

ICES WGOOFE REPORT 2009

SCICOM STEERING GROUP ON SUSTAINABLE USE OF ECOSYSTEMS

ICES CM 2009/OCC:10

REF. SCICOM

Report of the Working Group on Operational oceanographic products for fisheries and environment (WGOOFE)

15–17 June 2009
Aberdeen, United Kingdom

16–18 November 2009
IJmuiden, The Netherlands



ICES

International Council for
the Exploration of the Sea

CIEM

Conseil International pour
l'Exploration de la Mer

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Recommended format for purposes of citation:

ICES. 2009. Report of the Working Group on Operational oceanographic products for fisheries and environment (WGOOFE), 15–17 June 2009, Aberdeen, United Kingdom; 16–18 November 2009, IJmuiden, The Netherlands. ICES CM 2009/OCC:10. 18 pp.

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Executive summary

WGOOFE is a working group on the user/provider interface of operational oceanography products. It runs a web based portal for operational oceanographic products for users in fisheries and environmental research. In 2009, it launched its website and held a number of demonstration workshops throughout the ICES area. There are now over 20 products available through the WGOOFE portal (www.wgoofe.org).

WGOOFE also sent out a questionnaire on users requirements from operational oceanographic products. 100 scientists responded. This report contains some of the preliminary findings, including a list of the "important" products required by users. Excel, MATLAB, SAS and R were the most commonly used tools for data analysis. The users were mostly interested in data products at the scale of regional, ICES area and 10km. The respondents also wanted downloadable data (which was preferable over graphics), usually at monthly or greater resolutions available monthly or annually. They were interested in products that deliver historic and current operational oceanographic data. The most requested delivery format was ASCII files, followed by Excel.

WGOOFE also evaluated the existing products, giving them a green, yellow or red score dependent on the following criteria:

- i) Can the data from the product be easily and immediately down loaded from the web site?
- ii) If not then can the data be obtained by registering or requesting the data?
- iii) Was the website for the product well designed and easy to understand?
- iv) Was there a suitable amount of meta-data and/or product description available?
- v) Did the web site show clearly a contact person for help with the product?

WGOOFE will meet again twice in 2010 and continue both development and evaluation of products. It also plans to liaise with the ICES Working Group on Data and Information Management (WGDIM), the ICES data centre and other ICES working groups on improving the utility, access and appropriateness of oceanographic data products.

1 The rational for WGOOFE

On the advice in 2007 of PGOOP (ICES Planning Group on Operational Oceanographic Products), a workshop WKOOP was initiated to suggest ways of developing and/or improving the dialog between producers of operational oceanographic products and the potential users of those products. It was also asked to define initial oceanographic products that can be regularly delivered to identified users. In the light of products, WKOOP was then expected to formulate a strategy and a work plan for a new working group on the user/provider interface of operational oceanography products. This recommended the instigation of WGOOFE (see Annex 3 for the ToRs) and WGOOFE thus met in November 2008 and twice in 2009. This is the report of the two meetings in 2009.

2 Publicise the activities of WGOOFE [ToR A]

The group used various methods to publicise their work. More users attended the Aberdeen meeting (see Annex 1). Outreach also occurred at the home institutes and the ICES ASC.

3 Develop the first versions of web based products [ToR B]

The web based products were developed (see www.wgoofe.org). These are listed by region and provider (Figure 1). Over 20 web based oceanographic products (forecast, nowcast and hindcast) are now available through the WGOOFE portal, which is currently housed by IFREMER.

