

*Proceedings of the 2nd*

# **MERIS/(A)ATSR User Workshop**

22–26 September 2008  
ESRIN, Frascati  
Italy

*Scientific committee*

D. Antoine, Obs. Océanologique de Villefranche, France  
F. Baret, INRA, France  
I. Barton, CSIRO, Australia  
M. Caetano, Portuguese Geographic Inst., Portugal  
G. Corlett, Univ. of Leicester, UK  
G. de Leeuw, TNO, The Netherlands  
R. Doerffer, GKSS, Inst for Coastal Research, Germany  
C. Donlon, Meteorological Office, UK  
J. Fischer, FUB Inst. fur Weltraumwissenschaften, Germany  
N. Gobron, JRC Space Applications Inst., Italy  
J. Gower, Inst. of Ocean Sciences, Canada  
D. Llewellyn-Jones, Univ. of Leicester, UK  
P. Minnett, Univ. of Miami, USA  
J. Moreno, Univ. of Valencia, Spain  
J.-P. Muller, Univ. College London, UK  
C. Mutlow, Rutherford Appleton Lab., UK  
P. North, Swansea Univ., UK  
A.J. Prota, NILU Norwegian Inst. for Air Research, Norway  
T. Pyhälähti, Finnish Environment Inst. (SYKE), Finland  
M. Rast, GEO Secretariat, Switzerland  
R. Santer, Univ. du Littoral Cote d'Opale, France  
K. Sorensen, Norwegian Inst. for Water Research, Norway  
J. Yoder, Woods Hole Oceanographic Inst. USA

*Organising Committee*

Peter Regner, P. Goryl, S. Pinnock, A. Zmuda, Y.-L. Desnos, G. Campbell (ESA/ESRIN)

<i>Publication</i>	Proc. of 'The 2nd MERIS / (A)ATSR Workshop', 22–26 September 2008, Frascati, Italy (ESA SP-666, November 2008)
<i>Edited by</i>	H. Lacoste & L. Ouwehand
<i>Published and distributed by</i>	ESA Communication Production Office ESTEC, Noordwijk, The Netherlands
<i>Price</i>	€ 60
<i>ISBN</i>	978-92-9221-230-8
<i>ISSN</i>	1609-042X
<i>Copyright</i>	© 2008 European Space Agency

# CONTENTS

## Foreword

### **AATSR Validation**

*Chair: D. Llewellyn-Jones & G. Corlett*

AATSR In Orbit Performance and Prospects for Continued Operations  
*D.L. Smith*

Calibration Status of the AATSR Reflectance Channels  
*D.L. Smith & C.A. Poulsen*

AATSR SST Validation with SISTeR over the Skagerrak  
*T. Nightingale, K. Sørensen & A. Folkestad*

Validation of AATSR Using the ISAR Radiometer – Results Since 2004 and a New Approach for a Match-Up Quality Indicator  
*W. Wimmer, I. Robinson & C. Donlon*

### **MERIS Validation – Part 1**

*Chair: J-P. Huot & P. Goryl*

MERMAID: The MERIS Matchup In-Situ Database  
*K. Barker, C. Mazeran, C. Lerebourg et al.*

MERIS Vicarious Adjustment over Water: First Steps Towards Next Reprocessing  
*C. Mazeran, D. Antoine, C. Lerebourg et al.*

Applications of the MERIS Algal Pigment Products in Belgian Waters  
*K. Ruddick, Y. Park, R. Astoreca et al.*

Validation of MERIS Products in the Skagerrak  
*K. Sørensen, A. Folkestad, K. Stelzer et al.*

Status of the Implementation of the BPAC

*C. Mazeran, J.-P. Huot, M. Bouvet & G. Moore*

Comparison of MERIS (Algal\_1 and Algal\_2) and MODIS (OC3M) Chlorophyll Products and Validation with HPLC *In-Situ* Data Collected off the Western Iberian Peninsula

*C. Sá, J. Da Silva, P.B. Oliveira & V. Brotas*

## **MERIS Validation – Part 2**

*Chair: J-P. Huot & P. Goryl*

Performance of FAPAR Operational Products Derived from MERIS at the Full and Reduced Resolutions

*N. Gobron, B. Pinty, I. Andreadakis et al.*

Validation of the MERIS FAPAR L2 Products against Independent Estimates Derived from the MODIS and MISR Surface Albedo Operational Products

