

Nordic SWC User Guide

Introduction

Nordic Significant Weather Chart, NSWC, is a graphical aviation weather product that covers areas from the North Sea to NW Russia in the east-west direction and from Poland up to the Arctic Ocean in the north-south direction. The NSWC is mainly aimed for commercial and professional aviation use, but it can be used where applicable also for general aviation purposes.

The NSWC is published either by the Meteorological Watch Office (MWO) in Stockholm (by Swedish Meteorological and Hydrological Institute, SMHI-Stockholm) or in Helsinki (by Finnish Meteorological Institute, FMI-Helsinki). The NSWC gives significant benefit for aviation users in the Nordic area compared to other significant weather charts (SigWx) e.g. published by global World Area Forecast Centers (WAFC). This is due to at least three reasons:

1. NSWC has a lead time of 4 h instead of 15-24 h which is typical for WAFC SigWx. Thus NSWC contains information from more up-to-date sources of weather observations and numerical models.
2. The area of interest of NSWC is a lot smaller than that of WAFC SigWx making it possible to describe weather phenomena in greater detail.
3. NSWC is a fully monitored product thus in cases of unexpected weather phenomena the product is amended and the most recent information can be delivered to the customer.

NSWC is a combination of low (L), medium (M) and high (H) atmosphere SigWx. The chart can be described as a graphical representation of valid aviation weather messages (SIGMET, GAMET, AIRMET, TAF) and some other weather information between SFC-FL450 in chart form.













NSWC is a monitored product and if necessary an amendment chart will be published (AMD). An AMD is published in cases of appearance of non-forecast significant weather phenomena in the domain of the map.

The content of NSWC is compliant with requirements and recommendations of ICAO Annex 3.


Chart content

Significant weather

Widespread significant precipitation







Rain, snow, sleet	   Rain, Snow, Sleet
Rain shower, snow shower, sleet shower	   Showers
Freezing rain, freezing drizzle	  Freezing precipitation
Thunderstorm, hail	  Thunderstorm, Hail
Drizzle, snow grains	  Drizzle, Snow grains

Demarcation of significant weather

Demarcation of significant weather: scalloped line	 Boundary for significant weather
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Areas of widespread significant precipitation, OCNL/FRQ/EMBD/OBSC CB/TCU clouds, and moderate or severe icing are delineated with the scalloped line.

Widespread phenomena reducing visibility


Mist, fog, freezing fog	   Mist, Fog, Freezing fog
Haze, smoke, blowing snow	   Haze, Smoke, Blowing snow

Areas of widespread phenomena reducing visibility are generally delineated using the IMC line, see below.

Low clouds and poor visibility

Widespread low cloud ceiling and/or poor visibility (IMC, Instrument Meteorological Conditions) is delineated with a yellow dashed and toothed line, with its teeth pointing into the IMC area. IMC is defined as

- visibility < 5000 m, and/or
- ceiling (bkn/ovc cloud base) < 1000 ft.

Delineation of widespread IMC areas: yellow dashed and toothed line	 Boundary for ceiling<1000ft and/or visibility<5km (IMC)
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IMC is not detailed in mountain areas (shown with grey shading on the chart).

CB and TCU clouds (Cumulonimbus and Towering Cumulus)

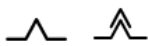


- **ISOL CB/TCU** (isolated, individual features which a maximum spatial coverage less than 50% of the area concerned)
- **OCNL CB/TCU** (occasional, well-separated features with a maximum spatial coverage between 50-75% of the area concerned)
- **FRQ CB/TCU** (frequent, little or no separation between adjacent clouds with a maximum spatial coverage greater than 75% of the area concerned)
- **EMBD CB/TCU** (embedded) is additionally used when CB/TCU clouds are embedded within cloud layers and cannot be readily recognized
- **OBSC CB/TCU** (obscured) is additionally used when CB/TCU clouds are obscured by haze or smoke or cannot readily be seen due to darkness

Widespread CB/TCU clouds with an areal coverage of at least OCNL, or EMBD/OBSC CB/TCU clouds are delineated with the SIGWX scalloped line.