WGOOFE

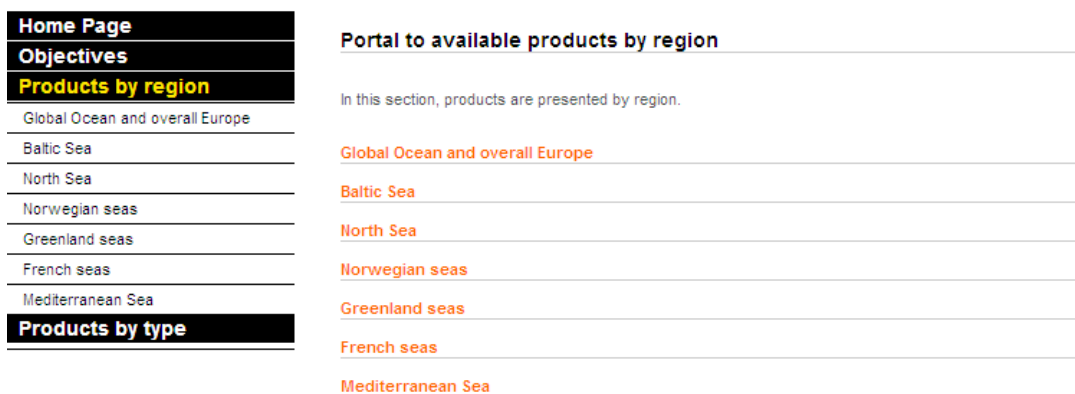


Figure 1. WGOOFE website portal to operational oceanographic productions by region.

4 First demonstration workshop with users in Aberdeen June 2009 [ToR C]

The demonstration workshop was organised and over 20 scientists took part. A questionnaire was developed to address the product requirements (see Annex 5).

5 Follow on workshops, including at the ICES ASC to demonstrate the first versions of products. [ToR D]

Additional demonstration workshops also took place at CEFAS, IMARES, IFREMER and Marine Scotland in 2009. There was also a demonstration workshop at the ICES ASC in Berlin, September 2009.

Feedback was received in written form from 100 scientists from a range of institutes (Figure 2). It was clear that Excel, MATLAB, SAS and R were the most commonly used tools for data analysis (Figure 3). The users were mostly interested in regional, ICES area and 10s km scales. The respondents also wanted downloadable data (which was preferable over graphics), usually at monthly or greater resolutions available monthly or annually. They were interested in products that deliver historic and current operational oceanographic data. The most requested delivery format was ASCII files (Figure 5).

This exercise proved very useful and WGOOFE felt that the results were worth publicising. With this in mind WGOOFE planned to produce a flyer/leaflet in 2010 for circulation to the wider marine community and to the ICES community. It also planned to produce a refereed publication on the findings. The results demonstrate the difference in perceptions between oceanographic production developers and their potential users.

It was agreed that both the ICES secretariat and the UK Met Office would be approached for help in developing the flyer. A brief scoping exercise would take place to determine the relevant journal for the potential refereed publication.

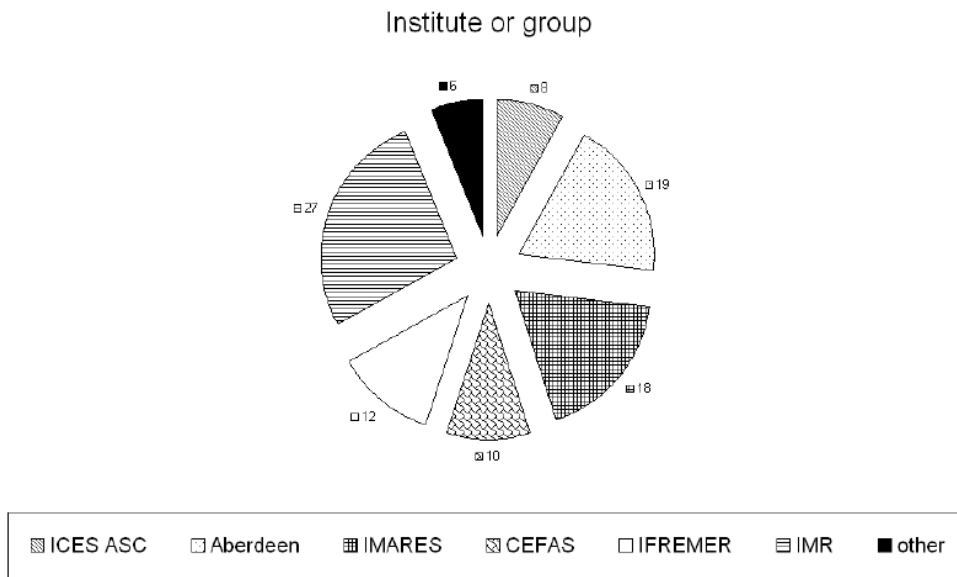


Figure 2. Sources of returned feedback WGOOFE user questionnaires.

