



ILMATIETEEN LAITOS
METEOROLOGISKA INSTITUTET
FINNISH METEOROLOGICAL INSTITUTE

Weather services for General Aviation in Northern Europe

Collaboration with the Northern
Europe Aviation Meteorology
Consortium (NAMCON)

19/07/2019 Jaakko Nuottokari / FMI

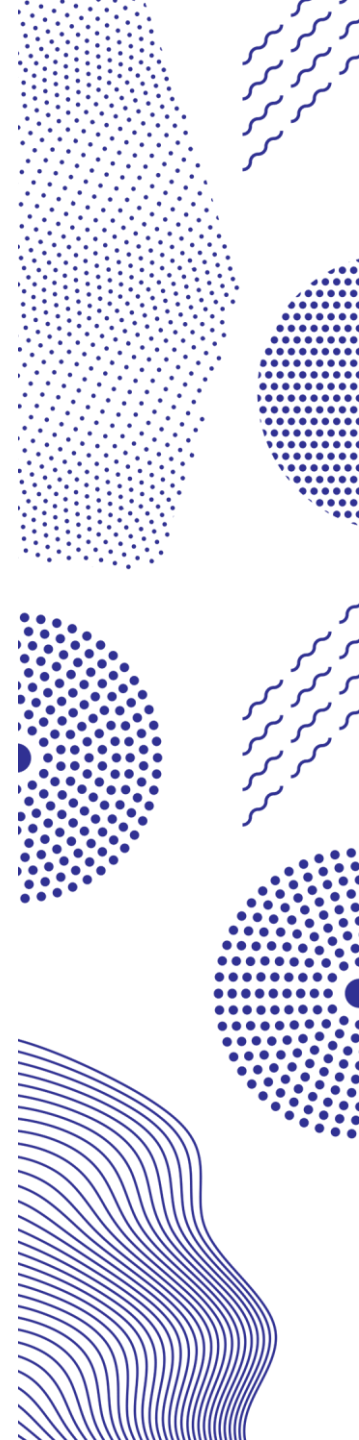


Funding and regulation for GA weather services by designated providers

- Some general aviation services fall within international regulation as recommended practice
 - Until 1 Jan 2020: ICAO Annex 3 20th edition
 - From 2 Jan 2020 onwards: (EU) 2017/373
- Can be complemented by additional national products
- Scope of services as determined by the competent authority in consultation with users
- If services under regulation, cost recovery from en-route and terminal charges
- General aviation supported by commercial aviation users due to enhanced flight safety

General aviation as a user of meteorological information

- Number of GA pilots small in Northern Europe due to cost and short season
- Significant user groups are aviation schools, HEMS operators, balloonists and increasingly drone operators
- Only operate in VFR conditions, observations and chart products are very important
- Purpose of TAF is to serve commercial scheduled aviation, this can cause frustration with general aviation
- Quality of Auto-METAR typically a major issue
- Pilots can take significantly more weather risk
- Difficult to communicate changing weather situations to the cockpit



