

arkmeeting date date de la réunion	31-3/1-4-2004	ref./réf.	page/page 1 1
meeting place lieu de la réunion	ESTEC	chairman président	Y. Kerr / M. Berger
minute's date dates de compte rendu de réunion	1-4-2004	participants participants	<b>SMOS SAG:</b> YK, JF, PW, MP, NS, EA, BvdH, AvdG, DS, WW, IC, NR, PYT, CM, TJ, JG, excused: DLV, GL, MDr: <b>ESA:</b> AH (part time), BD (part time), MZ (part time), SD, NW, JB, MMN, MD, HR, ED, MR, NF (part time), CG (part time)
subject/objet	14 <sup>th</sup> SMOS SAG Meeting	copy/copies	Jose Achache, Reinhold Zobl, Steven Briggs, Einar-Arne Herland, Michael Rast

**List of Recommendations:**

No :	description/description
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- R14.1**      *The SAG strongly recommends to include corrected brightness temperature in a grid and projections which still need to be defined as a standard SMOS L2 product.*

**List of Actions:**

description/description	action/action	due date/date butoir
Provide a download link to most relevant SMOS publication on the ESA SMOS web pages	14.1: HR, MB	1.6
Resend SMOS logo to new SAG members	14.2: MB	1.5
to send the mini-WS report to the SAG	14.3: MB	1.5
to provide SMEX'04 web address to download the experimenters plan	14.4: TJ/DLV	1.5
to present ESA's data policy at the Aquarius/Hydros/SMOS science team meeting end of	14.5: HR	1.5

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**ESTEC**

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description/description	action/action	due date/date butoir
April		
to provide the CryoSat cal/val AO as an example	14.6: MD, JB	1.5
to distribute HUT-2D poster as presented at the microRad Meeting in Rome	14.7: MMN	1.5

### **1. Welcome and Introduction – objectives of the meeting - approval of draft agenda**

MB, YK and JF welcomed the SAG to their 14<sup>th</sup> meeting.

Objectives of the meeting were:

- to introduce the new SAG members,
- to outline the Terms of Reference of the SAG for Phase C/D, and
- to provide an overview of past, ongoing and planned science activities.

### **2. Welcome and introduction of new SAG members**

New members were welcomed and introduced to the SAG. ESA staff involved in SMOS was introduced to the new members. The D-EOP structure, the interfaces and the responsibilities of the different department/divisions/sections in SMOS project were outlined.

### **3. SMOS SAG ToRs for Phase C/D**

MB outlined the SAG Terms of References for Phase C/D. Focus of the required advice in Phase C/D will be on fine-tuning the SMOS retrieval schemes including their sub-models, the ground segment development including the product definition and its detailed specification, and the calibration and validation schemes including validation site preparation.

### **4. Actions from the last meeting**

Actions from the last meeting were reviewed and their status updated:

No.	Category	Subject	to	due	Status
1.26	Promotion	To provide planned promotion activities/publications to MB	all		On-going

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3.9	Promotion	To draft GEWEX article - PV and GL to provide inputs	YK/PV/ GL	15/1 0	deleted
8.13	Science Report	To draft Science Report	MB	30/9	On-going
9.3	Studies	To draft requirements for an assimilation study	PV	31/1 0	closed
10.6	Cal/Val	To provide detailed feedback to the draft cal/val document which will be distributed by YK	SAG	1/11	closed
11.5	Studies	To send the GOCE ATBD to the SAG	MD	1/4	closed
12.5		To furnish and distribute the minutes of the French user group meeting	HR	1/12	deleted
13.1	Promotion	To distribute SMOS logo	MR	1/11	closed
13.2	Campaigns	To draft a list of field experiment requirements to identify the requirements for the radiometer procurement	YK	31/1 0	open
13.3	Retrievals	To keep to SAG informed about the brainstorming meeting with the US scientists	NS	1/1	closed
13.4	GS develop.	Feedback to Yann on the draft level 1 -2 req. docs	SAG	15/1 0	closed
13.5	campaigns	To send SALSA experimenters plan to the SAG	DLV	1/12	SMEX'04

