May 23, 2019 – User Uptake Meeting

Copernicus Marine Service General Assembly Brussels, Belgium

N O O S - D r i f t

S. Legrand, RBINS, Belgium

NOOS
North West European Shelf Operational Oceanographic System

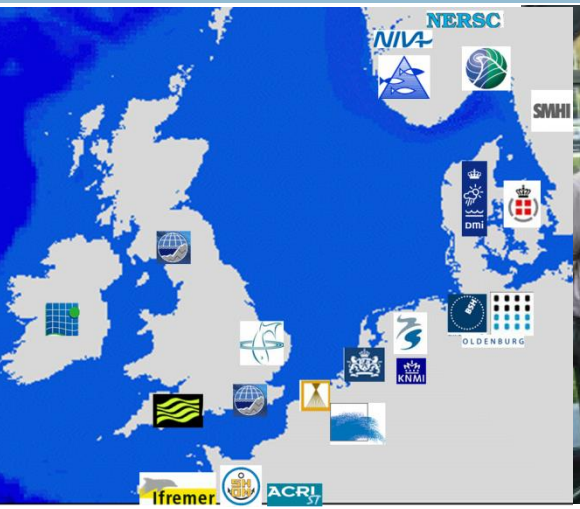
museum

Meteorologisk institutt

METEO FRANCE

NOOS - EuroGOOS ROOS for the NWS

EuroGOOS
European Global Ocean Observing System



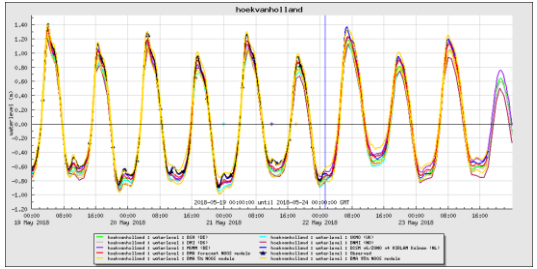
NOOS is a network of 23 governmental agencies and research institutions

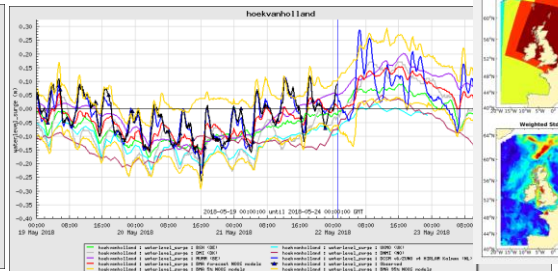
- From the 9 countries bordering the NWS
- Active in operational oceanography
- Willing to operate real-time operational data, products and services
- For the whole NWS and its Atlantic margin

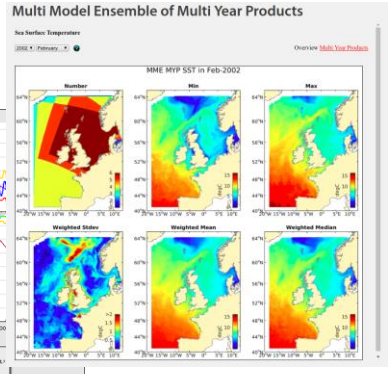
NOOS motto:
Coordination- Cooperation - Coproduction

- Sharing experience, expertise & innovation
  - Annual meeting
  - 7 thematic working groups