Current services in Northern Europe - Denmark

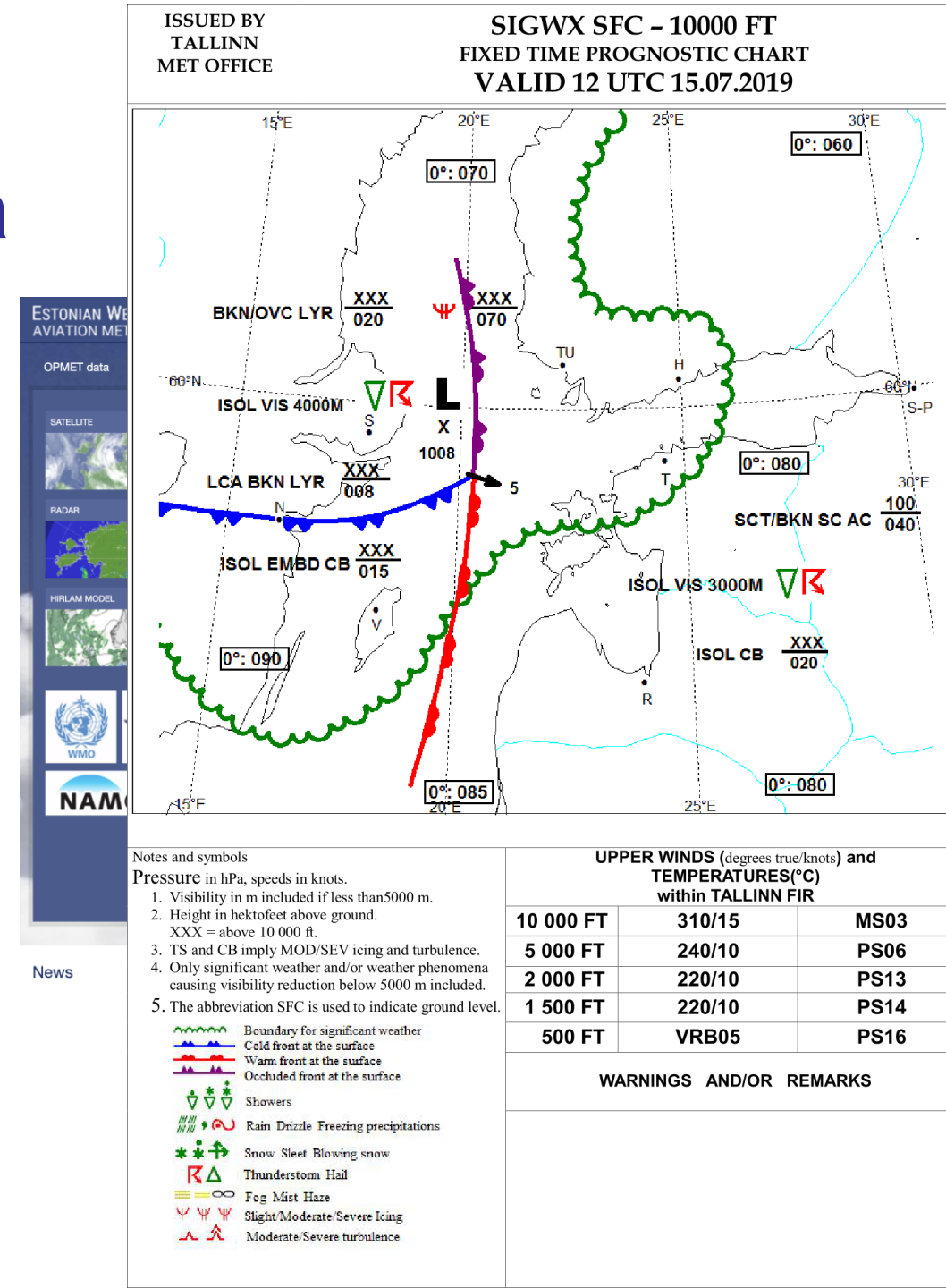
- Designated Aeronautical Meteorological Service Provider (METSP): Danish Meteorological Institute (DMI)
- Self-briefing portal at www.northavimet.com
 - Flight plan and NOTAM at <http://briefing.naviar.dk/>
- Aeronautical meteorological services from NAMCON member institutions
- Official MET self-briefing portal for Denmark
- Low-Level Forecast (LLF), Soaring/Ballooning forecasts, meteograms

The screenshot shows the Northavimet website dashboard. At the top is a navigation bar with links: Dashboard, Chart products, Radar, Satellite, Observations, TAF, Low level forecast, Model data, Info, and My Northavimet. The main content area is divided into several sections:

- SIGMETS**: A map of Northern Europe with red and yellow markers indicating significant meteorological events.
- TAF/METAR**: A section for entering an ICAO code and retrieving data. It includes dropdowns for 'System macro' and 'Private macro', and a link to 'Edit macro'.
- My favorites**: A list of favorite data sources: Observations, TAF, Geostationary satellite (day color), and Precipitation.
- Observations**: A map showing real-time observations at 11:54 UTC on July 15, 2019.
- TAF**: A map showing Terminal Area Forecasts at 11:54 UTC on July 15, 2019.
- Geostationary satellite (day color)**: A satellite image of Northern Europe at 11:30 UTC on July 15, 2019.
- Precipitation**: A map showing precipitation at 12:00 UTC on July 15, 2019.
- HELSINKI-VANTAA RWY: 04/15/22/33**: A section displaying TAF and METAR data for Helsinki-Vantaa Airport.
- Dashboard**: A link to 'Edit dashboard favorites'.


