NOOS PROJECT SUMMARY: River runoff data for operational ocean forecasting

Date of revision: 10 September 2013

KEYWORDS: ocean modelling, river, fresh water, runoff

River runoff data for operational ocean forecasting	
Project Aims	Make river runoff data – observed and predicted fresh water flux and nutrient/contaminant loads – available to NOOS partners for use in ocean hindcasting and forecasting, and assess the benefits derived. 1. Make **near-real-time observations** of river fluxes available to partners. 2. Make high quality **historical data sets** of observed fluxes and loads available to partners for hindcast studies. 3. Assess the availability and applicability of **prognostic river runoff data** and make recommendations for further effort. 4. Develop **best practises** for applying river runoff data in coastal ocean forecasting.
Lead agency Lead scientist	METrway, Bruce Hackett, Bruce.Hackett@MET
Participants	BSH, Stephan Dick, Stephan.Dick@bsh.de DMI, Jun She, js@dmi.dk MUMM, Jose Ozer, J.Ozer@mumm.ac.be Met.O, John Siddorn, john.siddorn@metoffice.gov.uk POL, Jason Holt, jholt@pol.ac.uk Deltares, Martin Verlaan, Martin.Verlaan@deltares.nl SMHI, Lennart Funkquist, Lennart.Funkquist@smhi.se IMR, Henning Wehde, Henning.Wehde@imr.no
Present status (September 2013) New or updated items in **bold**	Project tasks 1.1, 1.2 and 2 were addressed in ECOOP T2.5 (ended May 2010). NOOS partners: MET, SMHI, RIKZ, BSH. K. Borst coord NOOS part. Task 1.1, 2.1: River volume flux data inventory done (→ ECOOP T2.5) • Info on NRT data from Sweden, Germany, Norway, UK • Archive data for UK from Cefas • Coop IBI-ROOS for French, Irish stations Task 1.2: NRT data exchange • Daily updated obs data provided for major rivers in southern Norway by MET. ftp.MET/pub/bruceh/noos/. • Daily updated prognostic data for rivers feeding the Kattegat/Skagerrak provided by SMHI. • 10-min obs data for Dutch and German stations provided by Deltares. • Deltares has implemented data collation, presentation and dissemination. Online access for viewing at http://noos.cc/index.php?id=150. See Figure 1. FTP access at ftp://noosdata.nl/ECOOP/DATA/RWS. MATROOS at Deltares accessible at matroos.deltares.nl (noos login). • Data file format standardized to SDN ODV pending a netCDF standard. Metadata standard is SDN CDI. • **Data for UK: Possible progress since last NOOS meeting!** - Data for England can be brought in through efforts of RWS, Deltares and Met Office. **Permission from UK Env. Agency is solved** (thanks John!). Outstanding tasks/issues: - Select subset of all stations available (MET, MetO) - Obtain final permission from EA. **Done by MetO** - Implement in dissemination service (Deltares) – in doubt, needs to be revisited - Main use will probably be for validation of E-HYPE - Need to start process for Scotland. (MET, MetO) • No NRT data will be available from Belgium (but maybe via NL). • Contact IBI-ROOS for access to data from France, Eire. (MET, IMI) Task 3: Prognostic runoff data

	• **E-HYPE Hindcast data (daily and monthly means 1980-2012) produced using HYPE v2.1 available at e-hypeweb.smhi.se. See Figure 2.**
	• **E-HYPE: OPERR project completed. (EU Coord. Activity, SMHI, IMR, MET)**
	  • **MET has done a regional validation of E-HYPE v2.1; 21 Norwegian stations and 4 UK stations, 2005-2008. See example results in Figure 3 and Figure 4. OPERR Deliverable D4.1.**
	  • **IMR performed sensitivity study comparing the effect of E-HYPE 2.1 data and climatological data for forcing a coupled biogeochemical model. See example results in Figure 5 and Figure 6. OPERR Deliverable D4.2.**
	• Met O tested E-HYPE 1.0 data in phys model; results were inconclusive with regard to improved forecast skill. Awaiting better quality E-HYPE data.
	• **SMHI has started an ftp feed of operational E-HYPE data to MET. Daily updated 10-day forecasts. MET is currently implementing the data in ROMS code for Nordic Seas (4km). Should be available for NOOS partners; SMHI to confirm.**

