

C-Band Reception for GEONETCast and DDS Operational at ITC

Ben Maathuis
Chris Mannaerts

maathuis@itc.nl
mannaerts@itc.nl

GEONETCast (a global network of communication satellite-based data dissemination systems) provides free near-real-time environmental and Earth observation data (in situ, airborne and space-based) and derived products to a worldwide user community. It is part of the emerging Global Earth Observation System of Systems (GEOSS) led by the Group on Earth Observation.

Back in 2005, a Ku-band-based reception station was installed at ITC, pointing at EUROBird 9 at 9° East. The signal reception of such a configuration is limited to Europe and Northern Africa. In September 2009, a C-band GEONETCast reception configuration was installed at ITC. This antenna, with a diameter of 1.8 m is pointing to Atlantic Bird 3 at 5° West. It is now possible at ITC to also monitor the GEONETCast C-band data dissemination scheme over Africa. Apart from the antenna, a C-band LNB and

a Skystar-2 DVB board were used. Even though the antenna dimension is smaller than proposed by EUMETSAT, the reception quality is good.

For pointing, use was made of a dish pointer utility (available at www.dishpointer.com/). Take the GPS position of the antenna location and the utility will give you the angles needed to correctly point the antenna (to Atlantic Bird 3, situated at 5° West).

For use of the data delivered through GEONETCast, a plug-in (the so-called GEONETCast Toolbox) was developed in ILWIS 3.6 and further upgraded in ILWIS 3.7. This freely available utility currently supports over 100 satellite image and product import routines. Using this together with the existing processing utilities of ILWIS, users can now easily integrate the enor-



The C-Band antenna in the garden of the ITC building in Enschede

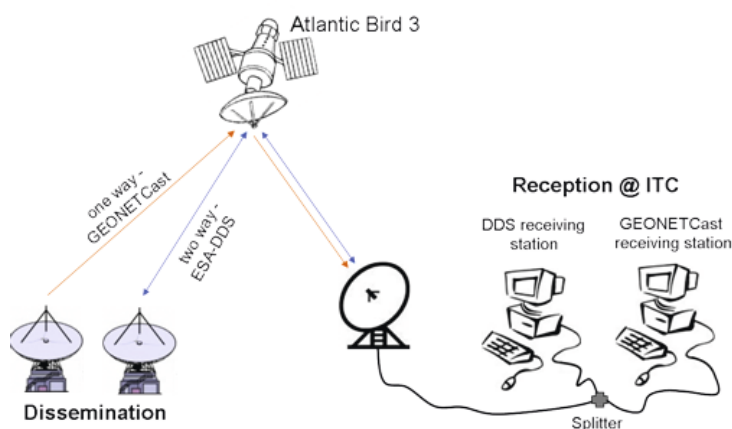


The GEONETCast Toolbox, a plug-in in ILWIS 3.7

For further information on the SkyStar-2 DVB board settings, you can contact maathuis@itc.nl or reinink@itc.nl. For further information on the configuration of a Technotrend Budget S-1401 DVB card, consult the DevCoCast Reception Station Setup Guide Book prepared by the Marine Remote Sensing Unit, University of Cape Town, or contact mark.matthews@uct.ac.za.

mous amount of environmental data delivered via communication satellites on a global scale into various applications related to weather, atmosphere, oceans, land, vegetation, water and environment.

In December, the same antenna was used to set up the European Space Agency's (ESA) Data Dissemination Service (DDS).



Graphical presentation of a combined GEONETCast and DDS architecture

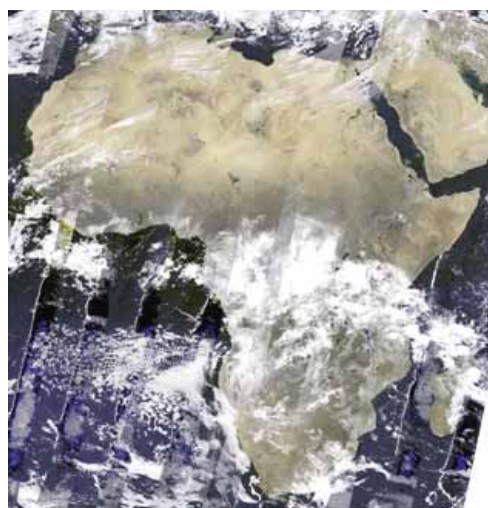
This service also uses digital video broadcasting and for Africa is using the same communication satellite to disseminate the data recorded by ENVISAT (MERIS, AATSR and ASAR) within 24 hours of sensing. A graphical presentation of the configuration is presented in Figure 3. The low-cost C-band ground receiving system now consists of two computers, one receiving the GEONETCast data stream and the other the ESA ENVISAT data using the DDS. This ground receiving computer is equipped with a BroadLogic Satellite Express 2530XL USB DVB board. The data are broadcast from approximately 20:00 hrs to 06:00 hrs CET and some 5 to 10 gigabytes are received on a daily basis. An important added advantage of the DDS is the two-way data dissemination capability that allows organisations to

upload data as well. A point of contact for DDS is Stefano Badessi, application support senior engineer, ESRIN (Stefano.Badessi@esa.int) or www.esa.int.

Through DDS, ENVISAT data and products (from ASAR, AATSR and MERIS) such as vegetation indices, brightness temperatures, reflectances, calibrated TOA radiances, cloud thickness, water vapour and geophysical products can now be obtained on a regular basis (see also Figure 4).

For the processing of the ENVISAT data, use can be made of the Basic Envisat toolbox for (A)ATSR and MERIS (BEAM), which is freely available at:

www.brockmann-consult.de/beam.



Composite of MERIS reduced resolution data of 11 to 13 January 2010

For more information
www.itc.nl/GEONETCast-General-information