Operational models at Norwegian Meteorological Institute

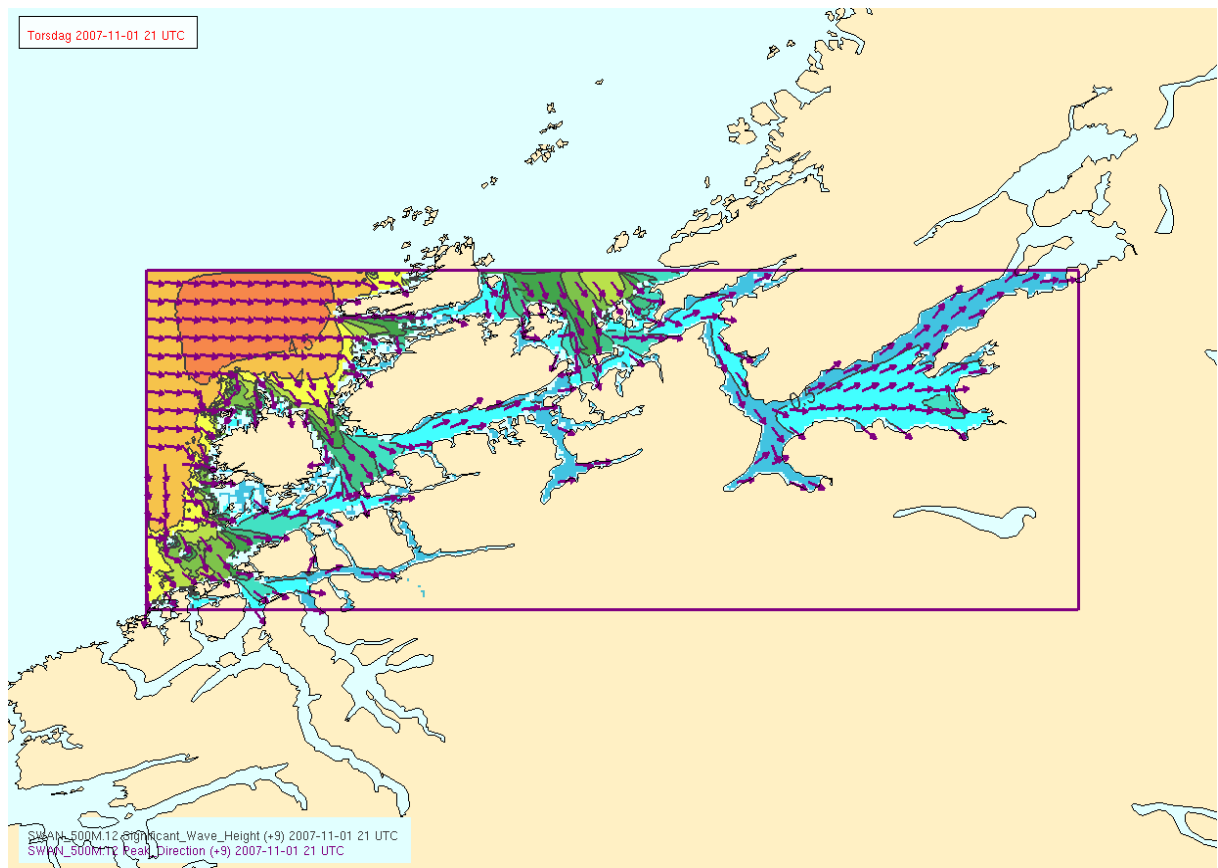## Harald Engedahl

Operational Wave models				
Modell	**UTC**	**Atmospheric forc.**	**Class**	**comments**
WAM50km	00,06,12, 18	HIRLAM20	A	3-hourly from T-15 to T+60
WAM10km	00,12	HIRLAM10	A	Nested in WAM50km. 1-hourly from T-11 to T+60
STORWAM12km	00,06,12, 18	HIRLAM12	A	Isgrense fra OSI-SAF. 1-hourly from T+9 to T+36
SWAN500m	00,12	HIRLAM4/UM4/ UM1	B	Trondheimsleia. Nested in WAM10km. 1-hourly from T+9 to T+36

Onsdag 2007-05-16 11 UTC

WAM.00 BOTTOM_DEPTH (+0) 2007-05-16 00 UTC
WAM.10km.00 BOTTOM_DEPTH (+0) 2007-05-16 00 UTC
SWAN.500m.00 Significant_Wave_Height (+11) 2007-05-16 11 UTC
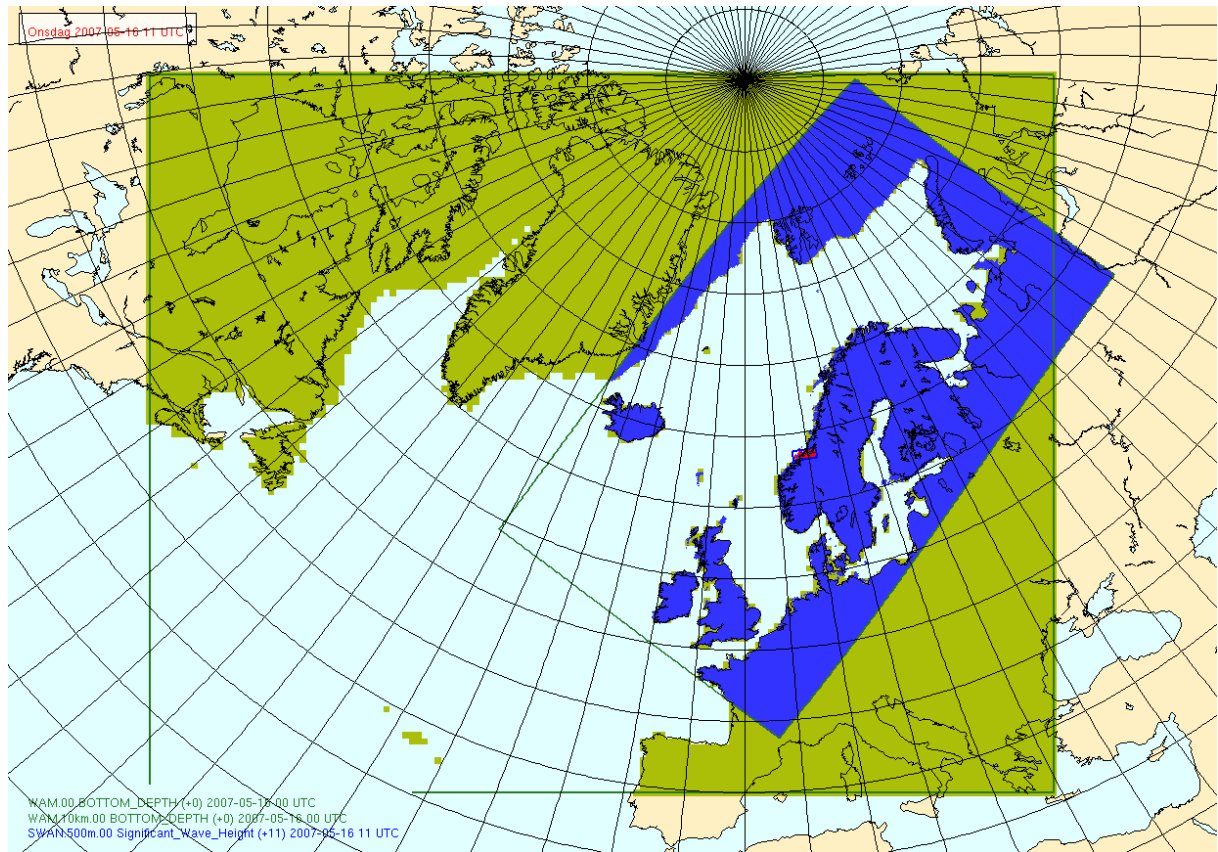
Model domains for WAM.50km (green) and WAM.10km (blue) (also SWAN.500m in red).