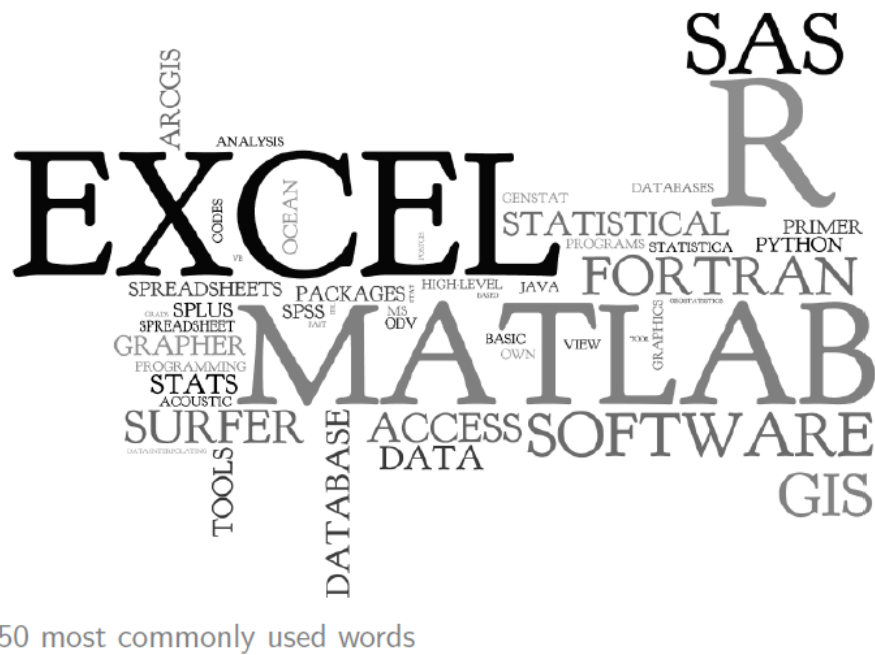


Figure 3. The most common answers to question 1d in the questionnaire (Annex 5). Size of word represents relative occurrence (linear scale).

