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Final Report of the Working Group on Operational Oceanographic Products for Fisheries and Environment (WGOOFE)

17–18 November 2014

ICES Headquarters, Copenhagen, Denmark



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International Council for
the Exploration of the Sea

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Executive summary

The ICES Working Group on Operational Oceanographic Products for Fisheries and Environment (WGOOFE), chaired by Rosa Barciela and Bee Berx, met five times between January 2012 and December 2014. During this time, the over-arching role of WGOOFE has continued to be the provision of a user/provider interface for operational oceanography data products within ICES.

As part of this, WGOOFE runs a web-based portal for operational oceanographic products for users in fisheries and environmental research (www.wgoofe.org). In addition, WGOOFE has actively engaged with a number of initiatives within ICES to further expand the use of operational oceanographic data products in research and advice.

Particular highlights from the past reporting period include:

- The publication of the ICES Operational Oceanographic Products and Services (OOPS) call, inviting interested parties to provide a more formal delivery of OOPS to the ICES community.
- Provision of advice to a number of Integrated Ecosystem Assessment initiatives within ICES (WKBEMIA, WKECOVER, WGINOSE & WGEAWESS).
- The demonstration project with the Herring Assessment Working Group on briefing sheets of key environmental indicators.

1 Administrative details

Working Group name: Working Group on Operational Oceanographic Products for Fisheries and Environment (WGOOFE)

Year of Appointment: 2012

Reporting year concluding the current three-year cycle: 2014

Chair(s):

Rosa Barciela, United Kingdom

Bee Berx, United Kingdom

Meeting venue(s) and dates:

17–18 November 2014, Copenhagen, Denmark (8 participants)

26–27 November 2013, A Coruña, Spain (17 participants)

29 April 2013, WebEx Virtual Meeting (12 participants)

6–8 November 2012, Brussels, Belgium (15 participants)

12–16 March 2012, Copenhagen, Denmark (8 participants)

2 Terms of Reference a) – z)

- a) Develop, through an iterative process with users, further index based products of environment and oceanographic change and variability for application to and take up by the ICES integrated assessments and advice;
- b) Demonstrate, through specific case studies, applications of oceanographic products in integrated assessments and advice;
- c) Communicate through various mechanisms, to the ICES community the availability of oceanographic datasets, products and time-series. This should include publicizing and maintaining the WGOOFE website, developing Fact sheets for ICES expert groups and further targeted meetings with groups and workshops;
- d) Act as an interface for ICES for multinational projects, networks and organizations on operational oceanographic products, such as MyOcean2, Emodnet, MarCoast2, EuroGOOS and work with producers of the expectations and abilities of users;
- e) Liaise with the ICES training committee to develop an appropriate training course in the availability and use of oceanographic and environmental data;
- f) Respond to ad hoc requests for advice on oceanographic products for the ICES ecosystem modelling, advisory and ocean observing communities.

3 Summary of Work plan

Year 1:

- Transition the WGOOFE website to ICES to be hosted through the Share-Point system.
- Inform providers of WGOOFE work in terms of visibility of their operational products and current “rankings” by users.
- Establish a focused dialogue with the users, including other ICES WGs to provide a route for inclusion of operational, high-quality data in the integrated management process carried out under the ecosystem approach.

Year 2:

- Liaise with the ICES training committee to develop an appropriate training course in the availability and use of oceanographic and environmental data.
- Define subject matter for Fact sheets most relevant to ICES Expert Groups and begin the drafting process.

Year 3:

- Demonstrate the use of operational environmental data in the ICES integrated annual assessments.
- Finalize Fact sheets for distribution to relevant Expert Groups.