Icing

Moderate or severe icing with forecast base and top	 Moderate, Severe icing
Delineation of icing: scalloped line, or blue short dashed line if different from SIGWX cloud area	 Boundary for icing

Turbulence

Moderate or severe turbulence, both CAT (Clear Air Turbulence) and low level turbulence with forecast vertical extent	 Moderate, Severe turbulence
Delineation of low level turbulence: purple dashed line	 Boundary for low level turbulence
Delineation of high level turbulence (CAT): grey dashed line	 Boundary for high level turbulence (CAT)


Mountain waves

Significant mountain wave (MTW) activity is forecast with the MTW symbol over the area affected (no delineation).

 Mountain waves





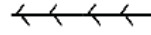

Jet streams

The jet stream axis (strongest wind within the jet stream) is marked on the chart when the wind speed is at least 80kt. The jet stream axis height is indicated in flight levels. The jet stream axis is intersected by two slashes (//) where the wind speed changes by at least ± 20 kt and/or the jet stream axis height changes by at least ± 3000 ft.

 Position, speed, direction and level of max wind
FL280

Fronts, troughs and squall lines

Fronts, troughs and squall lines indicate their position at the surface. The movement direction of fronts is indicated with an arrow and their movement speed in knots (or SLW = moving slowly, STNR = stationary).

Cold front at the surface		Cold front at the surface
Warm front at the surface		Warm front at the surface
Occluded front at the surface		Occluded front at the surface
Stationary front at the surface		Quasi-stationary front at the surface
Convergence / trough at the surface		Convergence line at the surface
Severe squall line at the surface		Severe squall line at the surface

High and low pressures

Surface high (H) and low (L) pressure centres are marked on the chart with their forecast QNH (hPa) pressure. Their movement is indicated in the same way as the movement of fronts.

0°C level

The 0°C level is indicated regionally and/or based on air mass temperatures. If there are multiple 0°C levels at different heights, the highest 0°C level is shown first, and the sub-zero layer below it is indicated separately with the lowest 0°C level as its base (e.g. 0°: FL050, <0°: 010-030).

0°: SFC means that the 0°C level is at (or only a couple of hundred feet above) the surface, or that T<0°C in the whole troposphere (no 0°C level).

0°:040

0°:050
<0°:015-030

Widespread strong surface wind

Widespread strong surface wind above 30kt is marked on the chart over the area concerned (no delineation). The value indicated is the mean wind speed, i.e. gusts can be significantly stronger.



Widespread sfc wind >30kt

Sea surface temperature and sea state

Mean sea surface temperature (°C) and significant wave height (index) is indicated over the main sea areas. The sea state index values and corresponding wave heights are described in the table below.

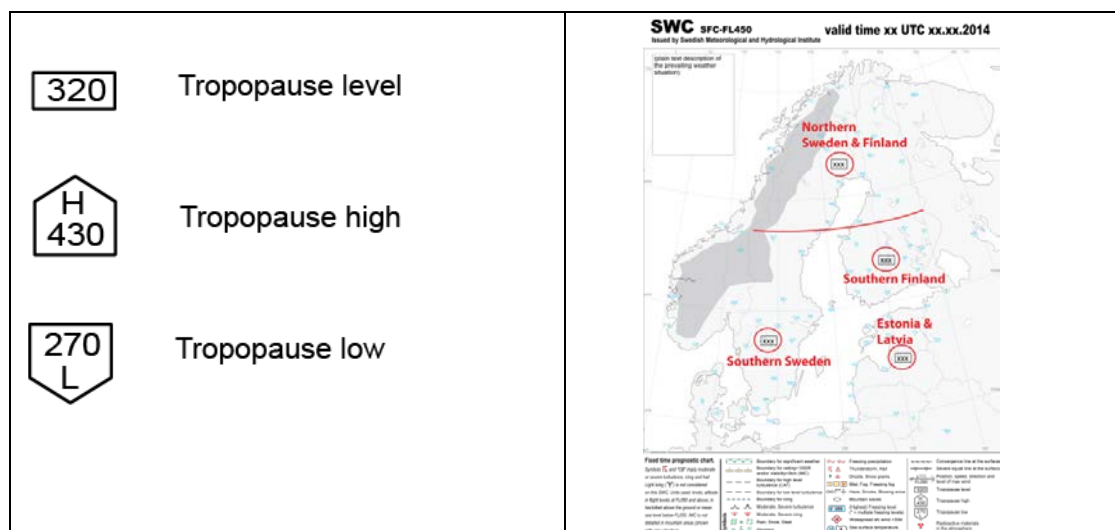


Sea surface temperature,
Sea state (index)

