The Soil Moisture and Ocean Salinity (SMOS) Science Advisory Group (SAG)

Minutes of the Twenty-Fifth Meeting

18-19 May 2009

ESTEC, Noordwijk, Netherlands

Chair: Y. Kerr

Participants:

SAG Members:	E. Anterrieu (EA), I. Corbella (IC), J. Font (JF), T. Jackson (TJ), Y. Kerr (YK), M. Peichl (MP), N. Reul (NR), N. Skou (NS), P. Waldteufel (PW), D. Le Vine (DL), C. Mätzler (CM), D. Stammer (DS) (half day), J. Grandell (JG)		
ESA:	A. Hahne (AH)		EOP-PS
	M. Brown (MB)		EOP-PTR
	M. Zundo (MZ)	(part time)	EOP-PEP
	M. Drusch (MD)	(part time)	EOP-SME
	C. Bouzinac (CB)		EOP-SM
	S. Delwart (SD)		EOP-PEL
	B. Duesmann (BD)	(part time)	EOP-PES
	J. Benveniste (JB)		EOP-SER
	R. Oliva (RO)		EOP-PE
	S. Mecklenburg (SM)		EOP-GM
	M. Martin-Neira (MM)		TEC-ETP
	N. Wright (NW)	(part time)	EOP-GP
Excused:	P.Y. Le Traon, G. Lagerloef, W. Wagner		
Guest:	G. Heygster (GH) (half day)		

Distribution List:

All meeting participants

ESA:	V. Liebig (D/EOP), S. Briggs (EOP-S), M. Drinkwater (EOP-SM) R. Haagmans (EOP-SME), M. Davidson (EOP-SMS), E-A. Herland (EOP-SA), M. Doherty (EOP-SE), G. Kohlhammer (EOP-G), H. Laur (EOP-GM), P. Edwards (EOP-P), D. Muzi (EOP-PG)

EOP-SM-SMOS-SAG-MIN-0025
(EOP-SM/2008/CB-ag)

1. Introduction (YK)

YK welcomed the participants and the agenda was agreed (see Agenda at the end).

All presentations are available at ftp.estec.esa.nl in the folder SAG25.

Login: smos-sag Password: MIRAS69-3

Or ftp://smos-sag:MIRAS69-3@ftp.estec.esa.nl/SAG25/

2. Actions Review (CB)

CB reviewed the past actions (closed recently or still open).

Action	No	Actionee	Status
To coordinate RFI related activities	19.10	D. LeVine & N. Skou	ongoing
To provide evidences of RFI to DL & NS & YK	19.11	All	ongoing
Give natural range of values and general statistical analysis for 4th Stokes parameter at antenna level from measurements done over various surfaces	21.1	N. Skou	ongoing
Write conclusions on galactic contributions and send to SAG members	22.3	D. Levine	closed (report available on Aquarius doc web page)
Update technical note on the use of Reich team galactic hemispheric maps and data	22.5 24.9	S. Delwart & N. Floury	closed (sent on the 20th of May 2009)
send report on SMAP activities related to RFI when available, to all SAG members	24.2	Tom Jackson	Open
send Gibbs1/Gibbs2 informative report to all SAG members	24.3	Eric Anterrieu & Francois Cabot	closed (sent on the 27th of April 2009)
contact Eric Thouvenot / Selma Cherchali to coordinate campaign activities between CNES and ESA	24.4	Malcolm Davidson	Open
organise a working meeting before the next SMOS cal/val meeting in March 2009 for airborne data processing	24.5	Niels Skou	Closed
provide a list of data tools indicating where to get them in March 2009	24.6	Steven Delwart	Closed
send DOMEX reports about the instrument design and construction to SAG members	24.7	Mark Drinkwater	Closed
Report exchange between EA and MM about the Corbella equation at the next SAG meeting	24.8	Manuel Martin-Neira	Closed

3. SMOS Project Status (AH)

The new official launch date is 09 September 2009. Currently the schedule is as follows; On July 8 the Proba satellite arrives to be integrated. On July 20 the SMOS campaigns should then start (departure from Cannes and arrival in Archangelsk on July 22). The integration on Rockot would start on August 18 and the whole launcher should start its journey to the launch pad on September 1. The booster fueling should be initiated on the 7th, for a launch on September the 9th. Currently the main risks about

launch date are linked with a Russian launch scheduled for June 25. Should it slip after the 29th of June, the 9/9/9 launch date would be seriously compromised.

4. Update on Commissioning Plan and data availability to Cal/Val users (MB)

AH reminded that no publication on SMOS data are allowed without the prior agreement of ESA before the official end of the commissioning phase.