Current services in Northern Europe - Estonia

- Designated METSP: Estonian Environment Agency (ESTE A)
- Aviation weather portal at www.lennuilm.ee
 - Satellite, radar and numerical model information
 - OPMET data: SIGMET, METAR, TAF & AIREP SPECIAL
 - Official internet self-briefing portal at <https://isb.eans.ee>
- SIGWX chart (SFC- FL100)



Current services in Northern Europe - Finland

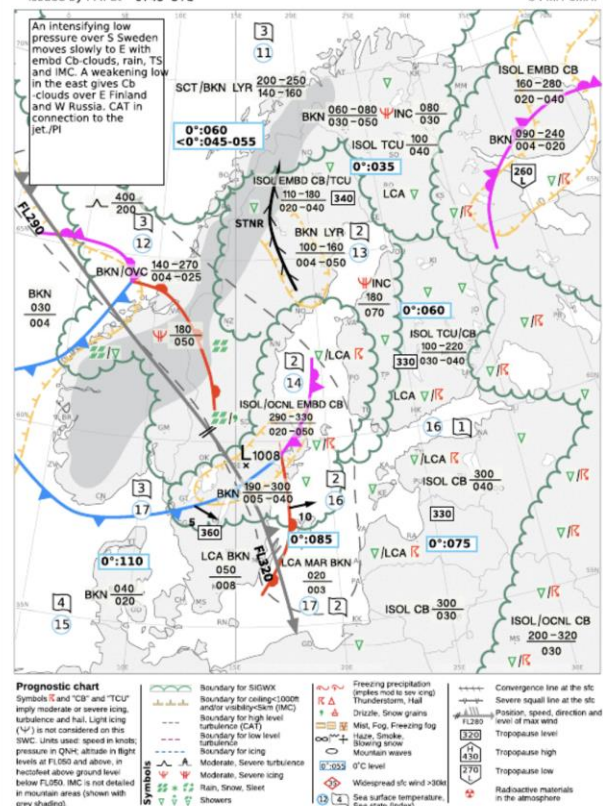
- Designated METSP: Finnish Meteorological Institute (FMI)
- Self-briefing portal at www.ilmailusaa.fi
 - Radar, satellite, numerical models, OPMET data
 - Flight plan, AIP, SUP, PIB and AUP at www.ais.fi
- Significant Weather Chart (SWC) SFC-FL450 produced with SMHI, Sweden
- GAFOR (until 30 Sep 2019), AWS-METAR and mast observations for general aviation
- LLF from 1 Oct 2019 onwards


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 Info FI

Weather on map
Weather on location
Weather on flight route
Warnings

Radar
Satellite
VIS,CLD,WIND
3 day surface
3 day flight levels
Rain, air pressure, temperature
WAFC
SWC
Finland
SWC

SWC SFC-FL450 valid time 12 UTC 15.07.2019
 Issued by FMI at 0745 UTC © FMI / SMHI



Prognostic chart

Symbols "CB" and "TCU" imply moderate or severe icing, turbulence and hail. Light icing ("LI") is not considered on this SWC. Units used: speed in knots; pressure in QNH; altitude in flight levels at FL050 and above, in feet/feet above ground level below FL050. IMC is not detailed in mountain areas (shown with grey shading).

Boundary for SIGWX
 Boundary for ceiling<1000m and/or visibility<500m (IMC)
 Boundary for high level turbulence (CAT)
 Boundary for low level turbulence
 Boundary for icing
 Moderate, Severe turbulence
 Moderate, Severe icing
 Rain, Snow, Sleet
 Showers

Freezing precipitation (indicated by red wavy lines)
 Thunderstorm, hail
 Drizzle, Snow grains
 Mist, Fog, Freezing fog
 Haze, Smoke
 Blowing snow
 Mountain waves
 0°C level
 Widespread surface wind >30kt
 Sea surface temperature, Sea state (index)

Convergence line at the stc
 Severe squall line at the stc
 Position, speed, direction and level of main wind
 Tropopause level
 Tropopause high
 Tropopause low
 Radiative materials in the atmosphere

