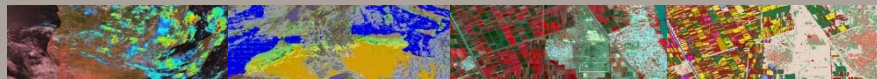
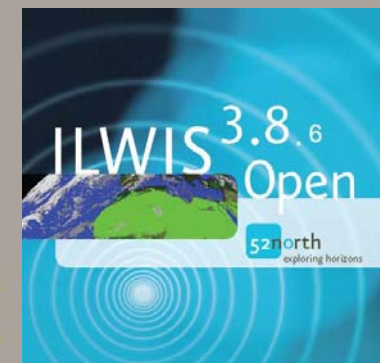
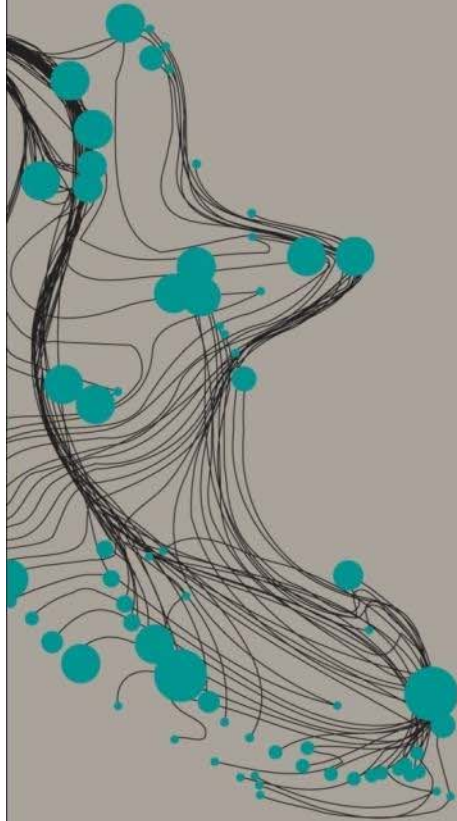


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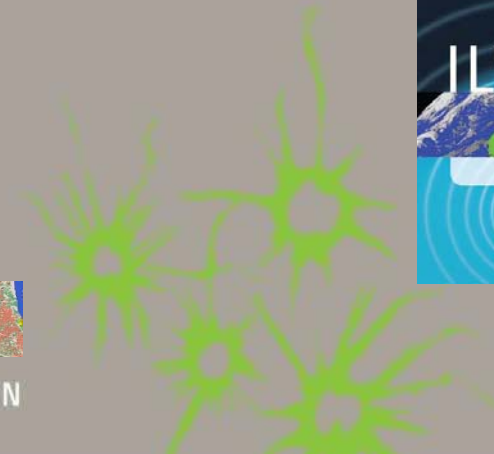


INTRODUCTION TO ILWIS

BAS RETSIOS / BEN MAATHUIS
FACULTY ITC, UNIVERSITY TWENTE, THE
NETHERLANDS



FACULTY OF GEO-INFORMATION SCIENCE AND EARTH OBSERVATION





ILWIS

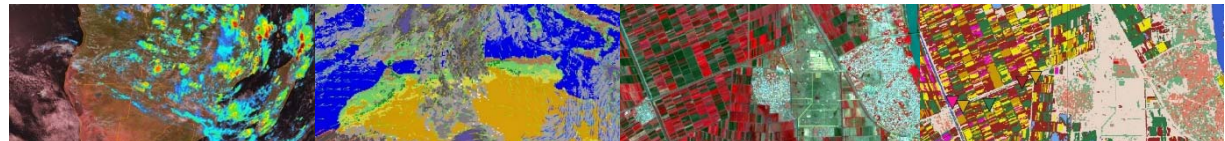
- Integrated Land and Water Information System
- Development started in 1984
- Grant from the Dutch Ministry of Foreign Affairs
- Result (1988) a Geographic Information System (GIS) for:
 - land use planning
 - watershed management studies
- Until 2007 in average 5 developers
- Commercial software until July 2007
- Since then, free and open source





