MERIS AND (A)ATSR DATA FOR AFRICAN USERS

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ABSTRACT

After more than 7 years of operation the MERIS and AATSR instruments onboard the Envisat satellite are in excellent condition and continue to operate very smoothly with nominal and stable performance. The demand for high quality data from these instruments has steadily increased over the years and has become an indispensable source of information in an increasingly wide range of EO applications.

MERIS provides a wealth of data highly relevant for the monitoring of phytoplankton distribution, water sediment and pollution levels in the open oceans and along coastal zones, the latter being areas of major concern world-wide. Diverse and complex natural processes and intense human demands on coastal areas jeopardize the ability of these ecosystems to support commerce, living resources, recreation, and habitation. MERIS ocean color data when used in synergy with other geophysical parameters, such as sea surface temperature derived from the AATSR instrument, enable a better understanding of the complex and diverse processes which continually change the coastal systems physically, chemically, and biologically. AATSR data, when added to the large data set collected from its predecessors ATSR & ATSR-2 onboard ERS-1 and -2 provides a near continuous record of 18 years of consistent global fields of SST data. Long time series of data are critically important to the development of robust and effective policies and management plans to ensure that coastal regions, including the hydrological and biogeochemical cycles, as well as coastal ecosystem health and productivity, are managed in a sustainable manner and to enable research into long-term processes and trends related to global change.

With a ground resolution of 300 m and 15 visible and near infrared spectral bands the MERIS sensor is ideal for measuring water quality parameters not only in the marine coastal areas, but also in large optically complex lake waters which are of high economical and ecological value. Lakes are a precious source of freshwater in Africa, and the usage of lake water must be carefully managed to satisfy a variety of different, and often competing, domestic, agricultural and industrial uses. Key to the formulation of adequate water management scenarios is accurate and reliable information on the occurrence and distribution of water quality indicators. MERIS data when combined with local algorithms tuned to specific water compositions provide basic key information for the state of lake water ecosystems, namely the optical properties of the water, which can be converted into transparency estimates as well as chlorophyll-a concentration and further phytoplankton biomass.

Access to EO data is a critical issue for African users. Recognizing the utility of satellite data for Integrated Water Resource Management and the need for action in Africa expressed at the World Summit on Sustainable Development (WSSD) held in Johannesburg, South Africa, the European Space Agency (ESA) in the context of the Committee of Earth Observation Satellites (CEOS), has launched the TIGER initiative in 2002 and since then has supported African efforts towards the development of the scientific, technical and operational capacity to better understand and monitor the status of the water resources in Africa making best use of EO technology. Since 2005, under the guidance of the African Ministerial Council on Water (AMCOW), with contributions from CEOS (e.g., ESA, the Canadian Space Agency), UNESCO and the African Development Bank and in collaboration with the Economic Commission for Africa (UN-ECA) and several other African and international organizations (e.g. CSIR, CRTM, Ramsar-Africa, South African Department of Water Affairs) TIGER has supported African partners with access to space-borne data and products, by offering specific training on EO applications for water management, by funding North-South collaborative projects aimed at developing tailored EO-based water information systems, and by favouring take-off, operationalisation and technology transfer of those demonstrated systems to African water authorities.

TIGER has completed its first implementation period (2005-2007) involving more than 150 African institutions (water authorities, universities, technical centres) through its projects and training activities and providing privileged access to MERIS data via dedicated regional acquisition plans in full resolution mode and data delivery via the ESA rolling archive over the largest lakes in the Continent: Lake Victoria and Lake Chad. The results and achievements of these first years of activity have

been recognized at the First African Water week organized in Tunis on 25-29 March 2008 with a direct recommendation: ***"International initiatives like … TIGER which provide useful tools to the countries to strengthen their capacities for ensuring water security should be encouraged and supported."*** As a direct response to this African request, a new implementation period of the TIGER initiative is proposed aiming at supporting African countries to enhance their capacities to better understand, monitor and manage water resources.

Within the frame of ESA's TIGER initiative and within the frame of ESA's Earth Observation data policy for Category-1 use, i.e. for research and applications development, MERIS and AATSR data products are continued to be provided to TIGER projects as well as to an ever-increasing number of users in Africa.

The presentation will give a general overview of the Envisat mission, with particular emphasis on AATSR and MERIS. The performance of the mission, as well as the current plan for extending its life and ensuring data continuity will be addressed. Further, an overview of the Envisat data access possibilities will be discussed including easy catalogue search, ordering, and the latest online archive access and data delivery services.