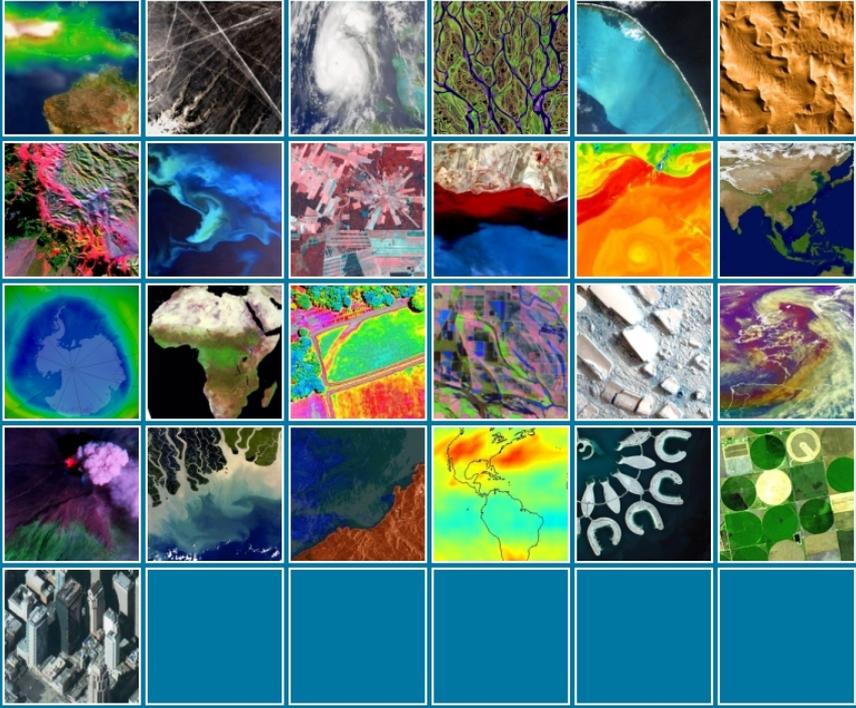


EARSeL

SEOS A-World of Images



PLAY MOVIE

AIR

WATER

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HUMAN IMPACT

MORE INFO

NEWSLETTER

September 2008
No 75



Front Cover – The front page of the entrance module “A world of Images” designed by the Belgian Earth Observation Platform within the framework of SEOS project [Science Education through Earth Observation for High Schools]. SEOS (www.seos-project.eu) is a two years project, now entering the second year, funded by the FP6 and coordinated by the University of Oldenburg. SEOS was initiated originally as an idea and proposal within the 25th EARSeL Annual Symposium in Porto (June 2005) by members of EARSeL and coordination of its Vice-Chairman, Dr. Rainer Reuter.

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The Newsletter is a forum for an exchange of news and views among the members of the Association. The opinions expressed in the Newsletter do not necessarily reflect the views of the editor, the EARSel Bureau or the other members of the Association.

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1. EDITORIAL

Dear members,

We are back from a hot summer here in Greece. We hope you have found some time to relax and your batteries are charged again. Now, as everyday life is gaining its normal rhythm let us focus on activities that promote and enhance the cooperation between EARSeL members.

The eProceedings of EARSeL are in the phase of evaluation towards awarding a citation index. Numerous Symposia and Workshops are bringing together the world of Remote Sensing and publications relevant to the activities of the Association are widely distributed.

In this issue specific attention is given to the SEOS project, for which more information you will find in the "news from members" chapter. SEOS is a Coordinated Action and can be considered as an EARSeL initiative. The idea from the Bureau found eager listeners at the 25th EARSeL Symposium in Porto and a capable consortium of EARSeL members was formed together with ESA and UNESCO. The SEOS proposal was submitted within the FP6 funding framework. Now SEOS is successfully entering its second implementation year and new ideas are developing for strengthening the cooperation between EARSeL members in research projects parallel to other activities.

If you take a look at the title of the news articles of this issue, you will realise that the world kept on spinning during the summer period. The focus of the news chapter is on the activities regarding disaster monitoring, climate change, data provision, and missions.

In the chapter for the feature article EARSeL meets EARSC. We have placed an interesting interview given to Mrs. Mónica Miguel Lago, EARSC secretariat, by Mr. Daniel Vidal-Madjar, Chief of the French Inter-Ministerial Task Force on GMES. The topic is about the importance of EO from space to our capacity to manage the environment for a sustainable development.

Finally, please do not miss the event calendar chapter till late 2009, so that you may mark on your agenda the interesting forthcoming events.

We would like to wish you a fruitful new academic year and we hope you to meet you in a next EARSeL event.

Sincerely,

The Editorial Team

2. NEWS FROM EARSel

2.1 EARSel ECONOMIC STATUS FOR THE FINANCIAL YEAR 2007-2008

At the General Assembly of the 28th EARSel Symposium in Istanbul, EARSel's treasurer Dr Lena Halounova presented the income and expenses of EARSel, since the last General Assembly in Bolzano last year.

The final financial result can be characterized by two parts - incomes and expenditures.

The incomes were formed by membership fees (56,945.80 €) and by subsidies which were donated by UNESCO for travel expenditures (1900 €). Annual Symposium and workshops fees were the second highest incomes. The Annual Symposium in Bolzano in Italy (75,530 €) and Imaging Spectroscopy organized in Bruges in Belgium (42,617 €) were the major EARSel events in 2007. In addition, the EARSel publications produced a revenue of 828 €. The final income was represented by bank accounts (4,592 €). The total 2007 income of the EARSel was 180,514 €.

The expenditures must cover the secretariat, posting and mailing (27,180 €). Missions of the bureau members to two meetings taking part twice per year (7,113 €). All events also had expenditures. Those for Bolzano reached 58,470 € and for Bruges 43,125 €. There were two invoices for workshops that were already organized in 2007 and paid in 2008 (1,731 €). Publications also create very high expenditure each year (30,623 €). The bank charges increase the expenditures for 1,050 €. The annual maintenance for the Conference Management System is the last item (205 €).

The total 2007 expenditure was 169,497 €. Calculating the difference we receive a positive result of 11,016 €.

*By Prof. Dr. Lena Halounova,
EARSel Treasurer*

2.2 EARSel INITIATIVE FOR STRENGTHENING THE CO-OPERATION BETWEEN MEMBERS BECOMES REALITY THROUGH SEOS PROJECT

Earth observation by means of remote sensing is relevant in science education in high schools since it sharpens the sensibility to the natural environment and thus stimulates the willingness to learn of its relevance to everyday life conditions. This covers a broad field of experience, ranging from daily weather data to long-term climatic conditions, landcover changes, marine pollution or environmental hazards as well as their interconnection to name but a few.

With over 200 members, many of them University Institutes, the European Association of Remote Sensing Laboratories (EARSel) has high expertise in earth observation using remote sensing techniques. Based on their research results, 15 internet-based eLearning tutorials are being realised on selected topics in earth observation within SEOS project (Science Education through Earth Observation for High Schools). The tutorials are being tested in co-operation with different European partner high schools.

SEOS is an initiative for using remote sensing in science education curricula in high schools funded under the 6th Framework Programme of the European Commission (EC). The project is implemented by 11 different partners from several European countries (including EARSel and UNESCO) in cooperation with the European Space Agency (ESA).

The project covers many disciplines such as physics, biology, geography, mathematics and engineering, focusing on the interdisciplinary character of remote sensing. Students will connect personal observations to global perspectives, and will gain an understanding for the techniques needed to receive and interpret these data. The project therefore aims to convey scientific literacy, which belongs to the key education standards.