PDF

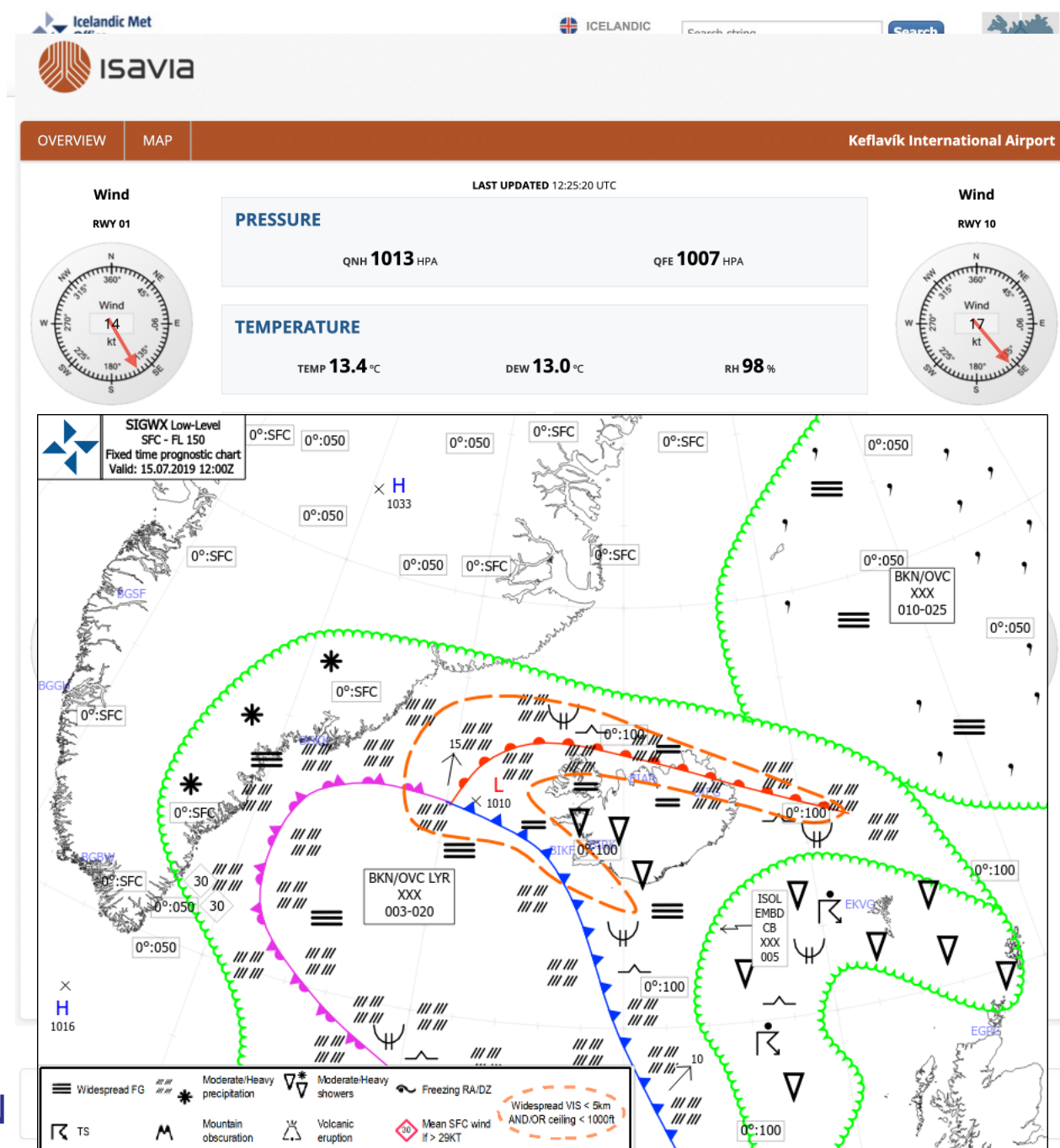
NOTICE!

Responsibility for the use of meteorological data is with the pilot in command of the aircraft.

Finnish Meteorological Institute
 ilmailu@ilmatieteenlaitos.fi
 0600 9 3808 (2,53€/min)