4 Summary of Achievements of the WG during 3-year term

- WGOOFE was instrumental in preparing the ground, setting up and writing the contents of the Operational Oceanographic Products and Services call, or OOPS, published in May 2014. The aim of the call was to obtain regular provision of monitoring information on the oceanography and hydrology of the regions of interest to ICES for key variables such as sea temperature, nutrients, oxygen depletions, salinity, spring bloom, and copepods. This information will be used to generate ICES integrated ecosystem assessments and will bring a step change in the way the ICES process links science, advice and data.
- Provision of advice to OSPAR, through an ad hoc expert group, on handling large amounts of data from monitoring devices for monitoring and assessment programmes.
- Provision of advice to Integrated Ecosystem Assessment initiatives within ICES, including a position paper titled “From concepts to operations: using operational oceanography data in environmental and fisheries advice” for discussion at the Workshop on Benchmarking Integrated Ecosystem Assessments (WKBEMIA) in November 2012 and the Workshop on Ecosystem Overviews (WKECOVER) in January 2013.
- A demonstration project, with the Herring Assessment Working Group (HAWG), to assess the usefulness of operational oceanographic data within the ICES ecosystem advice context. The success of the project led to a HAWG request for the annual creation of a “briefing sheet” detailing the current state of the physical and biological environment in the ecoregions that it covers as an aid to generating advice.

- Contribution to the definition of requirements for the evolution of the European Copernicus Marine Core Service via the interaction with the GMES Partnership for User Requirements Evaluation (PURE) project.
- Transition, as well as continuous support and update, of WGOOFE's web portal for operational oceanographic products for fisheries and the environmental users to ICES, which is now hosted through its SharePoint system.
(<http://groupsites.ices.dk/sites/wgoofe/operationalOcenography/Pages/default.aspx> or <http://www.wgoofe.org>)
- Interaction with data producers (listed in the WGOOFE web site) which were sent feedback, based on the information provided by data users, on the accessibility of environmental products with the view to encourage future development of those products.

5 Final report on ToRs, workplan and Science Implementation Plan

- a) Develop, through an iterative process with users, further index based products of environment and oceanographic change and variability for application to and take up by the ICES integrated assessments and advice

WGOOFE started work on developing index-based products in 2012. During meetings in Copenhagen and Brussels, the group drafted a list of potentially useful index-based products representative of oceanographic and environmental processes and their variability. During the discussions, WGOOFE identified the Herring Assessment Working Group (HAWG) as a good candidate to approach as a champion user to iteratively develop these products.

WGOOFE (under the lead of Mark Payne) created some index time series of temperature and primary productivity for specific regions to feed into the briefing sheets created for HAWG. The development of other, novel index-based products has been slow as WGOOFE members have been unable to dedicate resource to this, outside of the group's meetings. During the 2014 annual meeting in Copenhagen, the group discussed possible ways to continue the development of these new operational data products. Several initiatives are beginning to develop these kinds of products in parallel, and WGOOFE's main role may lie in facilitating the definition and provision of these products to ensure they are relevant to ICES scientific and advisory needs.

- b) Demonstrate, through specific case studies, applications of oceanographic products in integrated assessments and advice

In 2012, WGOOFE approached HAWG to become a "champion user" in order to demonstrate to the ICES community the potential for integration of environmental and oceanographic processes in their advice. Despite of the short notice of the initial request (3 weeks), a briefing sheet was produced, giving a graphic representation of the requested parameters, as well as a short expert interpretation of the information presented. In the end, the process of collating all the inputs was labour-intensive and challenging for those involved.

Feedback from the HAWG Chairs was very positive. The main lessons learned were: (i) both groups need dedicated time in order to plan the work, coordinate the inputs to the briefing sheet and provide expert interpretation of results, (ii) wider expert interpretation is needed in the products provided; and (iii) WGOOFE should explore how to streamline this process.

Although initially planned as an iterative process, no further briefing sheets were produced. The main reason for this was that although HAWG thought the information useful, it was not included in a direct manner into the assessment or advice processes. WGOOFE is keen to find ways of demonstrating to the ICES community the more direct advantages of incorporating operational oceanographic products into the advisory structures, and therefore WGOOFE is now exploring collaboration with the Integrated Ecosystem Assessment expert groups as these are considered in a position to more immediately incorporate WGOOFE products.