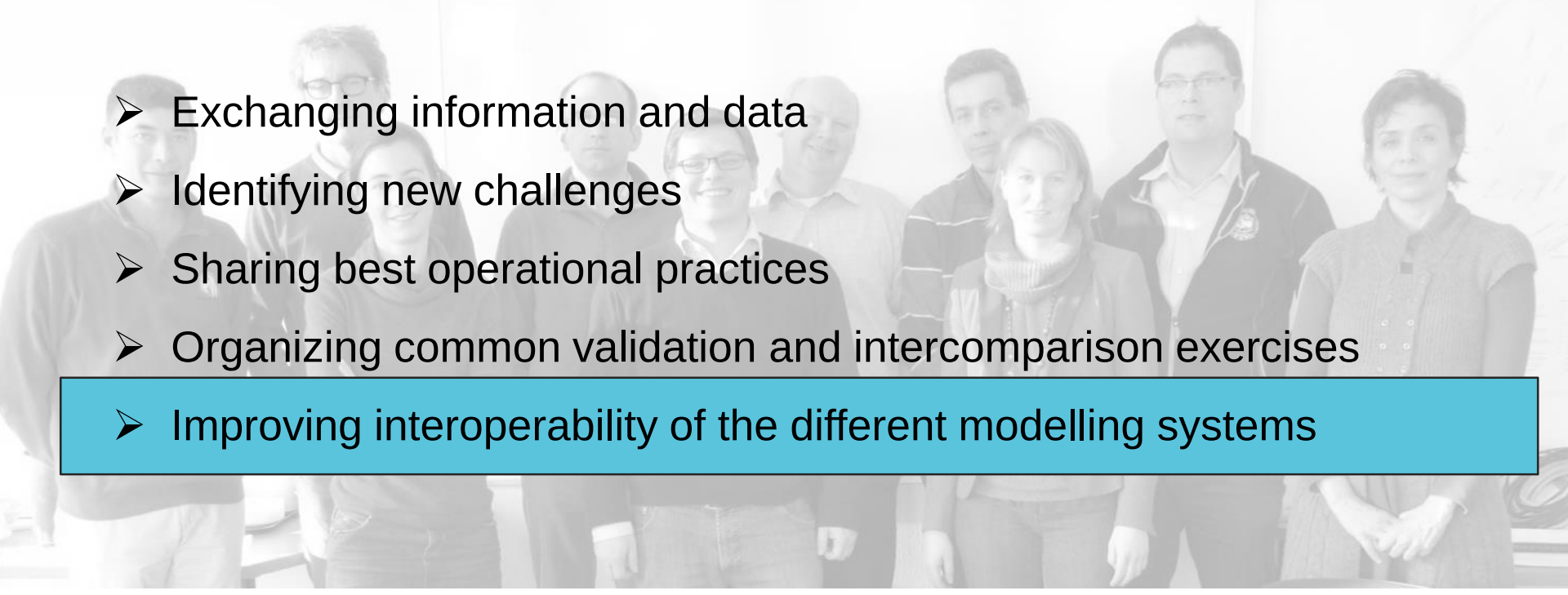
- Co-developping and co-operating services
  - RT & NR exchanges &NOOS data portal,
    backbone for CMEMS IN-SITU TAC & emodnet-physics
  - MME forecast for storm surge, waves, currents, SST, SBT, SSS, SBS, etc.



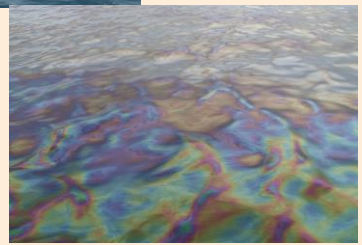




a focal point centralising every possible collaborations that could improve drift model forecast accuracy.

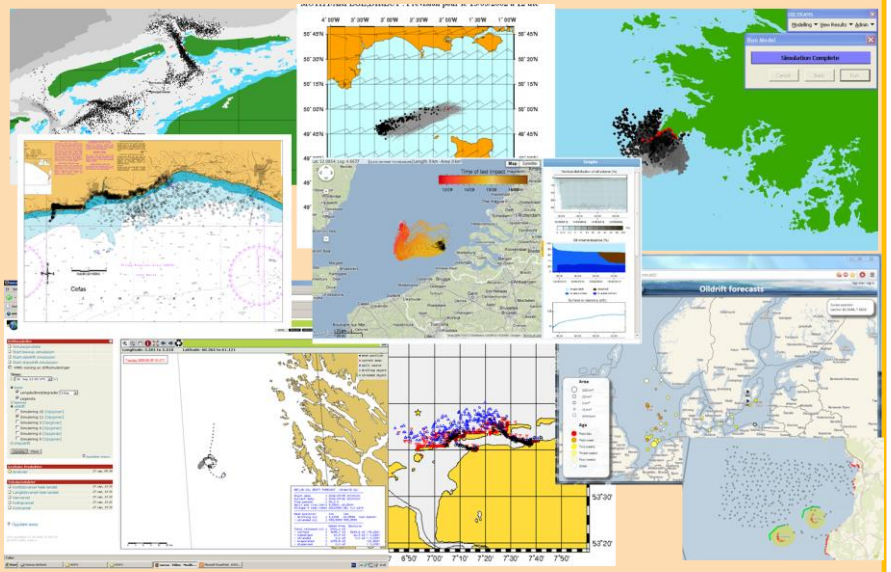


- Exchanging information and data
- Identifying new challenges
- Sharing best operational practices
- Organizing common validation and intercomparison exercises
- Improving interoperability of the different modelling systems



Drift trajectory forecast model = most valuable tools in the day to day management of the coastal and marine environment, marine resources and maritime safety