Workplan	Year 2013/14: • Obs data: Reinitiate efforts to access English data. Station selection and licensing options need to be resolved. (MET, MetO) • Obs data: Approach Scotland for same. (MET, MetO) • Test E-HYPE real-time and hindcast data in ocean models by NOOS participants.
Link to project docs	Description of Work ECOOP WP 2.5 description MyOcean WP3 MyRiver miniproject report OPERR description (http://www.smhi.se/en/Research/Research-departments/Oceanography/operr-operational-pan-european-river-runoff-1.16820)

Figures

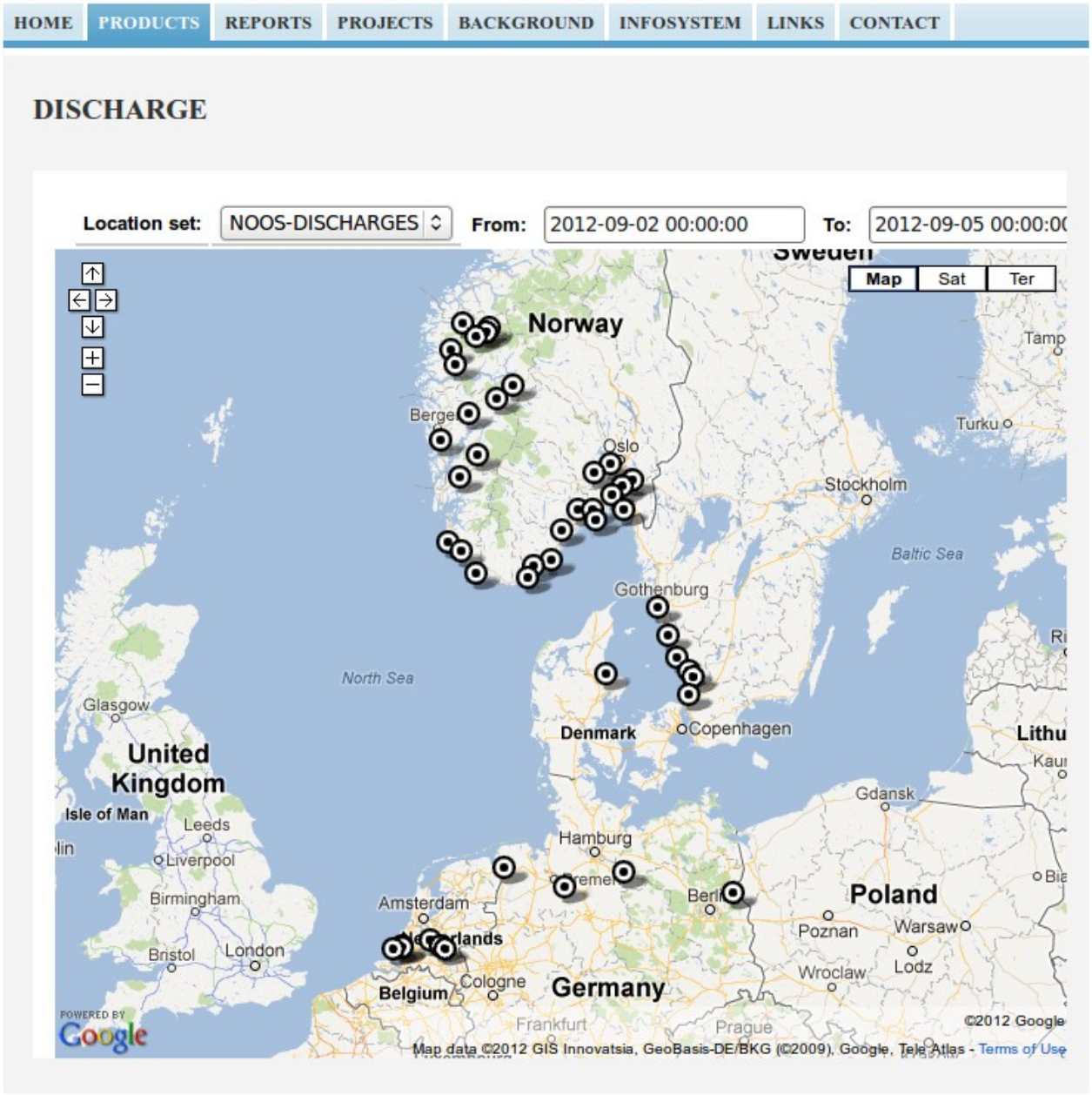

Figure 1: NOOS river discharge data viewing and access service at http://noos.cc/index.php?id=150.

