

EARTH SCIENCES DIVISION (APP-FS)
DIRECTORATE OF APPLICATION PROGRAMMES

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15 January 2001	APP-FS/0292/MB-dr	Page 1 of 10
from	M. Berger (APP-FSL)	Telephone: +31 71 565 5158 Fax: +31 71 565 5675 e-mail: Michael.Berger@esa.int
to	Members of the SMOS Science Advisory Group (distribution list attached) Dr. P. Waldteufel, ISPL, F (33) 1 3925 4822 Dr. G. Lagerloef, Earth and Space Research, USA (1) 206 726 0524	
c.c.:	ESA HQ: C. Mastracci (D/APP) ESRIN: S. Briggs (APP-A) ESTEC: A. Ginati (APP-F), C.J. Readings (APP-FS), A. Tobias (APP-FP), P. Silvestrin (APP-FPP), M. Rast (APP-FSL), E. Attema (APP-FSS), N. Floury (TOS-EEP), M. Borgeaud (TOS-EEP), P. Wursteisen (APP-FSS), M. Martin-Neira (TOS-ETP), P. Baptista (TOS-EEP), H. Rebhan (APP-FSO), A. Hahne (APP-PTO), M. Drinkwater (APP-FSO)	
Subject:	Minutes of the 4th SMOS SAG meeting held at CESBIO, Toulouse, 30th November/1st December 2000	

Dear Colleague,

Enclosed you will find the minutes of the fourth SMOS SAG meeting held at CESBIO, Toulouse, 30th November and 1st December 2000. Copies of the meeting viewgraphs are also enclosed.

Should you have any questions concerning the minutes, please feel free to contact me.

Yours sincerely,

M. Berger
Land/Surfaces Unit
Earth Sciences Division

**MINUTES OF THE
FOURTH
SOIL MOISTURE AND OCEAN SALINITY MISSION
SCIENCE ADVISORY GROUP MEETING
30th November/1st December 2000
CESBIO, Toulouse, FRANCE**

Participants: Y. Kerr, J. Font, N. Skou, M. Peichl, M. Hallikainen, G. Lagerloef,
P. Waldteufel

Excused: P. Ferrazzoli, P. Viterbo

Guests: Y. Trokhimovski, M. Srokosz (part time), J. Johannessen (part time)

ESA: A. Hahne, M. Drinkwater, N. Floury, P. Silvestrin, M. Martin-Neira,
H. Rebhan, M. Berger

1. Welcome and introduction – objectives of the meeting

M. Berger welcomed the SMOS SAG to its 4th Meeting and thanked Y. Kerr and CESBIO for hosting the meeting.

The objectives of the meeting were to discuss the findings of the 2nd SMOS WS, and to discuss EU participation in SMEX01 and/or SMEX02.

2. Approval of draft agenda

An agenda item covering national programmes and activities was added. It was agreed to discuss the following items under AOB:

- report on the 1st Inter-Agency Meeting
- report on the COST 712 final symposium
- US expert on SM
- ITU issues
- status of the calibration document
- strip-adaptive processing
- swath definition.

3. Actions from the last meeting

It was agreed to complete open actions from previous SAG meetings before the end 2000.

No.	Category	Subject	to	due	Status
1.6	MRD	To provide text for the coupled ocean-atmosphere models	PV	1/8	Open
1.8	MRD	To provide text on forecast	PV	1/8	Open
1.17	Camp. Doc	To keep master copy	NS		On-going
1.18	Camp. Doc	To send inputs/comment to NS	all	15/6	On-going
1.26	Promotion	To provide planned promotion activities to MB	all	15/6	On-going
1.27	Promotion	To generate/update list of planned promotion activities	MB	15/8	On-going
2.1	Faraday	To circulate VGs and model results from R. Leitinger	MB	1/8	Open
2.3	Promotion	To bring SMOS posters to next SAG meeting	JF	11/9	Closed
2.4	Promotion	To provide publications to MB for archiving	all	15/6	On-going
2.8	MRD	To draft sentence on challenges requirements for SSS	GL	15/8	Closed
2.11	MRD	To draft a list of definitions	YK	15/8	Open
2.11	MRD	To circulate MRD update for further reviewing	MB	1/9	Closed
2.13	Camp. Doc	To circulated updated version for further reviewing	NS	15/6	On-going
2.15	Instrument	To draft requirements for short term stability	PW	15/8	Open
2.16	Studies	To inform SAG of planned US campaign over Greenland	GL	15/6	Closed

