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M E E T I N G

meeting date *date de la réunion*	10-11 July 2006	ref./*réf.* GC-CDR-ACRI-MIN-01	page/*page* 1 / 16

meeting place *lieu de la réunion*	ESRIN	chairman *président*	S. Pinnock (ESRIN)
minute's date *dates de compte rendu de réunion*	11 July 2006	participants *participants*	O. H. Fanton d'Andon (ACRI) A. Mangin (ACRI) C. Lerebourg (ACRI) S. Lavender (UoP) Y. Pradhan (UoP) D. Antoine (LOV) N. Fomferra (BC) R. Quast (BC) K. Sorensen (NIVA) Jo Hoekedal (NIVA) Eric Thouvenot (IOCCG) P. Regner (ESRIN) P-P Mathieu (ESRIN) R. Wagner (ESRIN) Ph. Goryl (ESRIN) F. Sarti (ESRIN)
subject/*objet*	GlobCOLOUR PM2/CDR Meeting	copy/*copie*	O. Arino (DUE Programme Manager)

Odile d'Andon

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Agenda and presentations **Agenda** (GlobColour_CDR_Agenda_v1.1.pps) **DJF V2.0** • Overview of the developments in DJF (GlobColour_CDR_DJF.pps) • In-situ characterisation of MERIS/MODIS/SeaWiFS (GlobColour_CDR_DJF.pps) • Coastal waters (GlobColour_CDR_DJF.pps) • Cross-characterisation (GlobColour_CDR_DJF.pps) • Merging Algorithm Sensitivity Analysis (GlobColour_CDR_merging.pps) **VP 2.0** (GlobColour_VP_update.pps) **Technical description of solutions and tools** • Overview of the operational solutions with feedback on what was proposed during the SRR meeting (GlobColour_CDR_SRRfeedback.pps)Resulting Technical Specification (GlobColour CDR_technical_specification.pps) • Globcolour processor development (GlobColour_CDR_technical specification.pps) • Tools development status (GlobColour_CDR_Tools.pps) • Demonstration of tools • Acceptance Test Document (GlobColour_CDR-Tests.pps) **December Workshop** (Discussion) **CDR Conclusions** (Globcolour_CDR_conclusions.pps)		

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SP opened the meeting, welcomed the participants, and explained the purpose of the CDR meeting. Agenda was adopted (see below) **DJF ver 2 (SL)** Content: ➢ In situ characterisation ➢ Coastal waters characterisation ➢ Cross characterisation ➢ Merging algorithm sensitivity - GlobCOLOUR in-situ database In-situ consists of publicly available SeaBASS, NOMAD, NILU database and Boussole. Match-up extraction algorithm. Note that windows of 3 to 24 hrs gave very similar results. Differences with NASA-derived in-situ nLw's are due to difference in using theoretical vs measured solar irradiance - or possibly a mistake in UoP programming. Characterisations in DJF to be updated after further analysis. Most MERIS match-ups are with Boussole (⇒ potential bias to Mediterranean conditions) MERIS data all from latest (i.e. 2nd) reprocessing No Parasol data available for characterisation Need for a better dynamic range of nLw's to consolidate the characterisation. Lack of in-situ data leads to poor r-squared values compared to NASA's analysis. Characterisations with in-situ will not be used to re-calibrate the input satellite data (as envisaged in the SoW), but will be used to determine the input error statistics. This might relax the requirement to calibrate and validate using independent in-situ data sets - to be confirmed and documented in the updated DJF.	A1 : YP/DA to check computation	18 July

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A separation of Chlorophyll concentrations into two groups (high level and low) should be performed when deriving statistics in order to prevent from contamination of the whole result by large errors values. For the characterisation required for the generation of PPS, the team proposes to use GLOBCOLOUR characterisation for Kd, nLw and MERIS Chla and NASA results for MODIS/SW Chla. This characterisation may evolve according to availability of new in situ data that may arise before the 8th September (ultimate deadline for the PPS generation start). Characterisation is seen as an ongoing activity that will last during the Globcolour time frame. **Coastal Waters (KS)** Large differences between sensors found in coastal waters (see also MERSEA-IP report Djavidnia et al. 2006) SeaWiFS and MODIS not good in coastal waters Difficult to characterice the coastal waters due to few data available Need to focus on specific products to derive (still in discussion): MERIS Case 2 products will be generated for PPS.		