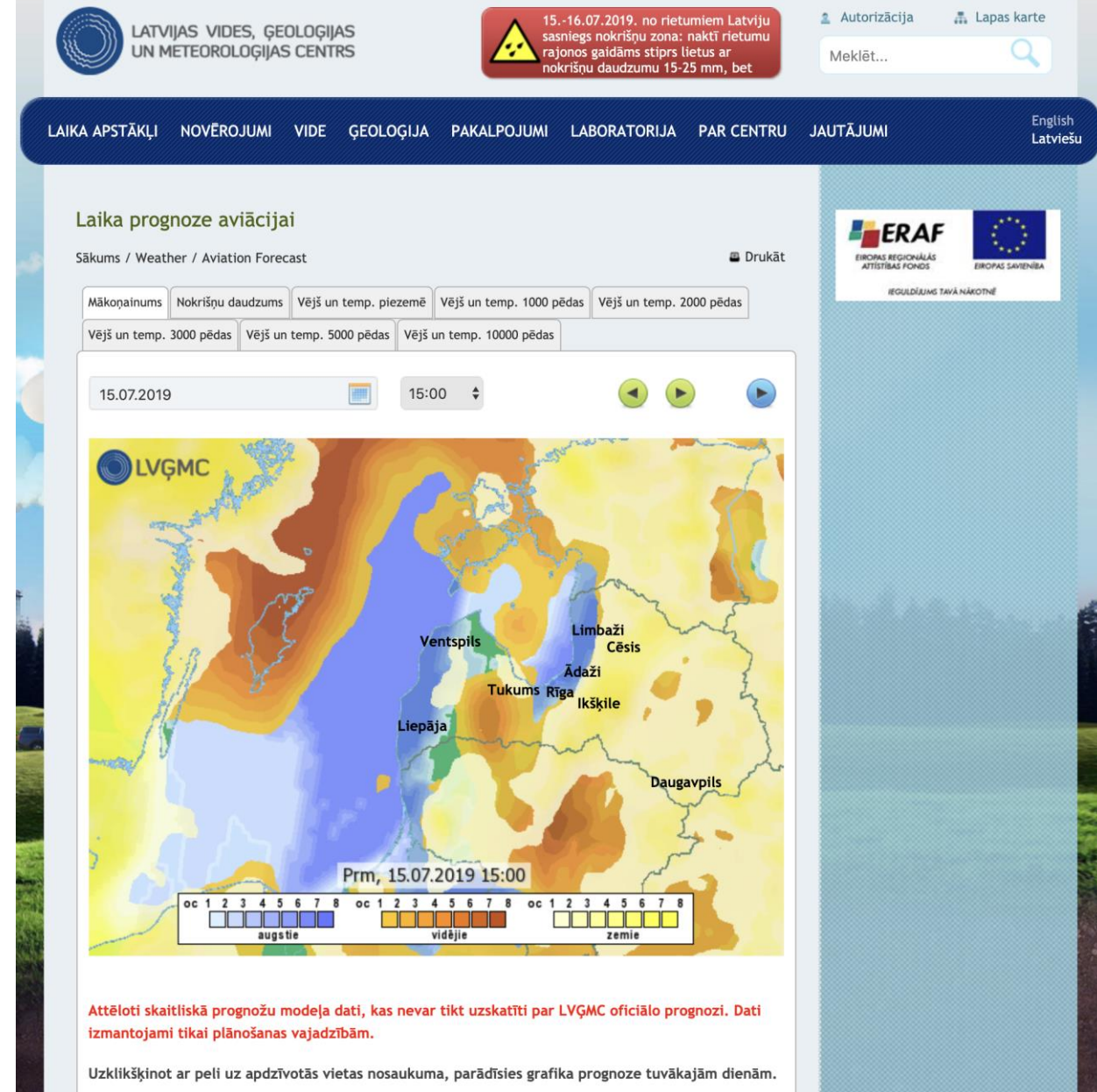
Current services in Northern Europe - Iceland

- Designated METSP: Icelandic Met Office (IMO)
- Aviation weather information at: <https://en.vedur.is/weather/aviation/>
 - OPMET data, numerical model data, radar, satellite, soundings, PIREPs
- Weather observations available at <https://www.isavia.is/en/corporate/c-preflight-information/aviation-weather>
- Significant Weather Chart (SIGWX) SFC-FL150



