DevCoCast Regional Land Training Workshops in Córdoba, Argentina, and Cachoeira Paulista, SP, Brazil

Ben Maathuis Bas Retsios

maathuis@itc.nl retsios@itc.nl

Many countries face serious environmental risks and need accurate earth observation data and derived environmental information for their sustainable development. GEONETCast provides reliable, worldwide and continuous access to information and is an easy and effective way for countries to receive satellite and environmental data. The GEONETCast for and by Developing Countries (DevCoCast) project, funded by the European Community's 7th Framework Programme for Research, involves developing countries more closely in the GEONETCast initiative. Many earth observation data products, some produced in Latin America, are freely shared via GEONETCast and can be received using off-the-shelf lowcost ground reception infrastructure.

Building on experience previously gained in Africa when organizing similar training events in close collaboration with the EU and AU initiative African Monitoring of the Environment for Sustainable Development (AMESD) (e.g. at the RCMRD, Nairobi, and AGRYMET, Niamey), these five-day workshops were organized by the DevCoCast Latin American project partners (CREAN, INTA, INPE and ITC, with support from VITO), and were hosted by the Centre for Surveying and Assessment of Agriculture and Natural Resources (CREAN) of the National University of Córdoba from 31 May to 4 June 2010 and by the Centre for Weather Forecast and Climate Studies (CPTEC) of the National Institute for Space Research (INPE) from 7 to 11 June 2010.

To present the recent developments and achievements to a wide range of thematic experts from various countries in Latin America, these workshops focused on the following aspects:

 exploring the potential of the GEONETCast broadcasting technology and the environmental data it offers, with

DevCoCast Latin American project partners

CREAN	Andres Ravelo
INTA	Tomas Hartmann
INPE	Sergio Pereira
VITO	Tim Jacobs
	Carolien Tote
ITC	Ben Maathuis
	Bas Retsios



Group photo of participants attending the Argentina workshop

particular reference to Meteosat Second Generation (MSG) and the SPOT Vegetation instrument

- demonstrating how to archive and process data, using the GEONETCast Toolbox plug-in developed under ILWIS 3.7
- presenting regional data disseminated via GEONETCast, building on the experience of Latin American users.

The DevCoCast Latin American workshops combined theory and practical assignments on a number of topics, for example GEONETCast, system reception and software, the data delivered by various GEONETCast services, as well as the regionspecific data delivered to Latin America through GEONETCast by various data distributors, such as INTA, INPE and VITO.

GEONETCast, Reception System and Freeware Software Utilities

An overview of the GEONETCast Environmental Data Dissemination System and the international organizations supporting this effort (GEO-GEOSS) was provided. The set-up of a low-cost ground receiving station and the software utilities available (the newly developed GEONETCast toolbox plug-in under ILWIS 3.7 and SIGMACast) were shown. This was accompanied by a site visit and a demonstration of the lowcost ground receiving stations installed at CREAN and INPE-CPTEC, providing participants with a good overview of the required GEONETCast system hardware components. Furthermore, the application procedures for the EUMETCast/GEONETCast Americas services were presented. During the practical assignments, participants were introduced to the use of the GEONETCast toolbox and other software components (e.g. SIGMACast) that enable the GEONETCast data stream to be processed.

Data Delivered by Various GEONETCast Services

Here the various satellite images and products available in the GEONETCast data stream were introduced, with special focus on MSG/GOES, SPOT Vegetation, INTA and INPE products in the DevCoCast America Service, including the fused CBERS high-resolution product. The theoretical background was also given in order to facilitate an appropriate assessment of the various DevCoCast products. In addition, attention was paid to relevant ongoing research and operational services, such as the INTA and **INPE-CPTEC** experiences in providing regular environmental products and disseminating these via GEONETCast, as well as the INPE-CPTEC SOS System for monitoring severe weather conditions.



Checking ground receiver at CREAN



Group photo of participants attending the Brazil workshop



An onsite visit to see the computer hardware configuration of the ground receiving stations used at $\ensuremath{\mathsf{INPE}}$



The various antennas used at INPE

Region-Specific Data Delivered to Latin America through GEONETCast and the DevCoCast Initiative

Various satellite images and data products covering South America and disseminated by GEONETCast and those produced on a regular basis through the DevCoCast initiative were used during the different practical sessions, for example:

- images from MSG, GOES and METOP-AVHRR/3, together with some of the MSG-derived products (e.g. cloud mask, multisensor precipitation estimate, atmospheric motion vectors)
- vegetation and agriculture indicators (e.g. SPOT Vegetation 10-day composite NDVI, dry matter productivity and green cover fraction, NOAA AVHRR-based NDVI, INTA's

absolute and anomaly NDVI) and their time series analysis

- water resources (NDWI) and weather products such as the 15-minute multisensor precipitation estimates, aggregated rainfall products and INPE's convective systems tracking and nowcasting, lightning discharges images, ultraviolet radiation index and other rainfall satellite products
- INTA's fire risk and detection product and the evapotranspiration product
- the high-resolution CBERS HRC-CCD fused image product.

Moreover, the diurnal variability of MSGbased products from LandSAF, such as land surface temperature and evapotranspiration, was investigated, using batch looping routines to facilitate effective import and preprocessing of the multi-temporal data.

The workshop also served as a platform for discussing relevant thematic applications to be further developed using information provided by the GEONETCast data stream during a two-week advanced training course provisionally planned at the beginning of next year at ITC. This effort should result in an application guide covering various topics that demonstrate the use of the images and data provided by GEONETCast and DevCoCast for Latin America. It is foreseen that selected participants of the various African workshops will also contribute, presenting relevant applications from the African continent. This application guide, including free open-source software and sample data, can be used by interested organizations and within universities to acquaint the parties concerned with the current capability in terms of reception and use of environmental data.

Both workshops were attended by a total of nearly 60 participants from Argentina, Bolivia, Brazil, Cabo Verde, Chile, Mexico, Paraguay and Peru. Some of the participants were able to attend thanks to sponsorship by NOAA–GEONETCast Americas. There was great interest in setting up ground receiving stations at participants' organizations for various applications using the images and data delivered by GEONETCast and the products that are currently operationally provided through the FP7-supported DevCoCast initiative.