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NEWSRELEASE

Satellites for Sustainable Development in Africa: new perspectives from space

The latest satellite technologies offer a vital tool in the battle to eliminate illegal logging from Africa, while at the same time helping to ensure food security and sustainable development and improve international disaster relief efforts across the continent, the annual meeting of the American Association for the Advancement of Sciences (AAAS) was told today.

Using state-of-the-art space technology, it has become possible not only to measure dramatic recent changes on the continent, but also to take steps to counter those changes and so aid the achievement of the UN's Millennium Development Goals, said Dr Alan Belward, Head of the Global Environment Monitoring Unit of the European Commission's Joint Research Centre (JRC).

Recent changes detected by satellite, announced Dr Belward, include the fact that, since the 1970s, Africa's forests, grassland and savannah have been converted to agricultural land at a rate of some 50,000 km2 per year - the equivalent of clearing all of Massachusetts *and* Vermont every year. And while Lake Chad covered an area the size of New Hampshire 40 years ago, today it would not even cover Rhode Island.

"Africa's rapidly growing population continues to put pressure on the environment to provide food, water, fiber, and housing. This pressure of course makes achieving the UN's Millennium Development Goals of eradicating poverty, reversing the loss of environmental resources and ensuring access to safe drinking water even harder to achieve," said Dr Belward, addressing a symposium entitled "*Earth Observation for Africa, with Africa*".

Information on the location and status of resources is an important step towards sustainable resource management and income generation. Unfortunately such information can be hard to get. Earth-observing satellites can help fill the information gap. Some African nations are beginning to develop this capacity, but this needs to be supported, reinforced and expanded.

Four key areas in which satellite observations could make vital contributions to Africa were highlighted:

Protecting natural resources

Income in many regions of Africa is heavily dependent on natural resources. Indeed, armed conflicts are increasingly being driven by natural resource availability. The JRC is using satellite imagery and geographic information systems to gather and process information on forest degradation and deforestation, biodiversity use and conservation, land-use patterns, desertification and water resources. New maps of land-cover for the whole continent have been generated. Systems for monitoring the replenishment and draining of seasonal water resources across semi-arid regions have been developed and systems for detection of forest logging tested.

New offices for the African Forest Observatory (FORAF) have just opened in Kinshasa under the Congo Basin forest partnership to further develop the monitoring of logging activities throughout the Congo Basin. Results just published by the JRC with Belgium's l'Université catholique de Louvain (FORAF partners) are heartening - the net deforestation rates being measured are lower than previously estimated. At just 0.16% per year they are around half the rate of deforestation in South America, and less than a quarter the rate in Asia. But the demand for Africa's timber is relentless and vigilance must be maintained if accelerated, even illegal, deforestation is not to go undetected.

Providing relief and support
The European Commission Humanitarian Aid Department (ECHO) provides relief assistance to vulnerable people, including the displaced, affected by natural disasters and complex emergencies. A significant part of this aid sustains people hosted in refugee camps. Due to insecurity in the host country or delays in repatriation, refugees may have to live in camps for years - Lukole camp in Tanzania for example was set up in 1994 to host Rwandese refugees, it has since also offered shelter to Burundi refugees and continues to do so more than a decade after its inception.

The JRC is processing very high resolution imagery to monitor refugee camps in crisis areas, such as Darfur, as a means of determining the number of people hosted at the camp. The imagery allows each family dwelling making up the camp to be counted. Together with household occupancy figures collected in the field, JRC can then provide a good estimate of the number of refugees that need assistance.

Disaster Risk Assessment to support disaster reduction initiatives
According to the United Nations Development Programme (UNDP), 75 percent of the world's population live in areas that have been affected at least once by an earthquake, tropical cyclone, flood or drought between 1980 and 2000. These natural hazards can wreak havoc on communities, and set development back for years. The poverty gap is also accentuated in disaster ridden regions of the world.

A key barrier to the effective management of disaster risk is the lack of a common assessment methodology to observe and characterize such risk. The JRC, in cooperation with a number of international institutions including the World Bank, is developing procedures based on both satellite imagery, including *Very High Resolution* imagery, and field data to measure the risk of some of the disasters in high-risk countries in the developing world, including Africa.

Providing early estimates of crop yields and warning of crop failure
The JRC's crop monitoring and forecasting system uses satellite imagery, agro-meteorological models and crop area statistics to monitor agricultural productivity in more than 30 countries vulnerable to crises and food shortages. Close attention is paid to the Horn of Africa due to the recurrence of food crisis in this region and the absence of a local regional monitoring system. Monthly reports describing current crop condition, yield prospects and the likelihood of food shortages are issued from April to October. During this period, continuous exchange also takes place with the EU offices in Africa, African institutions and UN partners.

"A land-mass that is 1/3 bigger than North America, with the fastest growing population in the world, Africa has a major impact on the functioning of the Earth system – especially climate," concluded Dr Belward.

"It plays a key role in global trade and security and receives more official development assistance than any other region. Africa is also a rich place. Its water, forests, and agricultural land have high economic and social value. But they can also be over-exploited, with damaging consequences for local economies, long term stability and for the Earth system as a whole."

Further information:

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Notes to Editors

- The Joint Research Centre is a Directorate-General of the European Commission. Comprising 2,900 employees in seven research Institutes in five European Union Member States, the JRC is organizing 10 sessions at the 2008 AAAS meeting.

- The mission of the JRC is to provide customer-driven scientific and technical support for the conception, development, implementation and monitoring of EU policies. As a service of the European Commission, the JRC functions as a reference centre of science and technology for the Union. Close to the policy-making process, it serves the common interest of the Member States, while being independent of special interests, whether private or national.

- The Global Monitoring for Environment and Security (GMES) initiative, a joint project of the European Union and European Space Agency, is one example of the ongoing effort to provide reliable and timely Earth observation-based information services. In December 2007 GMES' vast potential to serve the African continent was reaffirmed by the European Union's Presidency along with recognition that it has not been fully exploited yet. The Portuguese Presidency of the EU launched a two-year process leading to an Action Plan on "GMES and Africa" partnership. The initiative, which will enhance European-African cooperation on sustainable development and scientific cooperation, is being coordinated by JRC on behalf of the European Commission's Development, Aid and Co-operation services, and builds on JRC research.