Tutorial - Converting GNC-A GRIB files to GeoTIFF

In the GEONETCast-Americas broadcast there are **GRIB** files provided by **NOAA-NESDIS** called **"TOAST"**. They are **daily ozone retrievals** from **SBUV/2** and **TOVS** instruments.

Here's a detailed description of this product:

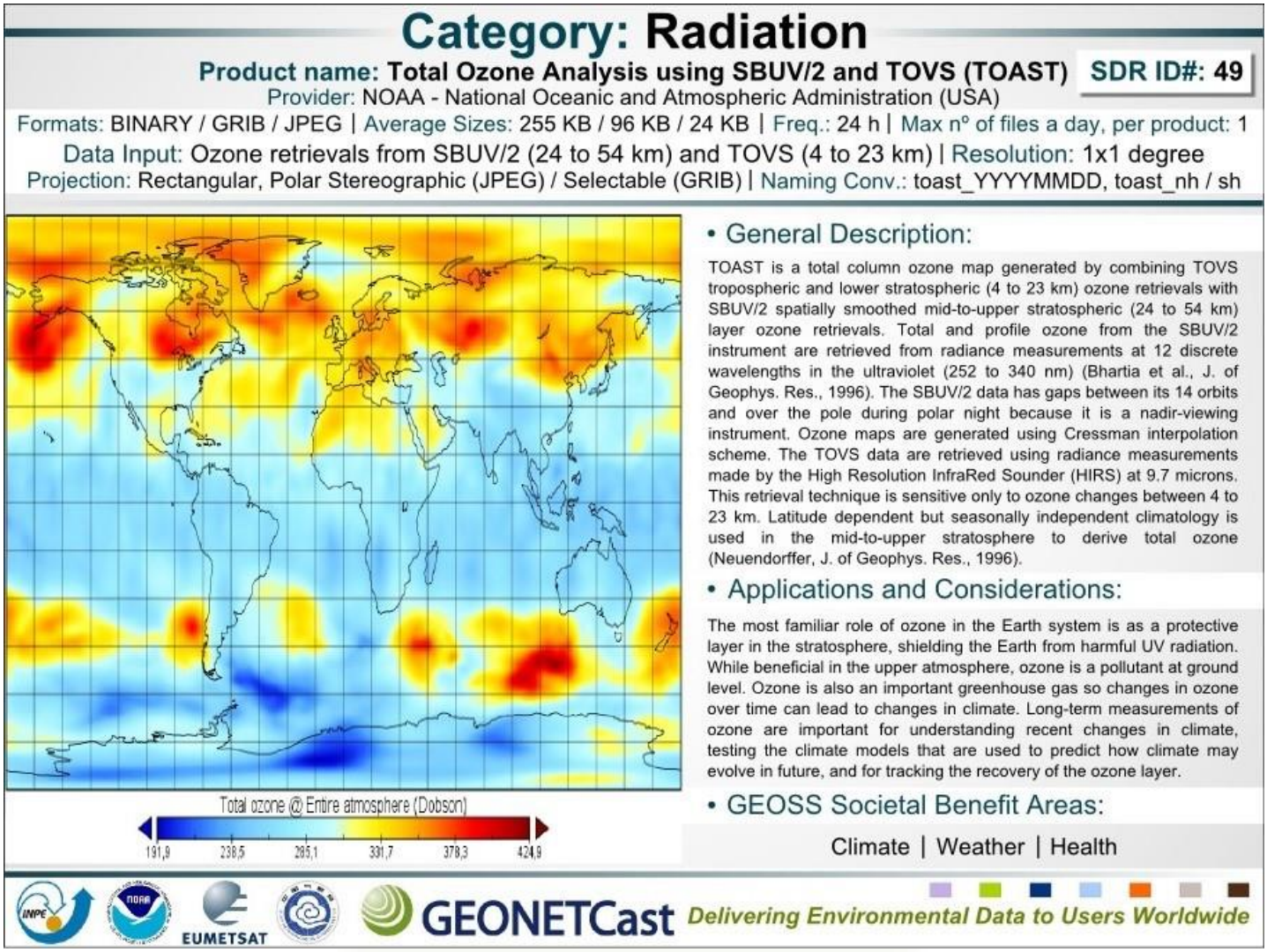

Figure 1: TOAST product datasheet developed by INPE

Note: "SDR ID#" stands for "Satellite Data Requirements Identification Number" of the ozone dataset, found at the table from the link below:
http://satelite.cptec.inpe.br/geonetcast/br/docs/RA-III-IV-Requirements-v20140913%20-%20V2.xls

