

RESEARCH DEPARTMENT

MEMORANDUM



To: 2nd HALO Workshop Participants
Copy: HR
From: A.Hollingsworth, J.Kaiser
Date: 2006-01-17
Subject: **2nd HALO Workshop Discussions** File: discussion-report_060117.doc

The 2nd HALO workshop was held at ECMWF in Reading on the 12th and 13th December 2005. The relevant developments were presented during by each of the HALO partners during the first day. GMES-related developments at the European Commission and ESA as well as an overview of EUMETCast were presented at the beginning of the second day. Most of the morning and the afternoon of the second day were devoted to discussions of the data transfer infrastructure and future scientific developments of the GMES backbone. This documents reports the main outcomes of the discussions. Further information on the workshop can be found at <www.ecmwf.int/research/EU_projects/HALO/workshops.html>.

1. Participants

#	Name	Organisation	Project
1.	Tony Bakker	ECMWF (Operations)	RMDCN
2.	Etienne Bartholome	JRC	GEOLAND
3.	Abderrahim Bentamy	IFREMER	MERSEA
4.	Peter Breger	European Commission (EC)	GMES
5.	Jean-Christophe Calvet	Meteo-France	GEOLAND
6.	Yves Desaubies	Ifremer	MERSEA
7.	Kees van Diepen	Alterra	GEOLAND
8.	Nicolas Dittert	RCOM, U Bremen	CARBOOCEAN
9.	Tony Hollingsworth	ECMWF (Research)	HALO, GEMS
10.	Johannes Kaiser	ECMWF (Research)	HALO
11.	Marc Leroy	Medias-France	GEOLAND
12.	Fabrice Levy	Astrium	HALO
13.	Jean-Marc Pechinot	Alcatel	HALO
14.	Martin Suttie	ECMWF (Operations)	GEMS
15.	Christiane Textor	CNRS	GEMS
16.	Marek Tinz	Infoterra	GEOLAND
17.	Mike Williams	EUMETSAT	EUMETCast
18.	Claus Zehner	ESA	ESA GSE

2. Data Transfer Infrastructure (2005-12-13, a.m.)

Input to Industry

Astrium and Alcatel were given the opportunity to ask for clarification of any open question from their point of view. They enquired about the compliance of existing functionality for the data transfer from GEOLAND to E.C.M.W.F (pages 56, 57 of presentation "Infrastructure Candidate Solutions". It was agreed to replace the requirement description with a prose text formulated by E. Bartholome. It reads:

"The GEOLAND global components focus on method development based on data acquired during the 2000-2003 period. The objective of the project is to develop pre-operational production methods.

Results of the project (i.e. processed products for the period 2000-2003) will be available through ftp with a Web-based interface. This is valid for all products from all components (due in 2006). The issue of real-time processing is not considered within GEOLAND (i.e. before end 2006). This is a pending issue to be tackled in the framework of FP7 → implementation to start in 2007 at the earliest. Strong relations with GEMS could facilitate fund raising for implementations.

Note that for the African continent GEOLAND products are being put in operational processing chains at VITO and will be distributed through EUMETCast to African users, implementations to be completed in 2006 through the VGT4Africa SSA."

It was generally considered that the developments in GEMS are most advanced in terms of operational production, followed by MERSEA. More information on possible processing sites and data flows for the operational period following the current IP is expected from GEOLAND in March 2006.

However, it is already clear that land cover products by GEOLAND will be updated on a time scale of 5 years; thus no real-time delivery is required. The same holds for the seasonality of fires. ESA is planning to deliver a real-time fire product from AATSR on Envisat by 2008. SPOT-VEGETATION is delivering a burnt area product. The product can be updated permanently and in near real time (on a daily - 10 day basis) and is being implemented for Africa in the VGT4Africa SSA. Distribution through EUMETCAST is expected to start by mid 2006. A group of partners of the GBA2000 project coordinated by JRC/GVM is right now processing the 2000-2005 VEGETATION dataset to generate a daily global 1km resolution burned area dataset (GDBA) that will be validated with high resolution satellite data.¹ The GDBA and VGT4Africa algorithms are equivalent, so it will be possible on requested to expand the near-real time production to the globe. Considering validation issues and technical times, this could occur in early 2007, provided that resources are available to cover the operations, which is a priori not the case today. This still needs to be evaluated; no decision has been taken yet on global real-time processing.

Astrium and Alcatel confirm that they have no further open questions.

The question by Infoterra, which data flow infrastructure gaps have been identified by Astrium and Alcatel based on the input given by the IPs during 2005, is not answered.

E.C.M.W.F and MERSEA stress that the GMES backbone of MERSEA, MERSEA, and GEMS will be "core services", which process various observations and distribute their products in real-time "downstream services". The latter will process the data and distribute their products to the various end users, see slides 5 and 25 of the MERSEA and GEMS presentations, respectively. Thus the GMES backbone will experience a highly predictable pattern of input and output data flows between a limited number of operational centres. GTS suites these characteristic of the GMES backbone data flow. In contrast, EUMETCast seems suitable for the data dissemination from the downstream services to the end users, as different users can be reached easily and any data access policy can be enforced.

