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SPACE BASED SOLUTIONS FOR EARLY WARNING, CRISIS RESPONSE, SUSTAINABLE RECOVERY,
VULNERABILITY REDUCTION AND LOCAL CAPACITY DEVELOPMENT FOR UN AGENCIES AND MEMBER STATES

**SPECIAL
REVIEW
2007**

UNOSAT

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Carlos Lopes, new Executive Director of UNITAR

United Nations Secretary-General Ban Ki-moon appointed Mr. Carlos Lopes of Guinea-Bissau as Executive Director of the United Nations Institute for Training and Research in March 2007.



Mr. Lopes specializes in development and strategic planning. After serving in the Guinea-Bissau public service, in the areas of research, diplomacy and planning, he joined UNDP in 1988 as a development economist. Mr. Lopes attained the rank of Deputy Assistant Administrator and was a member of UNDP's Executive Team. Mr. Lopes has managed UNDP's global programme, with a portfolio of \$1 billion, and acted for over a year at the level of Assistant Secretary-General. In June 2003

he became the United Nations Resident Coordinator and UNDP Resident Representative in Brazil, the largest UNDP programme in the world. Mr. Lopes has been serving since 1 September 2005 as Director for Political Affairs in the Executive Office of the Secretary-General. He has also authored or edited 20 books and taught at different Universities and academic institutions.

Since his appointment as Executive Director of UNITAR, he has concentrated on putting in place a new strategy and a strengthened structure for the Institute. Its aim is to rationalize UNITAR by bringing the various programmes in line with a common set of strategic goals and by creating three Departments: Support Services, Training, and Research. In line with the mandate and mission of UNITAR, and due to the fact that the work carried out by UNOSAT, its Operational Satellite Applications Programme, already enables the UN system to benefit from the progress of space technology in some key areas in translating science and technology into usable solutions, Mr. Lopes has decided to integrate UNOSAT fully into the new Research Department. UNOSAT will be one of the two pillars of the Research Department, and will allow UNITAR to strengthen and develop further their activities in this important segment of the Institute.

Photo source: UN

Institutional affairs

2007 was the central year in the UNOSAT consolidation strategy during which we achieved the strengthening of our donor base as well as our technical capacity and output. This was a challenge for a programme like UNOSAT; entirely dedicated at producing practical results through operational activities only. Because of the increase of our policy and inter-agency profile, we had to devote more resources to the institutional part of our work while avoiding creating an unnecessary bureaucratic layer.



In 2007 we enlarged our network of partnerships with a number of MoUs and operational agreements with most humanitarian actors and numerous other entities. The production of maps and GIS solutions has been flanked by increasing training modules, publications and high-level consulting services. The visibility of UNOSAT has progressively expanded beyond the technical sphere, requiring our presence in

arenas like ECOSOC, COPUOS, the Council of Europe, as well as the EU- African Union Summit of Lisbon. After the UN21 Award and the ESRI Award, these are additional rewards for a programme born only seven years ago as a technical project.

Today, UNOSAT's overall aim is clearly defined in our mission statement: ***UNOSAT is a people-centred programme integrating satellite solutions for human security, peace and development applications.*** This mission statement reflects the mandate given in 1963 by the UN general Assembly to UNITAR. This mandate refers to the work of UNOSAT as well, while the people-centred dimension is typical of the way we work to bring the benefits of satellite technology to real people in need of solving real problems. This is why we talk of satellite-based solutions, more than applications.

Our institutional relations with both partners and users is shaped by three principles:

COLLABORATION: We are open to collaboration and we promote participation in whatever we initiate or implement, because we are conscious that in any scientific applications endeavor working in isolation results in failure at some point.

COMPLEMENTARITY: With our work we fill the niche of an entirely operational UN programme dedicated exclusively to the acquisition, processing, value-adding and analysis of satellite data for the benefit of various agencies, their partners and national entities. This in turn offers a complement to all UN agencies and users having a discrete GIS capability but not the technical and financial needs to become a centre of expertise in satellite applications.

INTER-AGENCY SERVICE: UNOSAT is placed at the centre of the UN family as an inter-agency service supporting equally various communities and strategic goals because it has no specific turf nor political agenda. Our output is always tangible and measurable, and in most cases, usable by multiple entities.

Applying these principles to our daily work helps us keep in focus and also to extend our support to ongoing and new ventures. This is the case of UN-SPIDER, a new initiative launched by the UN General Assembly following UNISPACE III (1999) and the ISDR Conference on Disaster Reduction (2005). SPIDER is a non-operational platform for which UNOSAT is a natural operational partner and a source of examples as well as concrete solutions for the ever increasing number of potential users,

especially in hazard-prone developing countries.