Integrating earth observation with remote sensing as an element of science educa-

tion in high schools provides a basis for subsequently using environmental monitoring in working life. Therefore, the tutorials meet also the demands of training courses for the users of the Global Monitoring for Environment and Security (GMES) services. The UNESCO will use the produced material for educational purpose in selected developing countries, hence extending the benefits of this project to an even larger audience.

Tutorials

Remote Sensing for Earth Observation

Module 1 A world of images

Geography and Biology

Module 2 Conservation of natural and cultural heritages

Module 3 Coral reefs

Module 4 Remote sensing and geo-information in agriculture

Module 5 Landcover / landuse change and land consumption

Physics and Monitoring Technology

Module 6 Understanding spectra from the earth

Module 7 Ocean colour in the coastal zone

Module 8 Currents in the ocean measured from space

Module 9 Remote sensing using lasers

Environmental Sciences, Hazards & Environmental Management

Module 10 3D models based upon stereoscopic satellite data

Module 11 Natural resources management

Module 12 Marine pollution

Mathematics, Statistics & Modelling

Module 13 Classification, algorithms and methods

Module 14 Modelling of environmental processes

Module 15 Time series analysis

More information: www.seos-project.eu

Contact: Dr. Rainer Reuter, University of Oldenburg, Germany; rainer.reuter@uni-oldenburg.de

2.3 NEW EARSel MEMBER - LABORATORY OF GEO- PHYSICAL SATELLITE RE- MOTE SENSING & AR- CHAEO-ENVIRONMENT / IN- STITUTE FOR MEDITERRA- NEAN STUDIES – FOUNDA- TION FOR RESEARCH & TECHNOLOGY, HELLAS (FORTH)

The Laboratory of Geophysical-Satellite Remote Sensing & Archaeo-environment was established in 1996 through a funding programme from the Greek Secretary of Research & Technology. It was adopted by the Institute for Mediterranean Studies – FORTH which is based at Rethymno, Crete. During this period, the Lab contributed to basic and applied research and it became a reference point approaching with equal importance technology, culture and informatics. Its research agenda is dedicated towards the advance of innovative Geo-information technologies (GIS & Satellite Remote Sensing), Geophysical Exploration and Archaeo-environmental analysis within the cultural and environmental domain.

The Lab is equipped with the most current and upgraded geophysical instrumentation for shallow depth exploration and its services and collaborations have reached more than 30 university and research institutes from Greece and 15 countries worldwide, together with a number of public and private institutions. The Lab has played an innovative role in the development of cultural oriented GIS and WEB_GIS applications in Greece and Cyprus and its long term collaboration with the different sections of the Ministry of Culture and other cultural organizations has created a channel of reciprocal communication and trust. The continuing activities of the Lab led to the publication of Archaeo-Telepiskopika Nea in order to enhance communication with the scientific community and help the dissemination of the results of our research projects.

The Lab participates in more than 20 large-scale national and international research programs (e-Content, INTERREG, ARCHIMED, ETPA, PENED, EPEAEK, INSTAP, Region of Crete, 3rd Community Support Framework and Cohesion Fund, and others) and has the scientific supervision and partnership of more than 80 projects of applied and basic research that have resulted more than 200 publications. Within this framework about 150 students from Greek and foreign universities have got training

and about 20 of them have carried out their PhD, graduate and undergraduate dissertations.

Recent activities of the Lab include the development of GIS and WEB_GIS applications for the Acropolis of Athens, the Municipality of Rethymno, the European path E4, the archaeological Atlas of Crete, the Seismic Risk Assessment of the urban centres of Crete, the development of a digital archive for the natural resources of Crete, and others. Satellite remote sensing is used for the geomorphologic reconstruction of Neolithic Thessaly, the settlement pattern analysis of minoan Crete and the study of the lineaments and geomorphic characteristics of Crete. Finally, the

archaeological geophysical prospection campaigns of the Lab have been expanded to the wider Eastern Mediterranean region. The Lab is also a member of international organizations, such as AGILE and EPOCH.

Until now, the Lab is widely and internationally recognized for its contribution in fostering multidisciplinary research and education and keeps the vision of creating a common pole for promoting a wide range of innovative techniques and technologies in the area of cultural and natural heritage.

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3. NEWS ITEMS

3.1 AFRICAN WATER PROJECT SUPPORTED BY SPACE

Algeria, Libya and Tunisia have kicked off an ambitious water project called GEO-AQUIFER that will use satellite imagery to support the monitoring and sustainable management of their common, trans-boundary groundwater resources, bettering the living conditions of their population.

The groundwater resource, which was built up around 10 000 years ago, is known as the North-Western Sahara Aquifer System (SASS, after its French acronym). The SASS covers an area of over one million square kilometres and is the key water resource in the region. Although it has negligible recharge, it has experienced heavy exploitation, 'ground water mining', in the past thirty years.

Ensuring the sustainability of this valuable, non-renewable resource is vital for the lives of millions who depend on it for drinking water and irrigation. Recognising the overexploitation of this shared resource, these three countries initiated together with the Sahara and Sahel Observatory (OSS) a consultation mechanism at ministerial level. This consultation depends on objective, timely, area-wide and consistent information.

Although the ground water resources are hidden up to more than a kilometre below the surface, the soon-to-be completed ESA project Aquifer has demonstrated that observations from space of the surface of the Earth can provide useful information.

"The ESA Aquifer project has demonstrated to us and the countries several tools that space technology can provide. We are starting the GEO-AQUIFER project because we think this technology can help us to get information quickly on issues that have an exponential evolution," the OSS Executive Secretary Youba Sokona said during the launch event on Thursday.

The Aquifer project was developed under ESA's Data User Element (DUE) programme and takes place as part of the TIGER Initiative, aimed at applying EO data to develop a technical, human and institutional capacity to bridge Africa's water information gap using satellite data.

Since Aquifer's initiation in 2004, more than 200 African organisations have become involved in different TIGER projects around the continent.

GEO-AQUIFER provides continuity with the ESA Aquifer project. Its principal aim is to provide information to decision makers and thus to strengthen the integrated water management practice. GEO-AQUIFER will use products and services based on satellite data, such as land-use and land-cover maps, change maps, surface water extent and dynamics, digital terrain models, and derive information on water consumption for irrigation.

Capitalising on the encouraging results of the Aquifer project, GEO-AQUIFER will be an extension and expansion towards increased geographic coverage and user specific fine-tuning of products and services.

The GEO-AQUIFER project is co-funded by OSS and the African Water Facility (AWF), which is managed by the African Development Bank (AfDB). OSS, is the executive agency for GEO-AQUIFER, key partners are the national water ministries. ESA is involved as member of the steering committee.

Speaking at the launch event, Yvan Kedaj of the AWF commended the efforts of the African agencies involved. "I really appreciate the appropriation by the countries of the tools and methodologies demonstrated by the ESA TIGER Aquifer project. Countries asked us through the OSS initially as coordinating and executing agency, and now as secretariat of the consultation mechanism, for continuation of national capacity building on the tools and methodologies developed through Aquifer.

"GEO-AQUIFER is co-funded by the AWF as the next step in EO data utilisation in SASS water resources knowledge improvement, in order to quickly give to the consultation mechanism relevant information at SASS level for decision making."

GEO-AQUIFER has a lifetime of 18 months, with final results being planned for late 2008.

Source: ESA Homepage on 8 June 2008

3.2 NASA DATA HELPS PINPOINT IMPACTED POPULATIONS IN DISASTER AFTERMATH

When two catastrophic natural disasters struck within days of each other in May 2008, disaster relief, humanitarian aid, and health officials, as well as members of the news media tapped into a unique set of NASA data products describing the location of the exposed populations. In the hours and days following the cyclone in Burma and the earthquake in China's Sichuan Province, workers had the data they needed to assess the numbers of people possibly affected in these deadly events. What arose was a timely example of how NASA data comes to the aid of officials when such disasters occur.

