

GEONETCast Toolbox under ILWIS 3.5 Open

Sustainable development requires coordinated, comprehensive and sustained Earth observations for early warning, informed policies and effective decision making. In support of this objective the Group on Earth Observation (GEO) is leading a worldwide effort to build a Global Earth Observation System of Systems (GEOSS), providing Earth observations from a multitude of instruments worldwide. These Earth observation data (in-situ, air and space borne) and derived products are (re) distributed via GEONETCast to a broad range of user communities. Therefore GEONETCast, bringing together the many disparate sources of environmental information, has a significant potential to enhance access to a wide range of information to users who previously had no access to these resources. This low cost, global, environmental information delivery system currently operates the European, African and American services and successful tests have been conducted to cover the Asia-Pacific region recently. With the ongoing development of GEONETCast, broadcasting (globally) a multitude of satellite observations and associated products in conjunction with cheap ground receiving infrastructure, the data is now at the doorstep of the user community anywhere in the world.

The toolbox development effort described here is a low-cost alternative to retrieve regular data and products relevant for a broad range of environmental and hydrological applications by non-meteorological organizations in less developed countries dealing with geo-spatial temporal data analysis. The toolbox, developed under ILWIS 3.5 Open, is capable of handling the incoming data stream and stores the data in a structured way based on an interface that can be easily adapted by the User using a simple ascii text file. Furthermore the toolbox provides a resource

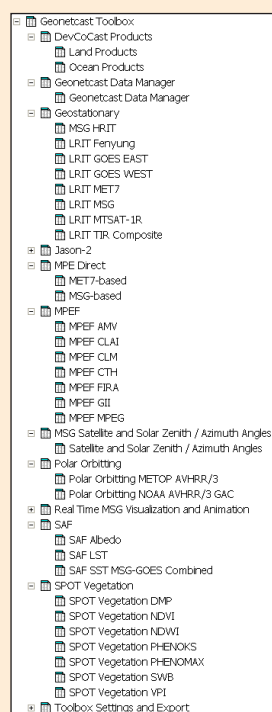


Figure 1: GEONETCast toolbox menu structure. The Polar Orbiting, Jason-2 and DevCoCast options will be developed in the future.

to incorporate a variety of basic environmental data of various formats (MSG-level 1.5, BUFR, GRIB/GRIB2, HDF4/5, ascii tables, etc) for further spatial and temporal analysis into a GIS. The examples shown demonstrate the versatile nature of the freeware toolbox using the (near real-time) data available through GEONETCast. This is highly relevant with respect to e.g. environmental monitoring and provides meaningful information to assess flood, drought and agricultural conditions. Using simple batch

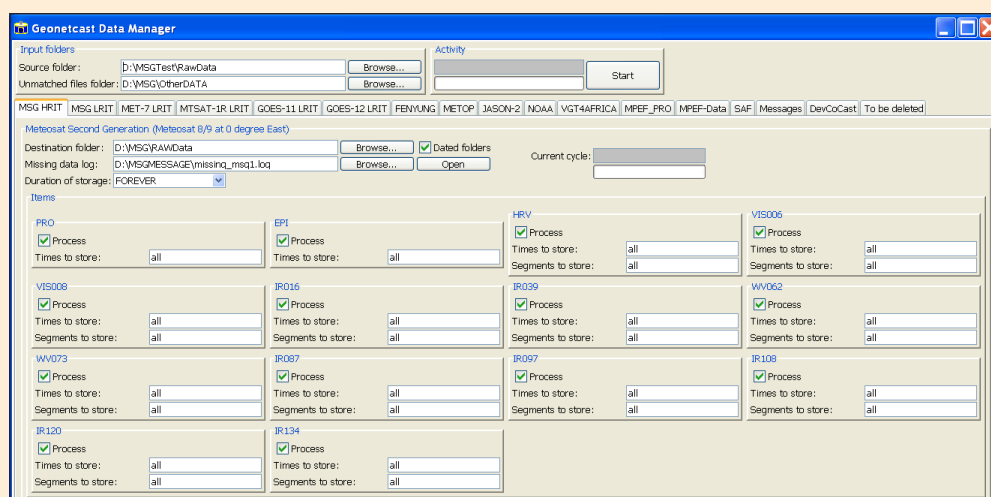


Figure 2: GEONETCast Data Manager menu resulting from an ascii configuration file that can be easily constructed and adapted (using a text editor) from a sample config file automatically generated when running the application for the first time. This program stores the data broadcasted via GEONETCast in a structured way to be used by the other toolbox facilities.

