GAMBLE

Global Altimeter Measurements By Leading Europeans

Minutes of the kick-off meeting held in

Toulouse, 21st March 2002

Document no:	SOS-GAMBLE-MIN-01
Issue no:	draft
Date:	8th April, 2002
Contract:	EVR1-CT-2001-20009
Author:	……
Quality control:	……

Satellite Observing Systems Ltd
http://www.satobsys.co.uk

Introduction

This document presents the minutes of the GAMBLE kick-off meeting held at LEGOS, Toulouse on Thursday 21st March 2002.

Attendees

Name	Organisation	E-mail
Tom Allan *	Satellite Observing Systems, UK	tom@satobsys.co.uk
David Cotton	Satellite Observing Systems	d.cotton@satobsys.co.uk
Ellis Ash	Satellite Observing Systems	e.ash@satobsys.co.uk
Yves Menard *	CNES, France	yves.menard@cnes.fr
Patrick Vincent	CNES	patrick.vincent@cnes.fr
Eric Thouvenot	CNES	eric.thouvenot@cnes.fr
Eelco Doornbos	TU Delft, The Netherlands	eelco@deos.tudelft.nl
Marc Naeije	TU Delft	marc@deos.tudelft.nl
Luigi Cavaleri	ISDGM, Italy	l.cavaleri@isdgm.ve.cnr.it
Peter Challenor	Southampton Oceanography Centre, UK	p.challenor@soc.soton.ac.uk
Pierre-Yves Le Traon	CLS, France	letraon@cls.fr
Laurent Phalippou	Alcatel, France	l.phalippou@space.alcatel.fr
Christian Le Provost	LEGOS, France	christian.le-provost@cnes.fr
Baptiste Mourre	LEGOS	mourre@notos.cst.cnes.fr
Daniele Hauser	CETP/CNRS, France	hauser@cetp.ipsl.fr
Jacques Verron	LEGI, France	jacques.verron@inpg.fr
Juan Guijarro	ESA - ESTEC	juan.guijarro@esa.int

* Meeting co-chairs

Apologies: Alan Edwards, EC project officer

Agenda and contents of the minutes

1. Overview of GAMBLE
2. Contract and finance issues
3. Data / information exchange
4. Status of missions post JASON-1, Envisat
5. GAMBLE themes and workpackages
6. Meetings and deliverables in 2002
7. AOB

1. Overview of GAMBLE

Tom Allan (SOS) gave an overview of the GAMBLE project using powerpoint slides. The slides will be available for download from the GAMBLE website at http://www.altimetrie.net/KO/.

Yves Menard (CNES) presented some background to GAMBLE and identified some previous studies of importance to the project.

2. Contract and finance issues

Ellis Ash (SOS) presented contract and finance issues, covering contract status, contract structure, membership agreements, initial payment and cost statement requirements. The importance of completing membership agreements by the end of April was emphasised.

3. Data / information exchange

Ellis Ash (EA) presented information on data and information exchange for the GAMBLE project. Information exchange will be via the GAMBLE website at http://www.altimetrie.net. This will contain public pages for general information and public documents, and a password protected partners area for restricted documents and mailing lists. Method of document upload is to be decided but initially by e-mail to EA.

Action All to e-mail EA their presentations from the kick-off meeting.

Action EA to put presentations and mailing lists up on GAMBLE website.

Action EA to e-mail all with user name and password for partners area of website.

4. Status of missions post JASON-1 & Envisat

Yves Menard gave a presentation on the current status of French-USA-ESA altimetry missions. There are now 5 altimeters flying (TOPEX/Poseidon, ERS-2, Jason-1, Envisat and Geosat Follow-on), with TOPEX/Poseidon now to be supported until end of 2003. Planned or proposed missions include:

- Jason-2 (2005)
- Wide Swath Ocean Altimeter (proposed by JPL)
- NPOESS (2010)
- Wittex (3 doppler altimeters)
- Oceanwatch missions (ESA post Envisat)

plus those planned by GAMBLE partners:

- Altika
- Swimsat
- GANDER

Altika

Patrick Vincent gave a presentation of the proposed Altika mission, a Ka band altimeter. The central objective is to study ocean mesoscale circulation, with a further technical

objective to improve coastal altimetry. There are problems with this frequency in the presence of rain.