"The gridded population product we produce helps officials understand the density of the population in and around a disaster area," said Robert Chen, manager of NASA's Socioeconomic Data and Applications Center (SEDAC) and director of the Center for International Earth Science Information Network (CIESIN), part of the Earth Institute at Columbia University in New York. "The data set shows where people actually live in relationship to hazardous events."

Members of the news media use the data and associated maps to report on possible casualties and property destruction. "When a major disaster hits, people want to know how many people were exposed to the disaster, in addition to how many were killed," said Chen. "For example, CNN used our map of population density in Burma to help explain how the unusual path of cyclone Nargis affected the low-lying, densely populated delta."

Using the SEDAC data, media were able to report that 25 percent of Burma's 57 million people resided in coastal areas overpowered by the cyclone. They also projected that a million people would likely face homelessness, a number calculated by the United Nations (UN) also by using data made available by SEDAC.

SEDAC, a part of NASA's Earth Observing System Data and Information System, collects, stores, processes and distributes population, land use, and socioeconomic data. A significant mission of NASA's Earth-observing satellite program is to en-

able scientists and other users to conduct analyses and make decisions based on the resulting data. SEDAC advances this mission by developing and operating practical applications that merge social science and Earth science data to improve knowledge of how humans interact with Earth's environment.

SEDAC and CIESIN's joint staff of more than 60 is made up of a diverse array of demographers, geographers, earth scientists, public health specialists, and information technologists. For the gridded population data, they collect two different types of input data: state and local population data for every country of the world and Geographic Information System (GIS) data on the boundaries of states, provinces, counties, and other administrative units within these countries.

Next they integrate the population figures with the GIS data to produce density estimates for a given area. By converting these data to a regular latitude-longitude grid, they enable the data to be used with a range of remote sensing information such as land cover data from the Moderate Resolution Imaging Spectroradiometer instrument aboard NASA's Terra and Aqua satellites, data from the NASA-built Landsat satellite for vegetation data, and high-resolution satellite images from the ASTER instrument on the Terra satellite.

Marc Levy, SEDAC's lead project scientist and CIESIN's deputy director, pointed out that a particular concern in the case of Sichuan is the location of built-up urban areas. "For that, SEDAC's Global Rural-Urban Mapping Project (GRUMP) has combined satellite data on night-time lights with population and other administrative data to estimate urban characteristics," said Levy. The GRUMP data available from SEDAC include urban versus rural population densities and the extent of "built-up" urban areas.

Columbia University researchers worked with the World Bank and other partners in recent years to develop integrated maps of global disaster risk "hotspots." Many parts of the world, including the heavily populated Asia-Pacific region, are even susceptible to overlapping hazards like cyclones, earthquakes, landslides and tsunamis. The team linked six natural hazards - earthquakes, volcanoes, landslides, cyclones/hurricanes, floods, and drought - with population exposure and historic mor-

tality and economic impacts data to identify areas of relatively high risk of disaster. In fact, CIESIN researchers have recently used population maps in the wake of significant child casualties in the Sichuan quake to estimate the number of children around the world who live in areas of relatively high earthquake risk.

“Although our information is most useful for groups needing to know how many people were in the exposure zone where a disaster occurred, it also helps when looking downstream at secondary impacts like disease, homelessness, hunger, and even conflict,” said Levy. “We have begun working with groups like the UN’s World Food Programme and nongovernmental aid groups to develop new data and tools to assist with planning for disaster recovery and reconstruction.”

SEDAC and CIESIN work with both U.S. and international agencies such as the U.S. State Department, the UN Geographic Information Support Team, and the World Health Organization to ensure that SEDAC’s data are both accessible and usable. “Sometimes users just need a simple map, but at other times they need detailed data for analysis,” said Chen. “We are working to provide both, in part by making our data available through tools such as Google Earth and NASA’s World Wind that enable users to visualize data quickly and easily.”

In the future, Chen says that the Center will try to gain more insight into a variety of issues: what types of structures people live in, how accessible they are through roads, how age, gender, and health affect vulnerability, and how other factors such as poverty, conflict, infectious disease, and water scarcity interact with natural hazards. “We need to improve our understanding of the human side of the equation using the data capabilities we have and will have in the future,” said Chen. “This is very critical to the welfare of populations everywhere

Source: NASA Homepage on 12 June 2008

3.3 ESA LAUNCHES PROGRAMME IN SUPPORT OF EARTH OBSERVATION SCIENCE



Since the advent of Earth observation from space, satellite missions have become central to monitoring and learning about how the Earth works, resulting in significant progress in a broad

range of scientific areas.

In the mid-1990s, ESA set up its Living Planet Programme and established a new approach to satellite observations for Earth science by working in close cooperation with the scientific community to define, develop and operate focused missions.

In 2006, ESA launched a new science strategy for the future direction of its Living Planet Programme in order to address the continuing need to further our understanding of the Earth system and the impact that human activity has on it.

The strategy includes 25 key scientific challenges addressing the different elements of the Earth system. The challenges, formulated under the guidance of the Earth Science Advisory Committee (ESAC) and in consultation with the scientific community, are guiding ESA’s efforts in developing the global capacity to understand our planet.

Reinforcing these strategies as well as ESA’s scientific support to researchers and industry, ESA has launched a new element of the Earth Observation Envelope Programme (EOEP) – the Support to Science Element (STSE).

STSE is designed to provide scientific support to both future and on-going missions by taking a proactive role in the formulation of new mission concepts and providing multi-mission support to science.

Chair of ESAC, Prof. Johnny Johannessen of Nansen Environmental and Remote Sensing Centre said: “A strong ESA contribution to data exploitation, as planned in the STSE programme, will enhance the

advances and achievements in scientific understanding of the Earth System.

"In turn, this will stimulate development of new applications that can contribute to improve quality of impact studies, now-casting and forecasting with subsequent benefit to society.

"The continuing trend in the scientific community is towards multi-disciplinary investigation integrating data from many sources. The STSE will be an important and significant asset in this context."

Dr Stephen Briggs, ESA's Head of Science, Applications and Future Technologies Department, said: "The value of ESA Earth observation data to the science community is very clear. The STSE will build on the long heritage of scientific exploitation by creating stronger links between ESA and scientists working with the data, implementing a key recommendation of our Science Advisory Committee.

"These modest investments by ESA Member States will reap significant rewards in the science community."

The programme, which will receive 25M Euro in funding for five years, will be implemented through four main Action Lines:

- Future Mission Concepts: supporting the development of novel mission concepts and its scientific agenda, facilitating the transferring of novel or non-space technologies to innovative EO mission ideas and enhancing the scientific capacity in member countries to prepare the next generation of EO missions.
- Novel Observations and Products: contributing to the development of novel and improved data observations and multi-mission based products exploiting ESA and non-ESA EO assets, exploring innovative retrieval methods and proposing new scientific uses of ESA data beyond the conventional scientific objectives and standard products of existing missions.
- Support to Earth Science: stimulating and supporting scientists to improve our understanding of the Earth system by responding to the needs of key international scientific programmes and encouraging activities that will improve modelling, data assimilation and forecasting by exploiting ESA data.
- Strategic Actions: contributing to the development the ESA EO science

strategy, providing a fast response to key strategic scientific needs where ESA data may contribute and reinforcing the collaboration between ESA and the major scientific international programmes.

