

Minutes of OceanHeatFlux progress meeting 3

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Overview

JFP made a general overview of project status, main progress items, and deliverables.

It is confirmed that payment 2 has been paid as agreed at the previous PM.

The roadmap delivery is delayed. It was stressed out by ESA that a recovery plan should be put in place to support Bertrand Chapron in the writing of this roadmap.

Report on WP3 & 4 (AB)

PDF assessment

The first part of the presentation was dedicated to the usage of the PDF defined by Sergey Goulev. A Fortran code was provided by Sergey and implemented and evaluated by Ifremer: comparisons based on this analysis method better account for extreme conditions than first moments (mean, std).

As an example shown by AB, mean values can be the same for two series of flux products but their distribution can be actually very different (ex on time series) : this is captured by the PDF. The PDF tool can be used with by users on the OHF platform for global and/or regional scale investigations. The source code is available and can be run on the reference datasets.

Action: Ifremer to ask Sergey if the code can be distributed in an open-source way.

AB shows then various examples of application of the PDF to OHF products : mean maps, comparisons with CFSR exhibiting dramatic differences, mean percentile 99, bi-dimensional variation of alpha vs beta at 3 locations on gulf stream , maps of distribution of PDF parameters (alpha=location and beta=range) : low values located in

northern/southern parts where time variation is high, highest value where time variation is low.

A task in the coming months will be to interpret these results which can help to provide some error bars for flux products to modelers for instance.

Igor explains that the variability of fluxes is related to how deep the flux penetrates (mixed layer depth) which is captured by the PDF. The two parameters alpha and beta indicate how ocean and atmosphere interact with each other.

The preliminary results shown by OHF confirm Sergey results. The analysis of these result will be supported by Sergey's postdoc in Russia

Clayson method for the estimation of errors

Ifremer received the source code from Clayson et al for the evaluation and characterization of flux dataset errors. This method splits error into systematic and random errors, taking into account any number of input parameters.

This was applied by Clayson on her 3 hourly products, while Ifremer applied it on the reference datasets daily products. The added value of OHF project aims at the application of the method to all reference data sets and the determination of the related error characteristics. This is shown by AB with maps of systematic and random uncertainties that will be made available on OHF portal.

Best estimate

Ifremer started the work on the best flux estimate using new wind retrieval (quikscat), Qa, and SST (CCI-SST) inputs. A time series of 3 years was produced so far (2003-2005).

Ensemble

The ensemble product will use the median to remove outliers. It will include all reference datasets except MERRA and ERA interim which are models.

PPM commented that the project has now a large collection of tools and methodologies, and it is time to connect the dots and show how they complement each other and can be used together.

Triple colocation (Igor Esau)

As part of the reference dataset, Arctic regional and north atlantic EO data and model (Topaz) are available upon request at NERSC. It is not clear which data are available :

Action: NERSC to detail the available data.

The triple colocation code is available on github but needs to be revised by Igor. It had been applied to SHF and the analysis is ongoing on LHF (nearly completed). It was planned to apply it to input parameters Ta, SST, Qa, U which shall be addressed in next 3 months.

The way it was implemented is questioned by Igor, who is taking over this activity, and he will look at a revision of this in the coming weeks. Eventually maps of uncertainty will be produced.

PPM emphasizes that results have to be provided and analysis of these results has to be performed. This analysis needs to connect to other uncertainty estimation methods.

AB and Igor discussed in further details the improvement of the triple collocation method and of the related results. It is suggested to perform the method for selected bulk variable bins for better consideration of air-sea interaction conditions.

outreach activities

newsletter and brochure draft provided, being circulated in the project.

Connection to GlobCurrent

some work is planned at NERSC in the frame of the roadmap study to also connect to globcurrent as source of advection (lateral fluxes).

Ocean optic properties (Hayley)

Hayley presented a summary of her study of sensitivity of heat budget, SST diurnal variability,... to optical variability.

She completed the core processing of a climatology from 1998 to 2005 : Chl, MLD, PAR, surface light, light penetration in MLD.

PPM stressed that connection to PDF analysis and other methodologies should be investigated for light penetration.

content for roadmap

several aspects will be investigated for inclusion into the roadmap such the implication of optical sensitivity in global ecosystem context, albedo considerations, etc... PML is ready to contribute to the roadmap on these aspects.

Demonstration of flux intercomparison (Antoine)

The demonstration of the intercomparison tool was well received. There are plans to connect it to the flux generation engine. This could also be expanded to other datasets and parameters.

Felyx can be used for comparison at buoy locations.

PPM suggests to try to get feedback from key identified users, make a group of these users to assess this tool and move forward.

Overview of user handbook (AB)

AB shown the current status of the handbook. The group agreed it needs to be simplified, possibly by splitting the document or using annexes. The main goal of the handbook is to explain the strengths and weaknesses of the collected and generated products to guide the usage of them. Where should they be used or not? Etc..

A section should also be added to refer to the existing web resources for access and intercomparison of the OHF flux data.

Cage analysis (Antoine)

The code of Karina was run at Ifremer to compute the ocean heat content from Argo profiles. The collection of the Nemo Mercator model outputs for lateral fluxes is ongoing.

PPM think it is not very clear who will do what on the cage analysis.

Action : Ifremer to provide a plan to explain how the cage analysis will be performed. Provide also a time scale.

General conclusion

ESA acknowledges various tools have been collected and made available for flux data analysis. There is a need for more connection between the different contributions, different workpackages and partners to assess how all these technics complement each other and what we can conclude from them on the flux product accuracy and uncertainties.