Wave height (m)	Sea state index
0 – 0,1	0/1
0,2 – 0,5	2
0,6 – 1,2	3
1,3 – 2,5	4
2,6 – 4	5
4 – 6	6
6 – 9	7
9 – 14	8
> 14	9

Tropopause level

Tropopause level is indicated in flight levels at spot locations in four standard areas (northern Sweden and northern Finland, southern Sweden, southern Finland and Estonia/Latvia). Additionally possible tropopause minima and maxima are indicated, where forecasted, in the chart area.



Radioactive materials

If there's a release of radioactive materials into the atmosphere the incident location is marked on the chart with the RAD symbol. Additionally a text box with the RAD symbol, release time, source site coordinates and the text "CHECK SIGMET AND NOTAM FOR RDOACT CLD" is placed on the side of the chart.



**Radioactive materials
in the atmosphere**

Volcanic ash

If volcanic ash is advected into the chart area a text box with the VA symbol, eruption details and the text "CHECK SIGMET, ADVISORIES FOR VA, ASHTAM AND NOTAM FOR VA" is placed on the side of the chart.

Description of the prevailing weather situation

The prevailing weather situation is described in plain (English) language in the upper left corner of the chart. It can be used e.g. to draw the user's attention to significant phenomena or how the situation on the chart is expected to change.

Notes

- The various phenomena can additionally be detailed by **LCA** (locally), **MAR** (at sea), **COT** (at the coast), **LAN** (inland), **MON** (above mountains), or **VAL** (in valleys), and in such cases the phenomenon is not necessarily delineated with the SIGWX or IMC lines
- Only TCU and CB cloud types are indicated, layered clouds are indicated with **LYR**
- Non-significant clouds are not delineated, but they can be included as additional information (with or without base and top information)

SWC amendment criteria

An amendment to the chart is issued (AMD added in the title of the chart) when one of the following phenomena is observed but was not forecasted (or a previously forecast phenomenon is no longer expected):

- SIGMET phenomena
- Widespread
 - IMC, i.e. phenomena strongly reducing visibility (e.g. mist/fog, moderate drizzle or snowfall, heavy rain, smoke, blowing snow) and/or low cloud ceiling (below 1000ft)
 - Moderate icing
 - Moderate turbulence
 - OCNL/FRQ/EMBD/OBSC CB clouds, when no CB clouds had been forecast

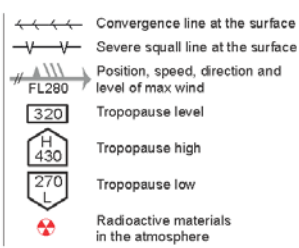
In case of a technical error (e.g. typos) a correction to the chart is issued (COR added in the title of the chart).

The chart is monitored for possible amendments from its issue time until +1.5h of its valid time (i.e. the monitoring period is chart valid time -4h...+1,5h).

NSWC example

Two example charts of the Nordic SWC are shown on the following pages.