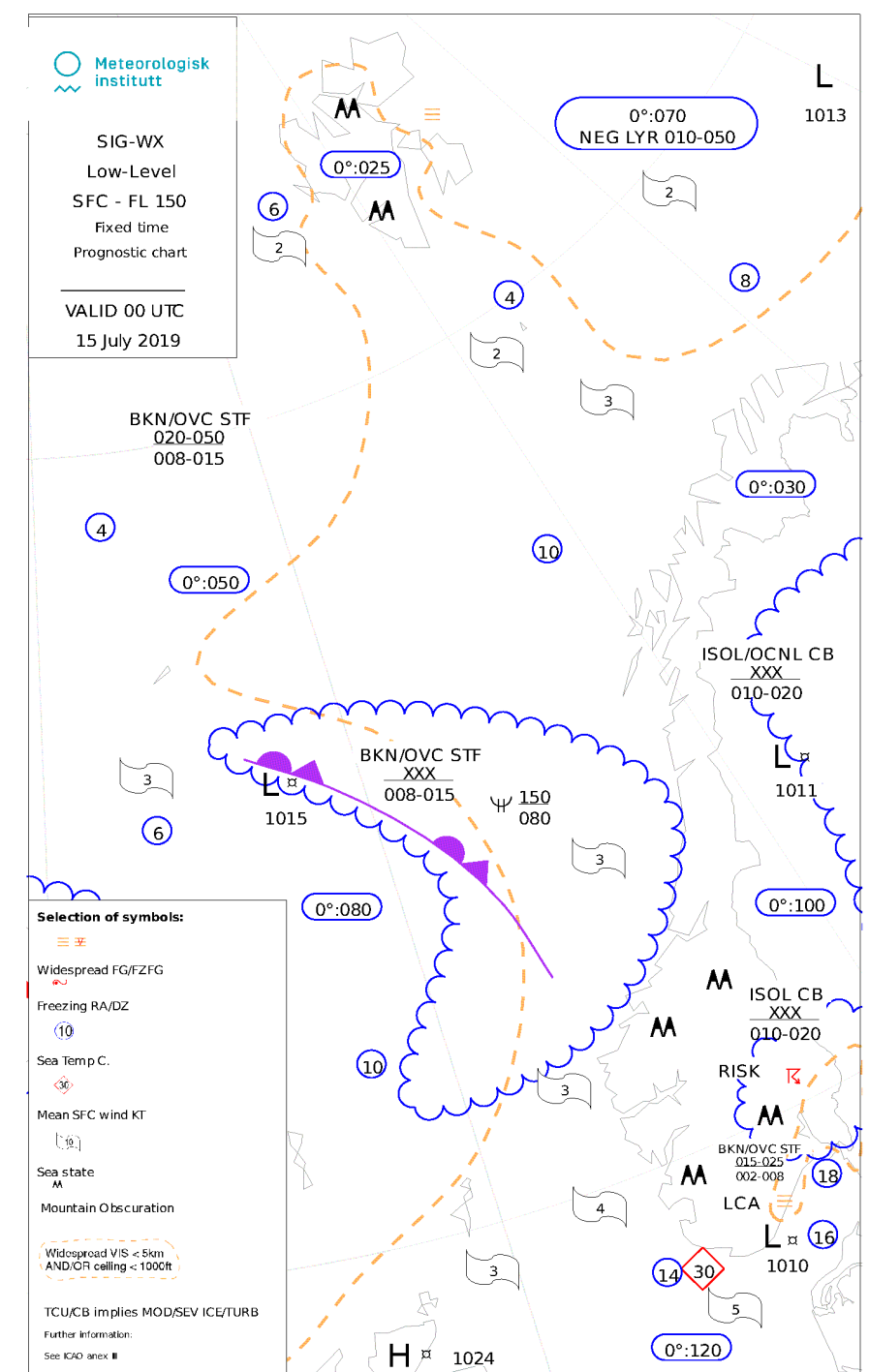
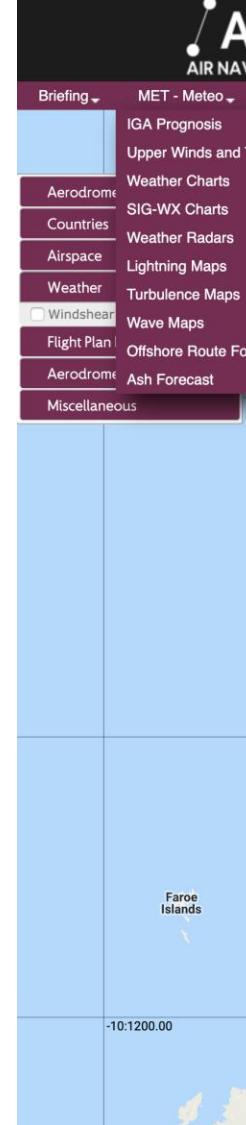
Current services in Northern Europe - Latvia

- Designated METSP: Latvian Environment, Geology and Meteorology Centre (LEGMC)
- Self-briefing portal at <https://lgs.ead-it.com/>
- Aviation weather products at: <https://www.meteo.lv/laika-prognoze-aviacija/?nid=833> (in latvian)
 - Numerical model products
- Significant Weather Chart (SWC) SFC-FL150
- GAMET and AIRMET



Current services in Northern Europe - Norway

- Designated METSP: Norwegian Meteorological Institute (MET.no)
- Self-briefing portal at <https://www.ippc.no/ippc/index.jsp>
 - Radar, chart products, lightning, turbulence, wave and offshore route forecasts, OPMET data
- Significant Weather Chart (SWC) SFC-FL150
- Offshore route forecasts



Current services in Northern Europe - Sweden

- Designated METSP: Swedish Meteorological and Hydrological Institute (SMHI)
- Self-briefing portal at <https://aro.lfv.se/>
 - Radar, chart products, OPMET data, VFR analysis, GAMET, Low-Level Forecast (LLF) (link to Northavimet)
- Significant Weather Chart (SWC) SFC-FL450 produced with FMI, Finland
- GAMET, LLF, VFR analysis & forecast

