



ESA Support to Science Element

**Ocean Heat Flux (OHF) – Minutes of progress
meeting on 9 September 2015 at ESRIN**

ESA Contract No. 4000111424/14/I-AM

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Reference :

Issue No.: 1.0

Date of Issue: 26 October 2015

1 AGENDA

Friday 18 Sept 09:00-13:00, ESRIN

Project status summary (JFP)

WP-2

Status of WP 2 (Abderrahim)

WP-3

Progress on WP3 (Abderrahim)

Product validation by triple collocation (Rick Danielson)

Progress from PML – Using ocean colour and optics to evaluate ocean heat flux (Hayley)

Progress on cages (K Von Schuckmann)

WP-4

Status of OHF portal and tools (JFP, on behalf Antoine)

Future meetings and AOB

Review of actions

2 PARTICIPANTS

Abderrahim (AB), Jean-François, Pierre-Philippe (PPM), Diego Fernandez, Karina (by phone), Hayley, Rick

3 PROJECT STATUS SUMMARY (JFP)

JFP presented a global summary of project progress and current status.

The OHF Reference dataset was completed. It will be updated in future with the full time series available for each flux product collection included into this reference dataset.

The Flux Assessment Report (WP3) was under Karina responsibility but Karina is now moving to a new position at Mercator-Ocean. A new leader for this document must be found.

=> the team will discuss with Sergey to take over the scientific responsibility of the report

=> **Action** : Ifremer to come up with a clear responsibility and plan for this task

The Scientific Roadmap (resp. B. Chapron) is currently in stand-by and a first version can not be delivered at this stage of the project as possible ideas are still being explored and discussed. PPM: this document shall state a plan of what needs to be done, the objectives in 5 years, a list of actions, big challenges to face for the flux community.

BC and AB have also to discuss this at European level

Action : Ifremer to talk to BC to have a roadmap, integrate inputs from community, write a paper.

Outreach activities : newsletters have been published in SeaFlux. An OHF newsletter is to be prepared by the team, coordinated by NERSC.

PPM: the upgrading of fluxes to ECV status shall be discussed at the meeting next week

There is currently no service planned in Copernicus for fluxes.

The project has to be presented at different meetings. Presentations are already scheduled at SOOS, CLIVAR Concept-Heat, GEWEX

4 WP 2 : REFERENCE DATASET GENERATION (AB)

Reference Dataset

The reference dataset of selected flux product is now complete. The latest addition are HOAPS (daily) and Merry. Because of heterogeneous resolution of products, some fluxes were re-interpolated to a 1/4 degree grid. 3 methods tested : bilinear spline, Gulev/Akima, and Kriging .

The interpolation method provided by Sergey (Fortran code) was compared to Ifremer one (results shown by AB), with no significant differences: comparison by slope/intercept of product difference, globally : error about 0.5W/m² which is negligible.

The assessment of interpolated/uninterpolated LHF at different locations was started by AB : RMS of LHF wrt buoys

PPM: do comparison make sense because of space/time sampling difference between in situ and satellite? AB: sampling errors are well known. They are characterized at local (buoys) as well as at global/regional scales based on synthesized data. DF: similar problems occur with any satellite/in situ comparison. PPM: to be combined with Sergey PDF, we have to do both.

The comparison plots are to be put on the web.

Concept of cages (Karina)

The cages are now bands by latitude

the provided code produces a scatterplot of dHB/dt vs dOHC/dt – HFlateral to be performed on Ifremer portal

A scientific analysis of these cages is required through postdoc, etc... to look at these

comparisons and analyse the results.

PPM: the point is to develop a tool for other scientists to play with.

KVS: recommend the assessment to be done started from 2005

The OHC content software was provided to Ifremer by Karina

The lateral flux is to be provided by Mercator (reanalysis) => open and available, to be collected at Ifremer and made available with the tool on the portal. This specific issue will be discussed with IORAS and Reading University during CLIVAR meeting in Exeter (29 Sep. – 1 Oct 2015).