Swimsat

Daniele Hauser (CETP) gave a presentation on Swimsat, a proposal to the ESA Earth Explorer Programme designed to measure waves. The result of the evaluation is expected in May 2002. The system consists of 5 Ku band altimeters 2º apart, each capable of conical scanning between 0 and 10º incidence. CETP are representing Swimsat in GAMBLE themes 1, 2, 4, 5 and 6 (see section 5.).

GANDER

Tom Allan talked about the proposed GANDER mission. GANDER is a constellation of 10 or more microsatellites each carrying a Ku band altimeter. The coverage of the narrow-swath altimeter is greatly improved by flying more satellites, and the implementation in microsat platforms is very cost-effective.

5. GAMBLE themes and workpackages

Presentations were given on the 6 GAMBLE themes:
Theme 1 – Sea surface height (WP2)
Theme 2 – Sea state (WP3)
Theme 3 – Orbit determination (WP4)
Theme 4 – Marine operators requirements (WP5)
Theme 5 – Research programme (WP7)
Theme 6 – Constellation oprimisation (WP8)

Theme 1 – Sea surface height

Pierre-Yves Le Traon (CLS) is the leader of WP2 and gave a presentation on the altimeter processing system SSALTO. This will soon incorporate all 5 altimeters in order to provide data for GODAE.

Work for WP2 was discussed. This should include a review of previous work and a study of error budgets, but Pierre-Yves expressed a concern over exactly what should be done under this WP, especially by contributors other than CLS. Suggestions from the floor included considering missions without precise orbit determination by using crossovers with other satellites (DH, MN); considering the impact of a better geoid (PDC); the benefit of additional altimeters to SSH determination (PC).

Action SOS to lay out partner specific partner contributions for WP2.

Theme 2 – Sea state

Luigi Cavaleri (ISDGM) gave a presentation on wave modelling work at ECMWF, and the slides will be made available at http://www.altimetrie.net/KO. Altimeter wave height and scatterometer wind speeds are assimilated into the wave model, but there are problems near the coast where satellite information is not available.

Theme 3 – Orbit determination

Eelco Doornbos (TUD) gave a presentation on orbit determination, giving existing altimeter satellites as examples and describing tracking models which simulate the effects of surface forcing. The slides will be available at http://www.altimetrie.net/KO. There will be a workshop for WP4 around autumn 2002.

Theme 4 – Marine operators requirements

David Cotton (SOS) talked about WP5 which involves the operational user community and aims to identify their requirements for altimeter missions. SOS are organising a workshop with marine operators and will try and tag this onto a suitable event. Daniele Hauser mentioned previous meetings with end users (e.g. Paris 1998) and the need to take these into account.

Theme 5 – Research programme

Peter Challenor (SOC) gave a presentation on work for WP7, the definition of a research programme to follow on from GAMBLE. The main parameters to consider are waves, wind and currents, but also sea level and others such as rain and gas flux. Issues were identified as:

- Interpolation and gridding
- Feature tracking and detection
- Extremes
- Barotropic signals
- Satellite-satellite height differences
- Gravity missions

There is no specific workshop for WP7, but a milestone.

Theme 6 – Constellation optimisation

Yves Menard gave a presentation on WP8 and the slides will be available at http://www.altimetrie.net/KO/. This WP is the crunch point, bring work from other WPs together.

6. Meetings and deliverables in 2002

David Cotton presented revised deliverable dates. There was a question over the timing of the orbits workshop, preferred to be held in the Autumn not summer. There is a Jason Science working team meeting in June. This is too early for an official workshop but will provide opportunity for a GAMBLE progress meeting.