2.17	Studies	To re-phrase topic: study of decorrelation	GL/JF	15/8	Closed
2.19	Studies	To provide comments on the 'land' list	MH/PF	15/6	On-going
2.20	Studies	To circulate scheduled of planned campaigns	NS	15/6	Open
2.22	Collaboration	To follow recommendation 2.1	MB/GL		On-going
3.1	interference	To review draft of revised recommendations for next ITU conference	all	15/11	Closed
3.2	interference	To clarify open issues concerning the draft revised recommendations with E. Marelli	PS	15/11	Open
3.3	Cal/Val	To draft a SMOS calibration document	Ph.W/Y K/MD/ GL	15.11	Closed
3.4	Camp. Doc.	To provide N.S. with an update on ground based radiometers	MH	1/10	Closed
3.5	Faraday	To simulate Faraday effects over DOME-C	NF	15/11	On-going
3.6	Faraday	To analyse short-scale Faraday effects	NF	15/11	On-going
3.7	Faraday	To update and circulate TN on Faraday rotation correction methods	NS	15.11	Closed
3.8	-	To circulate updated programme for the COST 712 final symposium	MH	1/10	Closed
3.9	Promotion	To draft GEWEX article	YK/PV/ GL	5/12	Open

4. Status of the project and next steps

P. Silvestrin presented the status of the project. A definition of the swath is still missing. P. Waldteufel agreed to look into this subject and M. Martin-Neira will provide required inputs (see also AOB). The spatial resolution and the impacts on the scientific objectives were also discussed. The SAG concluded that no explicit study is required and to stay with the requirements as given in the MRD.

5. Discussion on the outcome of the SMOS WS

The workshop was a big success and many interesting discussions evolved. The outcome of the workshop is covered under the different agenda items reflecting the main themes of the discussions.

6. Campaigns

Update on on-going campaign activities:

J. Font gave an update on the on-going WISE campaign. He informed the SAG that due to logistic problems and weather conditions some problems occurred exploiting the instruments. All instruments are operational now except the UMASS radiometer (due to damaged antenna) and one buoy (which was damaged during deployment). Two additional buoys will be deployed beginning of December. He further informed the SAG that the data acquisition

could be extended by two more weeks enabling to acquire more data and to cover different sea state conditions. The SAG recommended extending the campaign (**R4.1**).

Outcome of the US SM WS:

An overview of the US SM workshop was given by US colleagues during the SMOS WS. The SM campaign planned for 2001 (SGP01) was split into two campaigns, SMEX01 and SMEX02 due to the launch delay of Aqua. The objective of SMEX01 is to validate soil moisture retrieval from L-band radiometry. SMEX02 will be focussed on the validation of AMSR on Aqua. It was further stated that the US SM community plans to submit a proposal for a soil moisture mission within the next ESSP round. Currently the OSIRIS+ concept, based on a real aperture instrument, is favoured. Phasing the orbit with the SMOS orbit would provide daily data on SM for assimilation. The SAG concluded to wait for the proposal before making any recommendations.

EU participation in SGP01:

A possible participation in SMEX01 and SMEX02 was discussed. Considering the short time available before SMEX01 it was decided to concentrate on a possible collaboration in SMEX02. The use of the HUT-2D radiometer within this campaign may be feasible.

LOSAC:

According to N. Skou first test flights were postponed due to aircraft non-availability.