Each NWS country operates its own drift forecasting services



federal public service
HEALTH, FOOD CHAIN SAFETY AND ENVIRONMENT

Flanders
State of the Art

Shipping Assistance Division

NOFO

KYSTVERKET

Hovedredningssentralen

« How much accurate and reliable are your drift trajectory forecast? »

Cedre

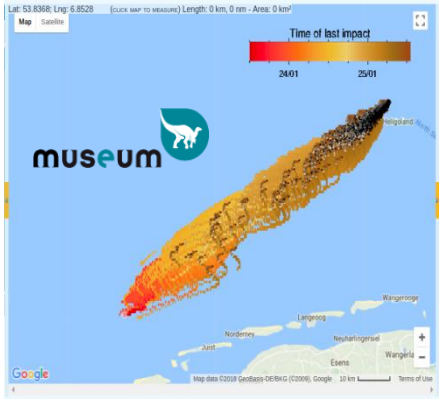
CROSS GRIS-NEZ

Préfecture maritime
de la Manche et de la mer du Nord

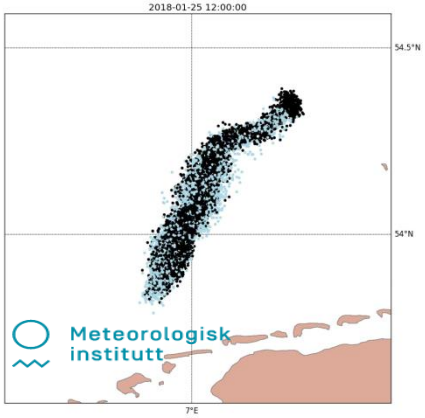
Bonn Agreement
Accord de Bonn

Before NOOS-Drift…

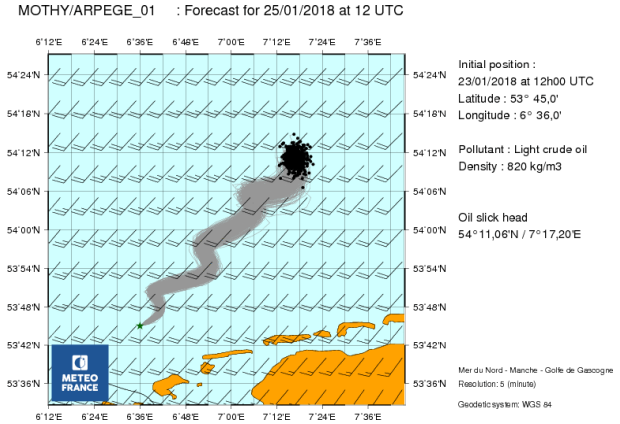
OSERIT



openDRIFT



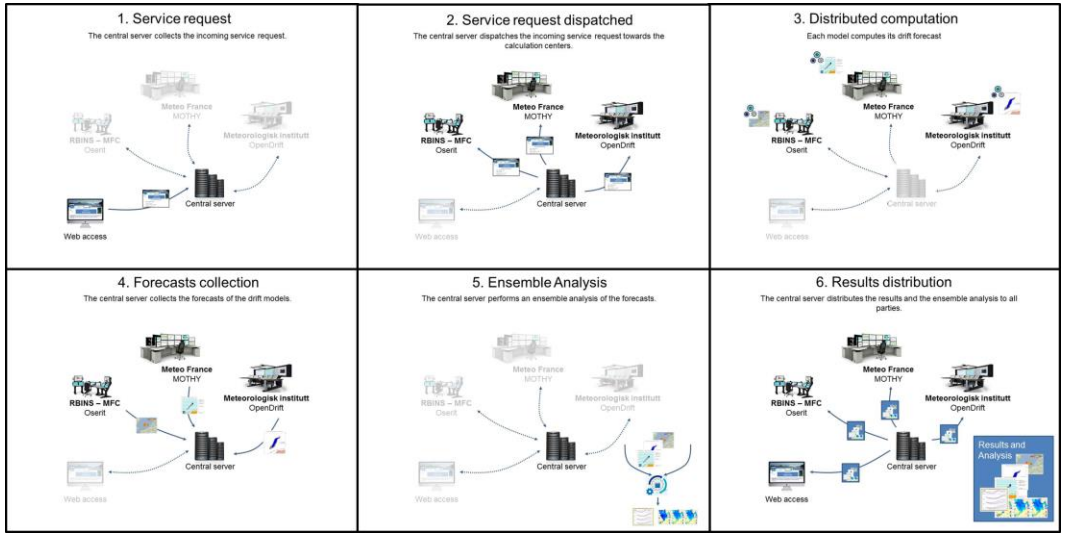
MOTHY



Before NOOS-Drift :

