Building a novel HNS online tool for exercising and training

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Cardiff
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Aims

Mariner - Enhance response to **HNS** spills by improving preparedness.

Task E - Enhancing HNS preparedness through training and exercising

PHE - Bespoke Exercise Software for Planning and Preparedness

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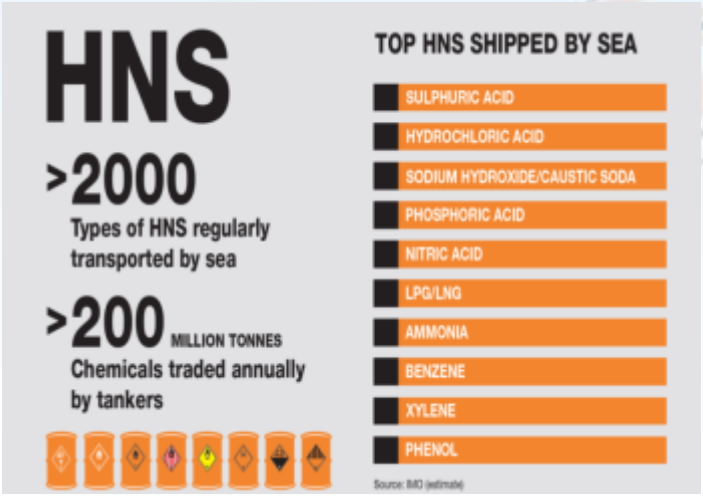
HNS - What are they?

Hazardous and Noxious Substances (HNS) are chemicals which, if introduced into the marine environment pose hazards to health, ecosystems and legitimate uses of the sea. (Typically excludes oil)



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HNS - What are they?

IMO Estimates, 2016

- Approximately 2,000 HNS regularly transported by sea
- In excess of 200 Million tonnes carried annually
- Numbers of ships are increasing
- Ships are getting bigger

http://www.hnsconvention.org/fileadmin/IOPC_Upload/hns/files/HNS_Why_it_is_needed_brochure.pdf

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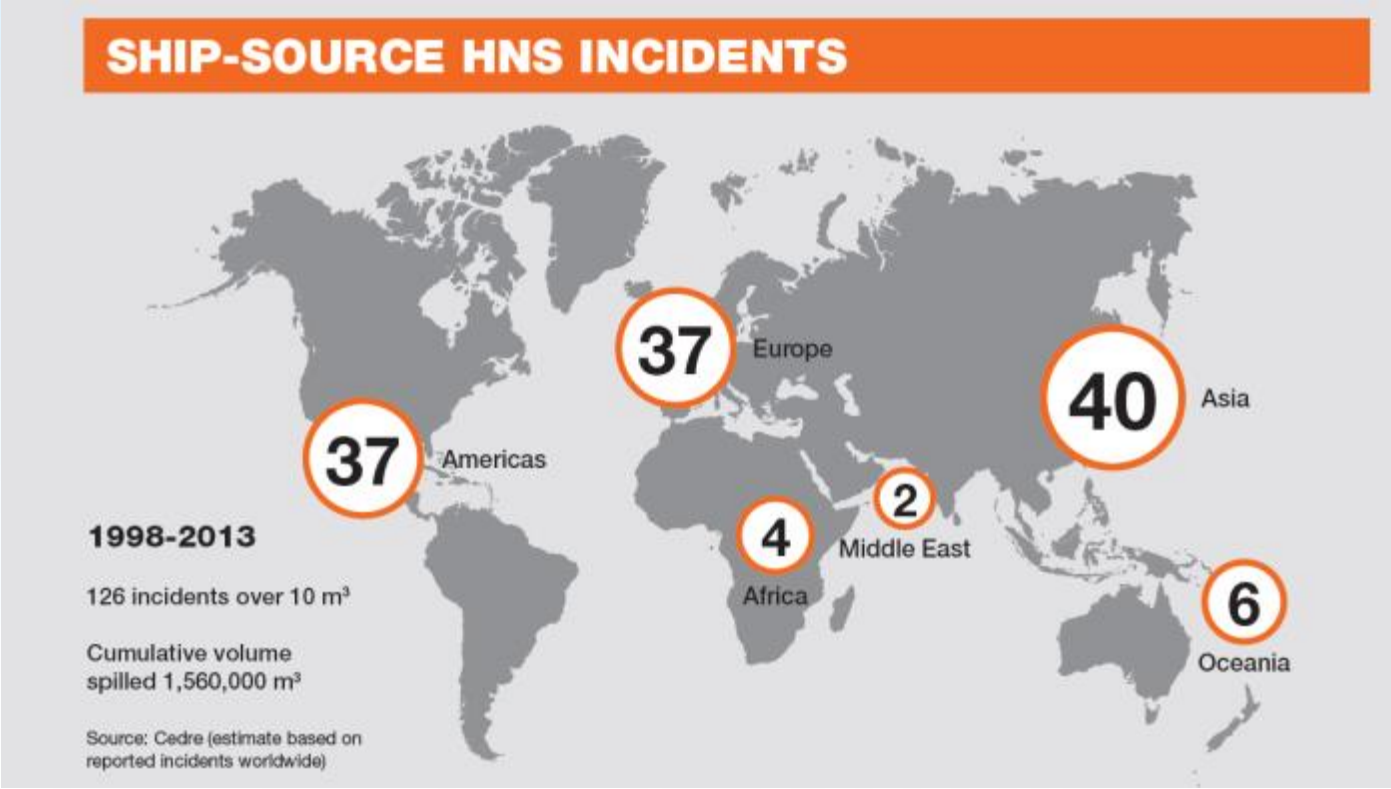
HNS incidents