Significant wave height and peak direction from SWAN.500m

Operational Ocean Models (MIPOM, MI-IM, ROMS)

| Modell	UTC	Atmospheric forc.	Class	comments
Stormsurge-20km	00,12	STORHIRLAM10	A	Nested in Nordic.4km 3-hourly from T-18 to T+60
Arctic-20km	00	ECMWF25	A	Coupled with ocean ice-modell MI-IM. 6-hourly from T-30 to T+168.
Nordic-4km	00,12	HIRLAM20/ HIRLAM12	A	Nested in Arctic-20km. 1-hourly from T-18 to T+60.
Nordic-4km_bio	00	HIRLAM20/ HIRLAM12	B	Nested in Arctic-20km. With bio + coupled to MI-IM.
NorthSea-4km	06	HIRLAM20/ HIRLAM12	C	Nested in NorthSea-20km 6-hourly from T-30 to T+240.
NseaSkag-1.5km	00	HIRLAM10/ HIRLAM4/UM4	B	Nested in Nordic-4km. 6-hourly from T-18 to T+60
Oslofjord-300m	00	HIRLAM4/UM4/ UM1	B	Nested in NseaSkag-1.5km. 3-hourly from T-18 to T+60.
Westcoast-200m	00	HIRLAM4/UM4/ UM1	B	Nested in NseaSkag-1.5km. 6-hourly from T+6 to T+36.