Source: ESA Homepage on 15 July 2008

3.4 OCEAN SURFACE TOPOGRAPHY MISSION/JASON 2 BEGINS MAPPING OCEANS

PASADENA, Calif. – Less than a month after launch, the NASA-French space agency Ocean Surface Topography Mission (OSTM)/Jason 2 oceanography satellite had produced its first complete maps of global ocean surface topography, surface wave height and wind speed.

The new data will help scientists monitor changes in global sea level and the distribution of heat in the ocean. This information is used to monitor climate change and ocean circulation, and to enable more accurate weather, ocean and climate forecasts. The data reveal patterns of sea level anomalies, which are used by scientists to calculate the speed and direction of ocean surface currents.

The new mission extends a 16-year continuous record of global sea level measurements begun in 1992 by the NASA/Centre National d'Etudes Spatiales (CNES) Topex/Poseidon mission and continued by the two agencies on Jason 1, launched in 2001. Data from Topex/Poseidon and Jason 1 show that mean sea level has been rising by about three millimeters (.12 inches) a year since 1993.

The new maps were generated from the first 10 days of data collected once the new satellite, OSTM/Jason 2, reached its operational orbit of 1,336 kilometers (830 miles) on July 4. The new satellite and its predecessor, Jason 1, are now flying in formation in the same orbit approximately 55 seconds apart, making nearly simultaneous measurements that are allowing scientists to precisely calibrate the new satellite's instruments. Comparisons of data from the two satellites on sea-level anomalies, significant wave height and ocean wind speed all show very close correlation of all measured parameters.

"These initial observations from OSTM/Jason 2 compare very closely to those of Jason 1," said Lee-Lueng Fu, OSTM/Jason 2 project scientist at NASA's Jet Propulsion Laboratory, Pasadena, California "To be able to collect such high-quality science data within a month of launch breaks previous records. It is also a direct reflection of how mature the field of satellite altimetry has become and of the seamless cooperation of our international team."

The satellite's first radar altimeter data were acquired just 48 hours after its launch on June 20 from Vandenberg Air Force Base, Calif., on a Delta II rocket. The French space agency processed the first test results, followed by more advanced data results a week after launch. The more advanced results came after calculating the precise location of the satellite's preliminary orbits. The satellite, its instruments and ground segment are all functioning properly. Once it has been fully calibrated and validated, the satellite will begin providing oceanographic products to users around the world.

OSTM/Jason 2 is an international endeavour, with responsibilities for satellite development and launch shared between NASA and CNES. CNES provided the OSTM/Jason 2 spacecraft, NASA provided the launch, and NASA and CNES jointly provided the primary payload instruments. CNES and the U.S. National Oceanic and Atmospheric Administration (NOAA) are responsible for satellite operations, while JPL is managing the mission for NASA. Data processing is being carried out by CNES, the European Organisation for the Exploitation of Meteorological Satellites (EUMETSAT) and NOAA, depending on the type of product.

Once on-orbit commissioning of OSTM/Jason 2 is completed, CNES will hand over mission operations and control to NOAA, which will then join with EUMETSAT to generate, archive and distribute data products to users worldwide.

For more information about OSTM/Jason 2, visit: <http://www.nasa.gov/ostm>.

Source: JPL Homepage on 30 July 2008

3.5 ESA MEETS INCREASING DEMAND FOR EARTH OBSERVATION DATA

Earth observation satellite data have never been in more demand than today as missions have demonstrated their ability to enable better understanding and improved management of the Earth and its environment.

ESA is meeting this demand by providing additional data, serving large science programmes, enlarging network stations and making more data available in near-real time.

Responding to calls from ESA's Principal Investigators (PI), the agency has released some 20 Announcement of Opportunity (AO) calls over the last decade that allow access to Earth observation (EO) data from ESA's ERS-1, ERS-2, Envisat, Earth Explorers and Third Party Missions.

As a result, more than 1500 scientific projects for research and applications development have been accepted and are receiving data free of charge.

These projects, called Category-1 projects, focus on research and applications development use in support of mission objectives, including research on long-term issues of Earth system science.

Under ESA's new Data Policy implemented in 2000, PI project proposals are now also accepted on a daily basis and not only in response to an AO. Consequently, some 1300 additional PI-proposed Category-1 projects have been accepted and are also receiving data with small cost of re-production for data not available online.

Since 2007 ESA sped up its access to data available online for Category-1 use by offering a simplified registration procedure to researchers. To date more than 300 users have been authorised to retrieve such data.

Serving large Science Programmes

ESA data also serves very large science programmes, such as the International Polar Year (IPY) 2007-2008 which focuses on the Arctic and Antarctic.



2007 Envisat Symposium (Source: ESA)

ESA committed to helping scientists collect satellite information, particularly to understand recent and current distributions and variations in snow and ice, during IPY. To this end, ESA issued a dedicated AO in 2006 and by spring 2007 48 selected projects had begun receiving data free of charge.

ESA is also making its legacy data available through an extensive EO data portfolio containing current and historical data, dating back 17 years for ERS data and 30 years for some Third Party Mission data. Another large science programme being served is ESA's GlobColour project, which supports ocean carbon cycle research.

GlobColour has merged 55 terabytes of data from three state-of-the-art instruments aboard different satellites, including MERIS aboard ESA's Envisat, MODIS aboard NASA's Aqua and SeaWiFS aboard GeoEye's Orbview-2, to produce a 10-year dataset of global ocean colour stretching to 2007.

Near-real time data delivery

Responding to user demand for services, ESA is generating and delivering some 250 Gigabytes of data products in near-real time to Envisat users.

Moreover the power of computers and the growth in network bandwidths and storage capacities have resulted in users requesting larger volumes of data to be delivered in unprecedented timeframes.

ESA also upgraded its data delivery method to the quicker Data Dissemination System (DDS), which allows users in remote areas to receive near-real time satellite data via a simple satellite dish connection to personal computers.

Expanding receiving stations

As the request for EO data increased, ESA has had to find strategic solutions for

transmitting large amounts of data from its satellites to ground stations.

The original four stations supporting the first ERS mission have been gradually expanded. The ground station in Johannesburg is the latest station to be added.

Scientific exchange

To stimulate a live exchange of experiences and knowledge between researchers, ESA organises dedicated thematic workshops and symposia every year. During these gatherings, ESA collects user feedback and recommendations for new products, new initiatives and input for improved scientific exploitation of the missions.

The thematic workshop proceedings are available as ESA Special Publications and can be searched here:

<http://earth.esa.int/resources/workshops/>

Every three years, ESA also organises and hosts major multidisciplinary events, such as the 2007 ERS and Envisat Symposia held in Montreux, Switzerland, in which some 1000 EO users attended.

These symposia allow scientists and researchers from around the world to present and review results of ongoing projects using data from ESA's Envisat, ERS and Third Party Mission satellites.

Source: ESA Homepage on 31 July 2008

3.6 NASA DATA SHOW SOME AFRICAN DROUGHT LINKED TO WARMER INDIAN OCEAN

A new study, co-funded by NASA, has identified a link between a warming Indian Ocean and less rainfall in eastern and southern Africa. Computer models and observations show a decline in rainfall, with implications for the region's food security.

Rainfall in eastern Africa during the rainy season, which runs from March through May, has declined about 15 percent since the 1980s, according to records from ground stations and satellites. Statistical analyses show that this decline is due to irregularities in the transport of moisture between the ocean and land, brought about by rising Indian Ocean temperatures, according to research published today in Proceedings of the National Academy of Sciences. This interdisciplinary

nary study was organized to support U.S. Agency for International Development's Famine Early Warning Systems Network.