Incidents Do Occur

- Over 100 incidents reported globally between 1998 and 2013
- Cumulative volume released of 1.5 million m^3



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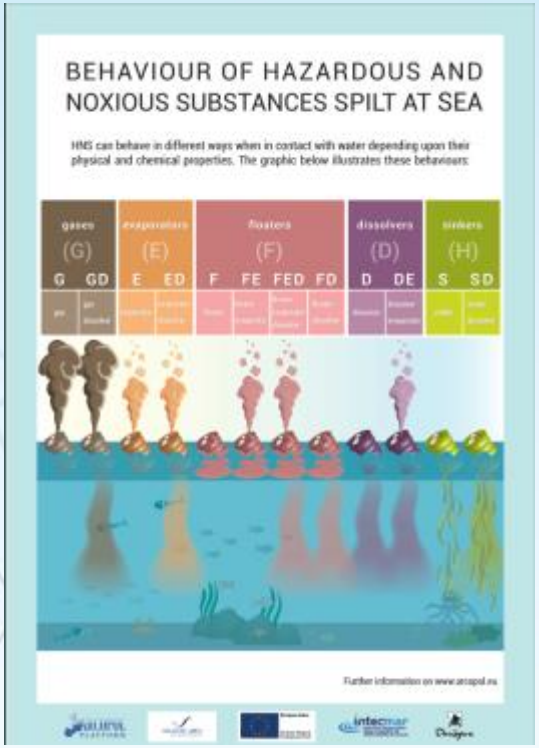
Response to Incidents

No one stop fits all approach to response

Need robust planning and preparedness mechanisms which can be readily engaged should the worst happen.

Need to Train / inform those potentially involved.

EXERCISES - Contribute to preparedness, enabling plans to be tested, particularly the human elements around capacity and resilience.



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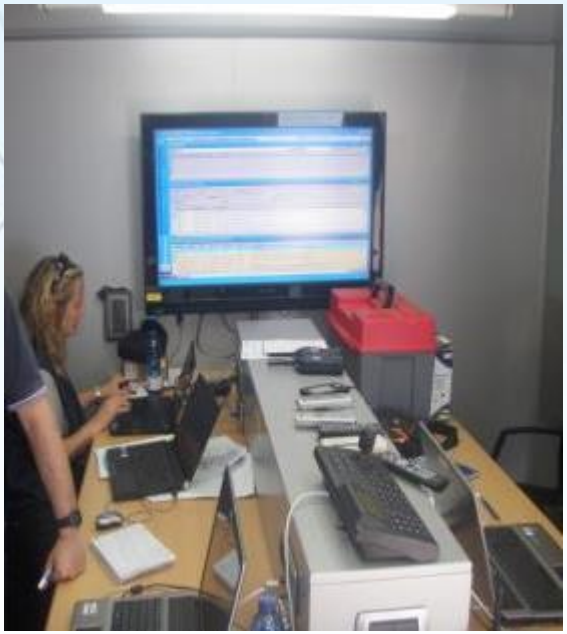
Exercises? So what's innovative?