5. Status of the SM Network Database (MD)

The work with the Meteorological Institute (IM) of Portugal (Pedro Viterbo) is not progressing. There is no possible communication and the schedule delay is already more than one year. Therefore the SAG members recommend to stop the contract and establish a new contract with the most adequate alternative (Recommendation 25.1). Options are Wolfgang Wagner at the University of Vienna or Richard Dejeu at the Free University of Amsterdam (VUA), ECMWF or EUMETSAT SAF.

6. SMOS sea-ice study final presentation (GH)

The third and fourth Stokes signals can be significant over sea-ice in specific conditions. The final report of the study should be provided to the SAG members in June 2009 (Action 25.1, CB).

7. Update on campaign activities (CB)

SMOS project decided to try to keep the TKK Skyvan aircraft available until mid 2010 to cover the Spring SMOS airborne validation campaign. AH requested an estimation of the costs to TKK and hopefully an agreement will be found in June 2009. If not, the project will try to use a DLR or NERC Dornier 228 aircraft if one of them is available in Spring 2010. Unfortunately, it is not possible to fly the HUT2D with another aircraft than the TKK Skyvan. Therefore only EMIRAD would be used in the case of a campaign with a Dornier 228. However until now, only TKK, ICM, ESTEC, CESBIO and Tor Vergata University have used HUT2D data. HUT2D data are only better for (dis)aggregation procedure, compared to EMIRAD data.

Jeffrey Walker (Melbourne University), in collaboration with CESBIO, is preparing an airborne validation campaign in two parts (nov.2009 and feb.2010 TBC) in South-East Australia. He provided the funding support still needed on top of his national funds. AH wants quickly a list of European scientific volunteers who plan to participate in the in-situ measurements of this campaign in order to provide some financial support (e.g. travels) to these volunteers (Action 25.2, YK).

YK presented an update on CAROLS activity plan. The funding decision from CNES for the flight hours in 2010 will be taken in June 2010. It is not decided yet whether the Valencia Anchor Site will be covered by the CNES CAROLS or the ESA validation campaign in Spring 2010. Francazal airport (base of the ATR42 used by CAROLS) will be closed soon. Meteo-France is looking for another airport solution.

8. Discussion on campaign activities and long-term cal-val

The next SMOS Validation and Retrieval Team meeting is proposed during the Living Planet symposium in Bergen (28 june - 02 july 2010). Although it will be a huge assembly, only cal/val PIs would be invited to this special parallel event. A training session for users (instrument and data) is also possible there.

TJ suggests to target a journal special issue for validation results in order to put some pressure on the cal/val PIs. SM and YK will initiate this and start looking for possible journals.

DL reminds everybody of the next Microrad meeting to be held in Washington DC in march 2010.
About validation, several points were discussed. SD expressed the needs for a proper match-up build-up activity and requested some help from level 3&4 groups. He also pointed out the Brockman Consult portal which is getting ready to deliver SMOS Cal/Val data to users.

The global strategy for In Orbit Commissioning Plan having been presented, BD showed the main constraints it induced on SMOS data acquisitions during the Commissioning Phase. While making the acquisition plan over the Cal/Val sites, YK raised several issues.

- The area over the land sites is driven by the short swath while the nominal swath should be used. This is not a problem and the files will be updated accordingly (Action 25.3, BD).
- Seeing all these constraints it is obvious that they should be prioritised. YK cannot see how avoiding the moon is as important as avoiding the sun or the Galaxy bright stars or even varying land in the back lobes. The geostationary satellites are not expected to emit at L band. If they do, who will not! Consequently the different contributors should be quantified to be placed at the right level of importance (Action 25.4, MB and MM).
- Similarly the task of getting always the land and sea sites is daunting so a priority list should be established for the different phases of the commissioning phase (see YK presentation).
- YK also considered that having all the short calibrations done at the same place could jeopardise some analysis especially in the tropical area. It should be done at random or pseudo-random. (Action 25.5, BD to propose a new set-up and YK to provide feedback).

9. Discussion on dual/full polarizations and RFI

RO and MZ presented the validation results of the full pol mode with SEPS-GS and L1PP.

NS presented the third and fourth Stokes observations with EMIRAD from RFI signatures. His conclusion is that the full pol mode could be advantageous to detect RFI in SMOS L1 data, compared to the dual pol mode.

There is a clear lack of RFI feedback in the SMOS data processors; proposed solutions are welcome. (Action 25.6, RO: write a technical note on the Level 1 RFI strategy).

MM presented estimations of RFI in SMOS L1 BT, especially from air traffic control radars. He recommends a preparation for RFI observing all the radars during the commissioning phase (Recommendation 25.2).