EUMETSAT agrees and additionally confirms that EUMETCast is a one-directional data flow from the central collection point to the various users.

Data Policy

Meteorological forcing fields produced by E.C.M.W.F are currently received in near-real time by MERSEA through the dissemination infrastructure of the meteorological community, i.e. RMDCN. The link mediated by Meteo-France is fully operational, though slightly inconvenient for MERSEA. A direct port on RMDCN would be optimal.

¹ Additional comment by E. Bartholome: Since GDBA has onboard the algorithm experts there will be also a on the fly quality check and algorithm update, which was not the case for the GLOBCARBON product (GBA algorithms were used but GBA partners were kept out of the loop, this explains in part the striking errors in the GLOBCARBON product: the GBA regional algorithms were applied globally for GLOBCARBON without further testing and fine tuning, and without any real validation procedure!).

E.C.M.W.F clarifies that its products are owned by the governments of its member states and access is managed by the national weather centres. Technical aspects of the data injection into the GTS, and thus RMDCN, are governed by regulations of the WMO, which are negotiated by the national administration of the WMO members. A WMO-IOC joint commission is dealing with aspects of data transfer between the meteorological and oceanographic communities using the GTS <www.ioc.unesco.org/jcomm>. Consequently, access to the GEMS products supplied by E.C.M.W.F needs to be negotiated at national level in the countries hosting the operational production centres of MERSEA and GEOLAND.

EC poses the question whether an additional political agreement between the EU and the meteorological community is needed to secure the data transfer between the GMES IPs.

ESA explains that it currently distinguishes two user categories, scientific and commercial. Discussions are ongoing to introduce a third category, i.e. public service, covering GMES users.

HALO Infrastructure Conclusions

Concluding from the discussion, the next steps towards a candidate solution are:

1. outline of the operational services expected for the GEOLAND successor, including the locations of the processing centres, to be communicated in March 2006. (GEOLAND)
2. more specific predictions of the data volumes and time limits, cf. slide 23 of “Guideline Overview” presentation and chapter 4.3.2 of Guideline document for examples of GEMS input on this. (GEOLAND, MERSEA, GEMS)
3. analysis with respect to infrastructure gaps of the data flow information given by the IPs and listed in the annex of the document “Infrastructure candidate solutions overview”
4. clear description of two alternative technical solution candidates by Astrium and Alcatel. One of the candidates should use the existing meteorological network. The description will be the basis for the recommendation given by HALO to the EC. Thus it should compare the two solutions and list their commonalities and differences. It shall list their advantages and limitations, including, but not restricted to, data rate, availability. Abstract concepts need to be explained with hands-on examples.
5. Data policy implications of the two solution candidates shall be pointed out.
6. an additional HALO meeting in June or July to decide on a solution recommendation based on all above input.
7. separate the discussions of solutions for the operational real-time data flow and for the data access for time-lagged products like reanalyses.

3. Future Scientific Developments (2005-12-13, p.m.)

Satellite Data Availability

Serious cost over-runs threaten the launch of NPP. Thus the continuation of the MODIS observations by the VIIRS aboard NPP may be threatened. If NPP is delayed, it is important for GMES to keep the two MODIS in operation as long as possible. Also, there is no prospect for a chemistry mission before 2015. Therefore, the GMES backbone needs the missions of Envisat, AQUA, TERRA, and AURA to continue for as long as possible.

Product Developments

HALO considers scientific developments in order to identify

1. unexpectedly arising needs for scientific developments,
2. additional products that have become scientifically mature enough for operational production, and
3. likely future products (In order to be sustainable, the GMES developments should not create obstacles for the operational production of such products.).

IFREMER expects to produce ocean biogeochemical parameters, fluxes, and SST operationally in real-time by 2012. They will be valuable input for GEMS. The ocean-atmosphere gas exchange due to breaking ocean surface waves needs further developments.

CARBOOCEAN collects, amongst others, CO₂ partial pressure observations in the lowermost atmosphere and the ocean top layer. These in-situ observations are sufficiently frequent to be beneficial for GEMS and MERSEA.

U Bremen stresses the importance of archiving all data for sustaining the scientific development. The World Data Centres (WDCs) are archives dedicated to this sustainability. E.C.M.W.F archives all observations it receives and model output it generates.

The aerosol products generated by GEMS will be highly useful in surface parameter retrievals of both MERSEA and GEOLAND. However, algorithms will need to be adapted to this new product.

The term “land use” refers to some specification of the vegetation type in the land monitoring community. Its year-to-year variation is small, but the fluxes usually exhibit an annual cycle showing, e.g., the growing season. Long time series are therefore required to observe land use changes. The observations of AVHRR-type instruments provide cover the longest time period, i.e. extending back to 1982. GEOLAND will provide an update on the properties of the surface reanalysis.

Vegetation fires cause a strongly varying land-atmosphere flux, for which none of the communities has an operationally stable description.