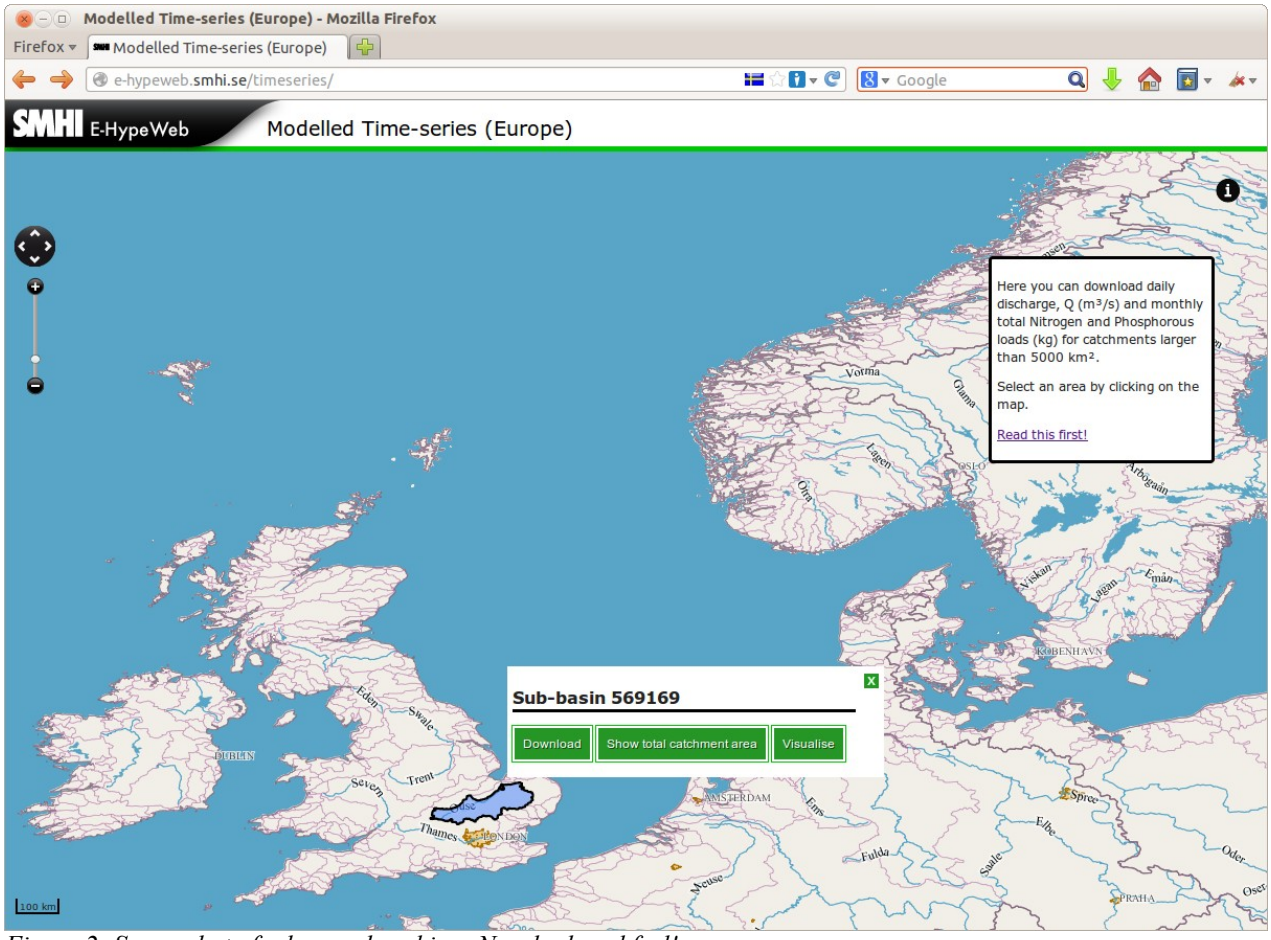

Figure 2: Screenshot of e-hypeweb.smhi.se. New look and feel!