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Cross-Characterisation between Sensors (OHA) Attempt to detect systematic biases between sensors, and harmonisation of Kd products. Some parts of the cross-characterisation were missing from the delivered DJF v2.0. Global conclusions at global scale – are they applicable at regional scale? See also cross-sensor characterisations performed in MERSEA (S. Djavidnia *et al.*): At global level, one clear bias between Modis and SeaWifs and between Modis and MERIS. No bias between Meris and SeaWifs. At local/regional scales: biases depends on the region/season As there is not enough information on seasonal and geographical behaviour of biases, and intersensor biases are much less than the targeted rms errors, GlobCOLOUR will not attempt to correct for them. Recommendation from the team is to use input data as is and to impact the output error bar with the expected input bias that has been transmitted into the processing chain.		
Harmonisation of the Kd(490) algorithms (OHA) New Kd: present definition in SeaWifs and MODIS does not account for observed curvature – improvement has been discussed during NASA ocean colour science meeting. LOV has proposed a formula under the form of $Kd(\lambda)=Kw(\lambda)+Ki(\lambda)*chl^{e(\lambda)}$ which has the double advantage to better fit the Kd extreme values and to account for the wavelength dependence of the various sensors. Recommendation: Globcolour to take this new Kd formulation as reference. Will use same formulation for all three sensors.		

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Conclusions from DJF v2 (SL) Characterisation needs to continue up to PM4 to close a few issues (additional in-situ, problems with calculation of in-situ nLw, *etc*) Increase the in situ data collection and consolidate the characterisation results during two months (i.e. until QR). For PPS: Take GLOBCOLOUR characterisation for nLw, Kd and NASA for Chla (except for MERIS where we take GLOBCOLOUR characterisation) This means: • one next week to fix the problem with the missing text and figures from the sensor-characterisation section. • one at PM3 revised to address the CDR issues required for production of the PPS. • one at PM4 to contain the final sensor characterisation, providing error statistics to be used in production of the FPS and accounting for Chla classes. About Case 2 waters: do we use Case1 chla (without considering the case 2 anom flag with an appropriate case 2 flagging (deviation from radiance range at 560 nm and/or shallow water flags) or do we use only case2 from MERIS? Both will be generated in PPS and decision will be taken at PM4. **Summary :** For PPS, we will generate: - Case1 chla (without considering the case 2 anom flag) - the product (deviation from radiance range at 560 nm)[SP1] - a flag "shallow water flags" - case2 Chla from MERIS Results will be analysed by the validation team and decision on the content of the FPS will be taken at PM4.	A2: OHA to provide updated DJF. A3: SL to provide updated DJF A4: SL to provide final characterisation in DJF	21 July 2006 PM3/QR PM4

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Merging Algorithm Sensitivity Analysis (CL/AM) Review merging techniques: (Weighted) Average, Subjective analysis, blended analysis, GSM01, optimal interpolation. Merging tested on (1) averaging and (2) GMS01. Added Gaussian noise to the input data sets to examine robustness and effect on output merged products. Some observed discrepancies between GSM01 and average Chla are still under investigation for understanding the origin of few outliers (that may be due to lack of convergence in GSM01) Propagation of bias - in accordance with the conclusions of the cross-characterisation study - will be checked next. A preliminary characterisation is presented on the spatial correlation and its variability wrt region and season, showing that OI would require very detailed characterisation, as correlation lengths vary greatly regionally. What are the implications for data-merging, and the choice of merging algorithms? More than two algorithms could be tested, as the most time-consuming task is to produce the input Level-3 data sets. OI and subjective analysis cannot be done within the time frame, due to lack of time to calculate variograms globally and seasonally and lack of data to get a consistent characterisation of all parameters. At least 2 methods will be used to generate the PPS and validated: • Weighted average • GSM D.A. suggests that the optimal interpolation be tested at regional scale (e.g. one example in Western Mediterranean) – in order to size both the cost and the impact in terms of performance.	A5: SP to check if MERSEA has any results on an intercomparison of methods. A6 CL to check for number of times GSM fails to find a solution.	PM3/QR PM3/QR

