



HAL
open science

Validation of the SMOS Level 2 retrieval algorithm over crops and prairies from the COSMOS-NAFE campaign

Kauzar Saleh Contell, Gilles Boulet, Yann H. Kerr, Philippe Maisongrande, Philippe Richaume, Jean-Pierre Wigneron, Steven Delwart, Rocco Panciera, Jeffrey Walker

► To cite this version:

Kauzar Saleh Contell, Gilles Boulet, Yann H. Kerr, Philippe Maisongrande, Philippe Richaume, et al.. Validation of the SMOS Level 2 retrieval algorithm over crops and prairies from the COSMOS-NAFE campaign. IGARSS 2008, IEEE Geoscience and Remote Sensing Society (GRSS). Labo/service de l'auteur, Ville service, USA., Jul 2008, Boston, United States. hal-02820892

HAL Id: hal-02820892

<https://hal.inrae.fr/hal-02820892v1>

Submitted on 6 Jun 2020

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

VALIDATION OF THE SMOS LEVEL 2 RETRIEVAL ALGORITHM OVER CROPS AND PRAIRIES FROM THE COSMOS-NAFE CAMPAIGN

*K. Saleh (1), Boulet G. (2), Kerr Y.H. (2), Maisongrande P. (2), Richaume P. (2),
Wigneron J.-P. (3), Delwart S. (4), Panciera R. (5), Walker J. (5)*

(1) Geography Department, University of Cambridge, Downing Place, CB2 3EN, UK, ks464@cam.ac.uk (2) CESBIO, Toulouse, France (3) INRA-EPHYSE, Bordeaux, France (4) ESA/ESTEC, Noordwijk, The Netherlands, (5) Department of Civil and Environmental Engineering, The University of Melbourne.

1. INTRODUCTION

This communication presents the results of the ESA-CoSMOS study on the validation of the SMOS (Soil Moisture and Ocean Salinity) Level 2 algorithm over prairies and crops. The objective of CoSMOS was to assess the performance of the SMOS soil moisture retrieval algorithm using real data, obtained from airborne measurements performed by the EMIRAD and PLMR L-band radiometers.

The ESA CoSMOS campaign (campaign for validating the operation of SMOS) was held at the end of 2005 in the Goulburn River Catchment, in SE Australia. The campaign gathered data to further investigate/validate the L-band emission model over prairies and crops which will be used by the SMOS Level 2 processor, to assess the effect of rainfall interception on soil moisture retrievals, and to assess the impact of sun glint on the radiometric measurements. CoSMOS was carried out for four consecutive weeks (during November-December 2005), and it provided airborne-based EMIRAD L-band measurements over eight farms (grazing, crops), each one flown around 8 times during the campaign period. Extensive ground support was available from the NAFE-05 campaign team. The NAFE campaign also provided airborne-based PLMR L-band measurements at a regular basis for four weeks, overlapping with CoSMOS for two weeks. In total, the two campaigns represent about 130 hours of flights spread over 6 weeks.

This presentation will focus on the following topics issued from the CoSMOS study:

- Based on the available data sets, including CoSMOS-NAFE, are we confident with the vegetation parameterisations in L-MEB (core of the L2 microwave model) over prairies and crops?
- Can the surface roughness uncertainty be tackled when attempting retrievals of soil moisture?
- What conclusions can be drawn from CoSMOS-NAFE concerning sun glint and rainfall interception?
- What conclusions can be drawn from CoSMOS-NAFE in terms of soil moisture validation from scattered soil moisture measurements?
- What recommendations can be made for future L-band airborne campaigns to be held around the SMOS commissioning phase?