Seventh Framework Programme FP7-SPACE-2010-1
Stimulating the development of downstream GMES services

Grant agreement for: Collaborative Project. Small- or medium scale focused research project
Project acronym: **SIDARUS**
Project title: **Sea Ice Downstream services for Arctic and Antarctic Users and Stakeholders**

Grant agreement no. 262922
Start date of project: 01.01.11
Duration: 36 months
Project coordinator: Nansen Environmental and Remote Sensing Center, Bergen, Norway

D7.2: Forecasting system for demonstration

Due date of deliverable: 30.06.2013

Actual submission date: 20.01.2014

Organization name of lead contractor for this deliverable: NERSC

Project co-funded by the European Commission within the Seventh Framework Programme, Theme 6 SPACE		
Dissemination Level		
PU	Public	X
PP	Restricted to other programme participants (including the Commission)	
RE	Restricted to a group specified by the consortium (including the Commission)	
CO	Confidential, only for members of the consortium (including the Commission)	

ISSUE	DATE	CHANGE RECORDS	AUTHOR
0	25/07/2011	Version 0.1	S. Sandven
1	16/01/2014	Version 1.0	J. Bergh

SIDARUS CONSORTIUM

Participant no.	Participant organisation name	Short name	Country
1 (Coordinator)	Nansen Environmental and Remote Sensing Center	NERSC	NO
2	Alfred-Wegener-Institut für Polar-und Meeresforschung	AWI	DE
3	Collecte Localisation Satellites SA	CLS	FR
4	University of Bremen, Institute of Environmental Physics	UB	DE
5	The Chancellor, Masters and Scholars of the University of Cambridge	UCAM	UK
6	Norwegian Meteorological Institute, Norwegian Ice Service	Met.no	NO
7	Scientific foundation Nansen International Environmental and Remote Sensing Centre	NIERSC	RU
8	B.I. Stepanov Institute of Physics of the National Academy of Sciences of Belarus	IPNASB	BR

Table of Contents

List of Figures

SUMMARY

This document describes deliverable WP7.2 and is a technical description of the Forecast System and the related Webpage for the Barents and Kara Seas.

1 Description of Forecast system

In the regional Barents and Kara Sea forecast system the TOPAZ forecast for the North Atlantic and the Arctic Ocean (TP4) is used as an outer model in the nested system. Initial conditions are taken from the assimilated TOPAZ system operated by the Norwegian Meteorological Institute (met.no). Locally the TP4 model runs once a week for an 11 days period, with 9 days forecast, and produce boundary conditions for the regional model of the Barents and Kara Sea (BS1). The BS1 model runs on a daily basis producing 3 days forecast of sea ice and ocean conditions. The nesting cycle and the forecast procedure are described in Figure 1. The figure shows the weekly forecast cycle starting at a Tuesday, here described as Day0. After one week on the next Tuesday, here Day+7, the cycle repeats itself.