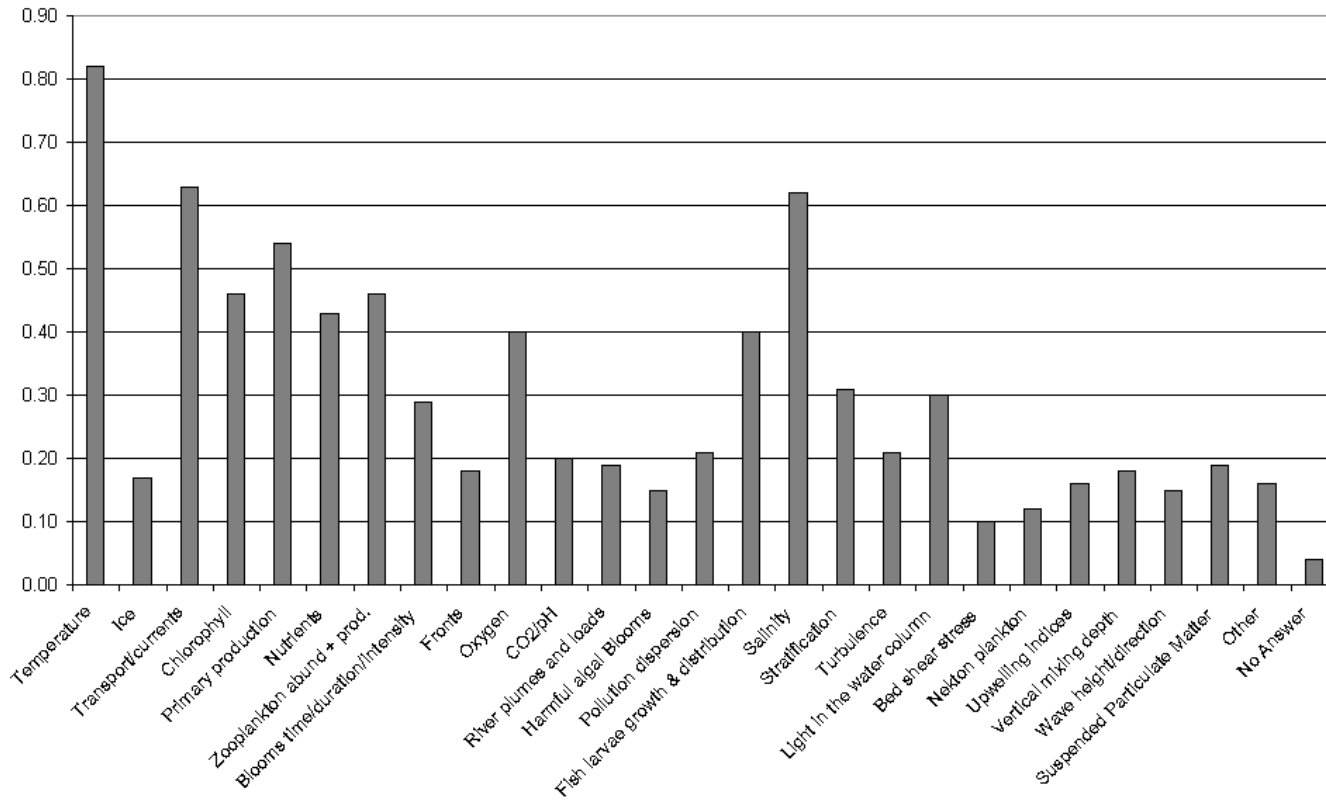


Figure 4. Products by variable that the users considered “most important to their work”, question 2 in the questionnaire (Annex 5). Y axis- the proportion of respondents. Respondents could choose more than one products.

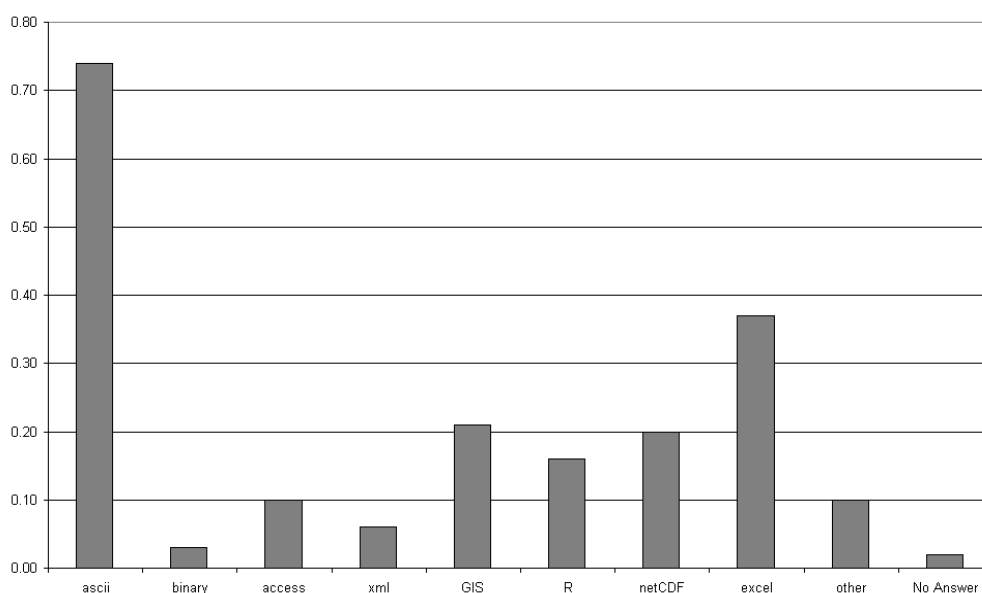


Figure 5. Respondents answer to “what file format is most convenient to you?” question 8 in the questionnaire (Annex 5). Y axis- the proportion of respondents. Respondents could choose more than one products.