"The last 10 to 15 years have seen particularly dangerous declines in rainfall in sensitive ecosystems in East Africa, such as Somalia and eastern Ethiopia," said Molly Brown of NASA's Goddard Space Flight Center, Greenbelt, Md., a co-author of the study. "We wanted to know if the trend would continue or if it would start getting wetter."

To find out, the team analyzed historical seasonal rainfall data over the Indian Ocean and the eastern seaboard of Africa from 1950 to 2005. The NASA Global Precipitation Climatology Project's rainfall dataset provided a series of data covering both the land and the oceans. They found that declines in rainfall in Ethiopia, Kenya, Tanzania, Zambia, Malawi and Zimbabwe were linked to increases in rainfall over the ocean.

The team used computer models that describe the atmosphere and historical climate data to identify and validate the source of this link. Lead author Chris Funk of the University of California, Santa Barbara, and colleagues showed that the movement of moisture onshore was disrupted by increased rainfall over the ocean.

Funk and colleagues used a computer model from the National Center for Atmospheric Research to confirm their findings. The combination of evidence from models and historical data strongly suggest that human-caused warming of the Indian Ocean leads to an increase of rainfall over the ocean, which in turn adds energy to the atmosphere. Models showed that indeed, the added energy could create a weather pattern that reduces the flow of moisture onshore and bring dry air down over the African continent, reducing rainfall.

Next, the team investigated whether or not the decline in rainfall over eastern Africa would continue. Under guidance from researchers at USGS, which co-funded the study, the team looked at 11 climate models to simulate rainfall changes in the future. Ten of the 11 models agreed that though 2050, rainfall over the Indian Ocean would continue to increase -- depriving Africa's eastern seaboard of rainfall.

"We can be quite certain that the decline in rainfall has been substantial and will continue to be," Funk said. "This 15 percent decrease every 20-25 years is likely to continue."

The trend toward dryer rainy seasons in eastern and southern Africa directly impacts agricultural productivity. To evaluate how potential future rainfall scenarios and shifts in agriculture could affect undernourishment, the team came up with a "food-balance indicator" model. The model considers factors such as growing-season rainfall, fertilizer, seed use, crop area and population to estimate the number of undernourished people a region can anticipate.

Continuing along a "business as usual" scenario -- with current trends in declining rainfall and agricultural capacity continuing as it is currently to 2030, the team found that the number of undernourished people will increase by more than 50 percent in eastern Africa.

Still, the food-balance indicator also showed that in the face of a continuation of the current downward trend in rainfall, even modest increases in agricultural capacity could reduce the number of undernourished people by 40 percent.

"A strong commitment to agricultural development by both African nations and the international community could lead fairly quickly to a more food-secure Africa," Funk said.

Source: NASA Homepage on 05 August 2008

3.7 CHANGING THE WORLD, ONE STUDENT AT A TIME

Can we put some of the world's biggest societal problems -- like global warming, disaster management and public health -- into the hands of students?

For NASA's DEVELOP student internship program team the answer is a definitive "Yes!" The DEVELOP program celebrates its tenth anniversary this summer. For 10 years the program has pushed the envelope of the traditional summer internship, encouraging students into research projects with big implications for society.

The DEVELOP program offers students the opportunity to use NASA Earth-

observing satellite data to address national and international policy issues. DEVELOP participants are chosen through a competitive application process and they must be currently enrolled in high school or college and have at least a 3.0 grade point average. DEVELOP is a student-run and student-led program, with science advisors and mentors from both the public and private sector.

DEVELOP is sponsored by NASA's Applied Science Program in the Earth Science Division, which extends the use of NASA Earth science data and technology for societal benefit through partnerships with state and federal agencies. These partnerships focus on innovative approaches for using Earth science information to provide decision support that can be adapted to help solve problems plaguing societies worldwide.

"The DEVELOP program is unique in that it takes on projects that communities are really concerned about and impacted by," said Tracey Silcox with the DEVELOP National Program, NASA's Langley Research Center, Hampton, Va. "Each individual project finds a way for NASA data and observations to better serve society."

Some of the projects that students have worked on in the past have addressed issues such as poor air quality and public health concerns associated with West Nile Virus. In 2007, one student project examined the impacts of global climate change on Virginia's coastline. The project used NASA satellite data to focus on the effects of temperature and sea level rise and the potential economic impacts that these changes could have on the region.

"Working side by side with scientists that allow us to apply our own thoughts and solutions to societal problems was great," said Becki Leggat, a 2008 DEVELOP student. "But the most rewarding part was being able to see the potential impact that our work would have on communities."

In addition to the challenge of the science research, the students are challenged to meet very high standards of professionalism as they present their work to policy makers, local and national government officials, NASA management and industry partners. It is through these interactions and presentations that the students truly see how communities could potentially use their studies in their decision or policy making.

"DEVELOP students get real-world experience. Not only do they analyze and interpret satellite data, they also present their findings to community leaders and decision-makers that can use their hard work to improve communities," said Mike Ruiz, head of the DEVELOP program. "Students have presented to high-ranking political officials, such as state governors, top NASA officials and scientists, and have presented at several scientific conferences such as the American Society for Photogrammetry and Remote Sensing, and the American Geophysical Union and conducted several media interviews."

When it started ten years ago, the DEVELOP program was just three students working on one project. In 2008, the program has grown into more than 200 students nationwide working on more than 25 projects that impact communities around the world. What's more, DEVELOP students have delivered project results back to the community at more than 80 scientific and policy forums.

In a decade, DEVELOP has touched more than 1,500 students through their involvement in the program. However, the program has gone beyond just teaching students about careers at NASA. This program inspires students to think about the problems that society will face in the future, and empowers them to find solutions. These students, with diverse backgrounds and interests, walk away from their internship prepared to handle the challenges of the new generation.

Source: NASA Homepage on 27 August 2008

3.8 ARCTIC ICE ON THE VERGE OF ANOTHER ALL-TIME LOW

Following last summer's record minimum ice cover in the Arctic, current observations from ESA's Envisat satellite suggest that the extent of polar sea-ice may again shrink to a level very close to that of last year.

Envisat observations from mid-August depict that a new record of low sea-ice coverage could be reached in a matter of weeks. Current ice coverage in the Arctic has already reached the second absolute minimum since observations from space began 30 years ago. Because the extent of ice cover is usually at its lowest about

mid-September, this year's minimum could still fall to set another record low.

Each year, the Arctic Ocean experiences the formation and then melting of vast amounts of ice that floats on the sea surface. An area of ice the size of Europe melts away every summer reaching a minimum in September. Since satellites began surveying the Arctic in 1978, there has been a regular decrease in the area covered by ice in summer – with ice cover shrinking to its lowest level on record and opening up the most direct route through the Northwest Passage in September 2007.

The direct route through the Northwest Passage is currently almost free of ice, while the indirect route, called the Amundsen Northwest Passage, has been passable for almost a month. This is the second year in a row that the most direct route through the Northwest Passage has opened up.

Prof. Heinrich Miller from the Alfred Wegener Institute (AWI) in Bremerhaven, Germany commented that, "Our ice-breaking research vessel 'Polarstern' is currently on a scientific mission in the Arctic Ocean. Departing from Iceland, the route has taken the ship through the Northwest Passage into the Canadian Basin where geophysical and geological studies will be carried out along profiles into the Makarov Basin to study the tectonic history and submarine geology of the central Arctic Ocean. In addition, oceanographic as well as biological studies will be carried out. Polarstern will circumnavigate the whole Arctic Ocean and exit through the Northeast Passage."

Regarding the use of satellite data for polar research Miller continues, "The polar regions, especially the Arctic, are very sensitive indicators of climate change. The UN's Intergovernmental Panel on Climate Change has shown that these regions are highly vulnerable to rising temperatures and predicted that the Arctic would be virtually ice-free in the summer months by 2070. Other scientists claim it could become ice-free as early as 2040. Latest satellite observations suggest that the Arctic could be mainly ice-free even earlier."