FEATURES

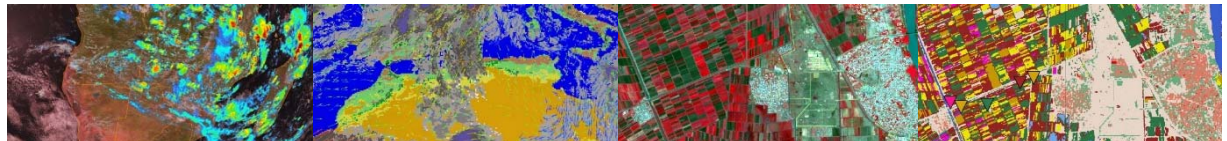
- Integrated raster and vector image analysis
- Digitizing vector images with digitizer tablet or computer screen
- Comprehensive set of image processing tools
- Orthophoto, image georeferencing, transformation, mosaicing
- Advanced modeling and spatial data analysis
- Rich projection and coordinate system library
- Geo-statistical analyses, with Kriging for improved interpolation
- Production and visualization of stereo image pairs
- Spatial Multiple Criteria Evaluation
- Operations for DEM hydrological processing
- Operations for Surface Energy Balance System
- Toolbox Plug-in (separately downloadable add-on extension)





ADVANTAGES

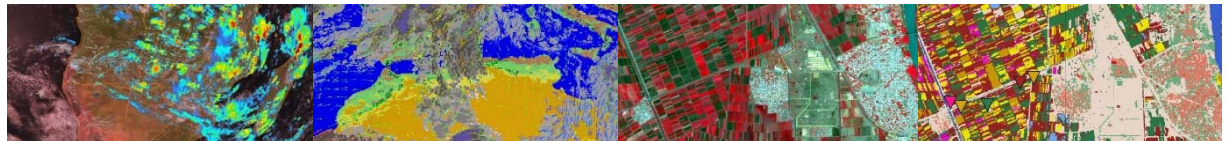
- Free and Open Source
- Compact (30 MB download)
- Zero-install (download, unzip and run)
- Integrated (all functionality is included)
- Highly optimized
- Lightweight, starts fast, responds fast
- Autosave
- Extensive Documentation
- The developers are at the ITC





ADVANTAGES – FAST MAP DISPLAY

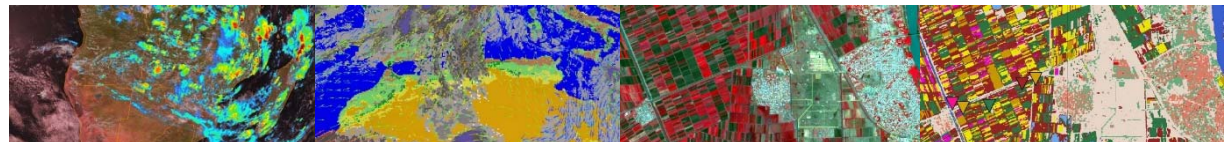
- Biggest innovation in ILWIS version 3.8.x
- Using OpenGL technology
- Full utilization of graphics-hardware
- Performance like 3D computer games
- Additional visualization possibilities
- Effortless switch from 2D to 3D
- Effortless overlay of raster images with different projections





DISADVANTAGES

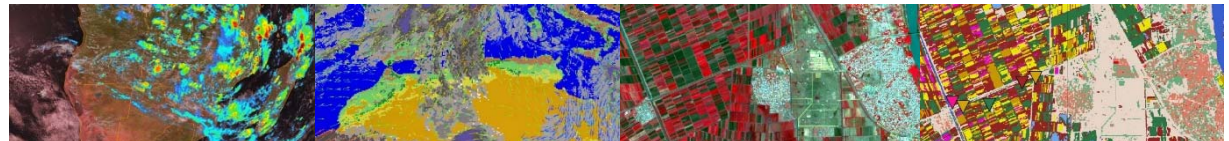
- Own file format
 - Implicates data import and export
- Some ILWIS metadata concepts to get used to
- Some ILWIS terminology to get used to (e.g. ILWIS Map = Image or Layer in other software)
- Some issues when folder names have spaces
- Traditional user interface
- Own scripting language
- Currently few developers