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Validation Protocol ver. 2 (KS) Updated version due to very early SRR date. Some minor corrections are presented. After examination there is more in situ data in 2002 than 2003 – it might then be preferable to select July 02, October 2002, January 2003 and April 2003. These dates have to be confirmed since there is no Boussole data for these dates.	A7 OHA to confirm validation data set	21 Jul 2006
Concern: .e.g. Not all the REVAMP data is in the NILU database	A8 KS to check with the Revamp PI, why the data is not available.	PM3/QR
Consortium will need to start downloading 10 years of SeaWiFS/MODIS by 1 Sept latest. DA strongly recommends not to begin before obtaining NASA approval.	A9: SP to get a clear answer from NASA on the provision of a copy of the SeaWiFS/MODIS dataset on tape. SP & OHA to Review situation before proceeding to download the full MODIS/SeaWiFS data set.	15 Aug 2006
Comparison to Requirements Baseline/SRR (SL) SL presents the status and orientations of the project wrt to requirements. Basically, requirements have been fulfilled (excepted for Parasol characterisation still pending). Characterisation that will be used is coming from GLOBCOLOUR outputs and from NASA for some exceptions (Chla for MODIS-SW) that are insufficiently covered in terms of in situ data. Two merging methods have been prototyped and a sensitivity analysis on Chla has been conducted showing the robustness to noise of these techniques . DA: Excess of radiance products (which is a new product in GLOBCOLOUR) has to be extended to "deviation from radiance" since also deficits in radiance are observed (as signature of large CDOM) and thus have to be documented.	A10 OHA to document differences in CDR Report	15 Aug 2006

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Development of the Processing System (OHA) Status of Globcolour processor development is presented. Implemented pre-processing allows to apply characterisation LUT prior to merging (that is not recommended today), to build up fully normalised water leaving radiances and to derive a common Kd(490). Processing specificities are presented. Merging methods: Weighted average, blended analysis and GSM already implemented in a breadboard. Output products of GLOBCOLOUR processor are presented to be discussed and commented – see annotation number in brackets for those which triggered discussion. Chl1 (without case2anom flag for MERIS) (1), Chl2(2), Chl1/2, CDOM(3), TSM(4), Kd, Lxxx(5), EL560(6), PAR(7), T865, Cloud Fraction (1) Chla (case 1)	A11 ACRI to generate Chl1 for MERIS (without using case2anom flag) to be compared to previous results of characterisation	PM3/QR
(2) Chla (case 2) it will be generated for the PPS and submit to users acceptance during the workshop. This will trigger (or not) the production of Chl2 FPS.	A12 Consortium to decide at PM4 what to do for FPS	PM4
(3) One YSBPA for case 2 from MERIS and one CDOM from GSM for case 1 waters to be used by IOCCP – A priori, these two CDOM shall be separated (two products). The alternative is to apply CDOM case 1 algorithm everywhere. KS: be careful; use terminology “yellow substance” instead of CDOM which is only the dissolved fraction. – It is reminded that, following SRR, there will be no validation activities on yellow substance.	A13: Consortium to decide at PM4 what to do for FPS	PM4
(4) TSM merged product could be replaced by backscatter Bbp, as Bbp can be retrieved from all sensors; note that the MERIS TSM is just Bp multiplied by a scaling factor. The present scaling factor 1.73 is not well validated "globally" (e.g. it works for Skagerrak area). This change to be confirmed by the user group, and documented in the DJF.	A14: User group to provide feedback	PM3/QR