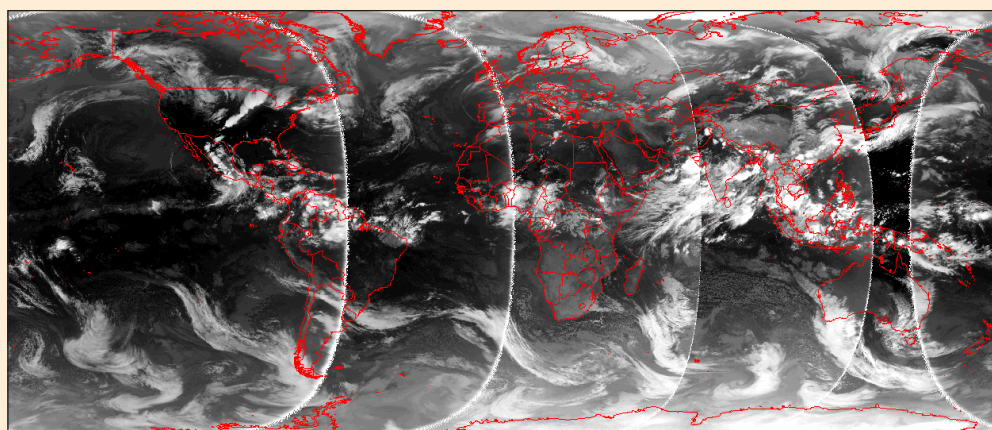


Figure 3: Thermal Infra Red composite of GOES-W, GOES-E, MSG, Meteosat-7 and MTSAT-1R LRTT images. Based on a user selected date-time stamp the corresponding TIR bands are imported, stretched and resampled to construct a global composite.

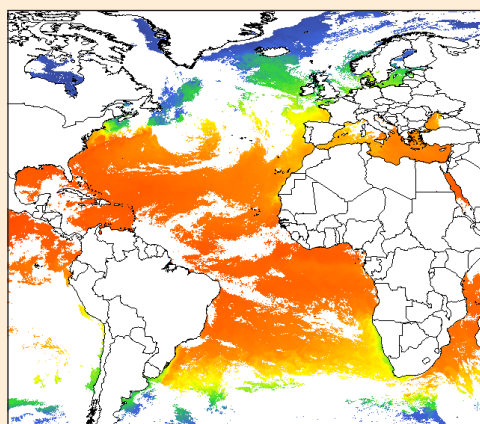


Figure 5: A sample SAF image, the combined GOES-MSG Sea Surface Temperature map.

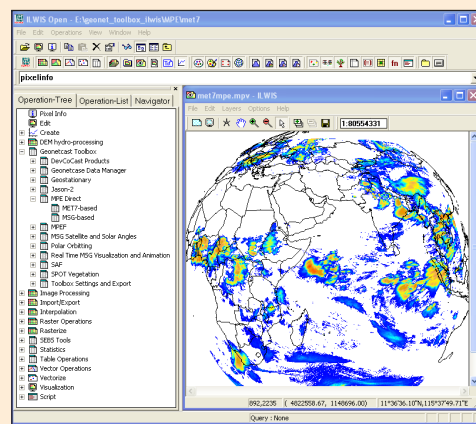


Figure 6: MPE-Direct extracts the MPE GRIB files directly from the EUMETSAT website.