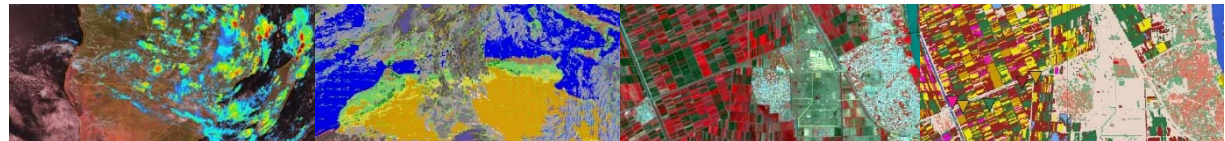
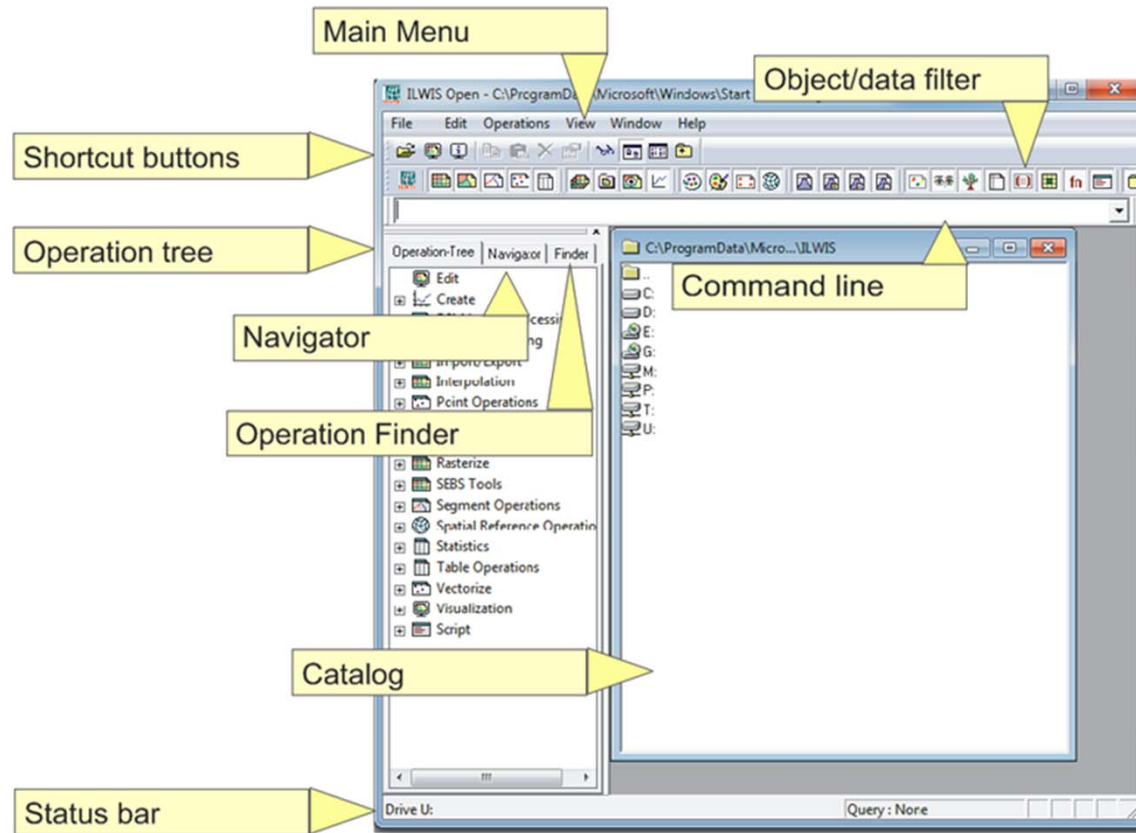
METADATA CONCEPTS