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(5) radiances at 681 and 709 will not be normalised. For merged 551-565 radiance, DA recommends to apply a spectral correction. Action to derive this correction and to submit it for validation by the team.	A15 DA to provide spectral correction model OHA to document in DJF	PM3/QR
(6) According to previous discussion EL560 product becomes a "Relative deviation of radiance"	A16 DA to provide range OHA to document in DJF	PM3/QR
(7) PAR SeaWifs and MODIS are daily – MERIS one is instantaneous (to interpret the fluorescence) – how to merge them ? DA recommends to use daily PAR and to use Frouin's algorithm to create this daily product.	A17 DA to contact Frouin to obtain algorithm or code. OHA to document in DJF	PM3/QR
Concerning the binning algorithm: check if the weight includes the number of pixels/path as it is done in SeaWiFS binning scheme.	A18. OHA to check	PM3/QR
Regression Tests Results are compared between NASA/ESA 9 km products and GlobColour 4.6 km products.		
Ranges of radiances are limited in Level 3 NASA and ESA products. Do we do the same for GlobCOLOUR ?	A19 ACRI to illustrate the case and DJF team to recommend a solution	PM3/QR
Total GlobCOLOUR output product size of 10yr data set is 18 Tb (uncompressed).		
Total i/p data volume 47 Tbyte (uncompressed).		
DDS Tools Demonstration (NF, RQ) Need to clarify requirements of the validation team for final DDS tools development. Possible web-interface to match-up processing (see below). Medspiration will provide SST-DDS's over GlobCOLOUR DDS sites.		

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Installation procedures, configuration management as well as coding documentation is presented by NF. A demonstration is done for the global products and for the DDS products. Virtual bands in Beam have been added to compute on-the-fly the mean Chl value and variance as the L3 is opened. Discussion about the public availability of DDS results – DDS products (Here we mean the satellite DDS data and not the in situ data) have to be freely available and accessible via the web. Discussion on the way to manage holes in the L2 DDS products. It often appears more holes than values. It is agreed to fill the Plate Carree grid with the satellite measurement data overlapping the centre of the pixel. Further flagging should tell if a pixel is empty due to no data available or due to invalid measurement (e.g. clouds, ..).	A20 ACRI to update L2-DDS SW and UoP/ACRI to regenerate DDS	August 11, 2006
Contractual status CDR invoice to be submitted.	A21 OHA to submit invoice	31 July 2006
CDR Conclusions (SL) << see conclusion slides >>		
DJF, DDF, ATD, VP shall be revised, final versions to be issued at PM3/QR (except DJF final version at PM4, see above).	A22 SP to provide full comments on CDR deliverables.	31 July 2006
	A23. Consortium to re-issue revised DJF, DDF, ATD, VP updated to address all issues raised at PM3/QR.	PM3/QR

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PARASOL (ET) PARASOL ocean colour products appear not to be sufficiently accurate for release by CNES. Possible bugs in processing are being checked. ACRI/ESA to and review the situation again with ET in time for PM3/QR.	A24 OHA, ET, SP	PM3/QR
Web Service for Validation (NF) The present DDS tool is limited since extracted data size is already critical – NF proposes that this tool is used as breadboard to develop a more general web tool for DDS consultation. SP agrees to keep the web service extraction of satellite matchups from the DDS separate from the ATD/QR tests, as it need several iterations of development to complete, due to ongoing refinement, revision and emergence of use cases	A25 BC to provide a web access service to DDS products in a staged manner	Continuous updates until PM4

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Workshop (DA) Dates confirmed as 4-6 or 7 Dec 2006 Venue: Villefranche (citadel, not LOV) End July: First announcement to potential participants by email. Preliminary list of participants will be circulated. Medspiration collaboration: How to merge workshop to be worked out with Ian Robinson. Invite agency representatives: ESA, CNES, NASA, *etc.* PPS shall be distributed 29 Sep 2006, in order for the validation and user-assessment to be ready for the workshop.		
Presentations to be collected and put on web site	A26 ACRI	18 July 2006
Dates of next meetings: PM3/QR - Proposed 11-12 September at ACRI. PM4/MTR - to be held immediately following the workshop at LOV, rather than at ESRIN, e.g. 7-8 Dec.		