6 Refine and evaluate the operational products [ToR E]

The product websites developed and listed on the WGOOFE portal were evaluated using the following criteria:

Criteria number	Criteria	Description
1.	Download of data	Can the data from the product be easily and immediately downloaded from the web site?
2.	Registration to get data	If not 1, then can the data be obtained by registering or requesting the data?
3.	View	Was the website for the product well designed and easy to understand?
4.	Description (method, reference, relevance – data format, update frequency,	Was there a suitable amount of meta-data and/or product description available?
5.	Contact person	Did the web site show clearly a contact person for help with the product?

The products were then evaluated and given traffic light colours on the following basis:

- Green: 1 + 3, 4, 5
- Yellow: 1 or 2 + at least two out of (3, 4, 5)
- Red: others

These colours will be incorporated into the WGOOFE web site by the June 2010 meeting.

7 Identify gaps in the products available, and define new products from this [ToR F]

At present, development of existing links is dominating the WGOOFE work, so further developments were not considered in great detail. However the results of the questionnaire (Figure 4) will be important in determining the future developments required from the WGOOFE community.

8 Further work of WGOOFE

A long action list was put together at the IJmuiden meeting for intersessional work prior to the first 2010 meeting (see Annex 4). WGOOFE will meet twice in 2010 at IFREMER, Brest, France, June 2010, at IMR, Bergen November 2010.

WGOOFE hopes to work on refining and critically evaluating the operational products to the needs of the users, including the format and timing, and highlighting the appropriate and most operational products for each region. It will also continue intersessional development of the web based products (either from institutes, projects or individuals) for testing with other ICES WG (see proposed ToR E).

It will further develop criteria for WGOOFE housed products (e.g. the levels at which products should be available, the availability and perhaps registration for data, clarity of text, agreed terms and acronyms). WGOOFE has received request to meet and discuss its work from other ICES groups, thus in 2010 it will plan joint meetings with WGPBI and WGHAB and initiate discussions with ICES data centre and WGDIM about appropriate housing of the WGOOFE web site in the future.

Annex 1: List of participants

NAME	ORGANISATION	EMAIL	JUNE ABERDEEN	NOV IJMUIDEN
Mark Dickey-Collas (co-chair)	IMARES	mark.dickeycollas@wur.nl	X	X
Morten D. Skogen (co-chair)	IMR	morten@imr.no	X	X
Holger Klein	BSH	holger.klein@bsh.de	X	X
Sebastian Legrand	MUMM	s.legrand@mumm.ac.be	X	
Patrick Gorringer	EuroGOOS	patrick.gorringer@smhi.se	X	X
Yann-Hervé De Roeck	IFREMER	yhdr@ifremer.fr	X	X
Barbara Berx	Marine Scotland	b.berx@marlab.ac.uk	X	X
Eric Dombrowsky	MERCATOR	eric.dombrowsky@mercator-ocean.fr	X	
Corinna Schrum	NIVA/UiB-GFI	cor@niva.no, corinna.schrum@gfi.uib.no	X	
Einar Svendsen	IMR	einar@imr.no	X	
Rosa M. Barciela Fernandez	UK Met Office	rosa.barciela@metoffice.gov.uk	X	X
Rodney Foster	CEFAS	Rodney.foster@cefas.co.uk	X	X
Mark Payne	DTU-AQUA	mpa@aqua.dtu.dk	X	
Sarah Hughes	Marine Scotland	s.hughes@marlab.ac.uk	X	
Gaetan Vinay	MERCATOR	gaetan.vinay@mercator-ocean.fr	X	X

Annex 2: Agendas for 2 meetings

15–17 June 2009, Marine Scotland Science, Aberdeen

Day 1, Monday June 15th 2009 (Conference Room)

12:00	Lunch
13:00	Introduction and agree terms of reference
13:30	Review products made available to web site (including phone presentation from Kevin Ruddick from MUMM).
15:30	Tea/Coffee
15:50	Presentation from Dave Mills - EMECO
16:15	Continue review of products
17:30	Formal end of day 1
Evening	Informal Discussion on format of Open Session with local marine scientists

Day 2, Tuesday June 16th 2009 (Conference Room)

09:00	Determine structure of Open session
10:15	Tea/Coffee
10:35	Split into sub groups: i. Prepare Open Session ii. Review utility of and strategy for web site
12:00	Lunch
14:00	Open Session with Marine Laboratory scientists in the Lecture Theatre
15:30	Tea/Coffee
15:50	Review Open Session and report findings and observations
17:30	Formal end to Day 2
19:30	Dinner