- An ILWIS Raster Image
 - has a Georeference
 - has a Domain
 - optionally has an Attribute Table
- An ILWIS Georeference
 - has a Coordinate System
- An ILWIS Vector Image
 - has a Coordinate System
 - has a Domain
 - optionally has an Attribute Table



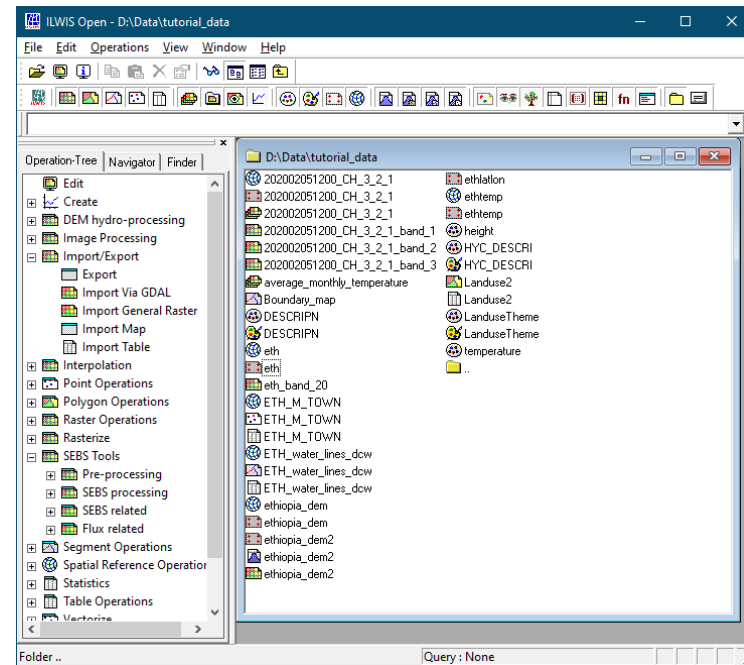
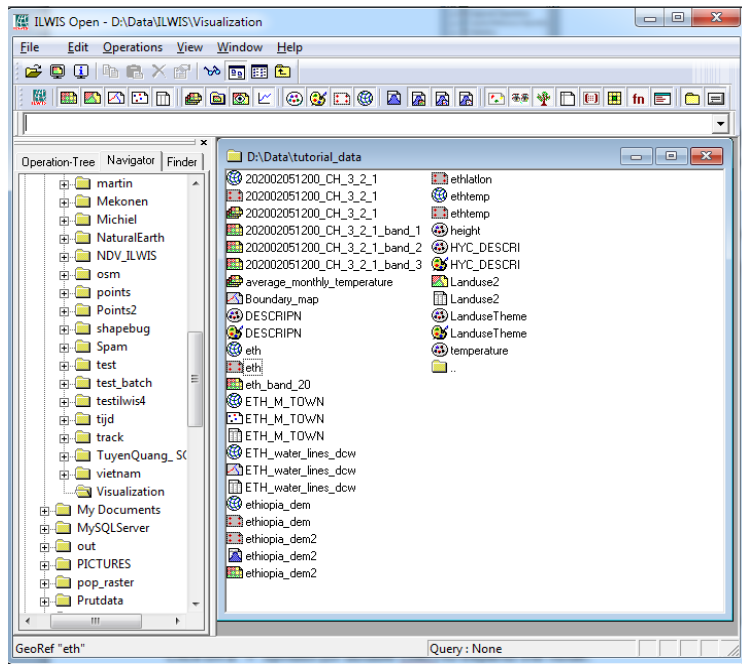