SS_EPS-20km	00	LAMEPS20	B	Ensemble storm surge 3-hourly from T+0 to T+60.
Ofotfjord-500	00	HIRLAM4/UM4/	B	Nested in Nordic-4km. 6-hourly from T-18 to T+16.
Arctic-20km_ROMS	00	ECMWF25	C	Just like the setting of MIPOM
Topaz	?	ECMWF25	C/B	Testing
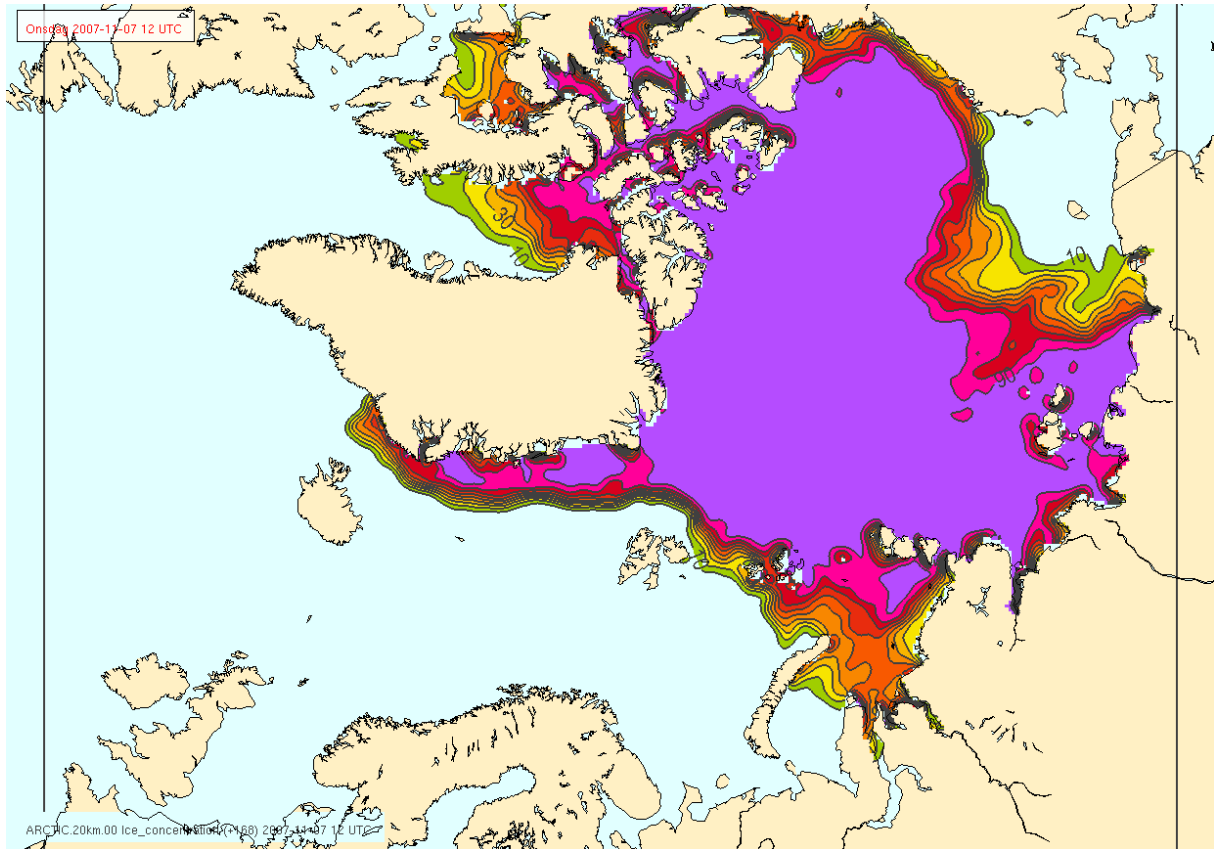
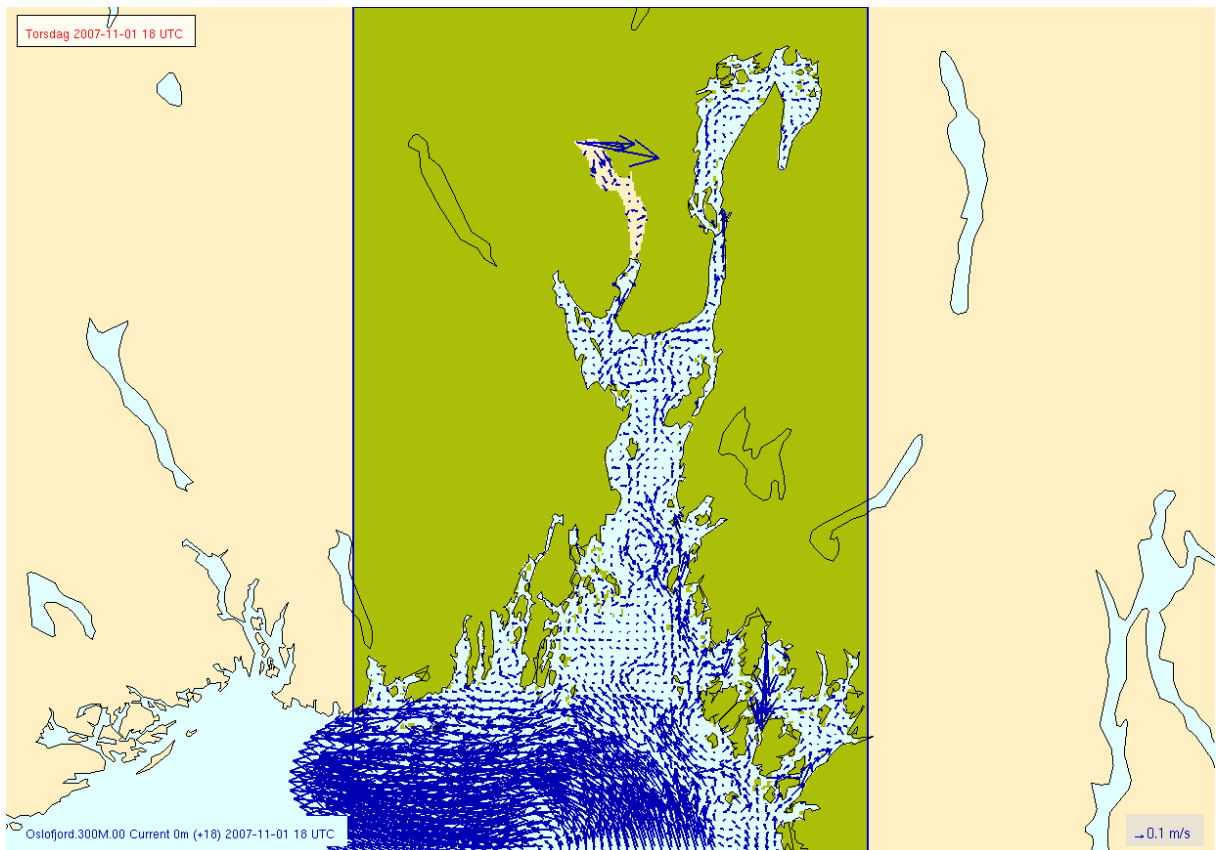**Sea-Ice concentration in percent from Arctic-20km**
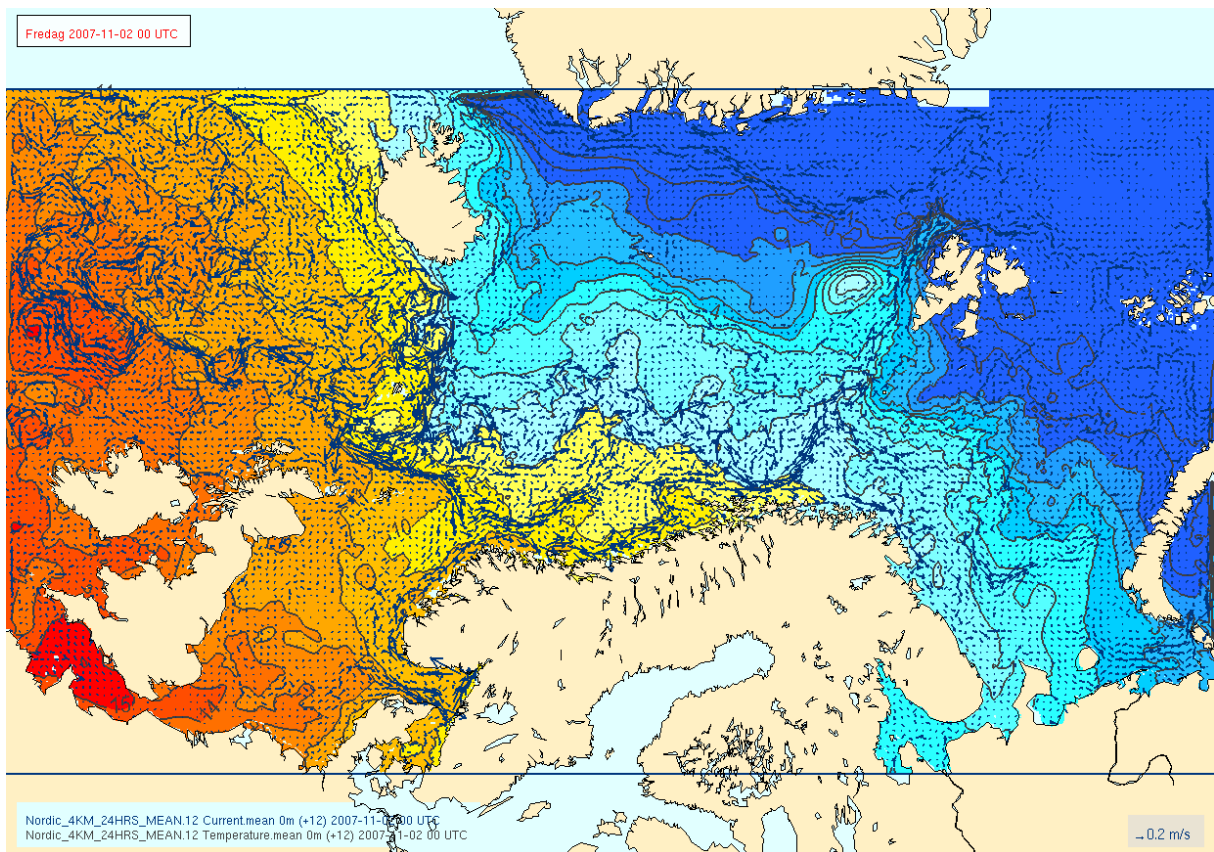