*B. Pinty, T. Lavergne, T. Kaminski et al.*

Multi-Scale Analysis and Validation of the Envisat MERIS Terrestrial Chlorophyll Index (MTCI) in Woodland

*J. Dash, S.F. Almond, D. Boyd & P.J. Curran*

Validating Time Series of a Combined GPS and MERIS Integrated Water Vapor Product

*R. Lindenbergh, H. van der Marel, M. Keshin & S. de Haan*

## **MERIS Ocean and Coastal Zones – Part 1**

*Chair: R. Doerffer & J. Fischer*

Operational Data Assimilation and Marine Forecasting Based on Envisat Data Covering Danish Waters (2006 – 2007)

*L.B. Hansen, J.V. Tornfeldt Sørensen, A.C. Erichsen et al.*

## **MERIS Ocean and Coastal Zones – Part 2**

*Chair: R. Doerffer & J. Fischer*

New Results from a Global Survey Using MERIS MCI

*J. Gower & S. King*

Using MERIS Data to Retrieve Water Components in the Pearl River Estuary

*H. Xi & Y. Zhang*

Detection of Red Tides Using the Red Shifts from MERIS 681 Nm Peak to 709 Nm Peak: A Case Study in the East China Sea  
*M.-X. He, Y. Wang, Q. Yang et al.*

The Impact of Sun Glint on the Retrieval of Water Parameters and Possibilities for the Correction of MERIS Scenes  
*R. Doerffer, H. Schiller, J. Fischer et al.*

Observation of Different Phytoplankton Groups and Biomass Using Differential Optical Absorption Spectroscopy on SCIAMACHY Data and Comparisons to In-Situ, NASA Ocean Biogeochemical Model and MERIS ALGAL-1 Data  
*A. Bracher, M. Voutas, T. Dinter et al.*

Estimation of Inherent Optical Properties and the Water Quality Components in the Neuse River–Pamlico Sound Estuarine System  
*L. Sokoletsky, R. Lunetta & J. Ediriwickrema*

Earth Observation for Monitoring Biodiversity in Central America  
*S. Kleeschulte, U. Gangkofner, P. Gaspar et al.*

## **(A)ATSR Applications – Part 1**

*Chair: C. Donlon & P. Minnett*

The (A)ATSR as a Reference Data Set for Operational SST Production  
*C. Donlon, J. Kennedy, J. Stark & G. Corlett*

Validation of (Advanced) Along-Track Scanning Radiometer Sea Surface Temperature Observations and Comparison with Advanced Very High Resolution Radiometer Pathfinder Sea Surface Temperature Data  
*A. O'Carroll, T. Blackmore, K. Fennig & R. Saunders*

Producing Climate Data Records of Sea-Surface Temperatures from Measurements from Spacecraft Radiometers  
*P.J. Minnett*

The (A)ATSR Re-Analysis for Climate Project  
*C.J. Merchant, E. Kent, D. Llewellyn-Jones et al.*

## **(A)ATSR Applications – Part 2**

*Chair: M. Caetano & A.J. Prata*

ATSR World Fire Atlas: Can we find a Trend in the Longest Global Fire Distribution Series?  
*O. Arino & S. Casadio*

AATSR Land Surface Temperature Product: Comparison with SEVIRI and MODIS in the Framework of CEFLES2 Campaigns.  
*G. Soria, J.A. Sobrino, M. Atitar et al.*

The Impact of Atmospheric Aerosol from Biomass Burning on Amazon Dry-Season Drought  
*S.L. Bevan, P.R.J. North, W.M.F. Grey et al.*

Using AATSR as a Radiance Calibration Reference for NOAA Satellites  
*J.P.D. Mittaz & A. Harris*

## **Tools and Services**

*Chair: G. Corlett & J-P. Muller*

SEBS Module BEAM: A Practical Tool for Surface Energy Balance Estimates from Remote Sensing Data

*L. Wang, G.N. Parodi & Z. Su*

General Satellite Data Service Provision Infrastructure for Processing Envisat MERIS and other Sources of Data

*T. Pyhalahti, S. Korhonen, J. Attila et al.*

New Products Available from the (A)ATSR Archive

*M. Pritchard & N. Houghton*

The Leicester AATSR Global Analyser (LAGA) – Quick-Look Analysis of Large-Scale Oceanic Processes

*D. Llewellyn-Jones, G. Corlett & S. Good*

Real Time Analysis with the Medspiration High Resolution Diagnostic Data Set

*D.J.S. Poulter, C.J. Donlon & I.S. Robinson*

Prediction Model of Jellyfish Blooms Based in Sea Surface Temperature and Salinity and other Water Quality Indicators

*L. Moreno-Patricio, L. Romero & A. Soria-Frisch*

## **MERIS Ocean and Coastal Zones – Part 3**

*Chair: J. Gower & R. Santer*

Cloud Filling of Total Suspended Matter, Chlorophyll and Sea Surface Temperature Remote Sensing Products by the Data Interpolation with Empirical Orthogonal Functions Methodology, Application to the BELCOLOUR-1 Database.