- c) Communicate through various mechanisms, to the ICES community the availability of oceanographic datasets, products and time-series. This should include publicizing and maintaining the WGOOFE website, developing Fact sheets for ICES expert groups and further targeted meetings with groups and workshops

WGOOFE has continued to develop and maintain its web-portal which was launched in 2009. Traffic to the website continues to be monitored and shows daily unique visitor levels to the site to average around 20 per day (with peaks greater than 50 unique visitors per day).

WGOOFE has continued to promote its web-portal and the application of operational oceanographic data products around the ICES community: through participation in a special session on “big data” at the 2014 ASC in A Coruña, by holding a joint meeting with WGIPEM in March 2012, through attendance at the WGINOSE and WGEA-WESS meetings in February 2013, and through its interactions with HAWG on the provision of briefing sheets on environmental conditions in key regions. WGOOFE submitted a position paper, titled “From concepts to operations: using operational oceanography data in environmental and fisheries advice”, to the ICES Integrated Ecosystem Assessment initiatives WKBEMIA and WKECOVER.

- d) Act as an interface for ICES for multinational projects, networks and organizations on operational oceanographic products, such as MyOcean2, Emodnet, MarCoast2, EuroGOOS and work with producers of the expectations and abilities of users

Members of WGOOFE have continued to engage with the operational oceanographic community. In 2012, we provided feedback to those providers whose data products are highlighted on the WGOOFE web portal. WGOOFE have continued to participate in relevant initiatives of the MyOcean-community (MyOcean2, MyOcean-follow-on and the move to Copernicus), and the GMES PURE project. Members of WGOOFE have represented the group at various other project meetings (e.g. Emodnet, MarCoast2, EuroGOOS), as well as within their own organisations.

- e) Liaise with the ICES training committee to develop an appropriate training course in the availability and use of oceanographic and environmental data

WGOOFE approached the ICES Training Group (ITG) to develop a training course on the application of operational oceanographic data products within the ICES context. This was seen as continuation of the two-way dialogue between users and producers of operational oceanographic data products: communicating user-needs to data providers, but also educating users about the best products available and their application.

At the same time, the ITG had also received a proposal from outside the ICES community with a similar remit: “Operational Oceanography: Synoptic Views of the

Sea”. The group evaluated the proposal, and provided feedback to the ITG and the proposer of the course. Unfortunately, this course proposal was withdrawn. WGOOFE was also aware that other projects in the Operational Oceanography community were planning training courses (e.g. MyOcean2 and JERICO). As several WGOOFE members have been active in these initiatives, it was considered more appropriate to join efforts.

- f) Respond to ad hoc requests for advice on oceanographic products for the ICES ecosystem modelling, advisory and ocean observing communities;

WGOOFE received few ad hoc requests for advice. The group’s main provision of advice during this 3 year term was the feedback it provided to the ICES OOPS call process (see below), to HAWG (see ToRs b and c), and to the integrated ecosystem assessment groups (WGINOSE, WGEAWESS; see ToRs b and c).

The WGOOFE Co-Chairs worked closely with WGOH and the ICES ecosystem professional officer on a paper focused on the delivery of operational oceanographic products to aid the Integrated Ecosystem Assessment (IEA) process. The paper was submitted for discussion to SCICOM. After a few iterations, a call was published in May 2014, requesting expressions of interest in order to provide Operational Oceanographic Products and Services (OOPS) to the ICES advice process.