ILWIS – USER INTERFACE





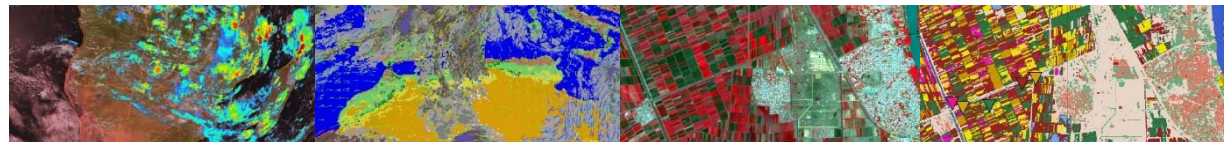
NAVIGATOR AND OPERATION TREE



Data Filter for catalog data visualization



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MAP WINDOW

The screenshot shows a GIS application window titled 'ethiopia_dem2: MapSub'. The interface includes a menu bar (File, Layers, Options, Help), a command line, a layer tree on the left, a central map view, and a status bar at the bottom. A 'Map Tools' toolbar is located above the map view. A 'Map Info view' is open at the bottom left, displaying coordinate information. A context menu is open over the 'Display Tool' icon in the toolbar, listing various tool options.

Labels in the image:

- Menu
- Command line
- Layer Tree
- Map Tools
- Map View
- Map Info view
- Status bar

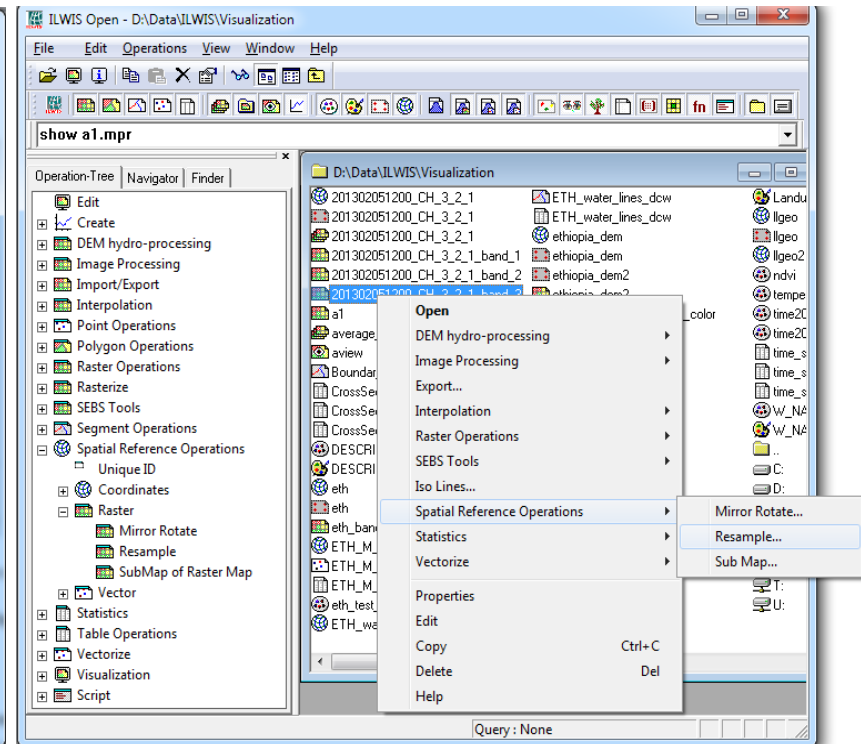
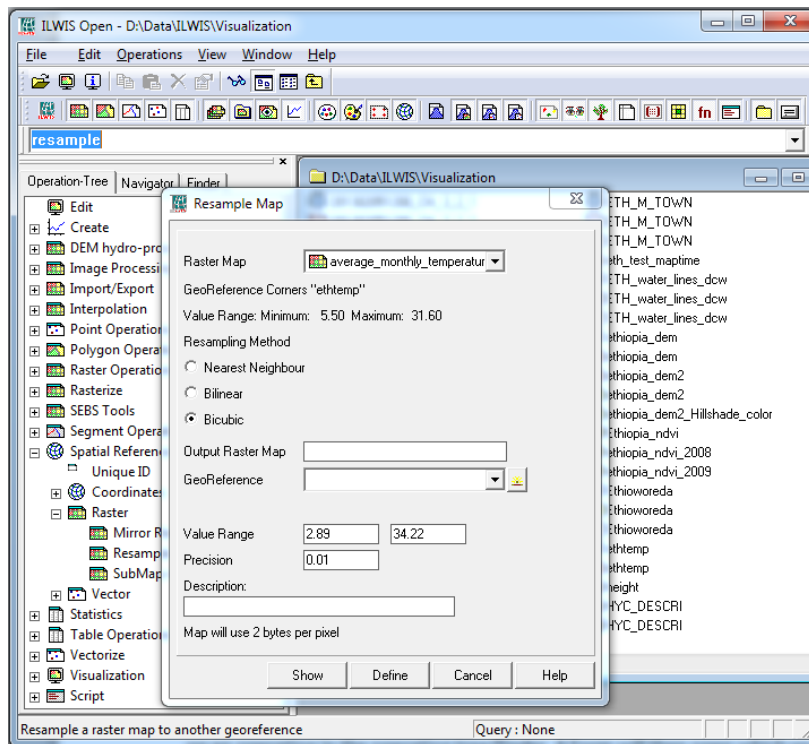
Context menu items (checked items are marked with a checkmark):