*D. Sirjacobs, A. Alvera-Azcárate, A. Barth et al.*

## **Clouds and Atmosphere**

*Chair: J. Fischer & G. De Leeuw*

MERIS AOD and PM10 In-Situ Measurements:  
Data Fusion in an Operational Air Quality Forecast Model  
*S. Janssen, P. Viaene, F. Fierens et al.*

A New Climatology of Sea Surface Wind Speed under Cloud-Free Conditions for the Estimation  
of the Impact of Sun glint in GMES Sentinel-3  
*M. Lekouara, B. Carnicero Dominguez, M. Aguirre & M.A. Rubio*

AMARSI: Aerosol Modeling and Retrieval from Multi-Spectral Imagers  
*G. de Leeuw, R.L. Curier, A. Staroverova et al.*

A Method for Detection and Classification of Clouds over Water  
*H. Schiller, C. Brockmann, H. Krasemann & W. Schönfeld*

## **Lakes**

*Chair: T. Pyhalahti & K. Sørensen*

Observations of the Largest Italian Lakes from MERIS  
*C. Giardino, M. Bresciani, V.E. Brando & A.G. Dekker*

Adjacency Effect Considerations and Air/Water Constituent Retrieval for Lake Constance  
*D. Odermatt, S. Kiselev, T. Heege et al.*

Development of MERIS Lake Water Algorithms: Validation Results from Europe  
*A. Ruiz-Verdú, S. Koponen, T. Heege et al.*

Performance of MERIS Products in Lake Victoria  
*K. Sørensen, A. Folkestad, K. Stelzer et al.*

Analysis of MERIS Data for Assessing the Water Quality in Lake Guiers (Senegal):  
Preliminary Results  
*S. Diop, S. Wade & M.N. Tijani*

## **MERIS Land**

*Chair: J. Moreno & F. Baret*

A Narrow Band NDVI for Robust LAI Retrieval Independent of  
Canopy Chlorophyll Concentration – Test with MERIS  
*F. Canisius & R. Fernandes*

Inter-Comparison of SEVIRI/MSG and MERIS/Envisat Biophysical Products  
over Europe and Africa  
*F.J. García-Haro, F. Camacho-de Coca & J. Meliá Miralles*

Testing MERIS FR Capabilities and Limits to Map Forest Classes in Spain

*D. Pedrazzani, J. Yagüe Ballester, R. Vallejo Bombín & G. Fernández Centeno*

Remote Sensing Input for Regional to Global CO<sub>2</sub> Flux Modelling

*W. Knorr, T. Kaminski, M. Scholze et al.*

Supervised Crop Classification from Middle-Resolution Multitemporal Images

*L. Brodsky, V. Vobora, L. Sourkova & R. Kodesova*

Land Cover Classification in Portugal with Intra-Annual Time Series of MERIS Images

*H. Carrão, A. Araújo & M. Caetano*

Monitoring Vegetation Dynamics Using MERIS Fused Images

*R. Zurita-Milla, G. Kaiser, J. Clevers et al.*

## **MERIS/(A)ATSR Synergy**

*Chair: P. North & C. Mutlow*

Forest Fire Monitoring Using Envisat-AATSR and MERIS Images

*X. Qin, Z. Zhang, Z. Li & H. Yi*

The Determination of Snow Albedo Using Combined AATSR and MERIS Observations

*A.A. Kokhanovsky & M. Schreier*

MERIS/AATSR Synergy Algorithms for Cloud Screening, Aerosol Retrieval and Atmospheric Correction

*P. North, C. Brockmann, J. Fischer et al.*

Cloud Screening Methodology for MERIS/AATSR Synergy Products

*L. Gómez-Chova, G. Camps-Valls, J. Muñoz-Mari et al.*

The Retrieval of Cloud-Top Pressure Using Combined Measurements of MERIS and AATSR

