

SP-578
July 2004

Proceedings of the 2nd CHRIS/Proba Workshop

*28-30 April 2004
ESRIN, Frascati, Italy*

**European Space Agency
Agence spatiale européenne**

Organising Committee

Remo Bianchi, ESRIN, Italy
Malcom Davidson, ESTEC, The Netherlands
Evert Attema, ESTEC, The Netherlands
Gonnie Elfering, ESTEC, The Netherlands

<i>Publication</i>	Proceedings of the second CHRIS/Proba Workshop, 28-30 April 2004, ESA/ESRIN, Frascati, Italy (ESA SP-578, July 2004)
<i>Compiled by:</i>	H. Lacoste
<i>Published and distributed by:</i>	ESA Publications Division ESTEC Postbus 299 2200 AG Noordwijk The Netherlands
<i>Printed in:</i>	The Netherlands
<i>Price:</i>	30 Euros
<i>ISBN No:</i>	92-9092-889-1
<i>ISSN No:</i>	1609-042X
<i>Copyright:</i>	© 2004 European Space Agency

Contents

Introduction

Session 1: CHRIS Calibration

Chairman: J. Settle

Review of Aspects Associated with the CHRIS Calibration

M. Cutter

Atmospheric Correction of CHRIS/Proba Data Acquired in the SPARC Campaign

L. Guanter, L. Alonso & J. Moreno

Quasi-Automatic Geometric Correction and Related Geometric Issues in the Exploitation of CHRIS/Proba Data

L. Alonso & J. Moreno

Removal of Noises in CHRIS/Proba Images: Application to the SPARC Campaign Data

J.C. Garcia & J. Moreno

Session 2: Land processes & Forests 1

Chairman: M. Barnsley

The SPECTRA Barrax Campaign (SPARC): Overview and First Results from CHRIS data

J.F. Moreno et al., J. Melia et al., J.A. Sobrino et al., J.A. Martinez-Lozano et al., J. Calpe-Maravilla et al., A. Calera Belmonte et al., F.J. Montero Riquelme et al., H. López Corcoles et al., M. Pujadas et al., M. Habermeyer et al., F. Baret et al., G. d'Urso et al., R. Boussema et al., J.-L. Roujean et al. & R. Bianchi et al.

Retrieval of Vegetation Biophysical Variables from CHRIS/Proba Data in the SPARC Campaign

S. Gandia, G. Fernández, J.C. Garcia & J. Moreno

Analyses of Hyperspectral and Directional CHRIS Data for Agricultural Monitoring using a Canopy Reflectance Model

S. Begiebing & H. Bach

Retrieval of Leaf Area Index by Inverting Hyper-Spectral, Multi-Angular CHRIS/Proba Data from SPARC 2003

G. D'Urso, L. Dini, F. Vuolo, L. Alonso & L. Guanter

San Rossore (Italy) Forestry Test Site: Methodology for Calibration and Validation of CHRIS-Proba Data

A. Barducci, F. Castagnoli, D. Guzzi, P. Marcoionni & I. Pippi

Session 3: Land processes & Forests 2

Chairman: J. Moreno

Forest Type Discrimination using Multi-Angle Hyperspectral Data

F. Kayitakire & P. Defourny

A Multi-Temporal and Multi-Angular Study of Hyperspectral Data Related to the Biophysical Properties of Cotton Crops & Soil Characteristics, NSW, Australia

R. Merton, Sugianto & J. Huntington

Core Site Gilching (Germany) - PI Activities in 2003 and Aims for 2004

N. Oppelt, W. Mauser, R. Efinger & P. Klotz

Exploitation of Multi-Angle Data from CHRIS on Proba: First Results from the Jornada Experimental Range