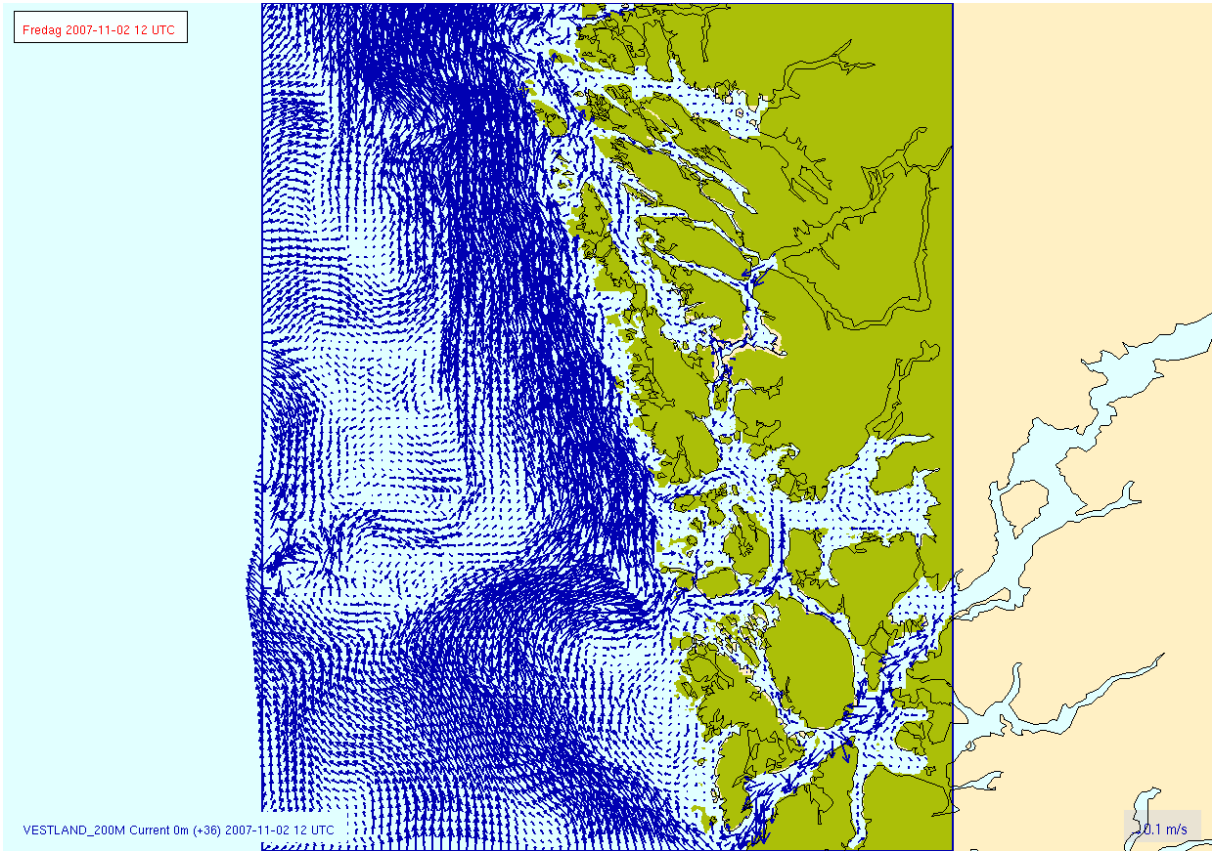**Surface currents and SST from Nordic-4km**
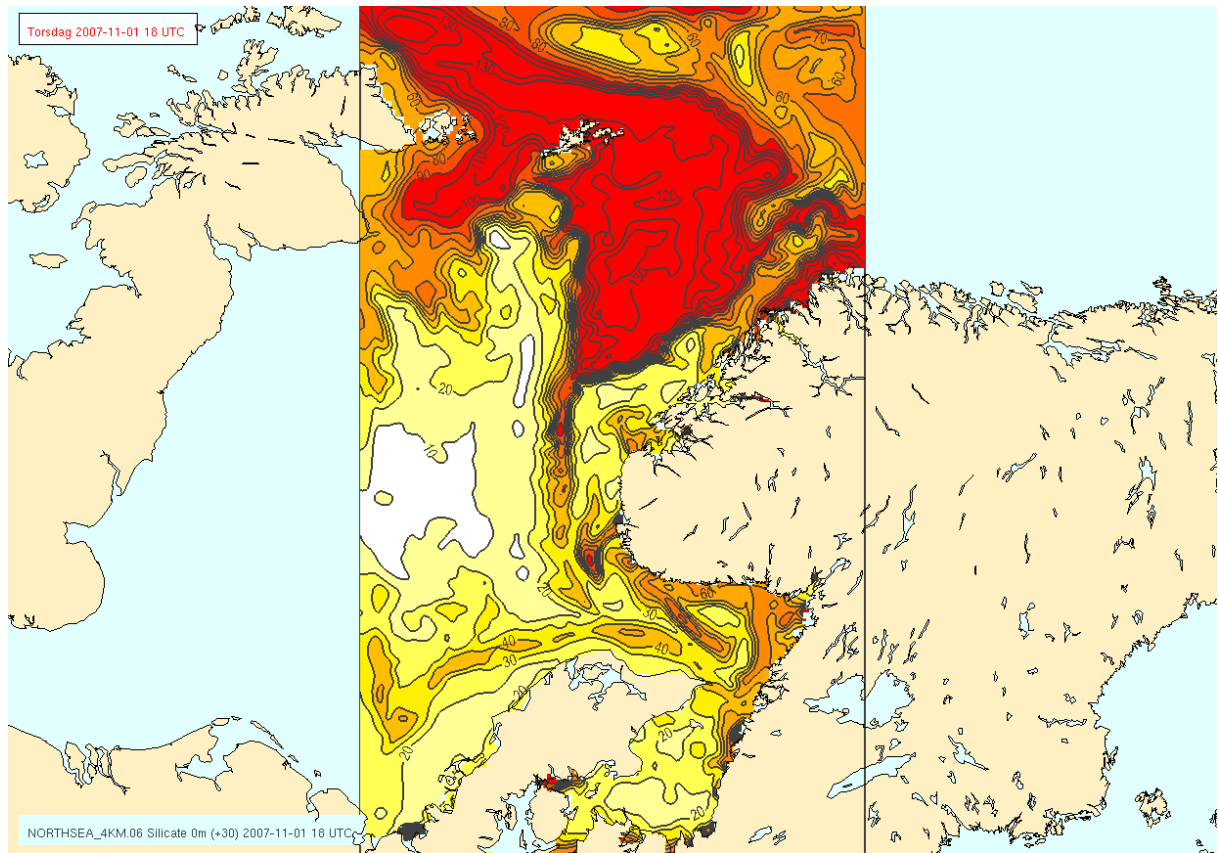
Silicate at surface from NorthSea-4km
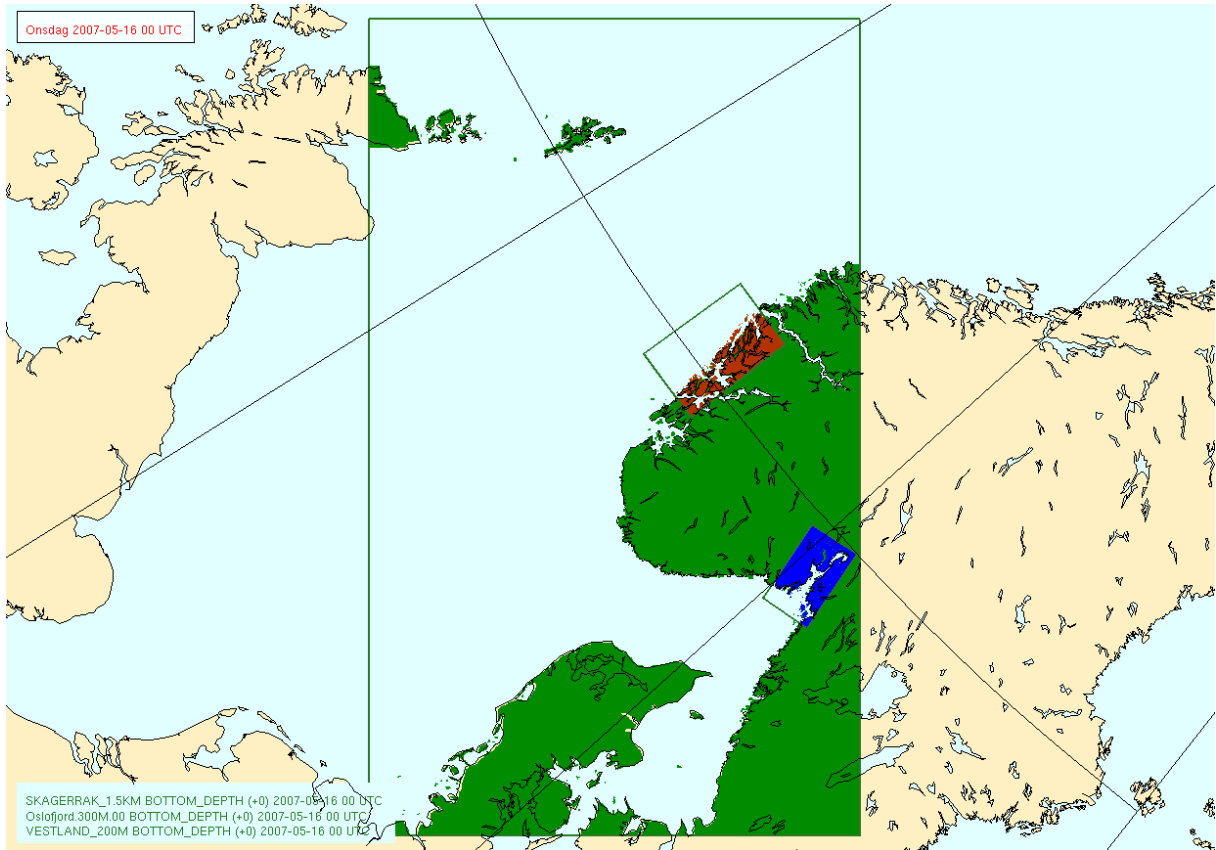
Model domains for NseaSkagerak-1.5km (green), Oslofjord-300m (blue), Westcoast-200m (dark red)
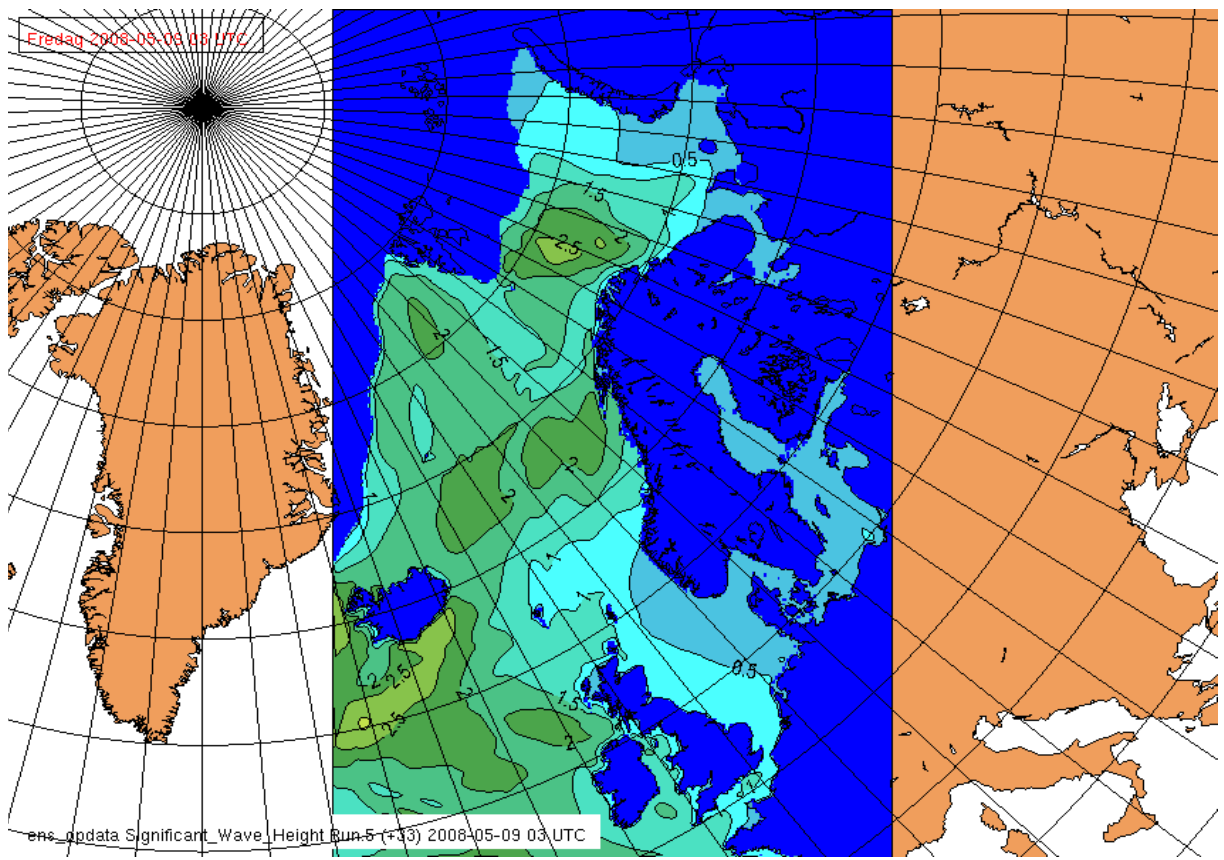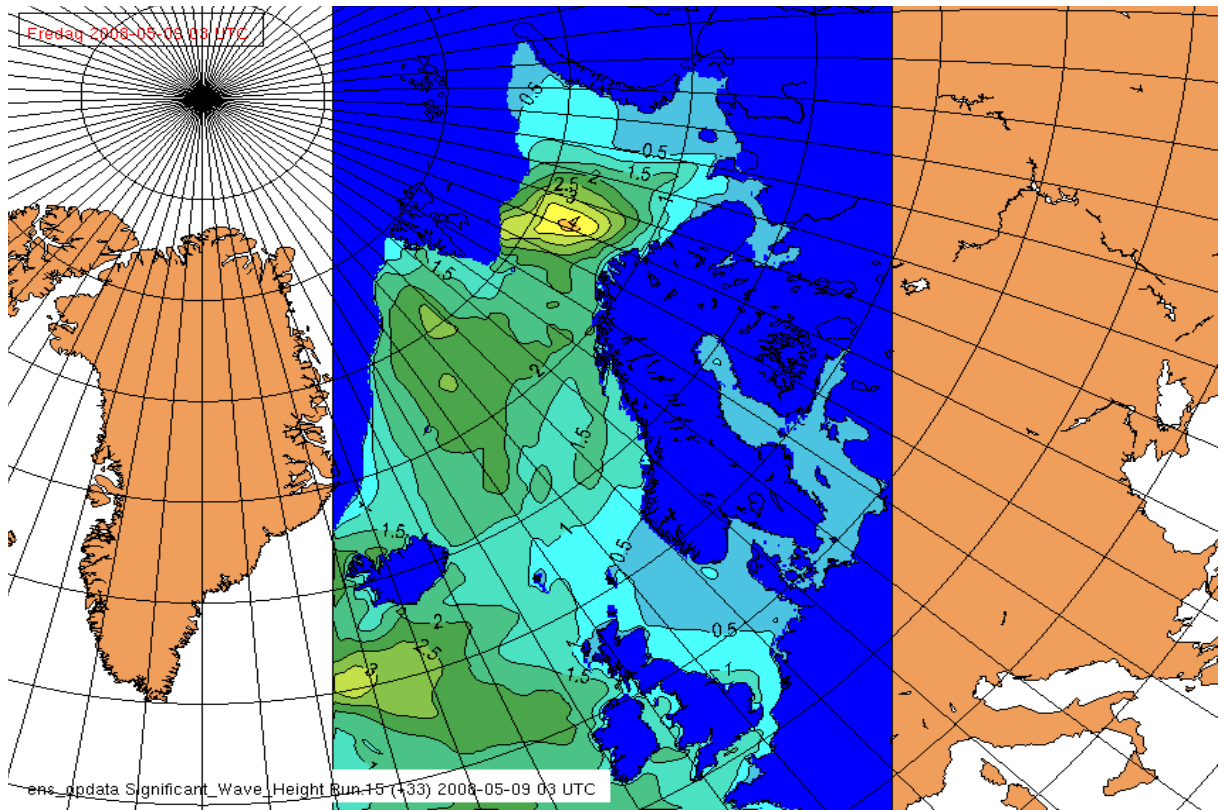
Surface current from Oslofjord-300m