- No definition of accuracy
- No real service interconnectivity
  - No standard model output file format
  - No unified visualization -> difficulties of interpretation

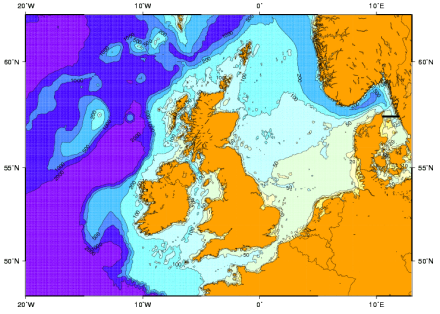
NOOS-Drift overall objective:
To develop a distributed multi-models ensemble system to estimate drift trajectory accuracy



Specifications :

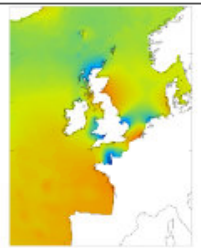
- On demand service accessible to registered users only via a web application or a API
- Drift categories : Person in water, Objects adrift, 6 generic Oils
- Area : entire NWS
- Timeliness : Within 15’ , all results must be available for visualisation and download netcdf and geoJSON => integration with end-users system

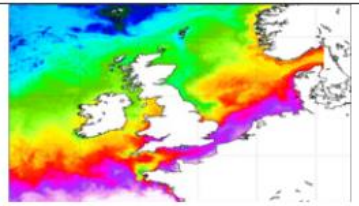
Which ensemble?
Which met-ocean forcing?



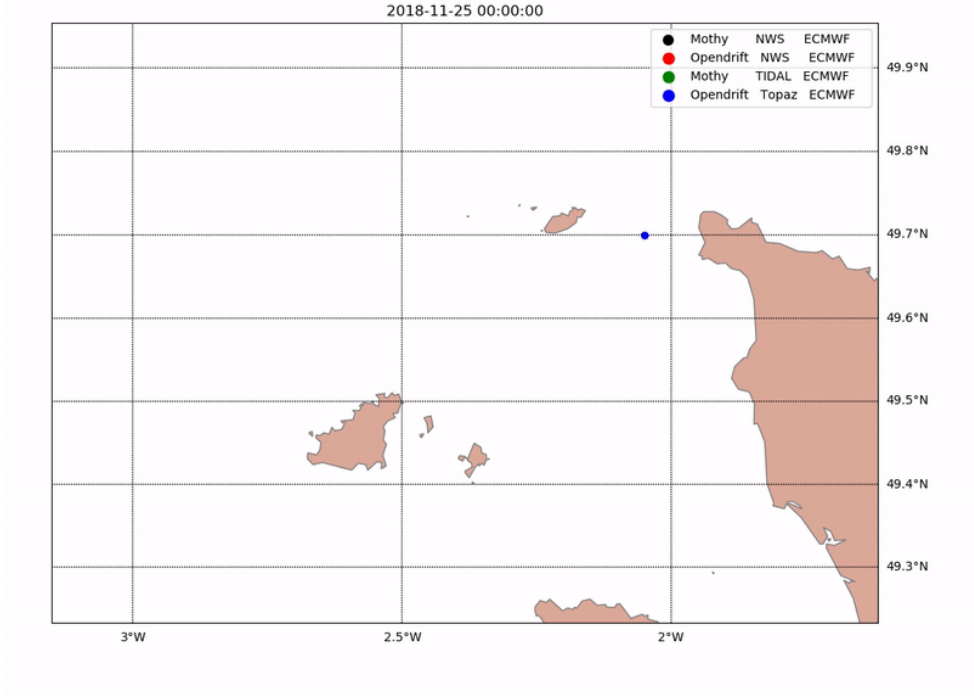
At each NOOS-drift activation, each model service provider shall deliver several drift trajectory forecast