*R. Lindstrot, R. Preusker & J. Fischer*

## **GlobSeries**

*Chair: O. Arino & B. Pinty*

Globaerosol: A 12 Year Global Aerosol Dataset from European Satellite Instruments

*G.E. Thomas, C.A. Poulsen, R. Siddans et al.*

The Globcarbon Initiative: Global Biophysical Products for Global Terrestrial Carbon Studies

*S. Plummer, O. Arino, F. Ranera et al.*

GlobCover

*O. Arino, F. Ranera, P. Bicheron et al.*

GlobSnow - A New Contribution to Global Snow Monitoring Services

*B. Koetz, O. Arino, J. Pouliaenen & B. Bojkov*



## Late Paper

Analysis of Landcover Dynamics in the Niger Inland Delta Using MERIS Full Resolution Data  
*R. Seiler & E. Csaplovics*

## Poster Session

Validation of MERIS Water Products in the Southern North Sea: 2002-2008  
*K. Ruddick, Y. Park, R. Astoreca et al.*

Validation of MERIS Remote Sensing Reflectance in Atlantic Case 1 Waters with Ground Based In-Situ Measurements  
*A. Theis, B. Schmitt, S. Gehnke et al.*

The Determination of the Cloud Fraction in the SCIAMACHY Pixel Using MERIS  
*A.A. Kokhanovsky, W. von Hoyningen-Huene, J.P. Burrows et al.*

Comparison of Theoretical and Empirical Algorithms for the Estimation of Atmospheric Water Vapour Amounts Using AATSR Data  
*I.J. Barton*

UV Absorbing and Scattering Aerosol Indices from SCIAMACHY: Comparison with Fire Counts from (A)ATSR  
*M. Penning de Vries & T. Wagner*

Sensitivity Study of the Dual-View Algorithm for Aerosol Optical Thickness Retrieval over Snow and Ice  
*L. G. Istomina, W. von Hoyningen-Huene, A. A. Kokhanovsky et al.*

Sentimers: Towards Operational Processing of Inland Waters MERIS FR and Sentinel-3 Data  
*S. Peters, W. Verhoef, M. Laanen & R. van Swol*

Global Monitoring of Annual Vegetation Cycles Using DOAS Satellite Observations  
*E. Eigemeier, S. Beirle, U. Platt et al.*

Geolocation Assessment of 300 m Resolution MERIS Globcover Ortho-Rectified Products  
*P. Bicheron, V. Amberg, L. Bourg et al.*

On the Importance of a Band at 709 nm  
*J. Gower & S. King*

MERIS Validation with Respect to Operational Monitoring Needs in the North and Baltic Sea  
*K. Stelzer, J. Geißler, C. Brockmann et al.*

A Case Study on the Use of Hydropt in the Wadden Sea  
*A. Hommersom & S. Peters*

Near Shore Oceanographic Conditions off SW Portugal in Summer 2006 and 2007 from Satellite and In Situ Data  
*P.B. Oliveira, M.M. Angélico, J. Fernandes et al.*

MERIS Ocean Color Processing at NOAA Coastwatch

*L. Stathoplos, P. Keegstra, S. Ramachandran et al.*

Algorithm Development for Coccolithophore Bloom Detection from Envisat MERIS Level-1B Data

*K. Ebert, J. Fischer & M. Schaale*

A Twelve Years ATSR-2/AATSR Preliminary Classification Maps Database

*M. Cavicchi, A. Beccati, S. D'Elia et al.*

ATSR-WFA New Algorithms for Hot Spot Detection

*S. Casadio & O. Arino*

The ATSR-WFA Web Tool: Easy Access to the WFA Archive

*S. Casadio, R. Nay & O. Arino*

Land Surface Temperature from AATSR Data: Comparison of Split-Window and Single Channel Correction Methods

*J.M. Galve, C. Coll, V. Caselles et al.*

Building Saliency, Legitimacy, and Credibility Towards Operational Global Land Cover Observations

*M. Herold, C. Schmullius & O. Arino*

OCOC – From Ocean Colour to Organic Carbon

*B. Heim, P. Overduin, L. Schirrmeister & R. Doerffer*

SOMAFID: A Second Level Stratified Image Processing System for Thermal Anomalies Identification in (A)ATSR Imagery

*L. Pellegrini, S. Natali & A. Baraldi*

Use of MERIS and AATSR Data in Previsional Fire Danger Index Computation System for Alpine Regions