Similarly, the multi faceted Global Platform for Disaster Reduction, managed by ISDR, is another constructive environment in which UNOSAT technical skills have found practical applications through the establishment of a specific partnership involving UNITAR, ILO (DelNet), and ISDR.

These are just two examples of how operations have become a complement and a support for large international agendas essentially based on consensus and policy cooperation, but also in need of practical applications for a growing number of users that require tangible deliverables.



Mr. Liebig and Mr. Briggs of ESA, during a visit to the United Nations Office at Geneva (Photo UN)

Projects and training, 2007

In 2007, UNOSAT kept on strengthening its portfolio of projects, for example related to local development. Examples of such projects are:

- Collaboration with Bolivian Public Agencies to reinforce cartographic national platforms for land, water and agriculture
- Collaboration with the Government of Bayelsa State, Federal Republic of Nigeria, to develop the use of satellite imagery for Niger Delta Region decision making in support to environmental protection activities
- Supporting strategic territorial planning for the three governorates of the Eastern Region of the Syrian Arab Republic in partnership with the State Planning Commission
- Expanding sustainable territorial management from town to rural municipalities of the Matagalpa watershed, Nicaragua, in close collaboration with long-term partners CIGMAT and Canton de Genève
- Launching three new local development projects in Colombia, Cuba and Nicaragua in the frame of an inter-agency ILO-ISDR-UNOSAT collaboration
- Preparing toolkits and guidelines on the benefits of space-based applications for post-disaster need assessment within the context of the international recovery platform (IRP)
- Supporting the Global Monitoring for Environment and Security (GMES) initiative through the Respond, LIMES and GMOSS projects.

Understanding major environmental issues using satellite solutions is also a priority. UNOSAT is currently involved in training local experts and providing them with IT field solutions for sustainable management of fragile eco-regions, such as the Lake Chad Basin and the Bayelsa State, Nigeria.

Biodiversity is a crucial topic in which UNOSAT is active with a fruitful collaboration to a scientific mission to the island of Santo in Vanuatu.




In support to the development and environmental projects, UNOSAT has a training team that has been deployed to hold courses and practical sessions. Main training-activities in 2007 included introduction to Geographic Information System (GIS) and Remote Sensing for a Master in Major Risks at the University of Corsica in Corte, France, training session in the framework of the ILO DelNet programme on state-of-art in GIS tools and satellite solutions for Latin American disaster experts at

Managua, Nicaragua, and several one-day lectures on best practices of the benefits from satellite imagery.



As part of UNITAR's core mandate, UNOSAT made progress in its R&D activities, including improved flood



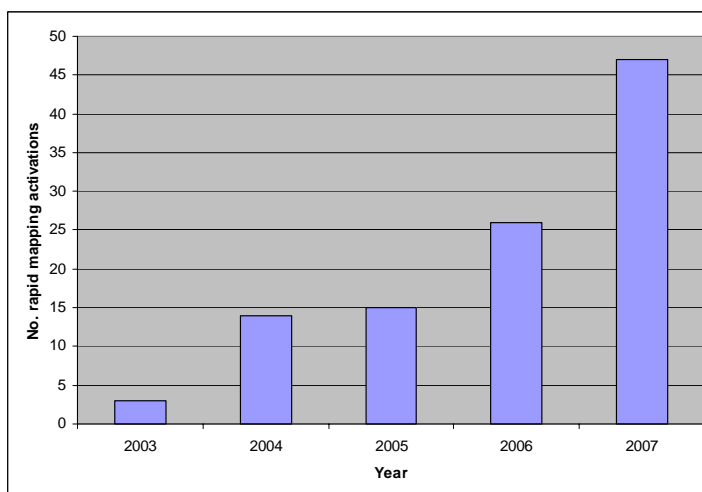
modeling, land cover mapping, and monitoring of irrigated perimeters. These results have been achieved through close collaboration with institutions such as Polytechnic Colleges, Universities, and Natural History Museums through signed agreements and internships.

In addition, UNOSAT has also facilitated data purchase, including assistance with technical specifications and quality control, of a wide range of satellite images to UN sister agencies and their implementing partners. Additional imagery has also been received from the Taiwanese space agency, NSPO.