Surface current from Westcoast-200m

Operational WAVE and OCEAN models at Norwegian Meteorological Institute (met.no):
Here is the latest news…

<table>
<tr><td colspan="2" align="center"><u>Ocean wave Model Products.</u>
Name: WAM.10km.EPS
Nested in WAM.50km
21 ensemble members
Wind from LAMEPS (12 km)</td></tr>
<tr><td>Parameters</td><td><u>Total sea:</u> significant wave height, significant period, peak period, peak direction.</td></tr>
<tr><td>Area coverage</td><td>North Sea, Norwegian Sea, Barents Sea. Approximate coverage in degrees N, S, W, E: 84, 54, -25, 65.</td></tr>
<tr><td>Spatial resolution</td><td>Approximately 10 km.</td></tr>
<tr><td>Vertical resolution</td><td>Only sea surface fields.</td></tr>
<tr><td>Availability</td><td>1 run a day available in 18 UTC. Results available approximately at 22:00 UTC.</td></tr>
<tr><td>Time steps</td><td>3-hourly from T+3 to T+60</td></tr>
</table>

ens_opdata Significant_Wave_Height Run 15 (+33) 2008-05-09 03 UTC

ens_opdata Significant_Wave_Height Run 5 (+33) 2008-05-09 03 UTC

Ocean Model Products.

Name: **Barents-1.5km**

Nested in Nordic-4km

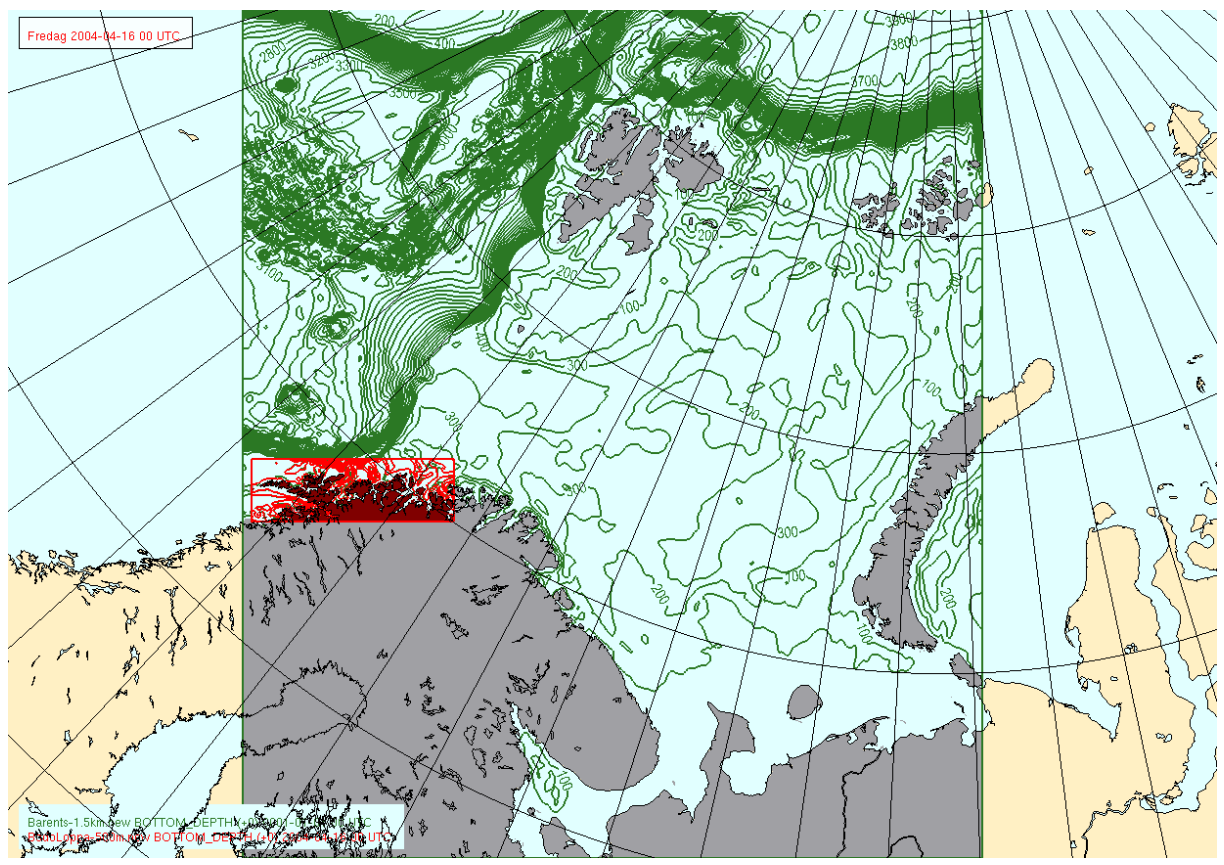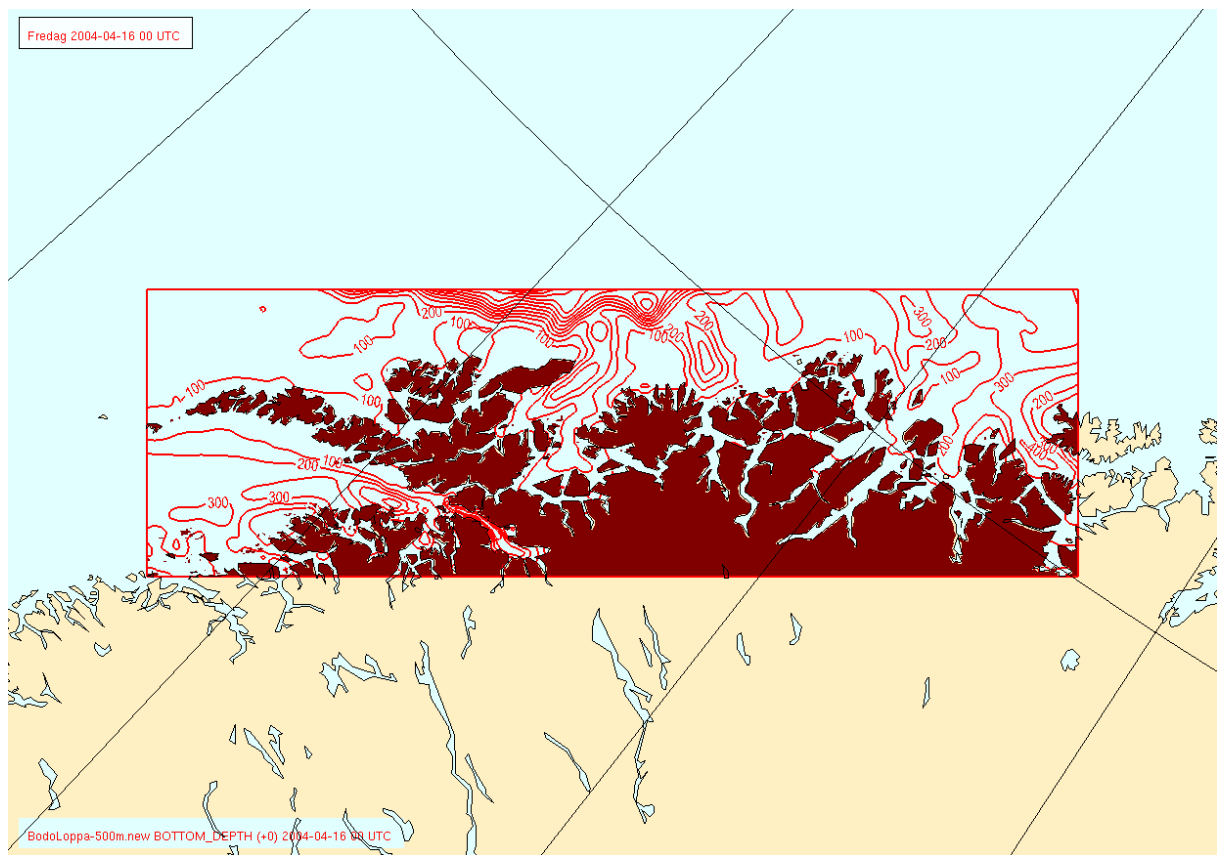|	
Parameters	Sea surface elevation, Currents, Salinity, (Potential) Temperature. Other parameters possible on request.
Area coverage	Barents Sea, western part of Kara Sea, parts of the Arctic Ocean and Norwegian Sea. Approximate coverage in degrees N, S, W, E: 85, 55, -2, 60.
Spatial resolution	Approximately 1.5 km.
Vertical resolution	Depths: 0, 10, 50, 100, 500, 1000 m.
Availability	1 run a day available in 00 UTC. Results available approximately at 04:00 UTC.
Time steps	6-hourly from T-18 to T+60.