- Global tools
- ethiopia_dem2 - MapSub
- Display Tool
- Portrayal
- 3D Properties
- Histo
- Annotations
- Map I
- Legend Annotation
- Interacti
- Portrayal
- Stretch
- Representation Legend
- Transpar
- Cross Section
- Operations
- Properties
- Raster Histogram
- Background
- Hovmöller Diagram
- Map Information
- Interactive Representation
- Operations
- Interactive Stretching
- Track Profile
- Transparency

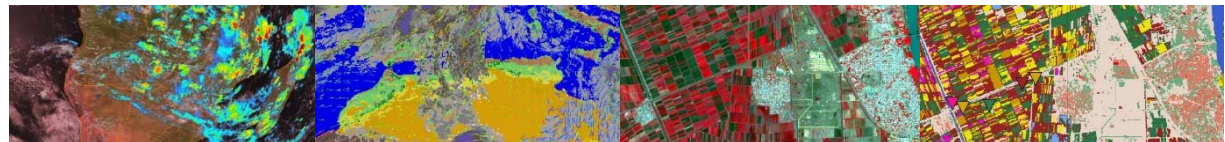




ILWIS RESAMPLE COMMAND

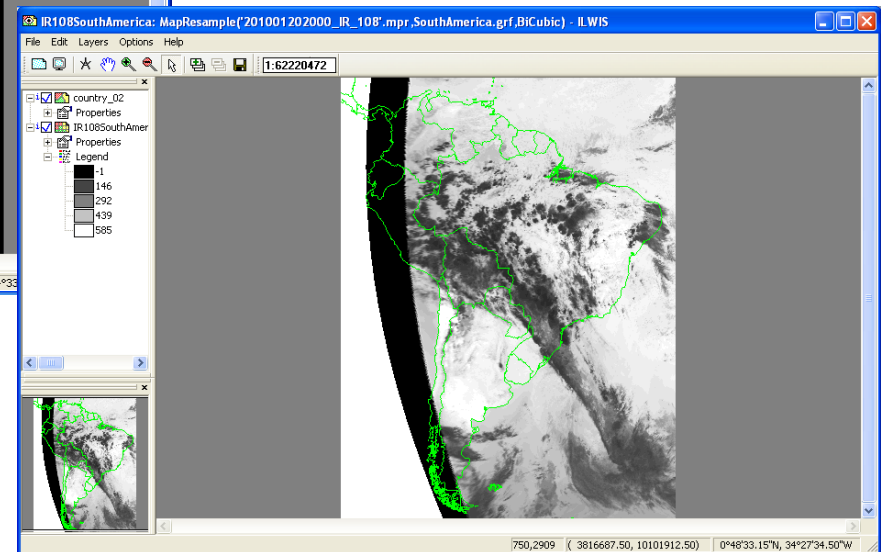
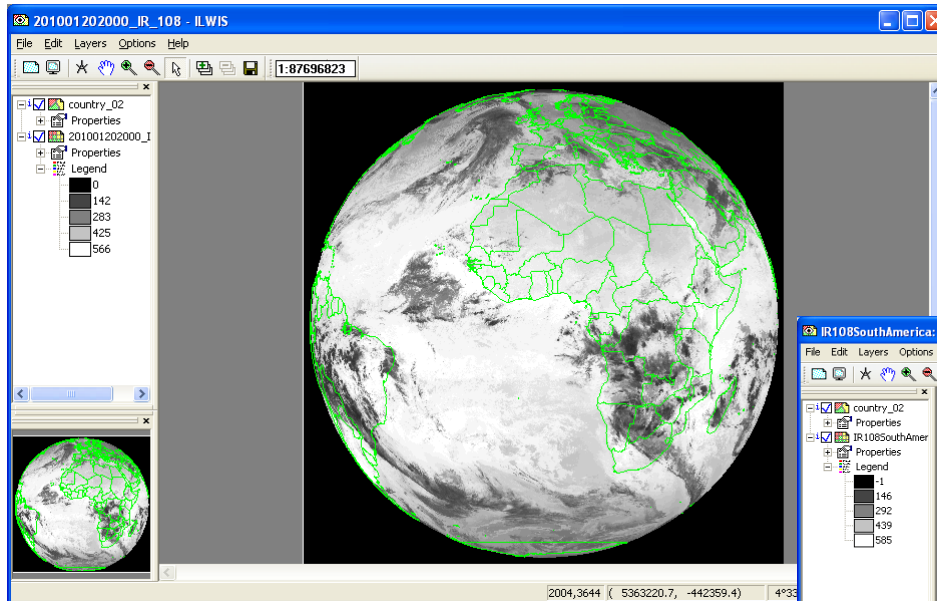


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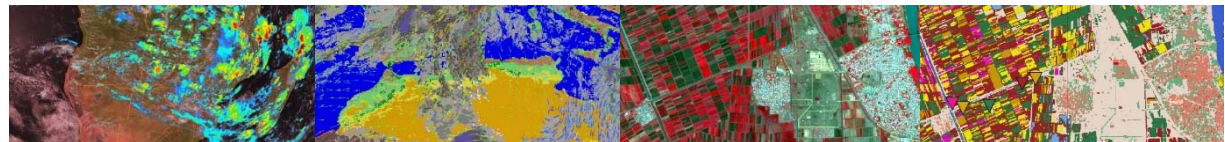




