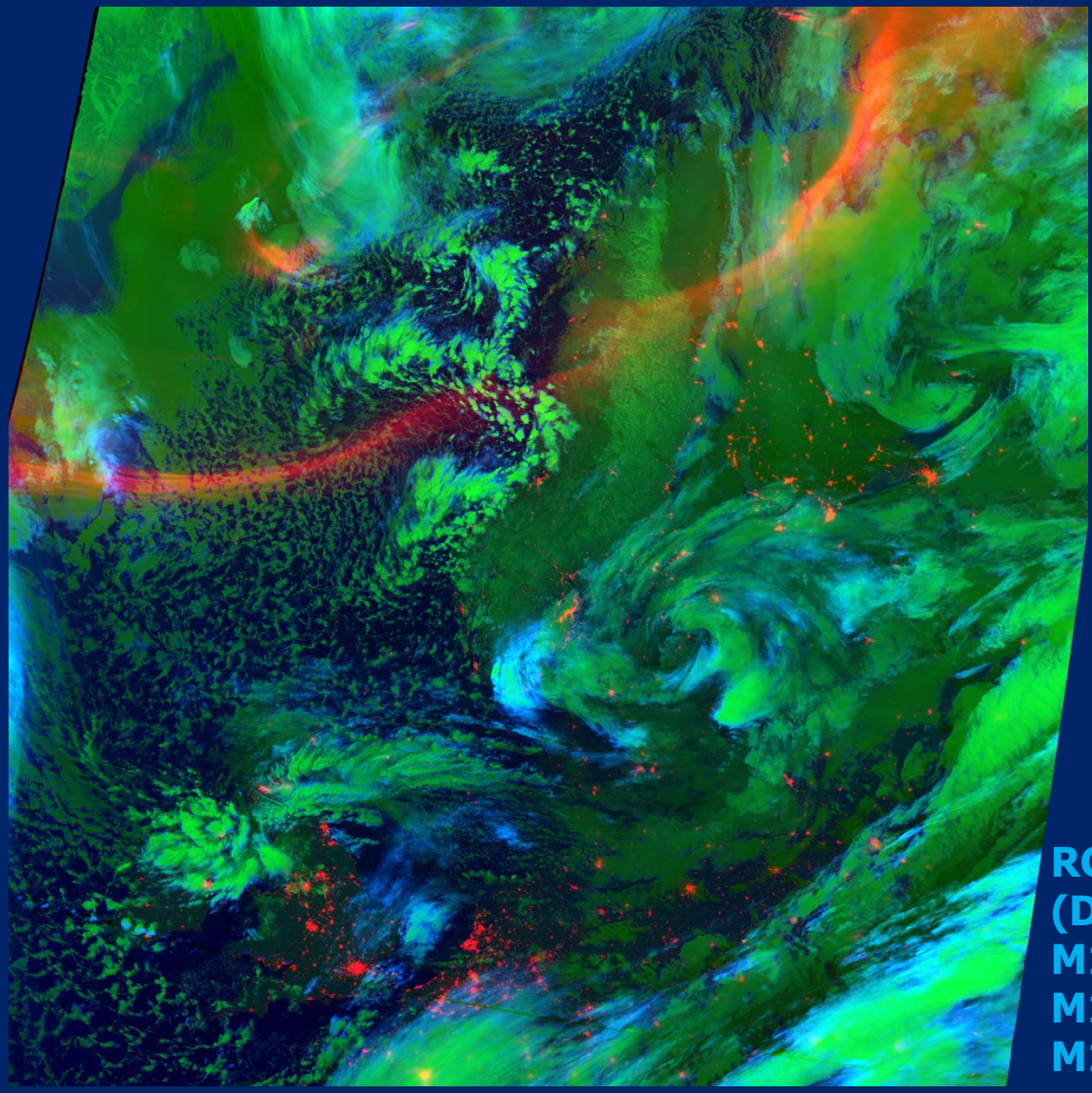
RGB (DNB, DNB, -M15)
M15 = 10.8 μm

Swedish Meteorological and Hydrological Institute Developing RGB Encodings

Adam Dybbroe, Swedish Meteorological and Hydrological Institute :

"SMHI is experimenting with RGB encodings of DNB.
In this image the thin/semi-transparent clouds, typically high cirrus, appear blue. Low clouds and fog appear with less or no blue.