6 Cooperation

- Cooperation with other WG
 - HAWG
 - WGOH
 - WGINOSE
 - WGEAWESS
 - WGIPEM
 - WKBEMIA
 - WKECOVER
- Cooperation with Advisory structures
 - Feedback to ICES Science Plan was provided during the consultation period in 2013
- Cooperation with other IGOs
 - GODAE
 - EuroGOOS
 - EmodNET, SeadaNET
 - Copernicus MyOcean
 - Copernicus PURE
 - GMES PURE

7 Summary of Working Group evaluation and conclusions

The work WGOOFE set out to do culminated in the generation of the OOPS call for Expressions of Interests, in 2014, seeking the routinely and timely provision of monitoring information on the oceanography and hydrology of ICES regions for integrated ecosystem assessment. This has been WGOOFE's greatest achievement so far and fulfils the expectations placed on the group 3 years ago. There are, however, still plenty of challenges ahead and details of the future continuation of WGOOFE, under new leadership, were discussed at the most recent annual meeting in November 2014. The WGOOFE members concluded that a new vision and its corresponding new ToRs for this working group are required, subject to SCICOM approval. These ToRs, and a loose 3-year work plan are formulated below:

Draft Terms of Reference

- Develop, through an iterative process with users, further index based products of environment and oceanographic change and variability for application to and take up by the ICES integrated assessments and advice;
 - This will involve some work within WGOOFE, but there will also be resource/cost implications for more intensive analysis/work. WGOOFE thought a small amount of work could provide the necessary momentum to respond to relevant EU/national funding calls.
- Demonstrate, through specific case studies, applications of oceanographic products in integrated assessments and advice;
 - Specifically, WGOOFE would like to build on the initial collaborations with WGINOSE to further integrate operational oceanographic data into their work.
- Communicate through various mechanisms, to the ICES community the availability of oceanographic datasets, products and time-series. This should include publicizing and maintaining the WGOOFE website, developing Fact sheets for ICES expert groups and further targeted meetings with groups and workshops;
- Act as an interface for ICES for multinational projects, networks and organizations on operational oceanographic products, such as MyOcean2 + Follow-on, Copernicus Marine Service, Emodnet, Seabasin Checkpoint studies, EuroGOOS and work with producers of the expectations and abilities of users;
- Respond to ad hoc requests for advice on oceanographic products for the ICES ecosystem modelling, advisory and ocean observing communities;

Draft Work Plan

Year 1 (January–December 2015)

- Define scientific research questions to be explored, such as: what is the impact of ingesting different data sources in to assessment models (integrated/fisheries/...) [free to WGOOFE, but effort/cost at the other EGs]
- Case Study Development: Approach the regional assessment expert groups (e.g. WGINOSE, WGEAWESS, WGNARS) to start process. Evaluate data provision to HAWG (has the data been used; if not, why? Are

there improvements needed?). WGOOFE has struggled to obtain user involvement at its own meetings, and will achieve this by asking for WGOOFE members to attend relevant expert group meetings (to ask for their data needs and how they will make a commitment to use the products provided).

- Approach WGOH about using spatial ocean data in IROC e.g. MyOcean SST.
- By Spring, – all WGOOFE members to send idea for ONE index product to chairs. With reasoning why. Divide into – fish/fisheries, MSFD (OSPAR common indicators), climate change. Plus references.
- Hands-on data meeting autumn 2015. Identify most important ecosystem indices (scoring system – science value, but also useful to reporting, other ICES groups), synthesis, presentation (ensembles, comparisons) and data visualisation. Data not already included in OOPS. E.g. mixed layer depth, duration of stratification integrated over sea areas. Work with ICES data centre during the week.
- Provide feedback to ICES on use of the first suite of OOPS products.
- Develop work plan for Year 2 based on new developments.
- Proposed meetings: virtual meeting in spring 2015 (after EGU or Liege Colloquium), in-person meeting in autumn 2015.

Year 2 (January–December 2016)

- Develop further indices following first OOPS results by means of joint meeting with WGINOSE –spring 2016.
- Examine new services arising from Copernicus Marine, Land, Climate Services.
- Provision of advice on new, large-scale data services (EMODNET?).
- Develop work plan for Year 3 based on new developments.

Year 3 (January–December 2017)

- Expand provision of advice on data to a wider range of ICES groups
- Fully documented case study with e.g. WGINOSE.

