

GAMBLE Progress Overview

GAMBLE - A Thematic Network to Consider Future Developments in Satellite Altimetry, supported by the European Community Framework 5 Programme.

1. General

1.1 The GAMBLE Programme

GAMBLE is a thematic network to investigate the synergy between European satellite altimeter missions before launch, primarily for ocean applications. GAMBLE aims to:

- Complement and help co-ordinate existing research and development activities;
- Stimulate existing user groups and integrate new users;
- Identify possible areas of new research;
- Enhance the state-of-the-art by extending the uses of satellite altimetry;
- Increase awareness within the marine industry of the relevance of satellite altimeter products to their operations.

GAMBLE is working towards the achievement of two milestones:

M1 June 2003 The definition of a research programme to make best use of data from present and future altimeter missions.

M2 August 2003 Recommendations for the optimisation of forthcoming altimeter missions (orbits, tracking, payload specifications, scheduling, ...).

The work programme is addressed along 6 Scientific / Technical Themes, the first four providing inputs into the last two. These themes are

Theme 1 Sea Surface Height Measurements (Error Budgets and Feature Detectability)

Theme 2 Sea State Measurements (Error Budgets and Feature Detectability)

Theme 3 Orbit Determination and Satellite Tracking

Theme 4 Marine Operator's Requirements

Theme 5 Research Programme

Theme 6 Constellation Optimisation

1.2 General Information

The GAMBLE kick-off meeting was held in Toulouse on 21st March 2002. The EC funding for GAMBLE continues until November 2003

A web site has been established at <http://www.altimetrie.net>. All project documents can be downloaded from here, and new information is posted regularly.

(N.B. The web site at www.altimetrie.net is linked to source material hosted at www.deos.tudelft.nl/gamble – hence the addresses of links given on subsequent pages).

The GAMBLE Mid Term Progress Review will take place as a 1 day meeting at Southampton Oceanography Centre on Friday 17th January. Progress in the first 10 months of GAMBLE will be reviewed and plans for 2003 discussed. Some alterations to the GAMBLE timetable for 2003 will be suggested.

Activities under Themes 1,2 and 3 (above) have taken place throughout 2002. These activities are outlined in Sections 2-4, below.

2. Theme 1 – Sea Surface Height (WP2) April 2002-April 2003

The aims of this work package are to identify the major issues of interest in applications of altimeter measurements of sea surface height, and to establish what improvements are required over the next 5-10 years, in terms of measurements from satellite altimeters. This work package is led by CLS (Collecte Localisation Satellites, France)

Contributions on a wide range of applications relevant from this theme have been gathered from the European altimeter community. A workshop (joint with Theme 3) was held at Delft University of Technology on 7-8th November 2002, to gather further contributions and discuss how the various requirements could be addressed. These contributions have been synthesised into an interim report (21 pages), available at:

http://www.deos.tudelft.nl/gamble/docs/GAMBLE_interimreport_theme1_021121.pdf.

A hard copy of this report has been circulated to all steering group members who are attending the Mid-Term Progress meeting.

A shorter summary report is also available. Minutes, and presentations, from the joint workshop are available at the GAMBLE web site (under http://www.deos.tudelft.nl/gamble/theme3_workshop.shtml)

A final report is due in April 2003.

3. Theme 2 – Sea State (WP3) April 2002-2003

The aims of this work package are to identify the major issues of interest in applications of altimeter measurements of sea state (wave measurements and wind speed), and to establish what improvements are required over the next 5-10 years. This work package is led by ISDGM (Istituto per lo Studio della Dinamica delle Grandi Massi, Italy)

Contributions on a wide range of applications relevant from this theme have been gathered from the European altimeter community. A workshop was held at ISDGM, Venice, on 30th September 2002, to gather further contributions and discuss how the various requirements could be addressed. An interim report (27 pages) has been compiled from these contributions. This report has been circulated in hard copy to all steering group members who are attending the Mid-Term Progress meeting, and is available online at:

http://www.deos.tudelft.nl/gamble/docs/GAMBLE_interimreport_theme2_020711.doc

A shorter summary report is also available. Minutes, and presentations, from the workshop are available at the GAMBLE web site (under http://www.deos.tudelft.nl/gamble/theme2_workshop.shtml)

A final report is due in April 2003.