Ocean Model Products.

Name: **BodoLoppa-500m**
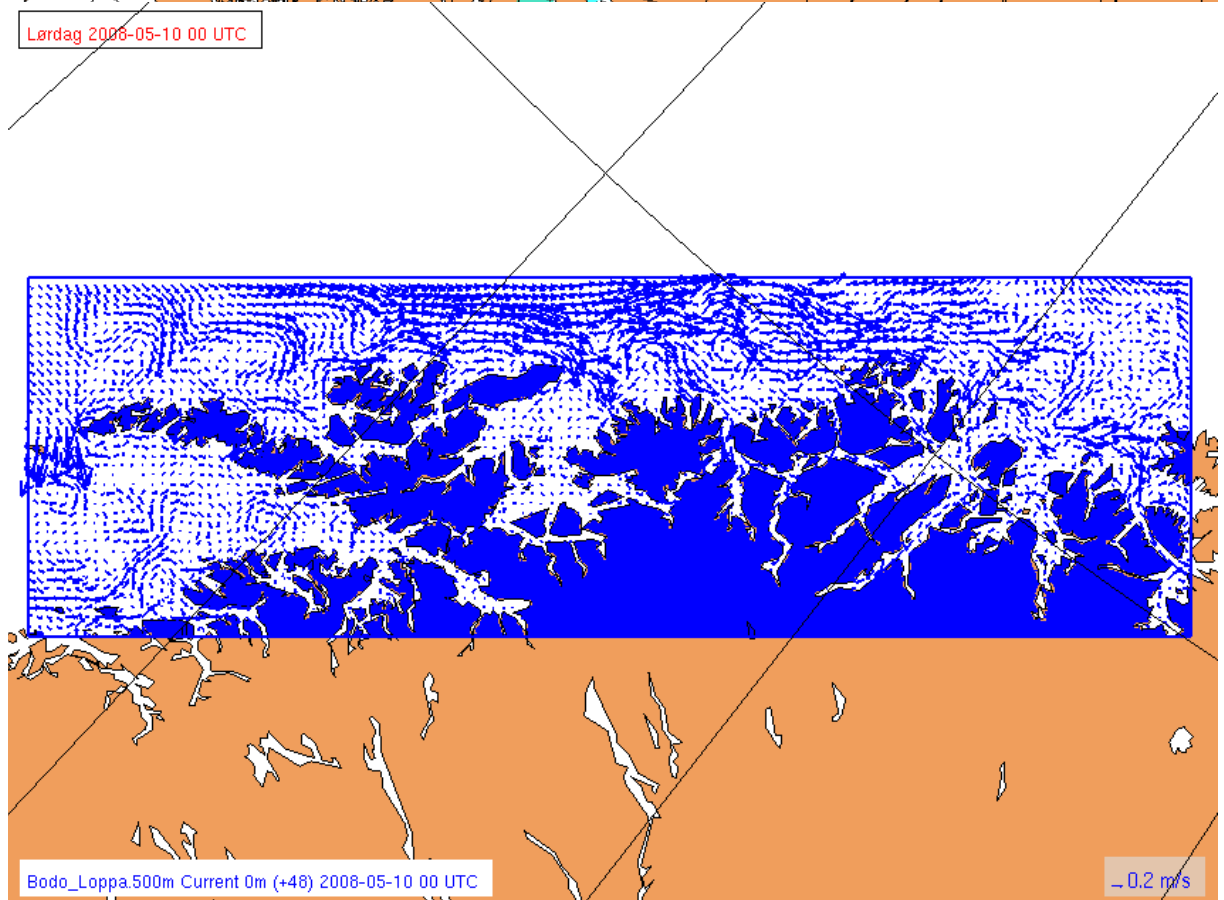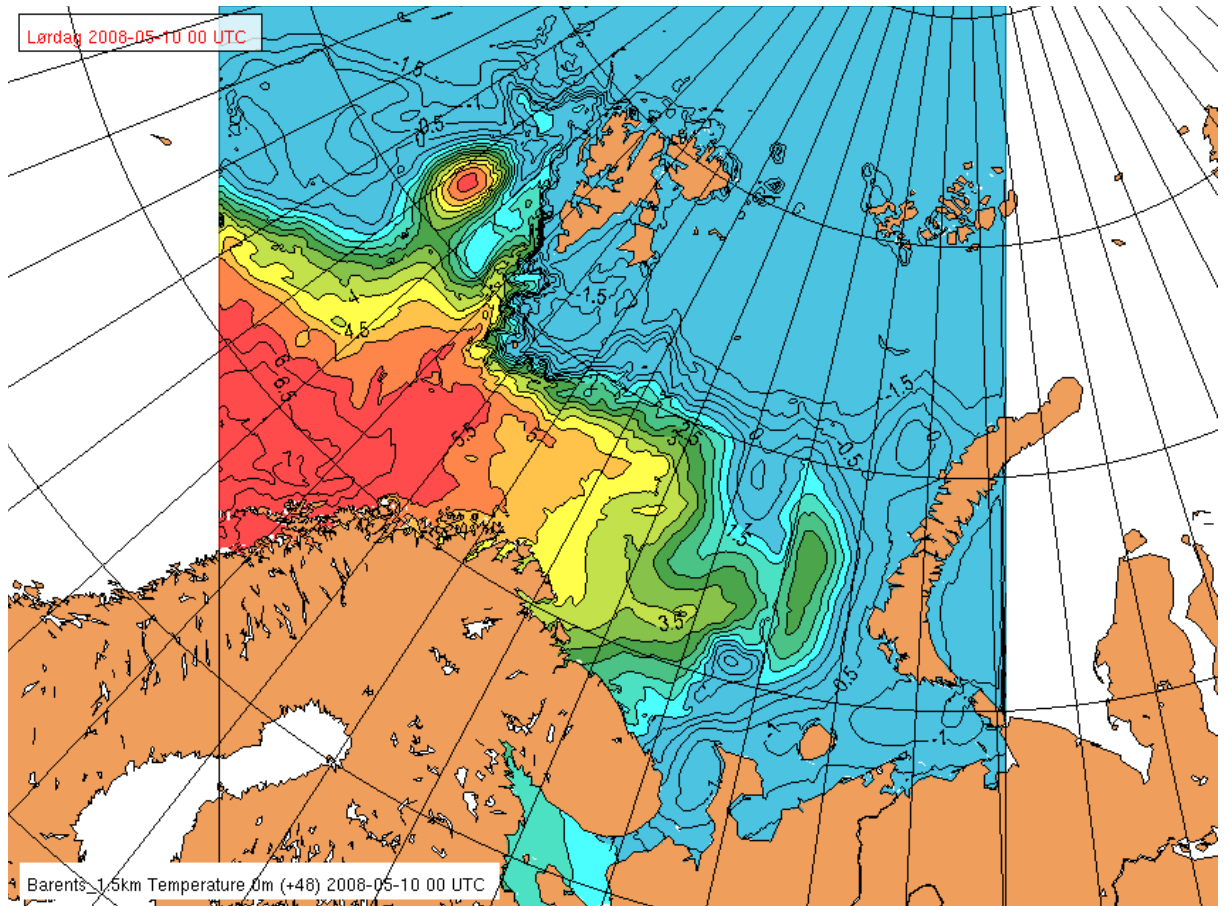
Nested in Barents-1.5km