Quicksearch	TAF	METAR	Charts	SWC/WC	PDF Bulletins
Quicksearch	TAF Sweden	METAR Sweden	SWC Nordic	SWC/WC 00	Company PIB
My METAR/TAF	TAF Nordic	METAR Nordic	VFR Analysis	SWC/WC 06	Menzies
	TAF North EUR	METAR North EUR	VFR forecast 06	SWC/WC 12	SAS
	TAF South EUR	METAR South EUR	VFR forecast 12	SWC/WC 18	Route PIB
					Area PIB
					Special PIB
Radar	SIGMET	LLF	GAMET	WINDS	Links
Weather radar	SIGMET Europe	LLF Area A	GAMET Area A	Valid 03-09	SMHI Aviation
	SIGMET/ARS/AIRMET	LLF Area B	GAMET Area B	Valid 09-15	Decode TAF/METAR
	SIGMET visualization	LLF Area C	GAMET Area C	Valid 15-21	Amended TAF (Swe)
	Volcanic Ash Adv.	LLF Area E	GAMET Area E	Valid 21-03	Northavimet.com
		Graphical LLF			
		LLF Chart			

30/04/2019

8.33 kHz channel spacing radio

Use of Y in FPL field 10

[Read more >>](#)

03/04/2019

VFR Guide

Information to VFR pilots

[Read more >>](#)

[Show all](#)

Low-Level Forecast (LLF)

- Graphical format of GAMET/GAFOR
- Fast overview of significant weather
- Phenomenon-based vs. area-based forecast
- Also with text
- Seamless across borders

Low level forecast Denmark/Sweden

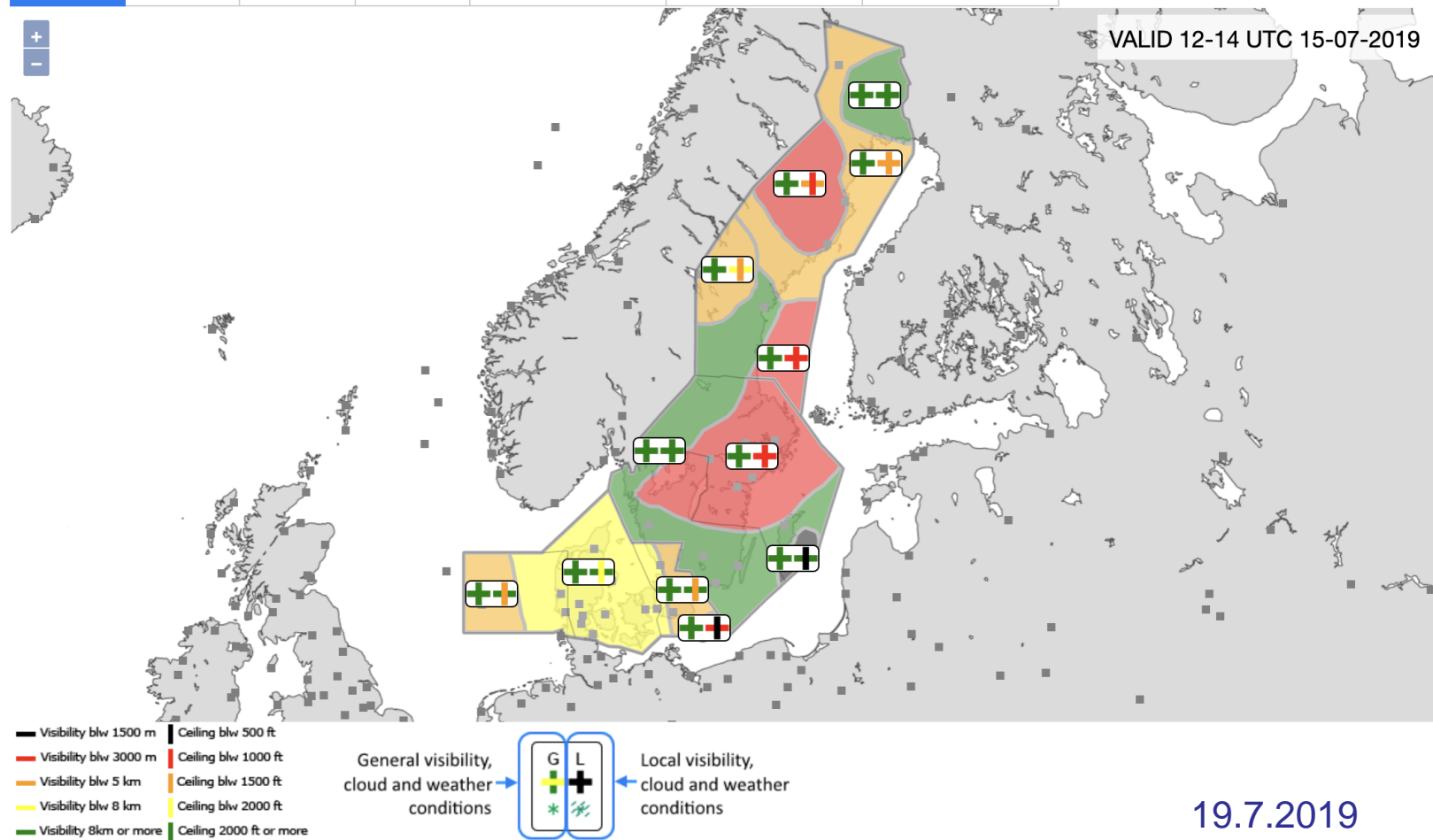
F - North Sea D - Denmark E - Halland/Skåne A - Norra Götaland B - Svealand C - Norrland

A low in the north of Jutland moves slowly towards southeast and gives a westerly and southwesterly flow of rather moist air.