**Remarks:**

**Action 1.26:** It was agreed to include a list of most relevant publications on the ESA SMOS web page with a direct link to download the respective files (**Action 14.1**)

**Action 13.1:** MB to resend to logo to new members (**Action 14.2**)

**Action 13.3:** MB to send the report to the SAG (**Action 14.3**)

**Action 13.5:** DLV/TJ to provide the web address from where the SMEX '04 experimenters plan could be downloaded (**Action 14.4**)

## 5. **Project status - GS prep. activities, MDPP, and HUT-2D**

AH presented the status of the project.

A MoU with CNES has been agreed and is awaiting approval/signature by the DG. Internal arrangements with ESRIN and ESOC for the GS development were initiated. Of concern is the stalled GS development

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activities due to disagreement on certain management issues. Platform Phase-B activities have started with CNES. A launcher/satellite interface is in progress with Rockot and a site review to evaluate facilities for the launch campaign is planned for end April.

Concerning the technical status, the focus is on improving mechanical, thermal, thermoelastic instrument modelling, on EMC issues, calibration and error budget modelling and the refinement of the AIT plan. The procurement of all PLM part has been initiated. Phase-1 of the level-1 processor development is completed and phase-2 is in preparation. Cal/val schemes are currently being discussed in detail within a special established expert group (see AOB). A release of a cal/val AO to the science community is planned for 2005. In the discussion concerning data policy in particular for US colleagues it was agreed that HR prepare a short presentation outlining ESA data policy in detail at the Aquarius/Hydros/SMOS science team meeting end of April (Action 14.5). MD and JB will provide the Cryosat Cal/Val AO as an example (**Action 14.6**)

MMN presented the MDPP-3 and HUT-2D status.

HUT-2D is now in the production phase following successful test flights with 4 receivers performed end of last year. First results were presented at the microRad Meeting in Rome. The fine structure visible in the flight line Tb-maps were questioned having only 4 receivers available. MMN will try to get a copy of the paper/poster for distribution to the SAG (**Action 14.7**). Further tests (tower based) with 16 units are planned for July/August timeframe.

On MDPP-3 MMN informed the SAG that the Preliminary Design Review had been held but not closed, awaiting for an improved thermo-mechanical design for the installation of the instrument on-board HUT's Skyvan. MDPP-3 hardware is spread across Europe for testing in benefit of SMOS development. Only after this summer, the different pieces will start being released for integration in MDPP-3.

## 6. *Pre-processing of SMOS observations (N. Skou)*

NS presented study results outlining the level of perturbing effects of the atmosphere, ionosphere and cosmic/galaxy and possible correction schemes. This work mainly was performed with the ESA image processing study. Details of his work could be found in the mid-term report (part2) of the IR study which is available for downloading from the SMOS SAG ftp server.

In the discussion it was noted that it seems that rain itself could be neglected as a perturbing signal but likely not the modulation of the roughness due to heavy rain showers. UPC recently conducted dedicated experiments using a rain and foam generator. Similar experiments were planned in the US. It is being expected that further information/first results will be made available at the Aquarius/Hydros/SMOS science team meeting end of this month.

For correcting perturbing effect of the galaxy L-band maps exist (Reich & Reich), however these maps do not contain polarisation information. YK reported on his radiometer measurement of the galaxy which

clearly show a polarised signal. The residual error in the correction due to the lack of polarisation information is still unclear.

## **7. Regular sampling grid for level 1C product (M. Zundo)**

MZ presented the product definitions and considerations of the fixed grid selection.

A criterion for the 'best' fixed grid is to have SMOS observations being processed at the points where the observations are taken. The most promising grid 'best' fulfilling this requirement seems to be the ISEA/Snyder based hexagon. Another option could be the EASY grid. It was stressed that the analysis is still on-going.