Photo source: SANTO, UNOSAT

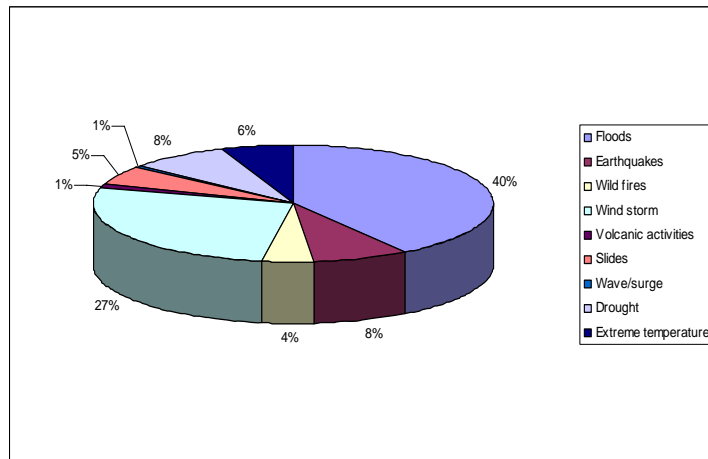
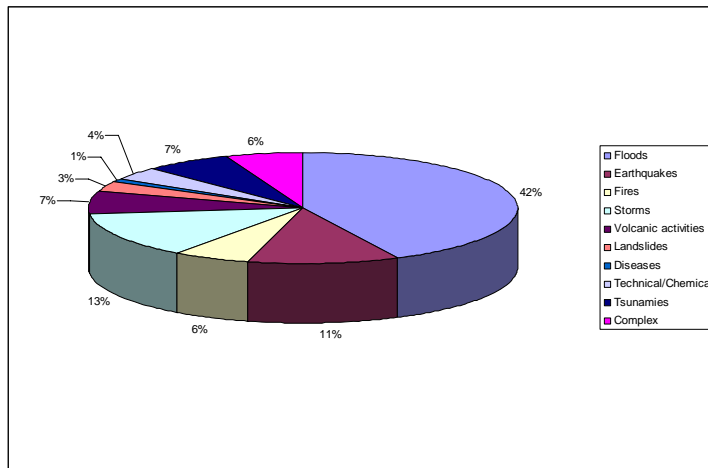
Humanitarian rapid mapping, 2007

During 2007, the number of humanitarian rapid mapping activations increased significantly, from 26 in 2006 to 47 in 2007. These activations were carried out in support to the UN community, their implementing partners and national governments, and provided key satellite imagery derived information and analyses to the humanitarian community. The increased capacity of UNOSAT to support the UN with such products is linked to a strong increase in donor funding for these activities, most notably from Denmark, Norway and Sweden, as well as internal capacity building and well-functioning institutional partnerships. The products have received excellent feedback from the user community, but UNOSAT will always strive to improve and thus engages in detailed discussions with for example emergency managers, field programme coordinators, logisticians, field security officers, desk officers and senior decision makers.



Increase in number of rapid mapping activations since 2003.

The types of activities since 2003 have been distributed in support to a wide range of natural disasters and complex humanitarian emergencies. The two pie-charts below show the percentage of disaster types where UNOSAT's rapid mapping was activated (top) and in comparison the global occurrence of natural disasters between 2000-2005, as reported by the Centre for Research on the Epidemiology of Disasters (CRED) in Belgium (bottom). One can see a striking similarity in the percentage of rapid mapping activations global occurrences for all the main specific disaster types, such as floods, earthquakes, fires and storms in the two datasets. This shows that the people-centered and user-driven rapid mapping approach indeed is able to meet the demands in terms of different types of disasters. These figures also demonstrate that the volume of rapid mapping products dedicated to each type of disaster reflects well the global picture.




Comparison of UNOSAT humanitarian rapid mapping 2003-2007 (per disaster type) and CRED global occurrence of natural disasters 2000-2005 (per disaster type).

Approximately 1/3 of activations received free data support from the International Charter Space and Major Disasters. The majority of data were either purchased on a commercial basis, received through bilateral agreements or from publicly available data. UNOSAT works closely with the private sector in this regards. Products for roughly 90% of all activations were produced internally at UNOSAT, with the remaining done by our partners, such as those in the GMES Respond project. During 2007, UNOSAT supported all UN Disaster Assessment and Coordination (UNDAC) emergency missions and OCHA remains the main requesting agency for humanitarian rapid mapping support, but also organizations such as WFP, UNDP, UNEP, UN-HABITAT, UNHCR, UNRWA, WHO and others were provided maps and analyses during 2007.

The operational capacity has improved through new software and hardware acquisitions, as well as further building of professional skills within the team. The more activations, the better the experience in assessments, analyses and map-production, consequently enforcing the capacity even more.