Please find below a procedure to convert these daily **GRIB** files to our well know **GeoTIFF** format using a command line tool called **GDAL**.

1-) Download a TOAST sample from February 24 2015 here:
https://www.dropbox.com/s/biqd3m45nhjoz4a/TOAST_150224.GRB?raw=1
(you may find all the TOAST products at the **"incoming/NOAA-NESDIS"** folder in your GEONETCast-Americas station).
Move the downloaded file to your preferred folder (in this example **"C:\VLAB"**).

2-) Download and install GDAL (Geospatial Data Abstraction Library) for your preferred O.S. here: http://trac.osgeo.org/gdal/wiki/DownloadingGdalBinaries
In this example (Windows 8.1), it was installed in *"C:\Program Files (x86)\GDAL"*

Hint: If you're using Windows, you may find step-by-step information on how to install GDAL at the following link: http://cartometric.com/blog/2011/10/17/install-gdal-on-windows/

3-) Open the Command Prompt (Windows), Terminal (Linux), etc, and access the GDAL folder.
In this example (Command Prompt): *cd "Program Files (x86)"\GDAL*

4-) To convert the TOAST GRIB file to GeoTIFF, use the following GDAL command structure:
Real example:
C:\Program Files (x86)\GDAL\gdal_translate.exe C:\VLAB\TOAST_150224.grb C:\VLAB\TOAST_150224.tif -of Gtiff

Where:
gdal_translate.exe -> GDAL function that converts data between different formats
C:\VLAB\TOAST_150224.grb -> Input file
C:\VLAB\TOAST_150224.tif -> Output file
-of Gtiff -> Output format (for a complete list of supported formats please visit: http://www.gdal.org/formats_list.html)

Congratulations! You have converted the GEONETCast-Americas TOAST GRIB file to GeoTIFF!
The newly created GeoTIFF will be called **"TOAST_150224.tif"** and will be located at **"C:\VLAB"** (or where you first moved the sample)

However... you will notice something strange!

5-) Open the resulting GeoTIFF in your favorite GIS (for example, following our ILWIS GeoTIFF tutorial):