Our tool is able to incorporate local and regional data and information to rapidly produce a wide range of geographical and chemical specific scenarios.

Specifically this tool is

- Adaptable to multiple EU Atlantic regions (and ultimately global).
- Applicable to a range of HNS types and incident sizes.
- Considering of seasonal variations.
- Providing editable scenarios to test local and regional response plans on a site specific basis with options for wider cross border impacts, where applicable.



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Who's it aimed at?

Facilitation

Those involved in planning and response arrangements to shoreline pollution incidents

Simple and rapid option for generating targeted scenarios to identify regional issues or specific identified risks

Players

Environment Group / Scientific Technical Advisory Cell members

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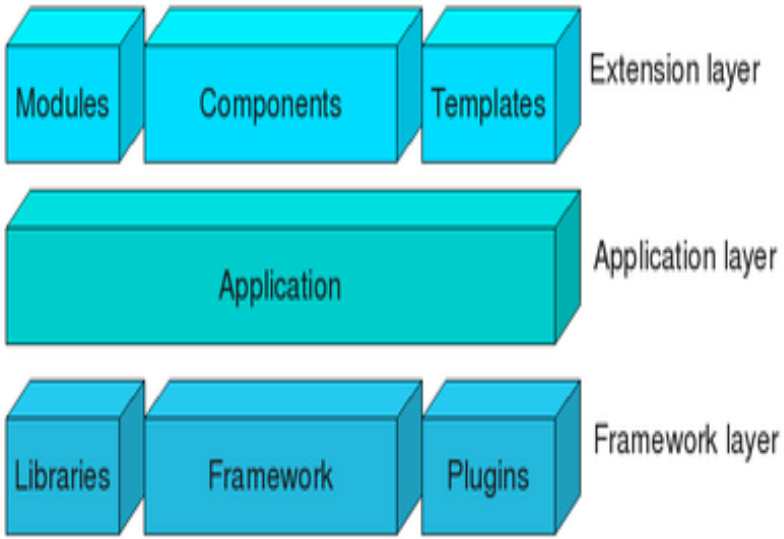
How it works

Software built by developers from Cardiff Metropolitan University, using Joomla architecture CMS build, PHP as the programming language, MySQL as a database and Apache Tomcat as a web server.



Exercise tool architecture (Joomla based)

preloaded and user input materials together with menus and user access settings

installation and administration functions.

libraries that are required to run the application.
Plug-ins, including Google Maps, extend functionality.

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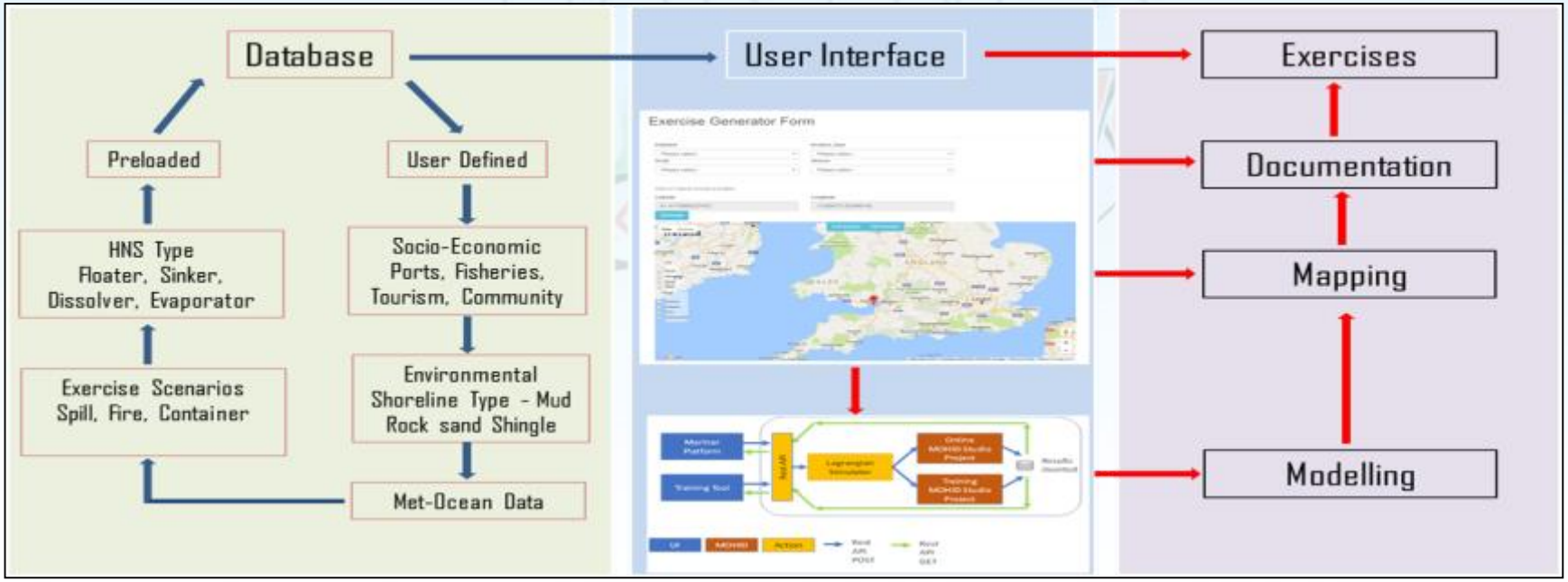
Concept