Annex 1: List of participants

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Annex 2: WGOOFE draft resolution for a new term

A Working Group on Operational Oceanographic products for Fisheries and Environment (WGOOFE), chaired by Dominique Obaton, France, and Rodney Forster, UK, will work on ToRs and generate deliverables as listed in the Table below.

	Meeting dates	Venue	Reporting details	Comments (change in Chair, etc.)
Year 2015	TBA	TBA	Interim report by 31 January 2016 to SSGEPD	
Year 2016			Interim report by DATE to SSGEPD...	
Year 2017			Final report by DATE to SSGEPD, SCICOM...	

ToR descriptors

ToR	Description	Background	Science Plan topics addressed	Duration	Expected Deliverables
a	Develop, through an iterative process with users, further index based products of environment and oceanographic change and variability for application to and take up by the ICES integrated assessments and advice;			3 years	Index-based products of environment and oceanographic change
b	Demonstrate, through specific case studies, applications of oceanographic products in integrated assessments and advice;			3 years	Documented case studies of the application of OOPS in integrated ecosystem assessment and advice
c	Communicate through various mechanisms, to the ICES community the availability of oceanographic datasets, products and time-series. This should include publicizing and maintaining the WGOOFE website, developing Fact sheets for ICES expert groups and further targeted meetings			3 years	

	with groups and workshops;	
d	Act as an interface for ICES for multinational projects, networks and organizations on operational oceanographic products, such as MyOcean2 + Follow-on, Copernicus Marine Service, Emodnet, Seabasin Checkpoint studies, Euro-GOOS and work with producers of the expectations and abilities of users;	3 years
e	Respond to ad hoc requests for advice on oceanographic products for the IC-ES ecosystem modelling, advisory and ocean observing communities;	3 years

Summary of the Work Plan

	<p>Define scientific research questions to be explored, such as: what is the impact of ingesting different data sources in to assessment models (integrated/fisheries/...) [free to WGOOFE, but effort/cost at the other EGs]</p> <p>Case Study Development: Approach the regional assessment expert groups (e.g. WGINOSE, WGEAWESS, WGNARS) to start process. Evaluate data provision to HAWG (has the data been used; if not, why? Are there improvements needed?). WGOOFE has struggled to obtain user involvement at its own meetings, and will achieve this by asking for WGOOFE members to attend relevant expert group meetings (to ask for their data needs and how they will make a commitment to use the products provided).</p> <p>Approach WGOH about using spatial ocean data in IROC e.g. MyOcean SST.</p> <p>By Spring, – all WGOOFE members to send idea for ONE index product to chairs. With reasoning why. Divide into – fish/fisheries, MSFD (OSPAR common indicators), climate change. Plus references.</p> <p>Hands-on data meeting autumn 2015. Identify most important ecosystem indices (scoring system – science value, but also useful to reporting, other ICES groups), synthesis, presentation (ensembles, comparisons) and data visualisation. Data not already included in OOPS. E.g. mixed layer depth, duration of stratification integrated over sea areas. Work with ICES data centre during the week.</p> <p>Provide feedback to ICES on use of the first suite of OOPS products.</p> <p>Develop work plan for Year 2 based on new developments.</p> <p>Proposed meetings: virtual meeting in spring 2015 (after EGU or Liege Colloquium), in-person meeting in autumn 2015.</p>
Year 1	
Year 2	<p>Develop further indices following first OOPS results by means of joint meeting with WGINOSE –spring 2016.</p> <p>Examine new services arising from Copernicus Marine, Land, Climate Services.</p> <p>Provision of advice on new, large-scale data services (EMODNET?).</p> <p>Develop work plan for Year 3 based on new developments.</p>

Year 3	Expand provision of advice on data to a wider range of ICES groups Fully documented case study with e.g. WGINOSE.
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Supporting information