Although natural disasters represent the majority of humanitarian mapping at UNOSAT, the team is more and more involved in support to UN operations in complex emergencies. This trend started in 2006 and continued in 2007. As part of ongoing developments and research into new and promising methods, several new applications were implemented as part of the operational suite of rapid mapping products, for example rainfall estimates and active fire mapping. Based on demands from UN colleagues operating in central and south America, relevant rapid mapping products are now also produced in Spanish for better integrated use in this region.

The wide network of users and partners ensures that UNOSAT products are received even at the most remote locations. Products are distributed digitally through e-mail notifications, but also more and more through direct integration in external systems



through GeoRSS feeds, ensuring immediate access to new maps once they are posted, such as in OCHA's Virtual On Site Operations Coordination Centre (VirtualOSOCC). Products are also distributed through ReliefWeb, AlertNet and IFRC's Disaster Management Information System (DMIS). To ensure efficient distribution of maps in the field, UNOSAT has teamed with Telecoms Sans Frontieres (TSF) who prints hardcopies and locally distributes maps digitally. Geographic Information System (GIS) data produced by UNOSAT, for example flood extents, are shared with MapAction who integrates these when producing maps locally. Promising exchange of field collected information and satellite maps took place for example with CartONG, a relatively new mapping NGO. UNOSAT also works closely with the World Meteorological Organization (WMO) in improving access to targeted weather forecasts in disaster areas as well as requests for and dissemination of rapid mapping products through national members of the WMO.

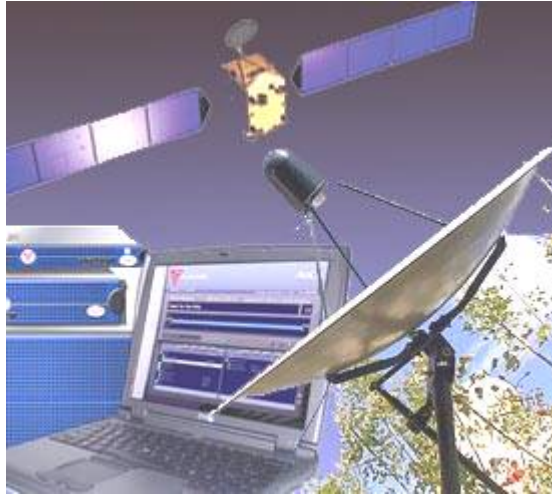
As the mapping component of the Global Disaster Alert and Coordination System (GDACS), UNOSAT works closely with the European Commission Joint Research Centre (JRC) in Italy and OCHA. This system integrates disaster alerts, VirtualOSOCC, field reports and maps in order to ensure relevant information is quickly available to disaster managers and early responders. Through GDACS, maps can be requested over specific areas of interest and delivered within a dedicated web-based environment.

Activities during December included support towards security assessments in Somalia and the Horn of Africa as well as analysis following the terrorist bombings of a UN building in Algiers, an attack that killed 17 UN staff members.

UNOSAT remains fully committed to continue and further improve its humanitarian rapid mapping support in 2008, and will be able to benefit from several new satellites recently launched as well as closer collaboration with data owners such as NSPO, and reception stations, such as those operated at high latitudes by KSAT.

Satellite communication and navigation

During 2007, UNOSAT has expanded its activities to include satellite communication and navigation. Several activities were carried out under these topics.



The three year TANGO project funded by the European Commission defines, adapts, integrates, and initiates satellite telecommunication services adapted to GMES requirements. UNOSAT's role is to represent the humanitarian community and advocate for their needs in the development of TANGO. UNOSAT is the team leader in the TANGO Humanitarian Aid topic.

Last year also saw UNOSAT partnering with Novacom Services and FleetForum to promote and implement a service of vehicle tracking and data capture dedicated to humanitarian actors globally ("Nav4All"). Data collection and management is undertaken by Novacom, while user interface is provided by UNOSAT. FleetForum will link to logistics teams within humanitarian organizations and promote the service within this community.

In the framework of bridging the digital divide, UNOSAT is undertaking projects to provide satellite broadband internet access service to remote regions. The first project is in a remote village of Nicaragua called Mulukuku. A Cyber-café is planned to be installed with a VSAT satellite internet access. To ensure synergy with other actors, VSAT-based Internet access will be distributed using WIFI. As part of the Lake Chad basin project, see above, UNOSAT is planning the provision of a VSAT broadband internet access service to Lake Chad Basin Commission (LCBC) headquarter in N'Djamena and later for five project management units located around Lake Chad.

Photo source: Inmarsat