M. Chopping, A. Laliberte, A. Rango

Field Goniometer System for Accompanying Directional Measurements

T. Schneider, S. Zimmermann & I. Manakos

Directional Measurements for Reed Differentiation

T. Schneider, P. Gege & C. Mott

Session 4: Inland and Coastal Waters

Chairman: S. Lavender

Monitoring of Lake Water Quality using Hyperspectral CHRIS-Proba Data

S. Mannheim, K. Segl, B. Heim & H. Kaufmann

High Spatial Resolution Remote Sensing of the Plymouth Coastal Waters

S. Lavender, RC. Nagur Cherukuru & D. Doxaran

Mapping of Chlorophyll and Suspended Particulate Matter Maps from CHRIS Imagery of the Oostende Core Site

B. Van Mol, Y.-J. Park, K. Ruddick & B. Nechad

Quantitative Estimation of Suspended Particulate Matter from CHRIS Images

S. Salama & J. Monbaliu

Investigations on the Capability of CHRIS-Proba for Monitoring of Water Constituents in Lake Constance Compared to MERIS

S. Miksa, P. Gege & T. Heege

Session 5: New projects for 2004

Chairman: R. Bianchi

CEDEX Proposal for CHRIS/Proba Activities in 2004 on Validation of MERIS Models

R. Peña-Martínez, A. Ruiz-Verdú & J.A. Dominguez-Gómez

BIRD-CHRIS Joint Experiments for Fire Mapping

D. Oertel, B. Zhukov, P. Barbosa, I. Csiszar, C. George, A. Held, H. Hayasaka, F. Siegert & M. Wooster

Assessment of CHRIS Proba Data for Land Cover Derivation and Flood Mapping: Application over the Dongting-Poyang Lake Sectors and to the Songhuajiang River (China)

H. Yesou, J. Li, Y. Wang, J. Xin, S. Clandillon & P. de Fraipont

Hyperspectral Remote Sensing Technologies and Applications in China

Q. Tong, B. Zhang & L. Zheng

Summary

List of Participants

Additional Material

Presentations:

Programme (with links to individual presentations)

2nd ESA CHRIS/Proba Workshop
on the Exploitation of Data Products
from the Compact High Resolution Imaging Spectrometer on board ESA's Proba
Satellite

28 - 30 April 2004

ESRIN
Frascati, Italy

INTRODUCTION

Proba (Project for On-Board Autonomy) satellite was launched in October 2001 as a technology demonstrator for onboard operational autonomy, for new spacecraft technology both hardware and software, and to test Earth observation and space environment instruments in space. The instrument payload includes a Compact High Resolution Imaging Spectrometer (CHRIS), a radiation measurement sensor (SREM), a debris measurement sensor (DEBIE), high resolution and wide angle Earth pointing cameras, a star tracker and gyroscopes.

After the one-year of operations as technology demonstration mission Proba had its lifetime extended as an Earth Observation mission providing the scientific community with unprecedented and innovative satellite hyperspectral multi-angular CHRIS data. The CHRIS instrument provides Earth surface reflectance data in the visible/near infrared, at high spatial and spectral resolution, and by using Proba's pointing capabilities collects Bi-directional Reflectance Distribution Function (BRDF) data for selected test sites on the Earth's surface with a wide range of different viewing configurations.

Following the workshop in April 2003 and after a successful year of CHRIS/Proba exploitation in 2003, it has been decided to invite all principal investigators, selected through ESA's announcement of opportunity, to a second workshop to present the results of their analysis of 2002 and 2003 acquisitions and their plans for 2004. The workshop is also open to all parties interested in the CHRIS/Proba achievements.

The CHRIS/Proba workshop represents a major opportunity for the user community to present scientific results obtained using CHRIS data for atmospheric, land and coastal studies. Contributions that discuss the performance of the satellite and the quality of its data products are also welcome. The workshop will be organised around a single stream of plenary sessions with oral presentations providing a forum for:

- Assessment of satellite performance and data quality;
- Scientific exchange on results achieved with CHRIS data in various application areas;
- Presentation of future CHRIS/Proba data exploitation projects;
- Review of individual projects for final definition of the 2004 CHRIS acquisition plan.