Agenda:

Day 1 - Monday 10 July, 2006
Start : 3 pm

15h – 15h10 INTRODUCTION-Welcome (Simon)
-Overview of agenda (Odile)

15h10 – 18h00 DJF V2.0 (2 :40)
-15:10 Overview of the developments in DJF (Sam)
-15:30 In-situ characterisation of MERIS/MODIS/SeaWiFS (Sam/Yaswant/Jo/Kai)
-16:10 Coastal waters - Jo and/or Kai -16:20 Cross-characterisation - Odile/Antoine 20 minutes
-16:40 Merging Algorithm Sensitivity Analysis - Christophe/Antoine -17:20 Discussion 40 minutes

Close-out : 6 pm

Day 2 - Tuesday 11 July, 2006
Start : 9 am

-09:00 Validation protocol (Jo)
-09:10 Overview of the operational solutions with feedback on what was proposed during the SRR meeting (Sam) -09:25 Resulting Technical Specification (Odile)
-09:55 Globcolour processor development (Odile/Antoine)
Merging method implementation/DDS generation/L3 products generation

Coffee break
-10:30 Tools development status (Norman/Ralf)
Validation tools in Beam / Demonstration / Discussion and finalised user requirements
-11:50 Acceptance Test Document (Norman/Ralf)
-12:00 December Workshop (David)
preparation/participants
Lunch
-12:20 CDR Conclusions (Odile/Sam)
Merging method final selection
PPS finalised definition
Work plan for next steps (0 :30) Odile/Sam/Norman
Plan for Qualification Review
Plan for PPS validation activities

Minutes / CDR review report

AOB
Close-out : 3 pm

Actions

N°	Description	Who	Due Date
A1	YP/DA to check Normalisation computations	YP/DA	July 18
A2	OHA to add results of cross-characterisation into the DJFv2.1	OHA	July 21
A3	SL to address the CDR issues required for production of the PPS into the DJFv2.2	SL/DJF team	September 1.
A4	SL/DJF team to provide final characterisation in DJF with separation of case 1 / case 2 waters	SL/DJF team	November 15
A5	SP to check if MERSEA has any results on an intercomparison of methods	SP	September 1.
A6	CL to check for number of times GSM fails to find a solution.	CL	September 1.
A7	OHA/consortium to consolidate the dates for the PPS generation	OHA/Consortium	July 21
A8	KS to check with the Revamp PI, why the data is not available through NILU DB	KS	September 1.
A9	SP to get a clear answer from NASA on the provision of a copy of the SeaWiFS/MODIS dataset on tape. SP & OHA to Review situation before proceeding to download the full MODIS/SeaWiFS data set.	SP SP/OHA	August 15
A10	OHA to document differences with Requirements Baseline in CDR Report	OHA	August 22
A11	ACRI to generate Chl1 MERIS data without accounting for case2-anom flag	ACRI	September 11
A12	Consortium to decide at PM4 what to do for Chla in FPS	Consortium	November 15
A13	Consortium to decide at PM4 what to do for YS products in FPS	Consortium	November 15
A14	User group to provide feedback on bbp product proposed as an alternative to TSM	User group	September 1.
A15	DA to recommend and OHA to document in DJF the spectral correction to apply to merge R551-R565 radiances	DA/OHA	September 1.
A16	DA to provide range for valid R560 range and OHA to document in DJF	DA/OHA	September 1.

Actions

N°	Description	Who	Due Date
A17	DA to contact Frouin to obtain algorithm or code for daily PAR.OHA to document in DJF	DA/OHA	September 1.
A18	OHA to check if the weight includes the number of pixels/path as it is done in SeaWifs binning scheme.	OHA	September 1.
A19	ACRI to illustrate the case of radiance ranges applied in level 3 and DJF team to recommend the solution to adopt	OHA	September 1.
A20	ACRI to update L2-DDS SW and UoP/ACRI to regenerate DDS	OHA/SL	August 11
A21	ACRI to submit invoice	OHA	July 31
A22	SP to provide full comments on CDR deliverables	SP	July 31
A23	Consortium to re-issue revised DJF, DDF, ATD, VP updated to address all issues raised at PM3/QR.	Consortium	September 1.
A24	OHA, ET, SP to take final decision on the use of PARASOL	OHA, ET, SP	September 1.
A25	BC to provide a web access service to DDS products in a staged manner	NF	Continuous updates, until PM4
A26	Presentations to be collected and put on web site	OHA	July 18