

## Author's comments

First, I would like to express my thanks for the valuable and helpful comments.

## Review

Bridging the Gap between Observational Oceanography and Users

### Summary:

The paper is a narrative in describing attempts for stakeholder involvement within the COSYMA project. As such it is not a typical scientific paper. There are weaknesses in the assessment which lacks a designed and quantitative component. This refers to a need for more structured data gathering as a precondition for a more structured analysis.

Also, there is a focus on what can be considered key stakeholders. This actual focus does not meet conditions described in the introduction basically seeking input from a diverse group of stakeholders. This should be addressed in a revision.

→ In order to point to the broad range of interest groups/stakeholders addressed, several sentences were added. See comments on review1

On the other hand, a summary of the stakeholder involvement process outside a preconceived scientific project is quite valuable and such a summary cannot scientifically cover all aspects of a PDCA assessment that may be should have but in fact has not accompanied the process. I would therefore recommend to retain the paper as a valuable summary of outreach activities within the COSYNA project, in spite of the fact that it is narrative and by itself clearly does not provide a scientific analysis of the stakeholder consultation process. In this context, I recommend the author to outline in some detail what could be a designed assessment for such a complex process such as COSYMA.

→ A description of the PDCA cycle and an outline of a designed assessment were included into „COSYNA product life cycle“, see comments on review1.

More detailed recommendations include:

### 1. Introduction

Quite complete, provides a very good literature base

Omit page 3 lines 26-30 (redundant)

→ Sorry, I don't understand which statements are redundant - if they are I'll be happy to remove them.

Omit page 4 reference to citizen science - does not seem to really fit the topic

→ The reference to citizen science was included at so.'s suggestion during the revision process. Therefore, maybe it should be kept – but I have no problem with removing it.

page 4 lines 12 to 13 moderate statement "Consequently ..... et al, 2012) - standards and evaluation criteria may not be well developed for marine systems, specifically. But does this matter? How would such methods be different from the evaluation of participatory processes in general?

→ Yes, text was unclear and was changed to:

*“Quality standards and evaluation criteria for transdisciplinary processes are widely lacking (e.g. Jahn et al. 2012).”*

### 2. The COSYNA product life-cycle

Consider elaboration of PDCA approaches - as is they are mentioned but no background is provided (basic information).

→ A paragraph was added to explain the PDCA and the outline of a designed assessment (see above and comments on review 1).

### 3. Steps of the COSYNA L8ife cycle

#### 3.1. Initial surveys

Appropriate description of the initial surveys

#### 3.2. Mathematical-technological realisation

not the focus in this paper, relies on reference to previous publications

page 6, line 15: I presume resolution should be 1 km<sup>2</sup> (not one km)

→ one km is ok.

#### 3.3. Free access to data

not the focus in this paper, relies on reference to paper in the same volume

#### 3.4. External evaluation

No NGOs participated in evaluation, missing a potentially important target group.

not the focus in this paper, summary sufficient

→ A sentence was included to justify the selection of the evaluators:

*„The evaluators were selected according to the outcomes of the initial surveys. These showed that NGOs or fishermen were less interested in oceanographic data such as currents and waves, but that scientists were a priority user group. Therefore, four evaluators were chosen, representing the user groups of administration, private enterprise and science.“*

except it would be nice to have an explanation for discrepancies between Science1 and Science2 and possible rankings below 4 in general

Table 1: Needs explanation of terms Science1 and Science2

→ A sentence was added to explain the difference between Science 1 and Science2:

*The two science representatives substantially differ in their fields of interest: (1) numerical ocean models and data assimilation, and (2) coastal observation with the aim of understanding the system and the influences of forcing factors.“*

#### 3.5. Interviews and workshops with stakeholders

Purely descriptive, lacks attempts for prioritization.

→ The following paragraph was added at the end of the case study section:

*„To summarize and rate the outcomes of the case study for COSYNA purposes, the most important finding was that COSYNA current and wave data, and in particular forecasts, would be the most welcome output. Safety of operations emerged as the overarching issue, meaning that reliability and completeness of data sets are indispensable – a requirement to be met by 24/7 services. With respect to usability, a good user interface is essential, although the different specifications for “good” cannot easily be served by a single approach. In the context of collaboration, many enterprises would welcome data exchange and even joint measurements in wind farms; these were generally considered possible. Specific endeavours, however, were blocked.“*

### 4. Impact evaluation

was conducted via evaluation and feedback sheets. However, results of evaluations are not presented.