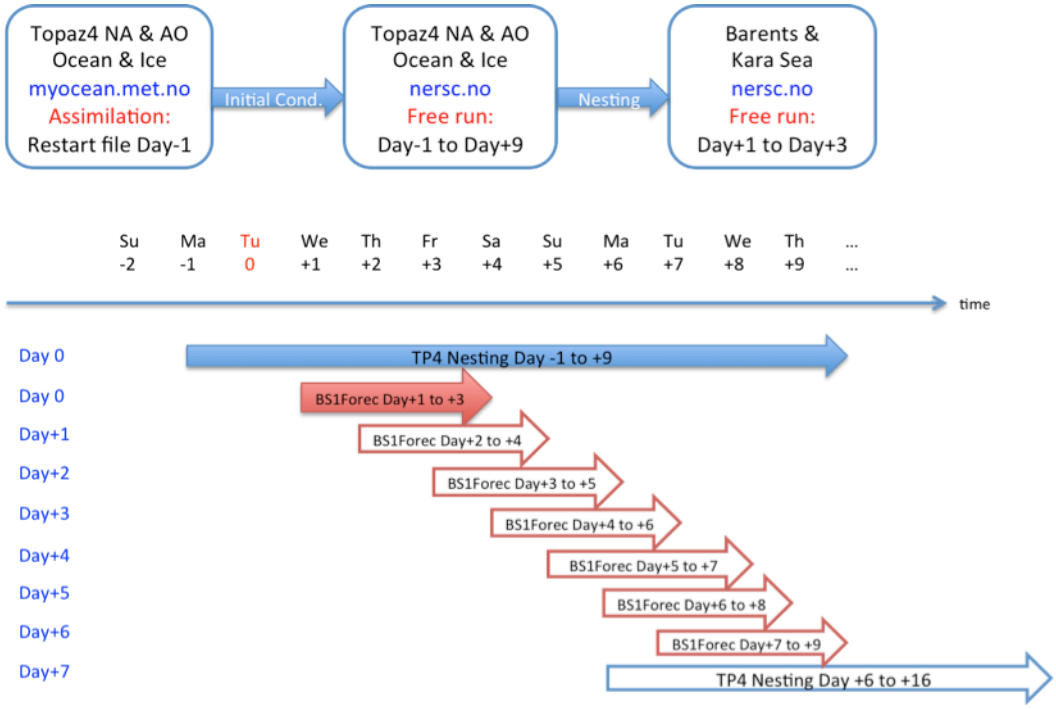

Figure 1. The cycle of the nested Barents and Kara Seas sea ice and ocean forecast system.

The forecast system runs, and is dependent on forecast products on several computer servers, see Figure 2. The main server in the forecast system is HEXAGON, the supercomputer system at the University of Bergen, from where the forecast system is initiated by running shell scripts using job scheduler Crontab functions. The scripts starts to download forecast products; atmospheric forecast ECMWFR from VILJE (ntnu.no), and wave forecast WAMNNSEA10km, TP4 restart files as initial conditions, and OSI-SAF sea ice concentration from the ftp server at myocean.met.no. The outer model, TP4, is running ones a week, giving nesting condition to the inner model, BS1. The inner model runs on a daily basis using daily updated forecast products. When the BS1 forecast model is ready, forecast and validation figures are produced and send over to the NANSEN server at nersc.no. The figures are sorted and a script is initiated that update the web page at the NANSEN server. The system is dependent on four different servers and four different forecast products, see Figure 2.

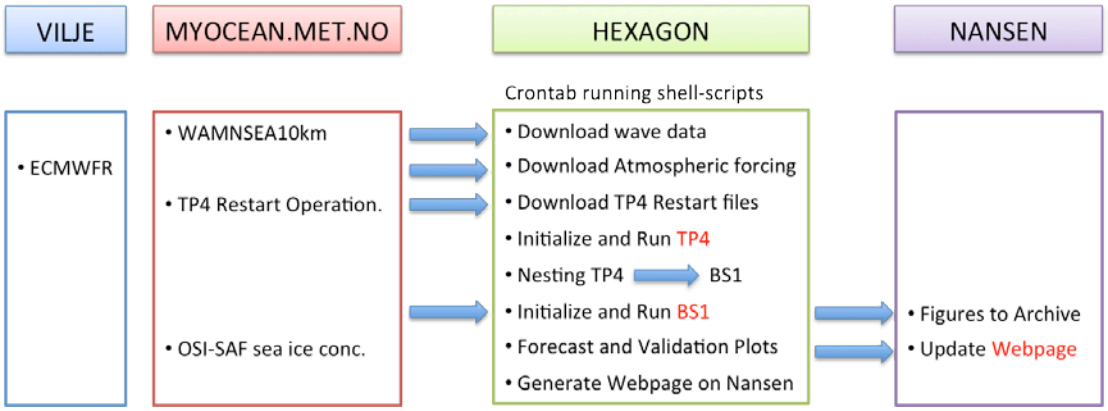

Figure 2. Schematics of computer resorces used for the forecast system

Today two parallel web pages are constructed, 1) which include a forecast using elastic-viscous-plastic and marginal ice zone sea ice rheology (EVP+MIZ) and 2) where also the wave-in-ice module is active (EVP+MIZ+WIM):

http://topaz.nersc.no/Knut/IceForecast/Barents

http://topaz.nersc.no/Knut/IceForecast/Barents2

The web pages include sections of Forecast, Validation, Archive, and System description. The daily forecast may be found clicking on the forecast figures on the top. In a similar manner may one access validation to OSI-SAF sea ice concentration in the Validations sections. Earlier validations are stored into the Archive section where one may scroll down to find previous forecasts.

END OF DOCUMENT