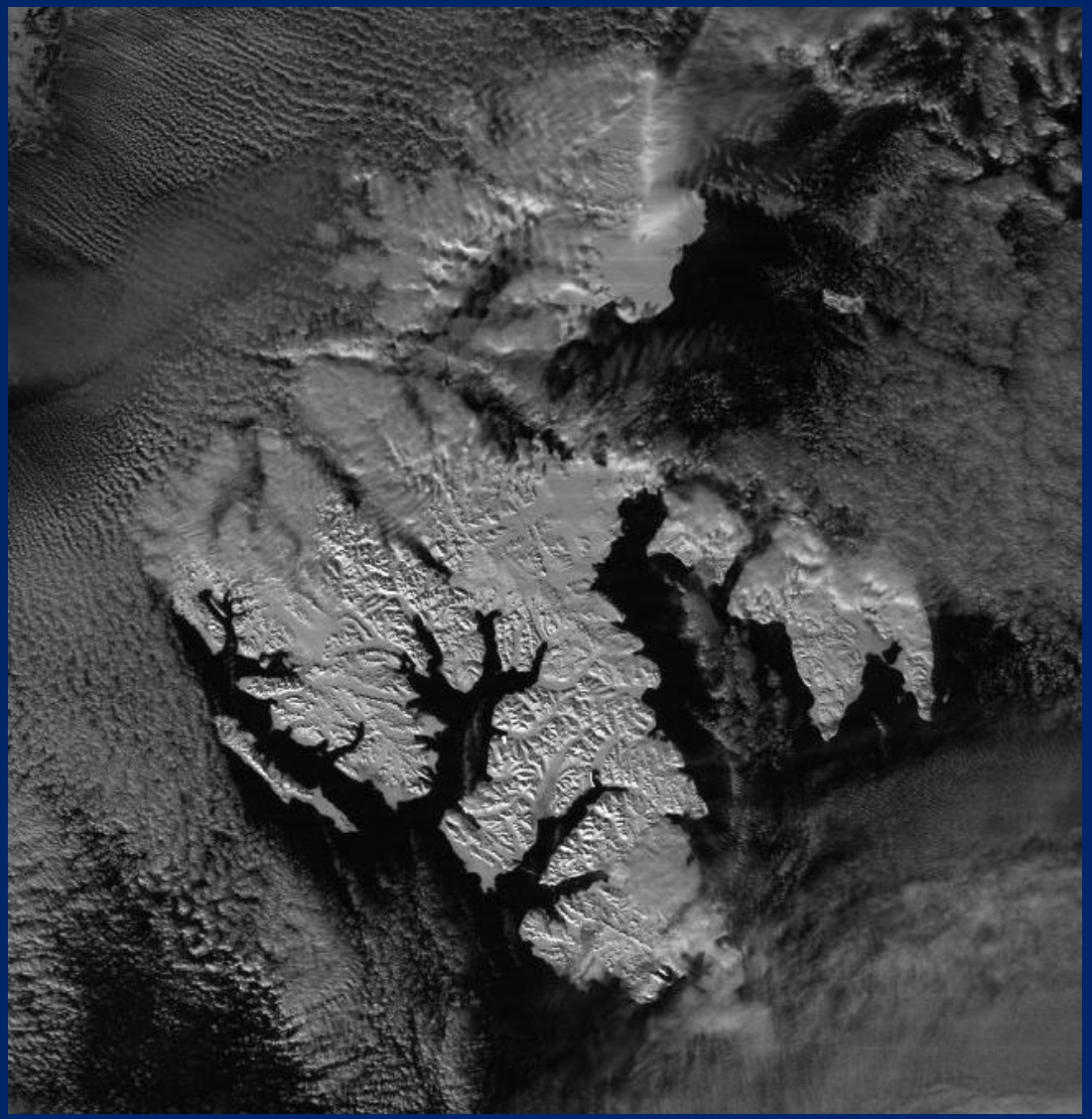
Proposals for alternatives welcome!"



Data acquired locally by SMHI

RGB
(DNB, -M15, M12-M16)
M12 = 3.7 μm
M15 = 10.7 μm
M16 = 12.0 μm

Svalbard at Night – 28 October 2015



Thank you for you attention!