Maps of T3 and T4 will be necessary from the ESL during the commissioning phase. The SAG believes that the full pol option should be considered actively as the nominal mode after the commissioning phase as it seems to present several strong advantages. The justification being that all things equal the full pol option has the advantage of allowing the generation of dual pol data which is not true the other way round. However, the fine balance between the two polarisation modes is delicate and a decision tree for the strategy and useful metrics is now necessary to prepare the final decision on dual/full pol, together with the list of people who will participate in the iterations leading to the final decision (Action 25.7, YK).

The mentioned topics to be taken into account are the following ones:

- Retrieval accuracy (SM & OS)
- Non-negligible natural T3& T4
- Faraday rotation correction
- Cryosphere, new products
- RFI detection
- Beam Squint
- FP allows for DP processing
- Novelty, future applications
- Operational services (Meteo)

10. ELBARA Update (MM/CM)

A statement of work is in preparation to support the three ELBARA operations in the next three years for transport, maintenance and repair if necessary. On 12-13 may 2009, a training course of GAMMA

was held in Zurich for the 3 users who will use soon the 3 ELBARA instruments: LMU team, VAS team and TKK/FMI team. The long-term experiments will start this summer 2009:

In the Upper Danube Catchment (LMU team)

At the Valencia Anchor Site (VAS team)

At Sodankyla boreal site (TKK/FMI team)

11. Corbella equation for radioastronomy and SMOS (MM)

Closure of Action 24.8.

12. Update on salinity retrieval with AMSR over the tropical atlantic ocean (NR)

The use of AMSR channels ratio, with some processing, showed that it was possible to retrieve with an accuracy of about 1 psu salinity with a C-band instrument. This is very encouraging as the AMSR C-band sensitivity to SSS is about ten times poorer than that of SMOS. During the discussion that followed, it was again stated that match-ups will be necessary on the long term (during all SMOS mission).

13. Date/Place/Objectives of next SAG meeting

The next SMOS SAG meeting will be held in ESAC on the 11th and 12th of January 2010 (TBC by Achim Hahne and Mark Drinkwater). The main goal will be to assess the key points of the Commissioning Plan and discuss emerging problem if any.

14. Update on Radar Backscatter for SM Estimation over Arid Areas (JB)

An Invitation-to-Tender for a study on radar backscatter for SM estimation over arid areas will be published by ESRIN in June 2009.

Recommendations

No	Description
25.1	Stop the contract with IM and establish a new contract with Wolfgang Wagner at the University of Vienna for the SM network database.
25.2	Prepare for RFI observing all the radars during the commissioning phase.

New Action Items

Action	No	Actionee	Due Date	Status
Provide the sea-ice study final report to the SAG members in June 2009	25.1	Catherine Bouzinac	June 2009	Open
Provide a list of European scientific volunteers who plan to participate in the in-situ measurements of the australian campaign	25.2	Yann Kerr	June 2009	Open
Use nominal swath instead of small swath for cal/val sites coverage detection	25.3	Berthyl Duesmann	June 2009	Open
Give priority order to the different contributors in the acquisition plan	25.4	Mike Brown & Berthyl Duesmann	June 2009	Open
Propose a new pseudo-random set-up for the short calibrations	25.5	Berthyl Duesmann & Yann Kerr	June 2009	Open

Action	No	Actionee	Due Date	Status
Write a technical note on the Level 1 RFI strategy	25.6	Roger Oliva & Michele Zundo	Jan 2010	Open
Start a decision tree for the strategy and useful metrics to prepare the final decision on dual/full pol, together with the list of people who will participate in the iterations leading to the final decision	25.7	Yann Kerr	July 2009	Open

25th SMOS SAG Meeting Agenda

18-19 May 2009

ESTEC, Noordwijk, Netherlands

1. Welcome and Introduction (Yann Kerr)
   - Objectives and approval of the draft agenda
2. Actions Review (Catherine Bouzinac)
3. Overview of on-going activities (Achim Hahne)
4. Update on Commissionning Plan and data availability to Cal/Val users (Mike Brown)
5. Status of the SM Network Database (Matthias Drusch)
6. SMOS sea-ice study final presentation (Georg Heygster)
7. Update on campaign activities (Catherine Bouzinac)
   - - expected benefit, needed support, available resources for Australian campaign
   - - spring campaigns in Europe
   - - planned CAROLS activities (Yann Kerr)
8. Discussion on campaigns activities and long-term cal-val
9. Discussion on dual/full polarizations
   - expected benefit from full pol for RFI observation (Niels Skou)
   - validity of full pol processing (Roger Oliva)
10. ELBARA update (Manuel Martin Neira/Christian Matzler)
11. Corbella equation for radioastronomy and SMOS (Manuel Martin-Neira)
12. Salinity retrieval with AMSR (Nicolas Reul)
13. Date/Place/Objectives of next SAG meeting (all)