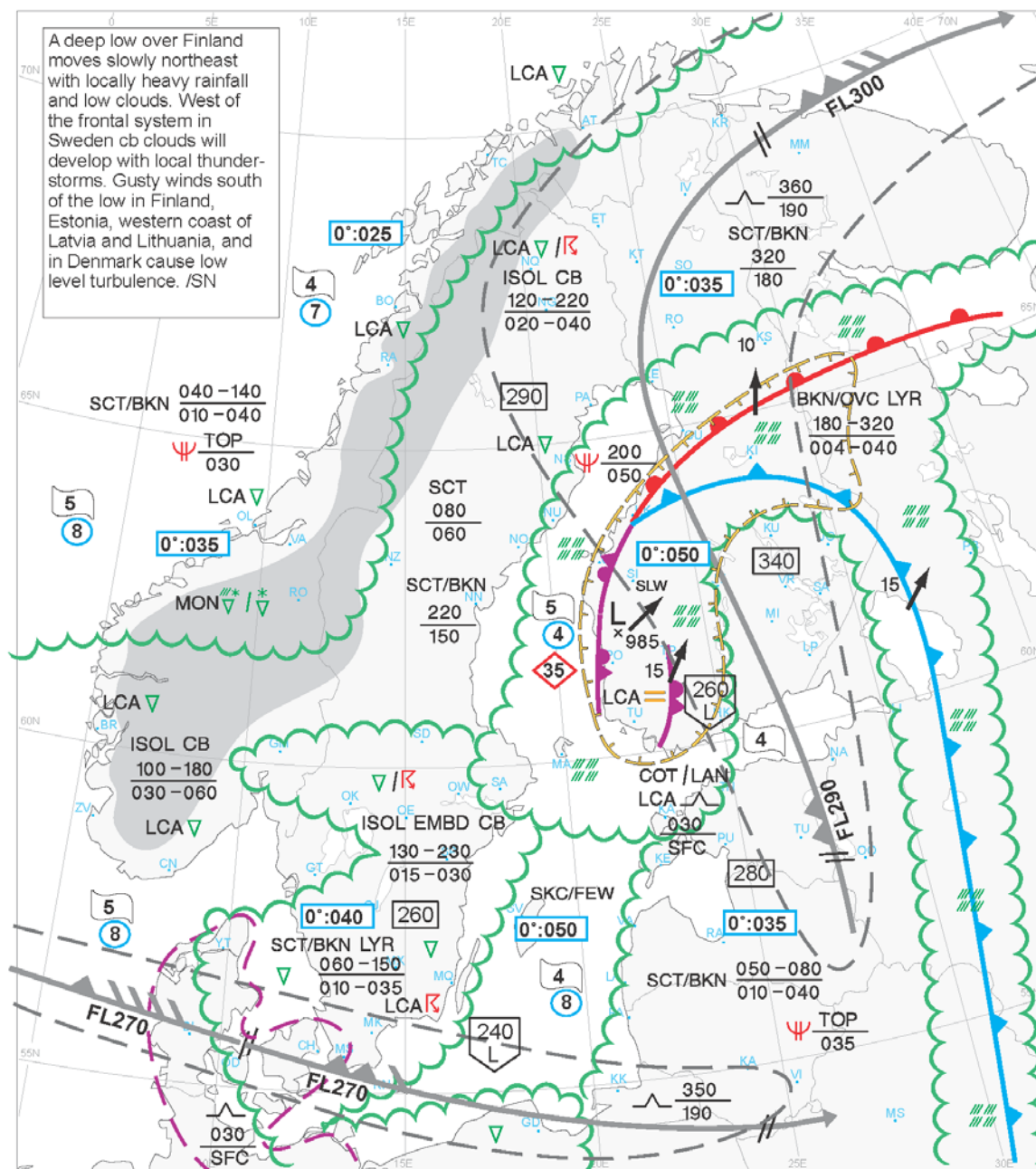
valid time 18 UTC 2.2.2014



SWC SFC-FL450

Issued by FMI at 0905 UTC

valid time 12 UTC 13.5.2015



Fixed time prognostic chart.

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

<ul style="list-style-type: none"> Boundary for significant weather Boundary for ceiling < 1000ft and/or visibility < 5km (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 	<ul style="list-style-type: none"> Freezing precipitation Thunderstorm, Hail Drizzle, Snow grains Mist, Fog, Freezing fog Haze, Smoke, Blowing snow Mountain waves 0°C level Widespread sfc wind > 30kt Sea surface temperature, Sea state (index) 	<ul style="list-style-type: none"> Convergence line at the surface Severe squall line at the surface Position, speed, direction and level of max wind Tropopause level Tropopause high Tropopause low Radioactive materials in the atmosphere
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