Comprises a database of preloaded information on HNS, a library of exercise materials, and interfaces for mapping and modelling.

Further populated by the user with regional receptor information, combining environmental, health and socio-economic data and uploaded as GIS mapping layers.



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Region Specific Inputs

Fate and transport simulations - Basic oceanographic and meteorological data are required for modelling. Several freely available sources of such data are available although resolution can be low.

Pollutants – Preloaded data on HNS classes and datasheets on proxy chemicals for each class. If however other specific HNS are relevant for a region then datasheets can be edited accordingly.

Coastal data - Illustrate regional sensitivities with pre-defined shoreline types and coastal anthropogenic activities. Such data are generally readily available from national surveys etc. Data are uploaded onto the mapping section of the tool as .kml files.

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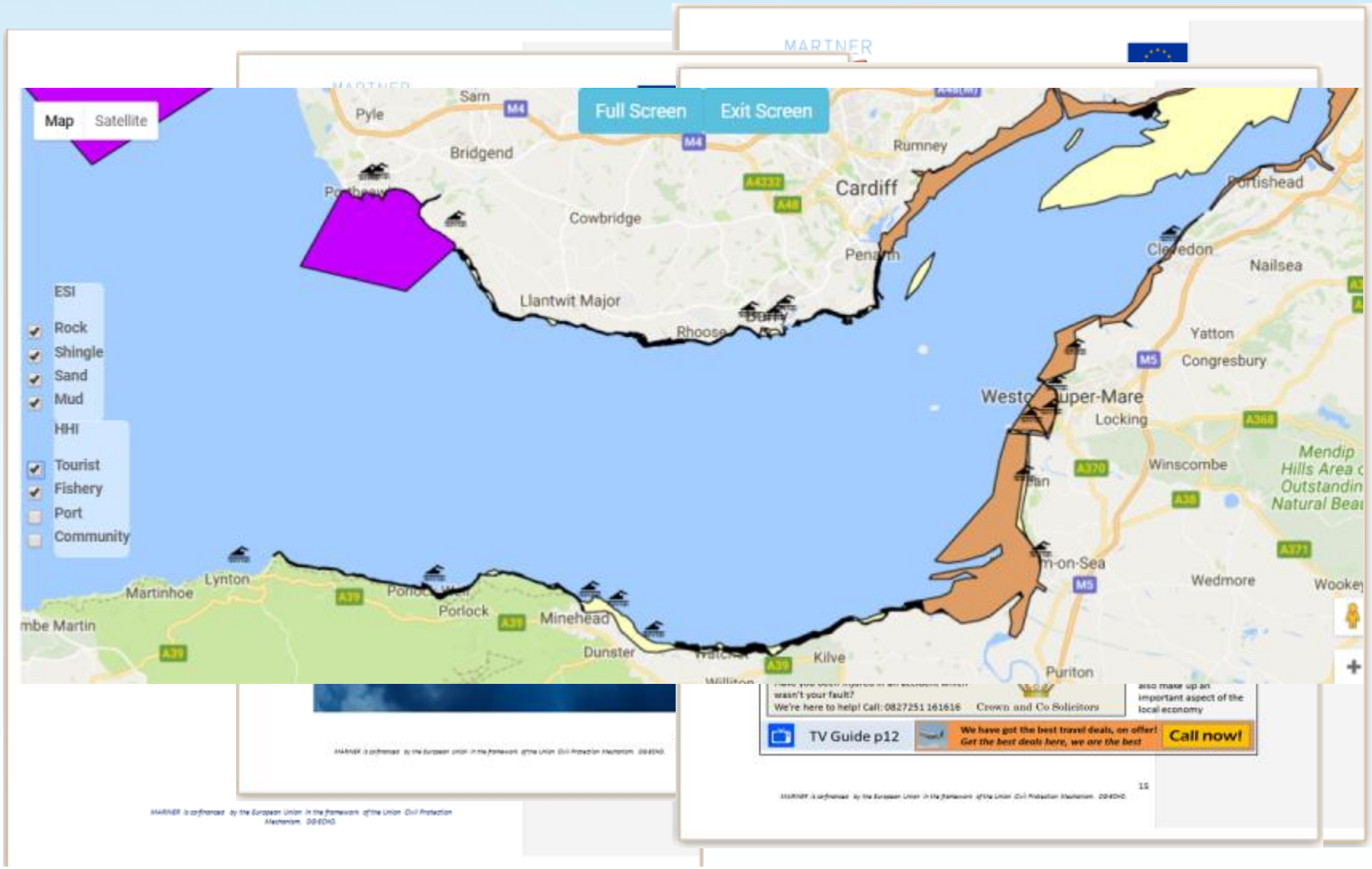
Outputs