Vis, clouds, weather Cloud top, turb, icing Surface wind/QNH High level winds/ Temp Text forecast
Visibility Cloud base CB

12-14 UTC 14-16 UTC 16-18 UTC 18-20 UTC Tomorrow 04-08 UTC Tomorrow 08-12 UTC Tomorrow 12-16 UTC

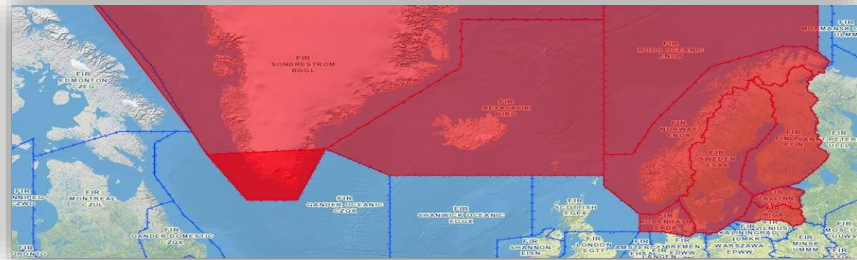


LLF Chart Area

This page refreshes automatically every 30 minutes

LLF production

- Production system for the LLF service is at SMHI with easy access via web browser from other producing centres
- Weather objects transferred as GeoJSON files across platforms
- Regular coordination between producing centres
- Approved by 7 competent authorities as being compliant to 2017/373 requirements for low-level forecasts
- High time and area resolution
- <https://www.northavimet.com/low-level-forecast/denmarksweden/>



REPUBLIC OF ESTONIA
ENVIRONMENT AGENCY



SMHI

Northern Europe Aviation Meteorology Consortium – NAMCON www.namcon.aero

Copenhagen Declaration (2011)

- Signed by NMS Directors from all 7 NAMCON States
 - *Note. Cooperation on aviation weather matters between Nordic NMS has started much earlier*
- Willingness to cooperate in production and development
- Agree on consortium – equal partners
- Cost-efficiency and high quality achieved through
 - Efficient division of tasks without regard to national borders
 - Minimising duplication
 - Harmonised products
 - Automated production without compromising quality
 - Mutual back-up production capabilities

Harmonisation, joint operations and shared tools: Examples of results so far

1. Joint Significant Weather Chart production between FIN and SWE: N(ord)SWC using SWIM-compliant SWC tool
2. Joint aviation weather briefing portal www.northavimet.com
3. Joint low-level forecast (LLF) production between SWE and DEN using a new interactive tool
4. Subcontracted service: DMI (DEN) responsible for TAFs in southernmost Sweden
5. Some back-up procedures and technical solutions e.g. for AFTN distribution between SWE-DEN
6. SIGMET coordination procedure between all seven countries
7. TAF and SIGMET Guidelines developed and implemented
8. FMI's TAF verification tool in use in all NAMCON countries

Harmonisation, joint operations and shared tools:

Future Plans

- Delivering VA SIGMETs from Norway and Iceland for all NAMCON FIRs
- Harmonised LLF product available in all (or almost all) countries
- Two SWCs: Greenland-Iceland & Scandinavia (DEN-FIN-NOR-SWE-EST-LAT-LIT) produced from two joint centres
- Service delivery ensured via backup arrangements (cross-border)
- TAFs verified with same methods
- Collective research aiming for new products and improved quality of services (RP3, PCP etc.)
- Common SWIM interface to users (www.NorthAvimet.com portal)
- Shared tools and software, where feasible
- Common practices and guidance, where feasible

NAMCON Vision for GA

- Harmonised and consistent graphical low-level forecast extending on the current LLF product produced by SMHI and DMI
- Harmonised significant weather chart SFC-FL450 covering the entire Scandinavian area produced by a few centres
- Additional services developed within SESAR (de-icing and winter weather) as SWIM services from the producing centre
- Single complementary point of entry for Northern European MET SWIM services drawing from national SWIM nodes
- Supporting added value services from the private sector



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