In addition to this a possible campaign to characterise Dome Concordia (DOME-C) in Antarctica was discussed. It was agreed to further investigate the suitability of the site using C-band SSMR data. M. Drinkwater will contact F. Remy for further information. In parallel, options other than to organise a costly campaign should be investigated, in view of other planned European core activities and potential GLAS cal/val activities.

In this context the repeat track option was discussed which might be essential for accounting for azimuthal variations in assimilation schemes for soil moisture retrievals. It was concluded that this issue needs to be analysed in more detail and will be followed up.

A possible airborne campaign in Europe for 2001 was discussed. The possibilities to use TUD, ESTAR and STARRS were discussed. The HUT-2D instrument will not likely be available before the end of next year. A possible candidate test site is located west of Valencia, which recently was proposed as a new anchor station within a Spanish programme. It was agreed to further investigate this.

7. Support Studies

Ocean Salinity Study:

The first progress meeting was postponed until 15th of Dec. due to the on-going WISE campaign in which many study team members are involved. First results are expected by the time of the next SAG meeting.

Soil Moisture Study:

M. Berger informed the SAG that the study had been kicked-off after a successful negotiation meeting on the 15th of Nov. The study focuses on modelling and validation whereas the

impact assessment is considered as a secondary objective. The first co-ordination meeting is planned for January, the first progress meeting is scheduled for February. It was stated that a formal kick-off has not yet been taken place by the Agency's contract office. M. Berger will look after this.

Salinity Data Processing:

The ITT for the Salinity Data Processing study has been released. It is planned to start the activity early next year.

Soil Moisture Data Processing:

In the discussion on future study needs it was recommended that a study similar to the salinity data processing is required for retrieving soil moisture from SMOS data (**R4.2**). The study should focus on the characteristics of SMOS data and also take account of varying land cover, varying pixel sizes within the swath and different incident angles.

8. National programmes and activities

Y. Kerr and J. Font provided an overview of the national programmes in Spain and France for SMOS.

J. Font noted that in Spain no dedicated scientific programme for SMOS exists but that activities are grouped under different programmes. Currently teams are built to address soil moisture. In this framework a new anchor station west of Valencia was proposed. Further, he noted that it is planned to re-submit a modified MIMOSA proposal to the 5th Framework Programme of the EC.

Y. Kerr informed that a proposal within the CNES Earth, Atmosphere, Ocean, and Biosphere Programme was approved to build a radiometer and to conduct specific scientific studies. CNES is further supporting PhD students and Post-Doc positions. CNRS is supporting also several studies (Avignon experiment, assimilation study, hydrology,...). In total the activity represents about 15 people working full-time on SMOS in France. In addition a regional proposal to cover campaign activities in Toulouse was approved. Currently, no plans exist to submit a proposal to the 5th Framework Programme of the EC.

9. AOB

Under AOB M. Srokosz presented the results of the ESA study 'Impact of sea state on nadir looking and side looking microwave backscatter'. The final report and the associated software will be available (please contact M. Srokosz).

Report on the 1st Inter-Agency Meeting

M. Berger reported on the 1st Inter-Agency Meeting, which took place at ESTEC in November. The objectives of the meeting were to review the status of the SMOS mission and to discuss the incompatibility of the instrument in the current design with the platform. It was agreed to raise the awareness of industry and to review the situation again after the PCR scheduled for mid March 2001. During the meeting it was stressed that the scientific

objectives are the driver of the mission. The SAG was asked to follow the development to assess the impacts of design changes on the scientific objectives.

Report on the COST 712 final symposium

M. Berger also reported on the COST712 final symposium, which took place at ECMWF in November. Some misunderstanding in the science community about the SMOS mission was noticed. It was therefore emphasised that the mission should be further promoted. During the discussion it was stated that a follow-on COST action would be helpful. M. Hallikainen will take an initiative and keep the SAG informed.