Parameters	Sea surface elevation, Currents, Salinity, (Potential) Temperature. Other parameters possible on request.
Area coverage	The coast from Bodø to Lopphavet. Approximate coverage in degrees N, S, W, E: 71.00', 67.10', 12.00', 22.00'.
Spatial resolution	Approximately 500 m.
Vertical resolution	Depths: 0, 3, 10, 30, 50, 75, 100, 150, 200, 300 m.
Availability	1 run a day available in 00 UTC. Results available approximately at 04:00 UTC.
Time steps	6-hourly from T-18 to T+60.

Fredag 2004-04-16 00 UTC

Barents-1.5km.new BOTTOM_DEPTH (+0) 2004-04-16 00 UTC
BodoLoppa-500m.new BOTTOM_DEPTH (+0) 2004-04-16 00 UTC

Fredag 2004-04-16 00 UTC

BodoLoppa-500m.new BOTTOM_DEPTH (+0) 2004-04-16 00 UTC

Barents_1.5km Temperature 0m (+48) 2008-05-10 00 UTC

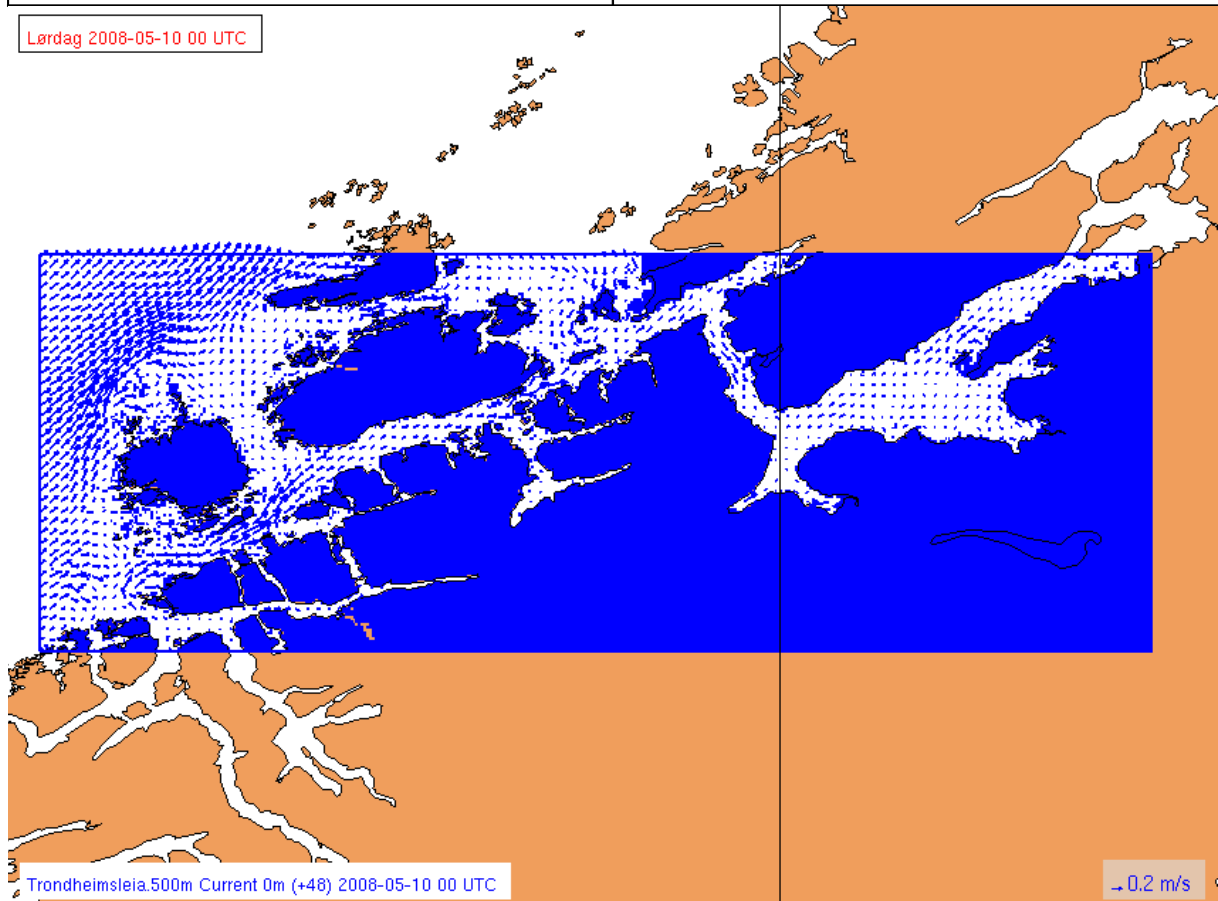Bodo_Loppa.500m Current 0m (+48) 2008-05-10 00 UTC

0.2 m/s

Ocean Model Products.

Name: **Trheimsleia-500m**

Nested in Nordic-4km

Parameters	Sea surface elevation, Currents, Salinity, (Potential) Temperature, Density. Other parameters possible on request.
Area coverage	Northwest coast from Kristiansund to Trondheim. Approximate coverage in degrees N, S, W, E: 63.45', 63.05', 7.30', 11.15'.
Spatial resolution	Approximately 500 m.
Vertical resolution	Depths: 0, 3, 10, 30, 50, 75, 100, 150, 200, 300 m.
Availability	1 run a day available in 00 UTC. Results available approximately at 03:30 UTC.
Time steps	6-hourly from T-18 to T+60.

Lørdag 2008-05-10 00 UTC

Trondheimsleia.500m Current 0m (+48) 2008-05-10 00 UTC

0.2 m/s

Future plans

(WAVE models; very brief)

- **Replace the wave models** WAM50km and WAM10km by WAM12km and WAM4km covering approximately the same areas.
- Starts operational experimens with **two-way coupling between wave and atmospheric models** (WAM and HIRLAM).
- Apply the **wave model SWAN** for more "critical" coastal areas (for safer navigation).

Future plans

(OCEAN models; very brief)

- Apply **boundary fields from UK met office (FOAM)** 1/3-degree model. Instead of climatology.
- **Nordic-4km** to be nested in Arctic-20km. Instead of climatology.
- Apply the **assimilation** scheme SEIK in all ocean models.
- Start operational experiments with the ocean model **ROMS**.