Miller added, "At AWI we place particular emphasis on studying Arctic sea-ice, and along with in-situ studies of sea-ice thickness change satellite data have been used extensively - not only for the regular ob-

servations of changes in the Arctic and Antarctic, but also for optimising the operation of Polarstern in regions covered by sea ice."

The Arctic is one of the most inaccessible regions on Earth, so obtaining measurements of sea ice was difficult before the advent of satellites. For more than 20 years, ESA has been providing satellite data for the study of the cryosphere and hence revolutionising our understanding of the polar regions.

Satellite measurements from radar instruments can acquire images through clouds and also at night. This capability is especially important in areas prone to long periods of bad weather and extended darkness – conditions frequently encountered in the polar regions.

By making available a comprehensive dataset from its Earth Observation satellites and other ground and air-based capabilities, ESA is currently also contributing to one of the most ambitious coordinated science programmes ever undertaken in the Arctic and Antarctic - the International Polar Year 2007-2008.

Further exploitation of data collected over the Arctic since 1991 is part of an ESA Initiative on Climate Change that will be proposed to the ESA Member States at its Ministerial Conference in November 2008. The proposal aims to ensure delivery of appropriate information on climate variables derived from satellites.

In 2009, ESA will make another significant contribution research into the cryosphere with the launch of CryoSat-2. The observations made over the three-year lifetime of the mission will provide conclusive evidence on the rates at which ice thickness and cover is diminishing.

Source: ESA Homepage on 28 August 2008

3.9 EUMETSAT AGREES TO PROVIDE DATA FOR GMES

During its 64th Council meeting on 1-2 July, EUMETSAT, the European Organisation for the Exploitation of Meteorological Satellites, agreed to provide its data and products for the Global Monitoring for Environment and Security (GMES) initiative.

The agreement covers GMES pre-operational services from 2008-2010, during which all EUMETSAT data and products, including real-time data, will be made available free of charge to the five GMES Core Services (three fast-track and two pilot services). The three fast track services are the Land Core Service, Marine Core Service, Emergency Response Support Service, and the two pilot services are Security and Atmosphere monitoring.

Stressing the importance of the decision, the Director-General of EUMETSAT, Dr. Lars Prahm, told Council: "This agreement probably covers more marine and atmosphere space data than the total until now available to GMES from any single source", adding that it covers a "significant" 30-50 per cent of the space data presently needed by GMES Core Services on Marine and Atmosphere monitoring. With this decision, EUMETSAT Member States gave a clear signal that they will support GMES' move into its operational phase and that EUMETSAT should play a key role in that phase. The data and products that the Council has agreed to put at the disposal of GMES emanate from the operational infrastructure developed by EUMETSAT over 20 years, soon to be complemented by Meteosat Third Generation (MTG) and the next generation EUMETSAT Polar System (Post-EPS).

Availability free of charge is under the condition that every GMES service user requiring the EUMETSAT data/products contacts EUMETSAT directly to receive the data and signs a simple web-based licence. Physical access to the data/products themselves and related user helpdesk functions will be through the existing EUMETSAT operational mechanisms: EUMETCast for real-time data and the EUMETSAT Internet portal for the off-line data and products.

The Head of EUMETSAT's Legal Affairs Division, Silvia Castañer, said: "The decision is in line with EUMETSAT's Data Policy and requires no change to the principles underlying it." One of the aims of the EUMETSAT Data Policy is to promote official duty use and research/educational use of EUMETSAT data and products.

Source: EUMETSAT home page on 3 July 2008

3.10 FIRST COMMERCIAL SATELLITE CONSTELLATION SUCCESSFULLY LAUNCHED

Brandenburg/ Havel, August 29, 2008 – A DNEPR-1 rocket was successfully launched earlier today from the Baikonur Cosmodrome in Kazakhstan carrying five earth observation satellites owned by the geospatial information provider RapidEye AG. This marks the first successful launch of a commercial satellite constellation worldwide.

The satellites will download their image data to an X-band antenna in northern Norway. The data will then be transmitted to the processing facilities at RapidEye headquarters in Brandenburg/Havel, where it will be processed and analyzed, and the products for customers generated. Another part of the ground segment is the control station, which monitors and controls the satellites. The combination of the satellite constellation, the control station and the data processing facilities enables RapidEye to offer cost-effective and efficient solutions for its customers in the agriculture, forestry and cartography industries and others. The RapidEye system is supported by the German Aerospace Center (DLR) as the next generation of optical earth observation and as an important public/private partnership in aerospace.

A countdown and launch celebration held at the RapidEye headquarters, attended by Jochen Homann, State Secretary of the Federal Ministry of Economics and Technology, Head Official of the Ministry of Economics, Michael Richter, as well as the Mayor of the City of Brandenburg, Dr. Dietlind Tiemann. The RapidEye team along with their family and friends also shared the exciting day with several hundred interested citizens of the city of Brandenburg.

Wolfgang Biedermann, CEO of RapidEye AG, explains what expectations customers from around the globe have of the RapidEye satellite system, "With our satellite constellation, we are able to observe large areas of our earth with a high revisit rate in high spatial resolution. The earth observation data obtained with our system is the basis for important management information services that haven't been commercially available until now, especially in the agriculture and forestry indus-

tries. We expect to play a decisive role in the quickly growing geospatial information market.”

“Earth observation satellites achieve weather, climate and environmental monitoring with the highest precision worldwide. The federal government pursues a leading position for Germany and wants to offer German companies a better chance in the European and global markets to commercialize their products and services. For this purpose, the government has created a positive business environment for the industry and specifically targets projects concerned with this topic. Germany has supported the RapidEye project through the German Aerospace Center (DLR) in this Public/Private Partnership,” explains State Secretary for the Federal Ministry of Economics and Technology Jochen Homann when discussing the commitment of Germany to RapidEye.

Brandenburg's state Minister for Economic Affairs, Ulrich Junghanns, who was represented at RapidEye's launch event by Brandenburg's Head Official of the Ministry of Economics Michael Richter, explains, “There is a growing need for geospatial information. Market surveys show good chances for the geoinformation sciences to tap into new and innovative markets, therefore it's a growing area which is supported by the state of Brandenburg's Business Development in particular. RapidEye AG is a key investment project for the development of this industry with a bright future in Germany's capital area. Their abilities will be particularly needed and recognized worldwide for their environmental monitoring and early detection of risks, since RapidEye can monitor large areas within a short amount of time.”

Mayor Dr. Dietlind Tiemann emphasizes the impact of RapidEye's location in Brandenburg/Havel and surrounding region, “When RapidEye AG, a global company for geo information, moved into our city center two years ago, it was a clear sign of business development in Brandenburg. In our over 1000 year old city, we have now one of the most advanced optical earth observation systems. We are very proud about this. We are also pleased that the coat of arms of the city of Brandenburg/Havel was displayed on the rocket that carried the satellites into space. I wish the international team of specialists at

RapidEye and all companies involved with this project all the best for the future.”

The significance of RapidEye's data for scientific purposes is highlighted by Dr. Hans-Peter Lüttenberg, Head of the earth observation department at the German Aerospace Center (DLR), “We have been convinced from the beginning about RapidEye's business model and have been supporting them from the start. From the image data from the RapidEye satellite constellation, we hope for new findings in research for Geo-sciences and Environmental studies. A long existing gap in demand will be closed with RapidEye's service offerings.”