Day 3, Wednesday June 17th 2009 (Conference Room)

09:00	Review list of products and potential contributors/developers
10:15	Tea/Coffee
10:35	Define gaps and challenges
12:00	Lunch
13:00	Prepare and plan further intercessional work
15:00	End of Meeting

16–18 November 2009, IMARES, IJmuiden**Day 1, Monday November 16th 2009**

12:00	Lunch – IMARES canteen (a few sandwiches available for later arrivals)
13:00	Welcome, housekeeping
13:05	Introduction and agree terms of reference
13:15	TorB: Status WGOOFE web site.
15:30	Tea/Coffee
16:00	TorB: ...WGOOFE web site (cont.)
17:30	End of day 1- Drinks and Dutch kibbeling

Day 2, Tuesday November 17th 2009

09:00	Representation on WG on promoting and implementing operational ocean observing systems for ICES
09:10	Evaluation of questionnaire
10:15	Tea/Coffee
10:45	Presentations: new/updated products
12:30	Lunch provided in IMARES canteen
13:30	Presentations: ...cont.....
14:00	TorE: Refine and evaluate the operational products
15:30	Tea/Coffee
16:00	TorE: ...cont...
17:30	End of day 2

Day 3, Wednesday November 18th 2009

09:30	TorF: Identify gaps in.....
10:15	Tea/Coffee
10:45	TorF: ...cont....
12:00	Lunch (sandwiches provided)
13:00	Summary of meeting. Activities 2010. New ToRs
14:00	End of Meeting

Annex 3: Terms of Reference for WGOOFE 2009

Terms of reference for WGOOFE 2009:

- a) Prior to the meeting and workshops publicise the activities of the working group to attract potential members, with an emphasis on users
- b) Intersessionally develop the first versions of web based products (either from institutes, projects or individuals) for testing in the workshops
- c) Arrange a demonstration workshop with users to get feedback on interim product list and operational services (Aberdeen, 15–17 June 2009)
- d) Hold other workshops, including an evening at the ICES ASC to demonstrate and operate the first versions of products.
- e) Refine and evaluate the operational products to the needs of the users, including format and timing (IJmuiden, 16–18 November 2009)
- f) Identify gaps in the products available, and define new products from this

Annex 4: Terms of reference for the next meeting WGOOFE 2010

The **Working Group on operational oceanographic products for fisheries and environment** (WGOOFE), chaired by Morten Skogen, Norway, and Mark Dickey-Collas, the Netherlands, will meet twice in 2010 at IFREMER, Brest, France, 7–9 June 2010, at IMR, Bergen 15–17 November 2010 to:

- a) Refine and critically evaluate the operational products to the needs of the users, including format and timing, and highlight appropriate and most operational products for each region;
- b) Continue intercessional development of the web based products (either from institutes, projects or individuals) for testing with other ICES WG (see ToR e) based on recommendations of the 2009 WGOOFE report;
- c) Identify gaps in the products available, and define new products from this;
- d) Develop criteria for WGOOFE housed products (e.g. the levels at which products should be available, the availability and perhaps registration for data, clarity of text, agreed terms and acronyms);
- e) Plan joint meetings to discuss product development with example ICES working group such as WGPBI and WGHAB;
- f) Initiate discussions with ICES data centre and WGDIM about appropriate housing of the WGOOFE web site in the future;
- g) Develop terms of references based on a work plan for the next two years, which complement the objectives of the ICES science plan.

WGOOFE will report by 1 December 2010 (via SSGSUE) for the attention of SCICOM and ACOM.