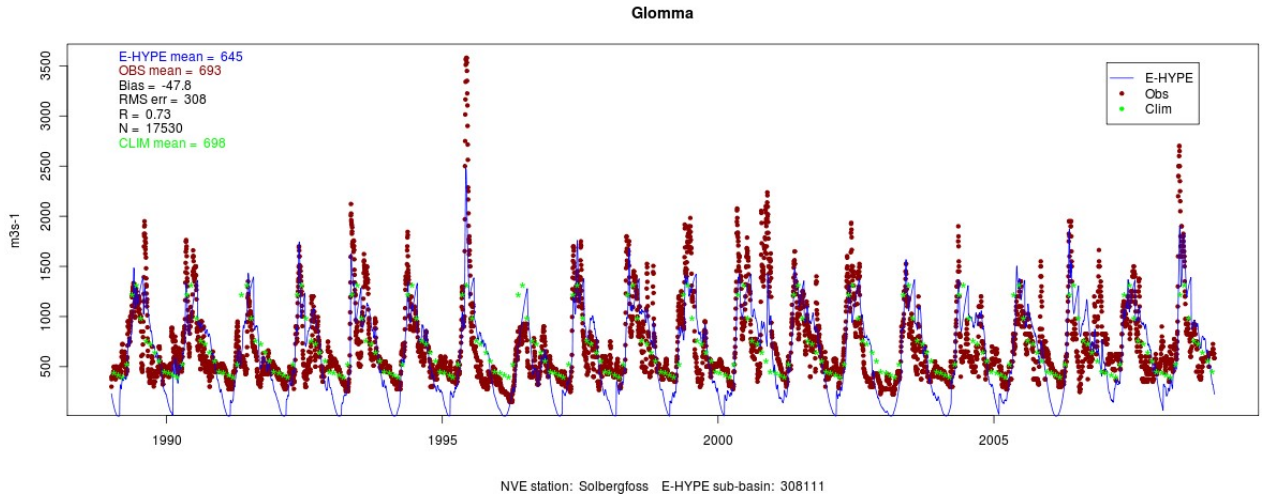

Figure 3: Validation of E-HYPE 2.1 hindcast for Solbergfoss (Glomma River), Norway. Period 1989-2008.

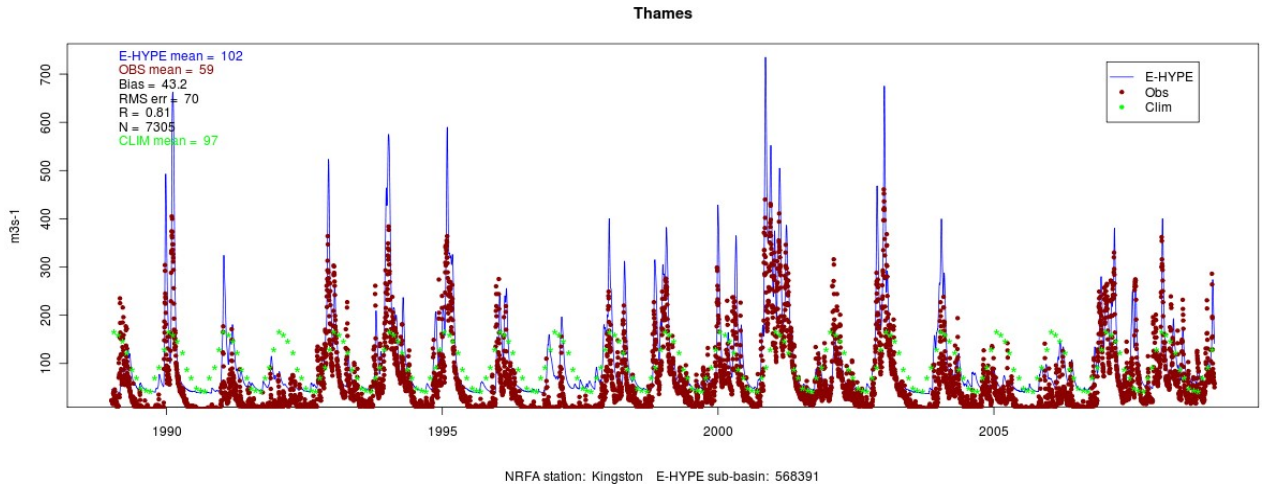

Figure 4: Validation of E-HYPE 2.1 hindcast for Kingston (Thames), UK. Period 1989-2008.