Dr. Dietrich Heine, Deputy Chairman of RapidEye's Supervisory Board emphasizes the importance of this project: “This constellation of five satellites with their special sensors makes RapidEye the first Geospatial Service Provider worldwide able to reliably deliver large quantities of high resolution images from every point of the earth. A wide variety of information can be derived about the earth for a myriad of uses. The possibilities are endless thanks to our team of specialists and a highly automated data processing system that catalogs and analyzes images for our customers. RapidEye's services for the agricultural sector will become more and more important in the course of globalization, since they can provide better planning tools and allow for more efficient land utilization.”

“This has been a huge undertaking that could not have been realized without the commitment of our investors, partners and our dedicated team in the last 10 years. I would like to thank everyone that contributed to this project on this special day. We are looking forward to the first images from the satellites, which will set another important milestone in the Geo-Information sector,” remarked Wolfgang Biedermann, RapidEye's CEO.

For more information on RapidEye and information on the launch visit:

<http://www.rapideye.de>
<http://www.rapideye.de/launch2008>

Source: RapidEye AG Press release on 29 August 2008

4. FEATURE ARTICLE

EO OBSERVATION FROM SPACE IS AN IMPORTANT COMPONENT OF OUR CAPACITY TO MANAGE THE ENVIRONMENT FOR A SUSTAINABLE DEVELOPMENT

Interview given to Mrs. Mónica Miguel Lago, EARSC secretariat, by Mr. Daniel Vidal Madjar, Chief of the French Inter-Ministerial Task Force on GMES

Originally appeared in the summer issue of EOMAG

ABOUT YOUR EXPERIENCE

Could you please briefly describe the current responsibilities as Chief of the French Inter-Ministerial Task Force on GMES?

I am in charge of the national coordination of the French participation to GMES. The coordination is placed under the responsibility of the French Ministry for Research. All topics relating to GMES are concerned: GMES Core Services, GMES space component, GMES partnerships with national bodies, mobilization of the downstream sectors.

Could you comment on the process to get national views coordinated under the European Institutions?

In principle it is organized through GAC, which represents the Member States (EU and ESA). But in reality, the Commission is talking directly with Institutions, especially those for which a European coordination exists (Meteorology or cartography for example). By doing so, the results can be biased. Indeed, most of the concerned institutions are not known from the Commission which has been asked to use the national representation through GAC. The ISOWG is the first answer to this demand. This type of process must be generalized quickly to consolidate the necessary GMES partnerships at all levels.

DIALOGUE WITH EO INDUSTRY: CO-OPERATION & PARTNERSHIP

What is your idea for the governance scheme and the related business model to be adopted?

An overall GMES governance is necessary to ensure the coherence of the programme and that future investments, from EU and MP, will be used in an optimized manner.

Furthermore, there is a lot of horizontal matters such as transparency, responsibility, security of information which must be treated centrally. The Central Governance will be also in charge to prioritize GMES evolutions in accordance with the GMES appropriations; at European and national levels (the GMES partnerships). At the level of the heart of GMES which are de core services, the objective is to help the development of an economic activities using information on the environment. It is therefore necessary to withdraw any restraints in the use of such information, notably by an adapted Core Services deliveries policy. The Commission is presently thinking to a free and open delivery to European stake holders, with exceptions such security on strategic matters. Such policy has a cost. The deliveries from the Core Services will have to be adapted to the available budgets: not all deliveries from GMES will be labelled GMES Service. Furthermore, it will be necessary to define general data and elaborated products procurement policy to help the Core Services to acquire the necessary data and products from bodies outside the GMES partnership. It is anticipated that the cost of downstream services, provided by SMEs, will be mainly based on the value added by these companies and will not contain any significant part of the upstreams cost.

The sector is following the Lisbon agenda in terms of helping growth and jobs in Europe... but what do you think about benchmarking along some other industrial sectors?

It is certainly a good idea. It could help to understand how such markets are working. It is always necessary to build on others experiences.

What type of dialogue mechanism could take place with the service industry and national institutions? How could be integrated the cooperation of industry with other partners?

GMES is a user based programme. As such it is necessary to take care of the users demands for future evolution of the provided services. Consultation of all users may appear to be inefficient or even impossible; I am convinced that this dialogue must be based primarily with the service industry. Indeed, they are in strong interaction with the end users and they know perfectly what are their needs. Partnerships with research must be strengthening to ensure the service industry is still competitive by developing new services from GMES Core Services.

In your opinion, what are the biggest challenges the commercial earth observation industry is facing in the years to come? What kind of downstream service industry would Europe benefit from?

If by Earth Observation industry you mean the space industry, I guess that the biggest challenge is to change dramatically its business model to go from a state based industry to an industry driven by the market. The cost of the space infrastructures will have to adapt to the willingness and capacity to pay of the users. Europe will benefit from all industry related to services on the environment, but some sectors are more important than others: for example water resources, air quality are probably more important than many others.

Is the European Earth Observation on the right track?

It depends... But certainly Europe has been able to build something which is important with decisions on GMES related space programme and on the consolidation of the meteorological space observatories.

Data Policy establishment is a priority, how is that treated at the Inter Ministerial Task Force on GMES?

It is a difficult matter as it will certainly trigger significant changes in the business models on which are based European providers of data and products. All important national data and products providers are part of our national coordination. We have set up a national working group to mirror the ISOWG. The members are from

all stakeholders, from national institutional bodies to NGO on the environment which are also contributing to the gathering of useful data.

DOWNSTREAM SERVICES CALL

How do you see the planning and the budgeting process in Earth Observation programmes?

Clearly now we must concentrate on the next budget cycle of the EU, eg beginning in 2014. At that moment a true and independent GMES will have to be financed. It is therefore important to work during the following months on the costs to provide GMES core services, including the necessity to maintain on the long run the provision of observation, from space or in situ, both at global and local scales. Trade off and prioritisations are not possible without a good knowledge on costs.

From your perspective, what are the minimum requirements to succeed with a downstream service?

Difficult to answer. We must work together in the following months and years to develop new types of Downstream services built on the Core Products which will be delivered by GMES. It is foreseen that this Core Information will enable the downstream companies to propose new and more efficient services to their clients.

How do you see the future steps for the GMES?

Next step will to set up an interim governance which will help in the building of a GMES programme to be operational at the horizon of 2014. It is also necessary to build on the FP 6 and 7 results to propose rapidly GMES core services on a pre-operational basis. These services will be demonstrated on the occasion of the Lille GMES Forum. Hopefully, they will be available to downstream sectors onward.

FUTURE & SOCIETY

At the end of the interview, here is the opportunity for your final thoughts on latest GMES developments, what do you see as the task ahead for GMES, and in general which is your vision for the future?

I am very impressed by the speed GMES has developed in the past few years. Just 8 years after the Council demand to de-

velop GMES services, we are able to produce core services. We have also be able to develop a satellite systems, the GMES space component, which comprises not only the ESA Sentinels programme but also the Eumetsat space observatory and a wealth of national missions. When Europe is acting together, it can realize much more than other have done.

How do you see Europe's autonomy in space in the years to come?

When we say "autonomy" we must understand the capacity of Europe to provide to its users reliable information on environment and security. For achieving this goal, Europe must be able to cooperate with other nations on an equal footing. It is therefore necessary to consolidate our positions in space based observation. We must be sure that we have the control of the strategic elements, but this does not

mean that we must do everything. International cooperation is necessary. GEO and other existing initiatives such as what is done for meteorology from space through WMO for example must be used extensively to ensure Europe will be able to access to all necessary data, from space or in situ.

What are your expectations of EO development in the future for the citizen? And which important benefits will be provided in the near future?

EO observation from space is an important component of our capacity to manage the Environment for a sustainable development. In the near future I do expect that EO from space will become progressively a true market based activity. I am sure that the GMES Core Services will greatly help.