7. AOB

Action SOS to send project definition to Brussels by end of April

Notes

GAMBLE Partners

UK	CO1	Satellite Observing Systems (SOS)	For GANDER
F	CR2	Centre National des Etudes Spatiales (CNES)	For JASON
NL	CR3	Delft University of Technology (DUT)	Orbit analysis
IT	CR4	Istituto per lo Studio della Dinamica delle Grandi Masse (ISDGM)	Sea-state
UK	MB5	Southampton Oceanography Centre (SOC)	Large scale oceanographic circulation and climate studies
F	MB6	Collecte Localisation Satellites (CLS)	AltiKa, oceanographic circulation studies
UK	MB8	Univ. Newcastle (UNEW)	Satellite Tracking, JASON PI
F	MB9	ALCATEL	Altimeter Instrumentation
F	MB10	Centre d'Etudes des Environnements Terrestre et Planetaires (CETP)	Leader of SWIMSAT proposal
F	MB11	Service Hydrographique et Oceanographique de la Marine (SHOM)	AltiKa. Responsible for French Navy and global Mercator ocean forecasting systems, JASON PI
F	MB12	Universite Joseph Fourier	Principal Investigator of Altika. Multi-satellite studies, JASON PI
F	MB13	Laboratoires d'Etudes en Geophysique et Oceanographie Spatiale (LEGOS)	Tidal modelling, JASON PI
UK	MB14	Proudman Oceanographic Laboratory (POL)	Tidal Modelling, Coastal Studies, JASON PI
UK	MB15	Surrey Satellite Technology Ltd. (SSTL)	Microsat technology.
F	MB16	Universite Versailles St Quentin	Linked to MB10 as joint research unit
F	MB17	Laboratoire des Ecoulements Geophysicques et Industriels	Linked to MB12 as joint research unit
F	MB18	Institut National Polytechnique de Grenoble	Linked to MB12 as joint research unit
DE	MB19	Max Planck Institut	Meteorology, modelling.
UK	MB20	Environmental Systems Science Centre	Assimilation, modelling
NO	MB21	Nansen Environment and Remote Sensing Centre	Climate and Environment studies, operational forecasting, modelling

Steering Committee
OceanRoutes, Shell International Exploration and Production, BP Amoco Exploration, Dockwise, EuroGOOS, CLS, MeteoFrance, ENEA

Formal Deliverables

WP1 CNES Project Kick off and Project Definition
Deliverables D1 Project Definition T0 +2 months Feb 2002

WP2 CLS Sea Surface Height Error Budgets
Deliverables D2 Interim Report for tracking workshop T0 +6 months June 2002
D3 Final SSH Report T0 +12 months Jan 2003

WP3 ISDGM Sea State Error Budgets
Deliverables D4 Interim Report for tracking workshop T0 +6 months June 2002
D5 Final SSH Report T0 +14 months Feb 2003

WP4 DUT Orbit Determination and Satellite Tracking
Deliverables D6 Orbit and tracking recommendations T0 +9 months Sept 2002

WP5 SOS Marine Operators Workshop
Deliverables D7 Report on Operational Requirements T0 +9 months Sept 2002

WP6 DUT Mid Term Review
Deliverables D8 Report on Error budgets and potential solutions
T0 +12 months Jan 2003

WP7 SOC Research Programme
Deliverables D9 Framework for Recommended Research (1st Milestone)
T0 +16 months Jun 2003

WP8 CNES Constellation Optimisation Workshop
Deliverables D10 Orbit recommendations T0 +18 months Aug 2003
D11 Payload recommendations T0 +18 months Aug 2003
(D10, D11 Milestone 2 – NB ESA altimeter studies due to be complete by end 2002)

WP9 CNES Final Workshop
Deliverables D12 Workshop Report T0 +12 months Oct 2003

WP10 SOS Management and Reporting
Deliverables D13-18 regular reports to EC (6 monthly intervals) Mid term and Final EC Report.

Meeting Dates

March 2002 Kick-off

5-8 March, Oceanology International London
21-26 April EGS NICE

~June 2002 Orbits and tracking workshop
(taking input from error budget studies - how to optimise sampling, crossover corrections)

10-12 June JASON SWT Biarritz

~July 2002 Marine operators workshop
(to provide recommendations from an operational perspective)

~Sep 2002 Sea surface height error budget and feature detection workshop
(to provide recommendations for multi-satellite measurements)

~Oct 2002 Sea state error budget and feature detection workshop
(to provide recommendations for multi-satellite measurements)

~Jan 2003 Mid term review workshop

6 – 11 April EGS NICE

~May 2003 Constellation optimisation workshop
(to provide recommendations for orbits and satellite payloads)

~Sep 2003 Final workshop