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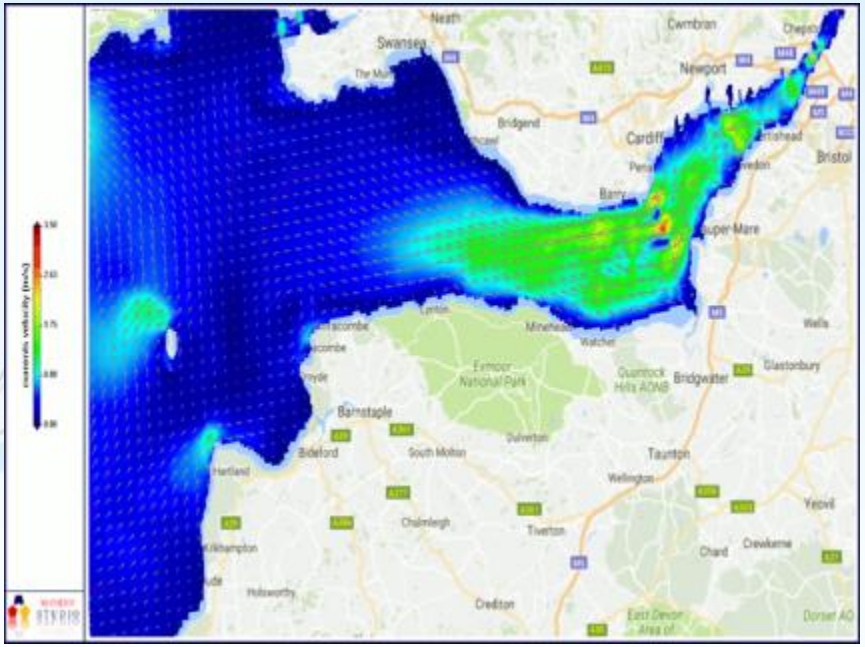
Pilot Study: Bristol Channel UK

A large tidal estuary separating South Wales and South West England
Busy shipping area of the UK Atlantic coast, approximately 160 miles of coastline and challenging met-ocean characteristics.

Piloting has comprised a 3- stage process involving

1. population of the database with regional data,
2. Beta testing of the populated tool for functionality
3. A full live trial with regional responders.



Stages 1 and 2 complete and have confirmed functionality and performance.

Stage 3 today!!

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Next steps

Feedback from June will be used to finalise the tool for wider use.

Additional EU pilot for Galicia in Northern Spain to appraise applicability to other regions.

Applying the tool to a wider audience will require the provision of met-ocean data for fate and transport modelling. Freely available data are generally low resolution and would need assessment for new regions.

Aim to develop a wider international community database, incorporating global high resolution data, available to all users and stimulating the opportunity for routine multinational training and exercise programmes.

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Thank You

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