5. FUTURE EVENTS

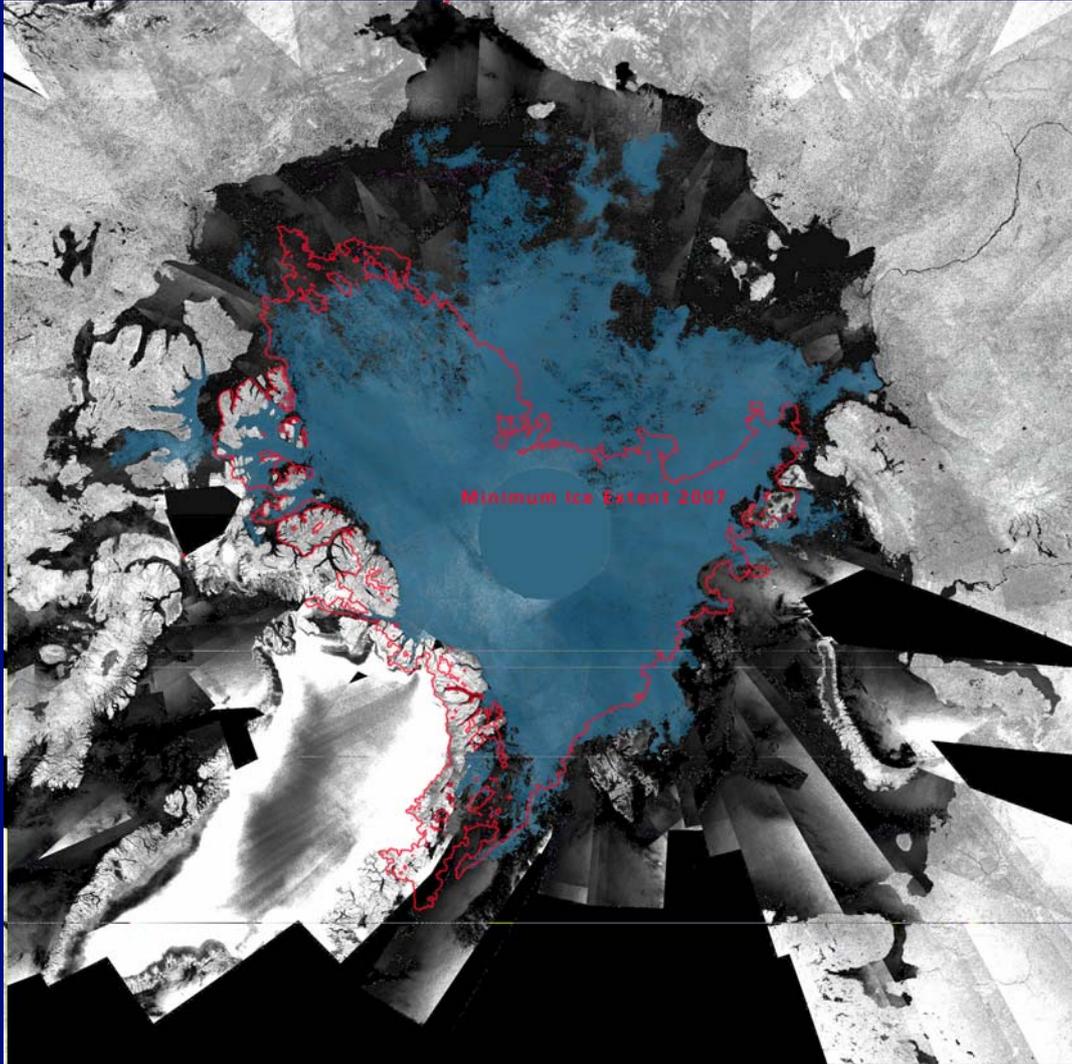
5.1 CONFERENCES AND SYMPOSIA

- 16 – 17 October 2008** 5th UN-wide Meeting on the Use of Space Technologies for Emergency Response and Humanitarian Assistance
Bonn, Germany
<http://www.unoosa.org/oosa/en/unspider/workshops.html>
- 27 – 31 October 2008** 7th International Conference of the African Association of Remote Sensing of the Environment
Accra, Ghana
<http://www.aarse2008.org>
- 4 – 6 November 2008** XXVIII INCA International Congress on Collaborative Mapping and Space Technology
Gandhinagar, Gujarat, India
<http://www.cmap.org.in/>
- 12 – 14 November 2008** Digital Earth Summit on Geoinformatics: Tools for Global Change Research
Wissenschaftspark Albert Einstein, Potsdam, Germany
http://www.isde-summit-2008.org/front_content.php
- 26 – 30 November 2008** GEO Tunis 2008 – “Natural resource management and study of the impact of climate change with geographic information systems, science and space technologies”
Tunis, Tunisia
- 26 – 28 November 2008** 5th International Symposium on LBS & TeleCartography
Salzburg Residence, City of Salzburg, Austria
<http://www.lbs2008.org>
- 18 – 20 December 2008** National Symposium on Advances in Remote Sensing Technology and Applications with Special Emphasis on Microwave Remote Sensing and Annual Convention of Indian Society of Remote Sensing (ISRS)
Nirma University, Ahmedabad, Gujarat, India
<http://www.isrsindia.org/>
- 16 – 19 March 2009** EARSel 6TH SIG Imaging Spectroscopy Workshop: "IMAGING SPECTROSCOPY: An Innovative Tool for Scientific and Commercial Environmental Applications"
Ramat Aviv, Tel-Aviv, Israel
<http://www.earsel6th.tau.ac.il/>
- 25 – 27 March 2009** Towards eEnvironment - Challenges of SEIS and SISE: Integrating Environmental Knowledge in Europe
Prague, Czech Republic
<http://www.e-envi2009.org/>
- 15 – 18 June 2009** 29th EARSel Symposium – “Imagin(e/g) Europe”
Chania, Crete, Greece
<http://earsel29.maich.gr/>
- 9-12 September 2009** The 6th International Symposium on Digital Earth (ISDE6)
Beijing, China
<http://www.isde6.org>

5.2 WORKSHOPS

- 30 September** 1st Workshop on Advances in Remote Sensing for Archaeology and Cultural
– Heritage Management
- 4 October** Rome, Italy
2008 <http://www.ibam.cnr.it/earsel/workshop/Workshop.htm>
- 6 – 8** 10th International Workshop on Signal Processing for Space Communica-
October tions (SPSC 2008)
2008 Rhodes Island, Greece
<http://www.congrex.nl/08c07/>
- 13 – 15** 2nd United Nations International UN-SPIDER Bonn Workshop: “Disaster
October Management and Space Technology – Bridging the Gap”
2008 Bonn, Germany
<http://www.unspider.org/>
- 24** User requirements workshop – Habistat Project: “Remote sensing for Natura
October 2000 habitat reporting: bridging the gap between users' requirements and
2008 providers' possibilities”
Academy Palace, Brussels, Belgium
<http://habistat.vgt.vito.be>
- 16** 2nd Workshop on Education and Training
June Chania, Crete, Greece
2009 <http://earsel29.maich.gr/>
- 18 - 19** 4th Workshop on Remote Sensing of Coastal Zones –
June ”Coasts and Climate Conflicts”
2009 Chania, Crete, Greece
<http://earsel29.maich.gr/>

Back Cover – ESA's Envisat ASAR data mosaic showing sea-ice coverage as of mid-August 2008. The red line indicates the all-time minimum Arctic sea-ice coverage in September 2007.
Source: ESA



EARSeL Sponsoring Agencies:



Council of Europe



European Space Agency

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