Supporting Information

Priority	There is an urgent need to incorporate the field of operational oceanographic products into ICES to be able to support fisheries research, assessment and management advice and other ecosystem approach related activities.
Scientific justification	<p>WGOOFE justification:</p> <p>Term of Reference a) To make the products of WGOOFE relevant and encourage them to be used within ICES, it is essential to engage users in the work of the WG, and not make the group a fora only for operational oceanographers.</p> <p>Term of Reference b) Available operational oceanographic products are to be used as initial products to initiate a dialogue with the users of their needs and possible use of the products.</p> <p>Term of Reference c) The dialogue will define improved products to better meet the user needs.</p> <p>Term of Reference d) To ensure regularity of the products to be delivered WGOOFE will identify the producers.</p> <p>Term of Reference e) Several large projects are running operational oceanographic services. To ensure the relevance of their works, WGOOFE will establish a close dialogue with these initiatives to stimulate for delivery of relevant (to</p>

	ICES) products.
Resource requirements	No specific resource requirements beyond the need for members to prepare for and participate in the meeting, and preferably participation from ICES data centre
Participants	The Group should have participants from organizations dealing with operational services and/or development of operational techniques, and participants that are identified of users of such products.
Secretariat facilities	None.
Financial	No financial implications.
Linkages to advisory committees	An obvious very close link with ACOM activities.
Linkages to other committees or groups	There would be a strong interaction with other experts groups within OCC such as WGZE, WGHABD, WGOH and WGRP, and modelling activities e.g. in WGPBI, PGNSP, NORSEPP, WGRED, REGNS. Later also with the ICES Advisory Programme.
Linkages to other organizations	The WG must interact with IOC/JCOMM/GOOS/EuroGOOS/ArcticGOOS/GMES/GEOSS. The group should also have a close relationship with MyOcean

Annex 5: Questionnaire Developed for Users

Page 1 of questionnaire

1. We would like to know about you!

a. What is your primary area of work (discipline and role; eg. research/advice/policy/other)?

b. How much expertise do you have in data handling?
 Beginner Basic Medium Expert

c. The typical quantity of data I handle is
 Kilobytes Megabytes Gigabytes Terabytes

d. What products and tools do you use to analyse and use data?

2. From the list on the reverse of this page, please list which data product(s) are most important to you and your work?

3. Which scales are you most interested in?

a. **Horizontal in Space**
 Global Regional, e.g. North Sea ICES Stats Square (60km x 30km)
 10km x 10km Single point Other

b. **Vertical in Space**
 Surface and/or Bottom Vertically resolved Other

c. **Temporal resolution**
 Climatological values eg. long term mean Annual mean Monthly mean
 Weekly mean Daily mean Hourly mean Other

d. **Time frame (and please specify duration)**
 Historic data- time series Current state- nowcast
 Forecast data- near future Other

4. Do you require absolute values or trends against the mean (i.e. anomalies)?
 Absolute Anomalies Trends

5. Would you use a metric or index of data quality and confidence directly in your analysis with oceanographic data? Are such metrics of more general use? For example, does your analysis include a weighting based on a confidence metric, or do you only use it to remove possibly suspect data points?

6. How frequently will you require the products to be delivered?
 Once per project/irregular On demand (eg. emergency)
 Regular (eg. monitoring, advice, reporting) – please specify below
 Once Annually Quarterly
 Monthly Weekly Real-time Other

7. Should data products to be accompanied by an explanatory text?
 Yes, describing methods and techniques Yes, expert interpretation of data No

8. How would you like data accessed and in what format?

Do you require graphical or raw data? Graphical(eg. figures) Values

Preferred access mechanism: E-mail Download Other

Which file formats are most convenient for you?

ASCII-files (text, comma-separated-values) Binary
 Microsoft Access or similar database format XML
 GIS format (Geotiff, ArcInfo, Shape, Rasterformats.....) R data file
 NetCDF Microsoft Excel or similar spreadsheet
 Other:

Page 2 of questionnaire

EXAMPLE VARIABLES FOR DATA PRODUCTS	
Temperature	
Ice	
Transport/currents	
Chlorophyll	
Primary production	
Nutrients	
Zooplankton abund + prod.	
Blooms time/duration/intensity	
Fronts	
Oxygen	
CO ₂ /pH	
River plumes and loads	
Harmful algal Blooms	
Pollution dispersion	
Fish larvae growth & distribution	
Salinity	
Stratification	
Turbulence	
Light in the water column	
Bed shear stress	
Nekton plankton	
Upwelling indices	
Vertical mixing depth	
Wave height/direction	
Suspended Particulate Matter	
Other – please specify	