It is currently planned to do all corrections when processing L2 data from L1C data. L1C therefore are TOA - brightness temperature maps georeferenced to a tbd grid. Further, it was assumed that L2 product will be provided in the same grid as L1C. However, this would require the resampling of all auxiliary information needed in the retrieval to the grid specified for SMOS which could put a heavy processing load on the ground segment. Furthermore, considering the current development within the science community which foresees the direct assimilation of corrected brightness temperature maps, the SAG recommended to add corrected Tb maps as an additional standard L2 product.

***R14.1:** The SAG strongly recommends to include corrected brightness temperature in a grid and projections which still need to be defined as a standard SMOS L2 product.*

## **8. Studies & Campaigns:**

*coSMOS:*

MB presented the findings of the 1<sup>st</sup> coSMOS experimenters meeting. It was emphasised that the ATR-42 was considered noty suitable because of the given constraints such as antenna size and beamwith, early booking requirements, etc. Therefore ESA decided to look into other options. The -55 and Canadian Convair 580 options will be analysed in detail within a contract currently in preparation with TUD.

*Dome-C:*

MD presented the preparatory status of the Dome-C experiment. It was noted that currently the instrument platform and its mount to the tower are being designed. Final instrument qualification review is planned for July '04. In the discussion it was noted that the 3 dB beamwith of the instrument is not very suitable for analysing the signal from different incidence angles but the focus is mor eo nt eh azimuthal scans. Furthermore, the need for absolute instrument calibration (and likely a difficult scanning to the cold sky avoiding sun perturbing effects) was questioned since mainly temperoral drifts are of interest which only require a relative calibration.

*Studies:*

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Soil Moisture Requirement Study/Ocean Salinity Requirement Study/Soil Moisture Retrieval Study and its extension for implementing an ocean salinity retrieval scheme/Ocean Salinity Retrieval Study/Image Reconstruction Study/OS Synergy Study:

SAG members involved in ESA studies (PW, JF, NR, MP) presented the objectives and (preliminary) results.

It was noted that it is planned to release a Soil Moisture Synergy Study will on EMITS shortly. Furthermore, studies devoted to the consolidation of the SMOS validation scheme are planned for the second half of this year.

## 9. AOB

*Status of the calibration WG (M. Martin-Neira):*

Inputs from Manuel

*Retrieving SM with the tau-omega model (Marleen Rijkeboer):*

MR presented the work planned to be conducted within her YGT assignment at ESTEC. MR will focus on a statistical analysis of simulated brightness temperature using the tau-omega model and a range of realistic input variables.

*SMOS brochure/poster, SMOS Science Report:*

MB reported on the status of the SMOS brochure/poster and science report. The brochure, originally planned to be available for the EGU end of April will be delayed by a few weeks. The layout is nearing its completion and a first draft was shown the SAG. After completing the brochure it is planned to start with the SMOS posters and the overdue science report.

*Aquarius, Hydros, SMOS Science Team meeting:*

The first Aquarius/Hydros/SMOS Joint Science Team Meeting will take place at the end of April. It was noted that many European scientists are planning to attend this event. YK and JF will provide a SMOS overview.

*next WS:*

The 5<sup>th</sup> SMOS WS was tentatively scheduled for week 49 (29 Nov – ) at ESRIN, Frascati, Italy. JB is responsible for the local organisation. It is envisaged to distribute a first announcement by the end of April. It is planned to combine the WS with a SAG meeting, tentatively scheduled for 2/3 Dec.

## 10. Date & Place of next meeting

It was agreed to schedule the 15<sup>th</sup> SMOS SAG meeting for 1 & 2 July at ESTEC. It is planned to combine the 16<sup>th</sup> SMOS SAG meeting with the 5<sup>th</sup> SMOS Workshop (tentatively scheduled for 2 & 3 Dec at ESRIN).

## 11. Summary and Conclusion

MB and YK thanked the SAG for the fruitful discussions. It was agreed to discuss the strip-adaptive processing in detail at the next SAG meeting.