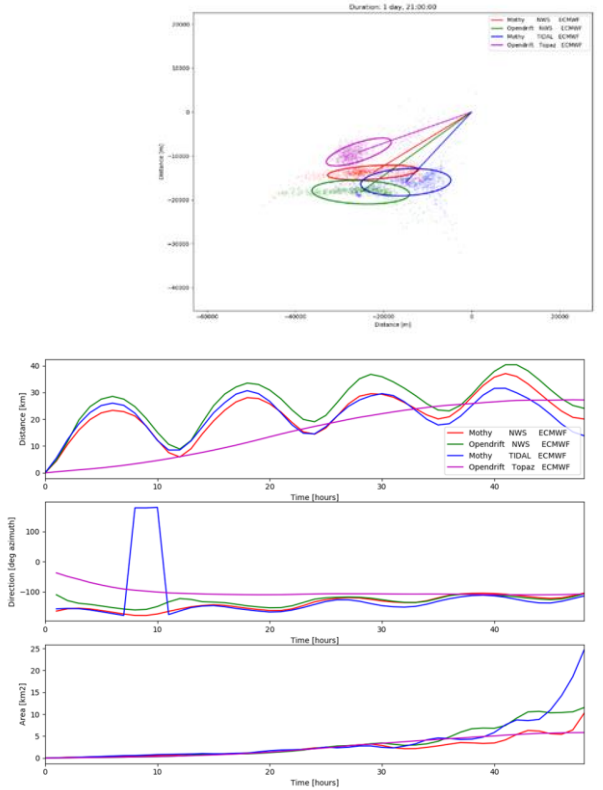
- [mandatory] with their standard met-ocean forcing
- [mandatory] With CMEMS met-ocean forcing from CMEMS NWS-MFC
- [optional] with CMEMS met-ocean forcing for Global, IBI and ARCTIC regions

NORTHWESTSHELF_ANALYSIS_FORECAST_PHYS_004_001_B	
ATLANTIC - EUROPEAN NORTH WEST SHELF - OCEAN PHYSICS ANALYSIS AND FORECAST	
MODEL ● ● ● X	NWS
T bottomT S SSH 3DUV MLD ⓘ	
0.067 degree x 0.111 degree (24 depth levels)	
From 2014-04-01 to Present	
daily-mean, hourly-instantaneous	
MORE INFO ADD TO CART WMS Sub-setting	

NORTHWESTSHELF_ANALYSIS_FORECAST_PHY_004_013	
ATLANTIC - EUROPEAN NORTH WEST SHELF - OCEAN PHYSICS ANALYSIS AND FORECAST	
MODEL ● ● X X	NWS
T bottomT S SSH 3DUV MLD ⓘ	
0.016 degree x 0.016 degree (33 depth levels)	
From 2017-01-01 to Present	
daily-mean, hourly-instantaneous	
MORE INFO ADD TO CART WMS Sub-setting	

Preliminary MME analysis results





Next developments : risk maps

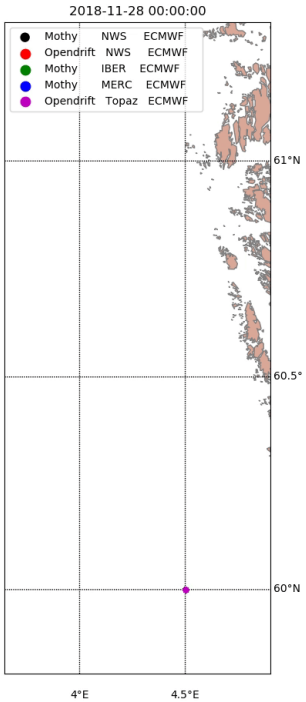
ADVANTAGE OF USING CMEMS

- ✓ CMEMS products to get provide ambient sea conditions
  - ✓ NWS-MFC physical forecast : currents, sea surface elevation, temperature and salinity with minimal processing
  - ✓ GLO-MFC; IBI-MFC, ARC-MFC physical forecast
    Overlapping CMEMS regions allow to extend the ensemble members
- ✓ Reliable service
- ✓ Open and free data policy

NEED FOR IMPROVEMENT IN CMEMS

- Provide advanced physical parameters:
  - Sea water density, vertical eddy viscosity/diffusivity, etc.
  - Depth of the Ekman layer in all products
- Consider product dissemination via OpenDAP
- 2 or 4 forecast cycles per day
  (many events occurs for storm conditions)
- Consider ensemble forecast
  (drift trajectory very sensitive to misplaced eddies)
- Extend forecast horizon to 7 or 10 days ahead

Take home messages



- NOOS-Drift is a distributed multi-model ensemble system connecting national drift model in order to estimate the accuracy of drift trajectory forecast
- The system is still under development with no major delay with respect to the initial schedule
- Service release foreseen for 15th November 2019.
- Expression of interest from Denmark, Germany, The Netherlands and Ireland to joint NOOS-Drift.

http://noos.eurogoos.eu/

https://odnature.naturalsciences.be/noosdrift/

slegrand@naturalsciences.be