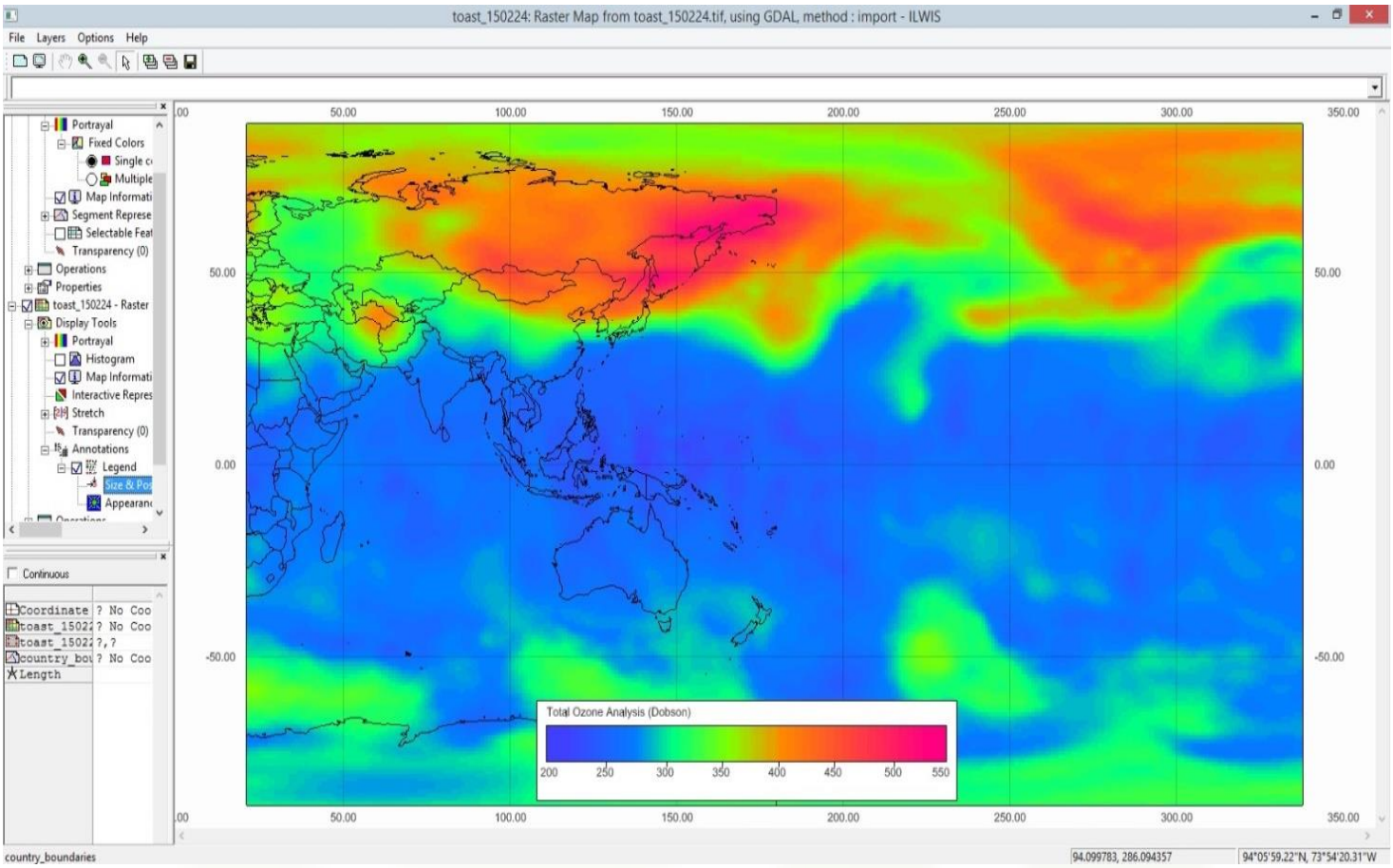

Figure 2: TOAST product converted and opened in a GIS

The hemispheres are flipped!

The reason is simple. This TOAST files are provided with **0° to 360° longitudes**. That is why the west hemisphere shapefile is probably not being show in your GIS.

But there is a simple workaround for this. Let's see...

6-) To convert the TOAST GeoTIFF file latitudes from 0° ~ 360° to -180° ~ +180°, use the following GDAL command structure:

Real example:

***C:\Program Files (x86)\GDAL*gdalwarp -t_srs**

WGS84 *C:\VLAB*TOAST_150224.tif *C:\VLAB*TOAST_150224_LONGOK.tif -wo SOURCE_EXTRA=1000 --config CENTER_LONG 0

Where:
gdal_translate.exe -> GDAL function for image reprojection and warping
-t_srs WGS84 -> Target spatial reference set
c:\VLAB\TOAST_150224.tif -> Input file
C:\VLAB\TOAST_150224_LONGOK.tif -> Output file
-wo SOURCE_EXTRA=1000 -> Warp option: Number of extra pixels added around the source window for a given request (used to avoid blank areas in the final image)
--config CENTER_LONG 0 -> Set the central longitude to zero

The newly created GeoTIFF will be called **"TOAST_150224_LONGOK.tif"** and will be located at **"C:\VLAB"** (or where you first moved the sample)

7-) Open the resulting GeoTIFF in your favorite GIS:

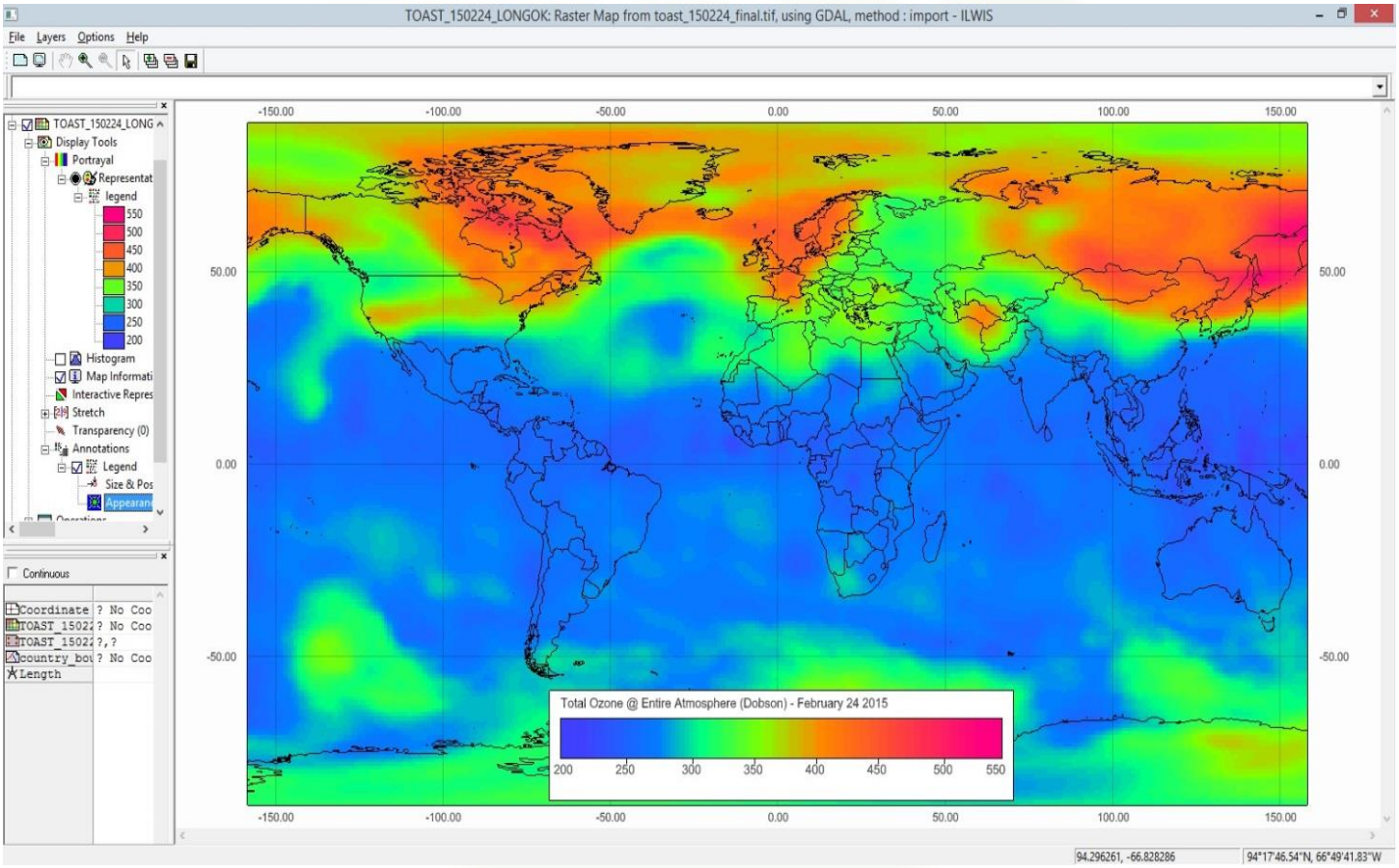

Figure 3: TOAST product converted from 0 to 360 to -180 to +180 and opened in a GIS

Now this GeoTIFF is in the same longitude format of the other GeoTIFF's provided in the system.