*L. Corgnati, S. Bertoldo, N. Tartaglione & G. Perona*

Laser Remote Sensing of Chromophoric Dissolved Organic Matter and Algal Pigments off the Svalbard Islands: An Opportunity for MERIS Cal/Val in the Arctic Ocean

*L. Fiorani, F. Colao, A. Di Cicco et al.*

Mt. Etna Volcanic Aerosol and Ash Retrievals Using MERIS and AATSR Data

*C. Spinetti, S. Corradini, E. Carboni et al.*

Aerosol Remote Sensing with AATSR: The Dual-View ORAC Retrieval Scheme

*A.M. Sayer, G.E. Thomas, R.G. Grainger & C.T. Mutlow*

Testing Available MERIS Image Processors for Lakes

*K. Alikas, I. Ansko, A. Reinart et al.*

Monitoring Water Level and Water Quality of Lakes Macro Prespa and Ochrid Using Radar Altimetry and MERIS Data

*M. Stefouli, A. Kouraev & E. Charou*

Use of Airborne and Field Data to Validate Sea Surface Temperature Data from MODIS in the Ria de Vigo

*L. González-Vilas, Á. Mosquera Giménez, M. Derriba Estévez & J.M. Torres Palenzuela*

Development of a Neural Network to Retrieve Chlorophyll Concentrations from MERIS Images in the Galician Coastal Waters  
*A. Mosquera Giménez, M. Darriba Estévez, L. González Vilas & J.M. Torres Palenzuela*

Signal-to-Noise Ratio for MTCI and NDVI Time Series Data  
*J. Dash, T. Lankester, S. Hubbard & P.J. Curran*

Disaster Monitoring with the Utilization of Envisat MERIS Satellite Images in Hungary  
*G. Nádor, Zs. Suba, G. Csornai et al.*

Estimation of Rice Plant Nitrogen Content from MERIS Data Using a Field Based Regressive Model  
*M. Boschetti, D. Stroppiana, A. Rosenmund et al.*

Potential of MERIS fAPAR for Drought Detection  
*S. Rossi, C. Weissteiner, G. Laguardia et al.*

A Methodology to Validate Coarse Resolution Biophysical Products from Multi-Resolution MERIS Data  
*F.J. García-Haro, A. Verger & B. Martínez*

Monitoring Drought Conditions in the Iberian Peninsula Using Moderate and Coarse Resolution Satellite Data  
*F.J. García-Haro, F. Belda, M. Amparo Gilabert et al.*

Ground Swath Prediction of MERIS and AATSR with ESOV-NG  
*O. Danne, N. Fomferra, M. Zundo & M. Pinol*

Test of Ground Reflectance Derived Using the AATSR Dual-View Algorithm  
*P. Kolmonen, L. Sogacheva, A.-M. Sundström & G. de Leeuw*

Contribution of Remote Sensing to the Monitoring of Environmental Parameters in the Portofino Marine Protected Area (Ligurian Sea): A Preliminary Test  
*M. Manca Zeichen, M.G. Finoia, G.P. Gasparini et al.*

Aerosol Retrieval over Finland Using the Dual-View AATSR Algorithm  
*L. Sogacheva, P. Kolmonen, A.-M. Sundström et al.*

Internal Waves Effect on Near-Surface Chlorophyll Concentration: Remote Sensing and Modelling  
*S. Muacho, J. Da Silva & V. Brotas*

## **Summary Session**

*Chair: Y.-L. Desnos & P. Regner*

AATSR Validation – Summary and Conclusions  
*D. Llewellyn-Jones & G. Corlett*

MERIS Cal/Val – Summary and Conclusions  
*Ph. Goryl & J.-P. Huot*

MERIS Ocean & Coastal Zones – Summary and Conclusions

*R. Doerffer, J. Fischer, J. Gower & E. Kwiatkowska*

MERIS Land – Summary and Conclusions

*J. Moreno & F. Baret*

MERIS Lakes – Summary and Conclusions

*T. Pyhalahti & K. Sørensen*

(A)ATSR Applications 1 – Summary and Conclusions

*C. Donlon & P. Minnett*

(A)ATSR Applications 2 – Summary and Conclusions

*M. Caetano & J. Moreno*

Clouds & Atmosphere – Summary and Conclusions

*R. Preusker, J. Fischer & G. De Leeuw*

MERIS/(A)ATSR Synergy – Summary and Conclusions

*C. Mutlow, P. North & I. Barton*

Tools & Services – Summary and Conclusions

*J.-P. Muller & G. Corlett*

## **List of Participants**