Priority	The current activities of this Group will lead ICES into issues related to the provision of integrated ecosystem management and advice.
Resource requirements	The research programmes which provide the main input to this group are already underway, and resources are already committed. The additional resource required to undertake additional activities in the framework of this group is negligible.
Participants	The Group is normally attended by some 10-20 members and guests.
Secretariat facilities	None.
Financial	No financial implications.
Linkages to ACOM and groups under ACOM	The integrated ecosystem assessment working groups, as well as any other advisory groups which would benefit from environmental and oceanographic information being incorporated in their advisory work.
Linkages to other committees or groups	There is a very close working relationship with WGOH, as well as the working groups under SSGEIA.
Linkages to other organizations	MyOcean Follow-On and the GMES Copernicus Service.

Annex 3: Copy of Working Group evaluation

- 1) If applicable, please indicate to which of the research priorities (and sub priorities) of the Science Plan to which the WG make a significant contribution

EPD, EPI, IEA and IEOM: WGOOFE's role underpins the work of all categories.

- 2) In bullet form, list the main outcomes and achievements of the WG since their last evaluation. Outcomes including publications, advisory products, modelling outputs, methodological developments, etc. *

- Involvement in ICES OOPS call
- Provision of advice on operational oceanographic products and large amounts of monitoring data to ICES expert groups and OSPAR,
- Provision of advice to Integrated Ecosystem Assessment initiatives within ICES
- A demonstration project, with the Herring Assessment Working Group (HAWG), to assess the usefulness of operational oceanographic data within the ICES ecosystem advice context.
- Transition, as well as continuous support and update, of WGOOFE's web portal for operational oceanographic products for fisheries and the environmental users to ICES
- Interaction with data producer community (e.g. European GMES and MyOcean initiatives, EMODnet, etc)

- 3) Has the WG contributed to Advisory needs? If so, please list when, to whom, and what was the essence of the advice.

WGOOFE has approached a number of advisory groups to initiate the inclusion of oceanographic data products operationally in ICES advice. However, none of this work has materialised yet in a dedicated stream of OOPS being included in ICES advice. The group is confident this will change in the near future.

- 4) Please list any specific outreach activities of the WG outside the ICES network (unless listed in question 7.2). For example, EC projects directly emanating from the WG discussions, representation of the WG in meetings of outside organizations, contributions to other agencies activities.

WGOOFE have continued to participate in relevant initiatives of the MyOcean-community (MyOcean2, MyOcean-follow-on and the move to Copernicus), and the GMES PURE project. Members of WGOOFE have represented the group at various other project meetings (e.g. Emodnet, MarCoast2, EuroGOOS), as well as within their own organisations.

- 5) Please indicate what difficulties, if any, have been encountered in achieving the workplan.

The main difficulty has been an overall lack of staff resource for WGOOFE members to advance work discussed at the EG meetings when this is not a key component of delivery in their own daily jobs.

Future plans

- 6) Does the group think that a continuation of the WG beyond its current term is required? (If yes, please list the reasons)

Yes, the main challenges continue to be the incorporation of operational oceanographic products in ICES advisory processes. The recent OOPS call will remedy this, but the group feels it still has a role to play in the definition of index-based data products and the incorporation of the OOPS call products in ICES advice.

- 7) If you are not requesting an extension, does the group consider that a new WG is required to further develop the science previously addressed by the existing WG. (If you answered YES to question 6 it is expected that a new Category 2 resolution will be submitted through the relevant SSG Chair or Secretariat.)

- 8) What additional expertise would improve the ability of the new (or in case of renewal, existing) WG to fulfil its ToR?

Additional members who are considered "users" of OOPS would benefit the group, however, this is a challenge which has been present since the start of the EG, and one which WGOOFE considers remedying by asking current members to attend other EG meetings and report back.

- 9) Which conclusions/or knowledge acquired of the WG do you think should be used in the Advisory process, if not already used? (please be specific)

The application of oceanographic information in assessment models to improve management practices in the marine environment.