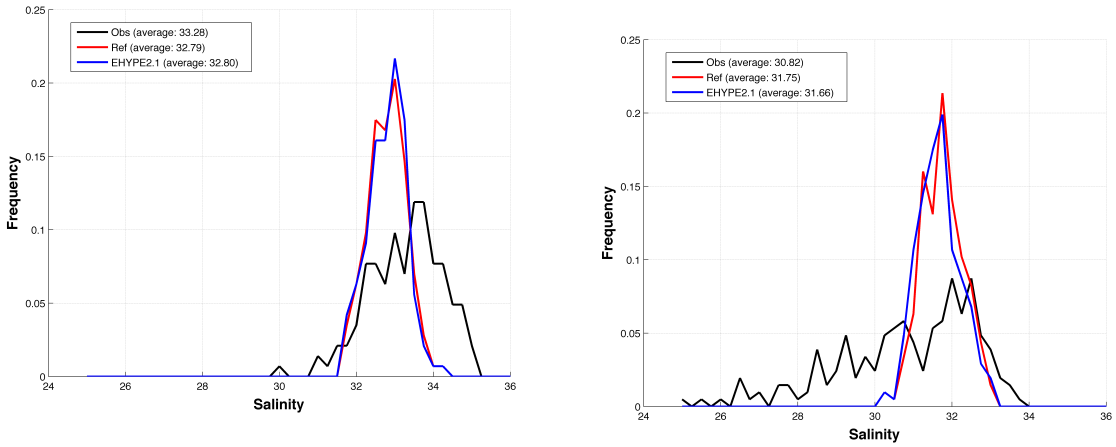

Figure 5: Probability density function (PDF) of salinity for the period 1985-2008 for Danish Coastal Water (left) and Norwegian Coastal Water (right) along the Torungen-Hirtshals transect.

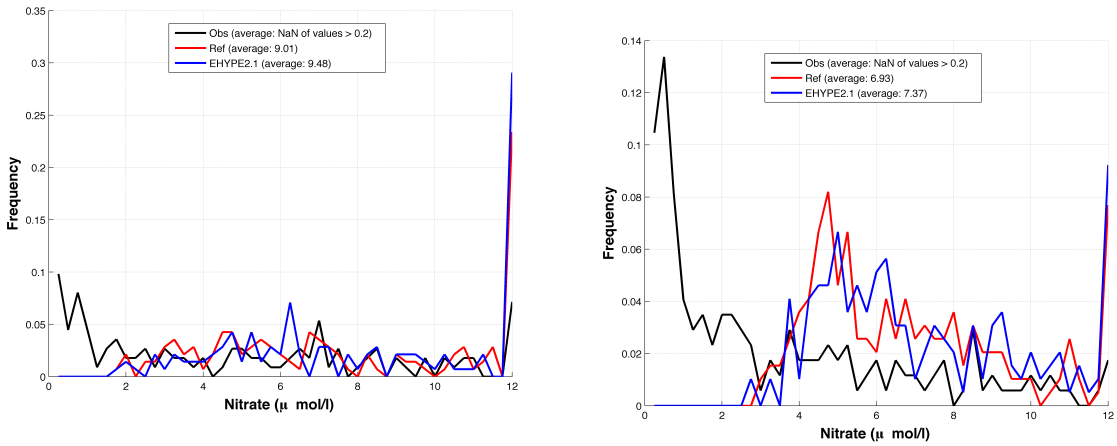

Figure 6: Probability density function (PDF) of nitrate for the period 1985-2008 for Danish Coastal Water (left) and Norwegian Coastal Water (right) along the Torungen-Hirtshals transect.