4. Theme 3 – Orbit Determination and Satellite Tracking (WP4) April 2002 – April 2003

Accurate determination and control of the satellite's position in space are essential if useful measurements of the sea surface are to be provided by a satellite borne radar altimeter. The aims of this work package are to identify the techniques by which this control and knowledge can be achieved to a satisfactory accuracy for a number of candidate satellite systems. This work package is led by DUT (Delft University of Technology, The Netherlands)

Contributions have been gathered from experts within the European altimeter community. A workshop (joint with Theme 1) was held at Delft University of Technology on 7-8th November 2002, to discuss how satisfactory orbit determination and tracking could be achieved for various satellite scenarios. These contributions have been synthesised into an interim report (20 pages). Hard copies have been circulated to the GAMBLE Steering Group, and the report is also available online at:

http://www.deos.tudelft.nl/gamble/docs/GAMBLE_interimreport_theme3.pdf

A shorter summary report is also available. Minutes, and presentations, from the workshop are available at the GAMBLE web site (under http://www.deos.tudelft.nl/gamble/theme3_workshop.shtml)

A final report is due in April 2003.

5. Mid –Term Progress Review

The Mid-Term progress review is to be held at Southampton Oceanography Centre on Friday 17th January. The aims of this meeting are to review the progress made towards the GAMBLE aims in 2002, represented by the three interim reports identified above, and to assess the plans for 2003, described in Section 6 below.

In particular the Steering Group will be asked to consider if they believe any modifications to the plan (in terms of the timetable, or in the activities that are proposed) are necessary, if the goals for GAMBLE are to be met by the scheduled end of the project in November 2003.

6. Timetable for 2003

6.1 Work Packages 2, 3 and 4 (To finish in April 2003)

Work Packages 2, 3 and 4 (Themes 1, 2 and 3 above) finish in April 2003. The final reports, which will give the recommendations in terms of measurement requirements for a range of applications, are due at this time.

6.2 Theme 4 - Marine Operators' Workshop (WP5) May – June 2003

The Marine Operator's Workshop is now planned for May 19th 2003, in Stavanger (still to be confirmed). This will take place in co-operation with the OGP "JIP" week (OGP –

International Association of Offshore Oil and Gas Producers, JIP – Joint Industry Projects). The aim is to discuss operators' requirements for sea state and ocean current information, identify priorities, and to discuss how different satellite and data processing systems could contribute towards a service which could help satisfy these requirements. More detailed plans will be discussed at the Mid-Term Progress Review.

A report summarising the outputs of this workshop, and identifying key operational requirements will be delivered at the end of this work package (proposed to be June 2003).

This work package is led by Satellite Observing Systems, UK.

6.3 Theme 5 - Define Research Programme (WP7) Feb–July 2003

Plans for activities within this work package will be presented at the mid-term progress review.

In outline the intentions are to:

Establish work to be done to ensure that wave, wind and current data products can be generated and expeditiously delivered for climate studies and routine marine operations.

Investigate potential impact on ground segment system designs, including data processing, distribution etc.

The ultimate aim, which is the First Milestone deliverable, is to define a recommended programme of research to be pursued by research centres (outside the terms of the GAMBLE thematic network). This work package is led by Southampton Oceanography Centre, UK.

It is proposed to delay the end of this work package, and so the date of the deliverable D9 (Milestone M1), until July 2003, to allow input from the Marine Operators' workshop.

6.4 Theme 6 - Constellation Optimisation (WP8) June – August 2003

Plans for activities within this work package will also be presented at the mid-term progress review. These activities will work towards the aims of:

Providing recommendations for orbits, orbit maintenance and tracking, orbit phasing, and satellite / payload specifications.

Provide preliminary GAMBLE multi-satellite configurations/scenarios.

These recommendations together comprise the GAMBLE Milestone 2 deliverables.

This work package is led by CNES (Centre National d'Etudes Spatiales), France, who will host a constellation optimisation workshop, planned for June/July 2003.

6.5 The Final GAMBLE Workshop Sept. 2003

A final GAMBLE workshop will be held in September 2003. The aim will be to bring together a range of interested parties (researchers, modellers, marine operators, satellite programme managers,.....) to discuss the future of European satellite altimetry in the light of the recommendations coming from the GAMBLE programme. The GAMBLE partners will agree a dissemination strategy for the GAMBLE results and consider how to continue the GAMBLE cooperation into the future.

7. Finally

The rôle of the Steering Group is to provide an independent assessment of the work carried out within GAMBLE, and to make recommendations on future activities within the GAMBLE programme. In the context of the Mid-Term Review we suggest that the Steering Group members will use the interim reports for Themes 1, 2 and 3, together with presentations made at the Mid Term Meeting, as the basis for their recommendations.

We will continue to circulate further details to the Steering Group as GAMBLE progresses. Whilst the Steering Group Members are asked to review reports and present their observations to the Mid Term Progress Meeting, and to the Final Meeting in September 2003, we would be interested in receiving comments at any time.

If members of the Steering Group have a particular interest in attending any of the remaining topic specific workshops, they should contact David Cotton (D.cotton@satobsys.co.uk). Also contact David Cotton with any other queries about the GAMBLE project.