US expert on SM

Possible US candidates supporting the SMOS SAG on SM issues were discussed. It was agreed to invite one of two experts from the US according to the meeting objectives. One expert covering more technical related issues and the other expert representing the US soil moisture community. Candidates were identified and will be approached offline.

ITU issues

Since E. Marelli was not able to attend this meeting it was agreed to invite him for the next meeting to discuss ITU issues in depth at the forthcoming meeting. The SAG was encouraged to subscribe to an email distribution list (pmr@www.wmo.ch) where ITU issues are discussed. Guy Rochard from Meteo France maintains the list.

Status of the calibration document

P. Waldteufel distributed a draft version of the calibration document at the meeting. The SAG was asked to review the document and to provide P. Waldteufel with comments.

Strip-adaptive processing

M. Martin-Neira introduced the strip-adaptive processing using different apodisation windows. In the discussion it was agreed that P. Waldteufel and M. Peichel would provide a list of adequate windows to P. Silvestrin for forwarding them to industry for consideration.

Swath definition

M. Martin-Neira explained the interrelation of the swath and the sensitivity of the instrument. P. Waldteufel outlined the problem defining the swath edges. He agreed to study the issue in more detail. M. Martin-Neira will provide required inputs (simulated gain pattern, error model, ground speed within FOV – see actions).

10. Summary and conclusions

Y. Kerr and M. Berger thanked the SAG members for attending the meeting and for the fruitful discussions. It was stressed again that open actions from previous meetings should be completed before the end of the year 2000.

11. Date and place of the next meeting

It was agreed to combine the next SMOS SAG meeting with the SEPA PCR planned to take place at ESTEC mid March 2001. Since the exact date for the PCR is not yet agreed with

industry, the SAG was asked to block 15th to 23rd of March in the diary. The exact dates of the meetings will be announced as soon as possible.

List of Recommendations:

R4.1: The SAG recommends extending the WISE campaign by two weeks.

R4.2: The SAG states that a study for soil moisture retrieval from SMOS data is required

List of Actions:

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3.5	Faraday	To simulate Faraday effects over DOME-C	NF	15/11	On-going
3.6	Faraday	To analyse short-scale Faraday effects	NF	15/11	On-going
3.9	Promotion	To draft GEWEX article	YK/PV /GL	5/12	open
4.1	SAG	Re-send ftp access to SMOS ftp site	MB	24/12	
4.2	Calibration	Review draft calibration document as circulated by PhW during the SAG meeting	all	24/12	
4.3	Faraday	Provide NF with updated TN on Faraday rotation	MB	24/12	
4.4	Campaigns	To find out price and possibilities to borrow STARSS	NS	24/12	
4.5	Cal/Val	To contact F. Remy re. DOME-C characterisation with SSM/I data	MD	1/3	
4.6	Cal/Val	To provide MD with SMOS satellite sub-tracks of DOME-C	YK	1/3	
4.7	Collaboration	To evaluate Japanese activities for OS	GL	1/3	
4.8	Studies	To check status of kick-off of the SM study	MB	5/12	
4.9	Collaboration	To contact US SM experts for SAG membership	YK	24/12	
4.10	Reconstruction	To propose a list of possible apodisation windows to PS	PhW/ MP	24/12	
4.11	System	To provide PhW with the ground speed within the FOV	MMN	24/12	
4.12	System	To provide PhW with model based gain pattern	MMN	24/12	
4.13	System	To provide information on the error model of the instrument to PhW	MMN	24/12	
4.14	System	To analyse issues related to the swath definition	PhW	24/12	
4.15	Studies	To provide MB list of items relevant for the SM data	YK	24/12	

		processing study			
4.16	SAG	To define date for the next SAG meeting combined with the PCR between 15-23.3.2001	PS/MB	15/12	
4.17		To report on further COST activities relevant for SMOS to the SAG	MH	On-going	
4.18	System	Define the characteristics of the scenes to be made in OS and SM	MP	15/12	
4.19	Reconstruction	Simulated test scene (Ocean and Land) to MP	GL/YK	30/1	