PML progress (Hayley)

use Chl to estimate ocean albedo

Action : Hayley to contact Bertrand on contribution to scientific roadmap

Action : MLD product to be made available on portal (Boyer, "Mimoc"?). PML product to be run at 1/4 degree and monthly (2002-2013) and made available on OHF portal

Action: Ifremer to provide data format guideline to Hayley

Action: Running optical model for various surface parameters such as surface winds, SST at daily and 0.25° temporal and spatial resolutions.

Action: IFREMER will provide daily averaged winds, SST, specific air humidity, and air temperature over some specific oceanic areas (To be defined). The latter could be high latitudes, upwelling zones (north and south west African zones), and Indian Ocean.

5 WP 3 : PRODUCT GENERATION, INTERCOMPARISON AND UNCERTAINTY CHARACTERIZATION

AB presented the current results on this activity.

The sensitivity to SST (using ESA CCI) was assessed on LHF and SHF. Main impact on SHF bias.

The main impact of sea state is mostly for high winds (but parameterization for high winds has not be validated by Fairall because of too few data) => we should not include sea state in future flux best estimate since effect is very small in most cases.

About the flux calculation method assessment (Coare3 vs Coare4) : difference mostly in amplitudes (expected by Cd, Ch coefficient changes), mostly in inter-tropical area

effect of improved wind speed and air humidity => comparison of ASCAT and QuikSCAT : even with better rain screening, QuikSCAT still generally higher than ASCAT

humidity => comparison Ifremer vs ICOARDS. Ifremer calculation now changed to include SST in addition to brightness temperature.

As a conclusion, fluxes are improved from better winds and humidity

Error characterization by Sergey

will be done for all products of the reference dataset.

Will be at some point on the OHF platform as a service.

Triple collocation by NERSC

requires three independent sources : buoys, reference and forecast.

So far, no evidence of any work or results have been shown by NERSC. Rick explains this is due to a resource availability issue.

Despite two visits of NERSC representative at Ifremer premises, tools, data and guidance provided by Ifremer on the usage of Cersat cloud, NERSC has been unable so far to deliver its expected contribution to OHF project. The provided inputs so far are deemed not satisfactory and not suited to project objectives. This is a major risk for the whole project as it introduces a significant delay in the completion of WP3, it has also impact on the other partners as no payment can be made if the work is not done.

Action : Ifremer must discuss with NERSC to address the manpower resource issue and to allocate the most suitable expert to the project tasks to be done. Ifremer to block payment for NERSC in between (calculate men.month spent).

6 PUBLICATIONS AND CONFERENCES

EOScience

Part of Antoine's presentation should be to ask people to send some key inputs for the flux generation by email (interface may be too complex for non-experts) and generate a time series then report at the end of the conference and show the ensemble result (simple mean or median) to the room.

7 CONCLUSION

Define a leader for flux assessment report (not necessarily scientist) : the report can be compiled by the project manager. But we need to find someone also for scientific coordination and guidance.

The NERSC activity must be taken care of : we need urgently a recovery plan from NERSC to address this issue.

8 DELIVERABLES AND AGENDA

- D1.1 (Requirement baseline) has been delivered, with a large overdue delay.
- D2.2 (Reference dataset) is completed
- D3.1 (Flux assessment report) : the intercomparison is still ongoing (AB, Sergey, Karina, Rick).
- D3.2 (Handbook) and D3.3 (Flux dataset) : handbook has been delivered. Flux dataset will be delivered before end of this year.
- D4.1 (OHF portal) : the portal was delivered. It is regularly updated (product catalogue, access to OHF platform at Ifremer,...) (resp. JFP)
- D5.1 (Scientific Roadmap) : no progress was made. We suggest to change the delivery of initial version back to early 2016 (resp. B Chapron)
- D6.1 (Outreach material) : several presentations have been made and two articles have been published in flux related newsletters (resp. Abderrahim).
- D6.6 and D6.7 (brochure and newsletter) : this task is now under the responsibility of NERSC.