Figure 4 provides results from download. These should be described and possible patterns discussed (high proportion of science downloads, private enterprises and industry only in December 2014 and 2015 etc).

→ In order to explain, some sentences on Fig. 5 (data download) were added:

*As COSYNA is committed to an open data policy and does not collect any personal user data, any information on users is limited to download rates and information provided voluntarily on user categories. On average, about 19 GB of COSYNA data was downloaded per month from November 2014 until March 2016. Users from the category of science downloaded the highest proportion of data, followed by users from „administration“. During some months, however, other user groups used COSYNA data for specific purposes. In December 2015 for example, private enterprises used data to validate their model. Whether the greater diversity of data users in December 2014 is a direct result of the workshops cannot be validated.*

## 5. Discussion

Suggest to remove introductory paragraph or integrate with introduction

→ ok.

### 5.1. The usability of the products

page 10, line 20: How did you rank the questions in order to come to the most interesting questions for the offshore wind energy sector - should the deduction of interesting have a database in the results?

→ Some sentences on the deduction of the conclusions from interviews (and workshops) were added to the results section (see above 3.5).

page 11, line 1: the use needs a description in the results section and an explanation in the discussion - is the download from those administrations that provide the services?

→ see above, 4.

page 11, line 23: usefulness to potential users - what are the potential users beyond the administration - business nexus

→ We consider the range of interest groups mentioned in the introduction and exemplarily interviewed for the initial survey to be the main potential users.

### 5.2. The stakeholder process

page 11, lines 29 - 31: Not sure enough is provided in the preceding chapters to warrant the conclusion that the process was successful. Table 1 in particular does not support that conclusion

→ In order to better explain that the process (!) was successful, the text was changed to:  
*„Through the various interactions with different stakeholders the COSYNA products could be improved substantially. In addition, especially the interaction with the key stakeholders from the offshore energy sector led to essential insights into the demands and constraints concerning the use and usability of COSYNA products, and identified new research questions. Although the most challenging steps of co-operation or collaboration could not be achieved, the entire process of stakeholder interaction should be considered successful.“*

It is also not clear to me whether co-operation or collaboration was achieved or how it is supposed to be achieved. Is a statistics on data exchange (e.g. number of relevant events) feasible in this context?

→ In order to be more clear, the following sentence was added (but see also p12, line 6 and page 9, line 14-16)

*„Internal constraints of the offshore wind energy sector, however, prevented the interaction process from being truly collaborative. „*

A new paragraph was added to section 5.2 stakeholder process:

*“Revisiting the ideal assessment design of stakeholder interaction outlined above, we acknowledge that this ideal was not fully achieved for the COSYNA products. This is partly due to limited resources, but also to the fact that the products developed by a research institute cannot always be tailored to the specific demands of every individual user. It would have been useful to include a larger number of*

*stakeholders in the later stages of the process, however this was not possible due to limited resources. Overall, the constraints experienced highlight the challenge of finding an acceptable balance between idealistic expectations on the one hand and realistic capacities on the other."*

page 12, lines 2-3 suggestion to rephrase;

"The "consultation" indicates ...." change to "The "consultation" encompasses ..."

→ ok.

"... and was fulfilled via ..." change to "...and was specifically addressed through ...."

→ ok.

### 5.3. Contribution to impact evaluation

page 12, line 16, suggestion to rephrase

"... or what might be the possible criteria for success."

→ ok.

Main concern is that stakeholder integration usually is restricted to government agencies, i.e. those funding the according research. This appears to be too narrow. In general this point of rather narrow stakeholder participation should be discussed. Proposals how to solve this may be helpful including approaches to broaden input, but also approaches to prioritize (identify key stake-holders). As is the promise in the introduction to look for broad stakeholder participation is not really met. Stakeholder participation is very much targeted at industry.

→ I agree with your general concern on restricted stakeholder interaction. In COSYNA we initially dealt with a broad range of stakeholders and during the course of the initiative increasingly focused on key-stakeholders – which is hopefully more clearly shown in the paper now (owing to your comments, thank you!). The paragraph on „designed assessment“ also refers to this point.