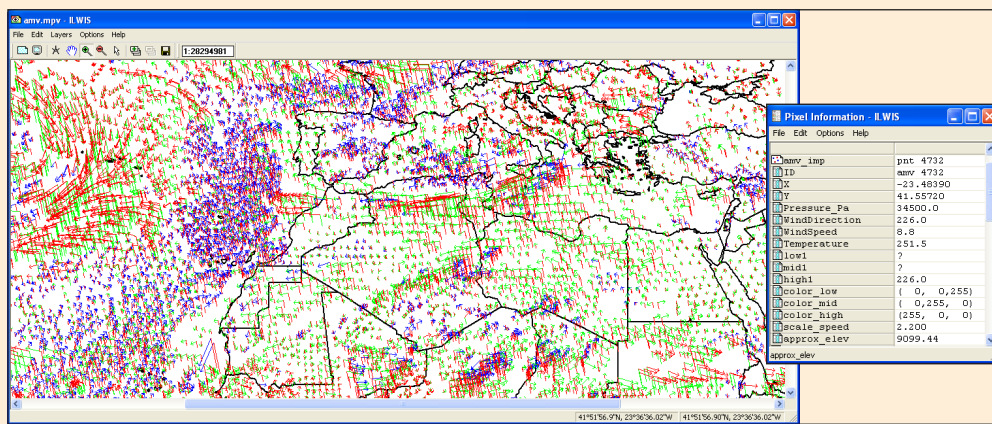


Figure 7: The Atmospheric Motion Vector product is shown here as an example of BUFR encoded data import and processing (additional attributes calculated are used for visualization).

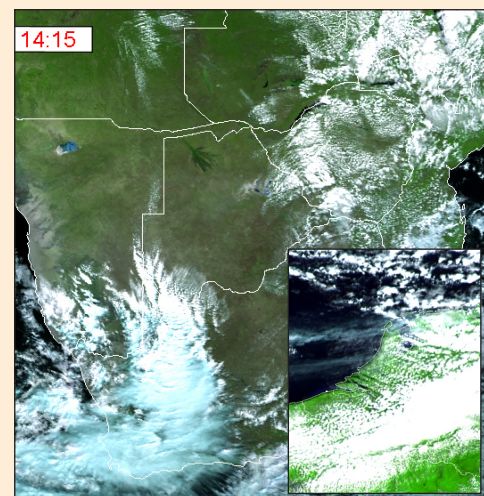


Figure 4: The real-time visualization option uses the system clock time to extract and process the newly received MSG HRIT images, eventually fusing the HRV channel with the low resolution channels (VIS006, VIS008 and IR_016). Different pre-defined windows can be selected.

routines additional toolbox functionality can easily be created to address the specific user needs. As more data-information will be released through GEONETCast it is anticipated that more import and preprocessing routines will be developed. Using off the shelf equipment to build a low cost ground receiving station, in conjunction with free data (when applying for a research and education license through EUMETSAT) and the freeware toolbox described here a number of essential prerequisites are fulfilled to develop a sustainable basis for research and even regular operations. After further testing the GEONETCast toolbox will become available as a plug-in of the new ILWIS 3.5 Open release.

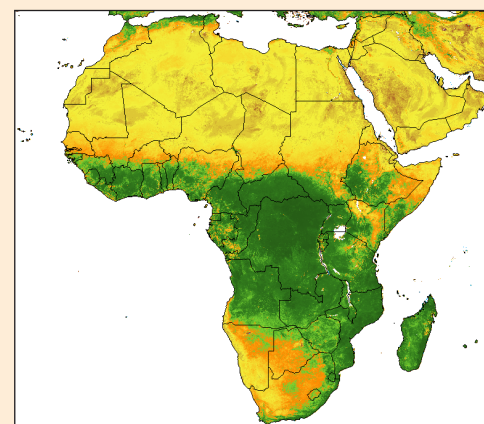


Figure 8: The NDVI product is shown here as an example of the VEG4Africa products disseminated via GEONETCast every 10 days.

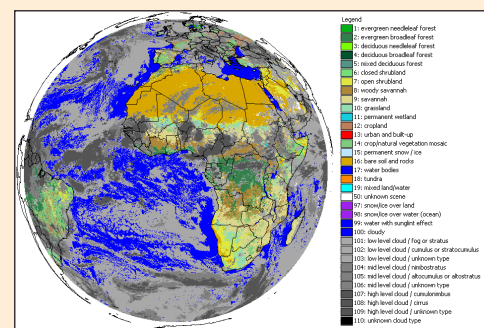


Figure 9: The Cloud Analysis Image (CAI) is given as example of the various GRIB based import routines. All MPEF GRIB based products are re-assigned to their appropriate class or value.

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