MAP WINDOWS SHOWING ORIGINAL MSG AND RESAMPLED MSG IMAGE

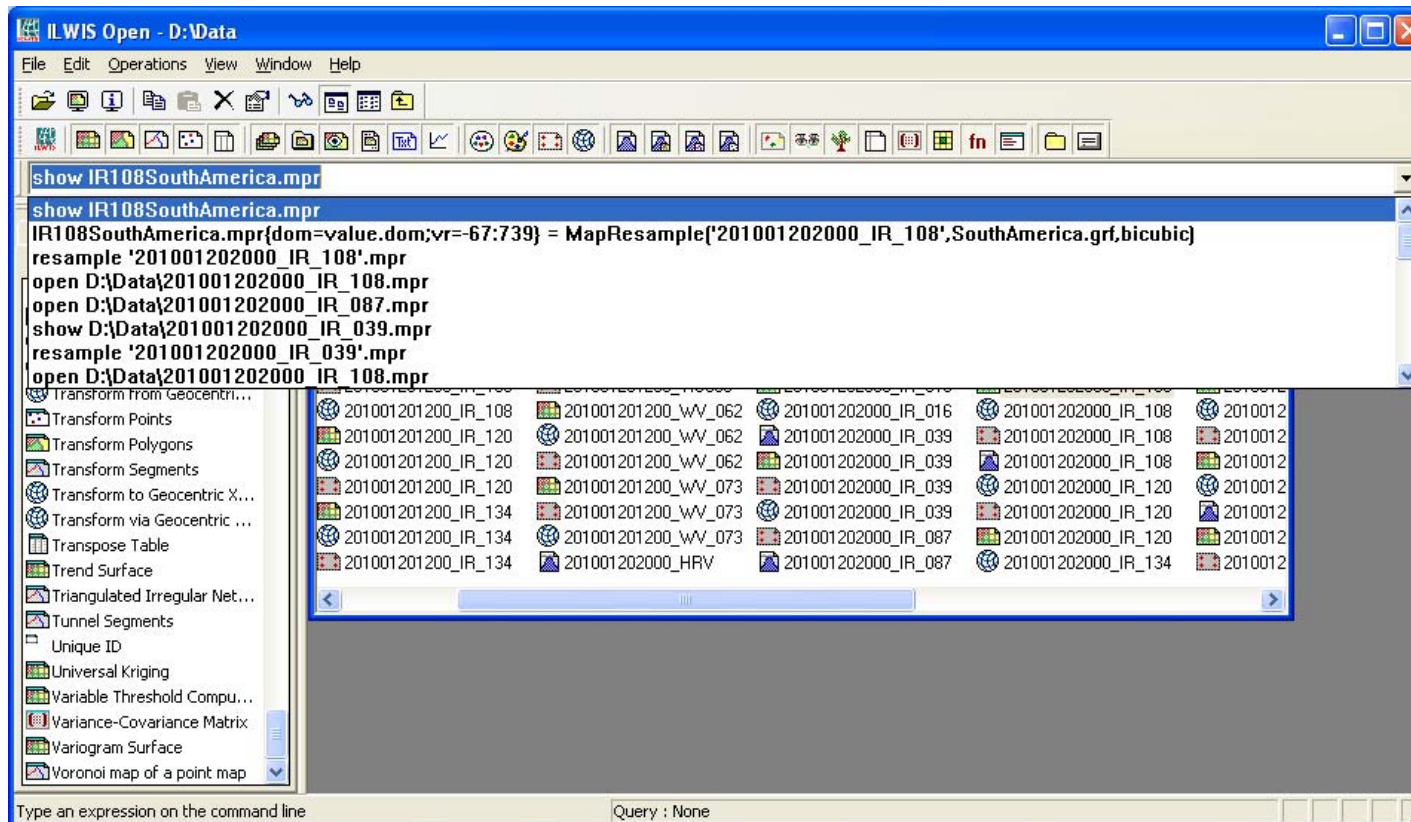


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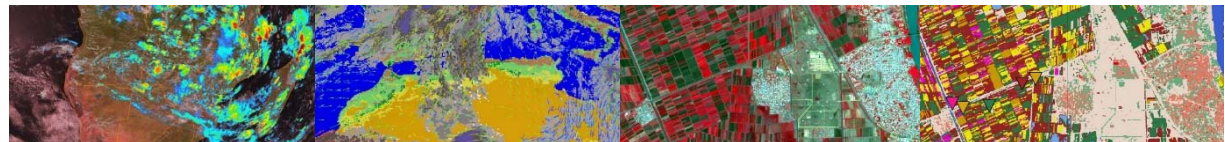




ILWIS COMMAND LINE



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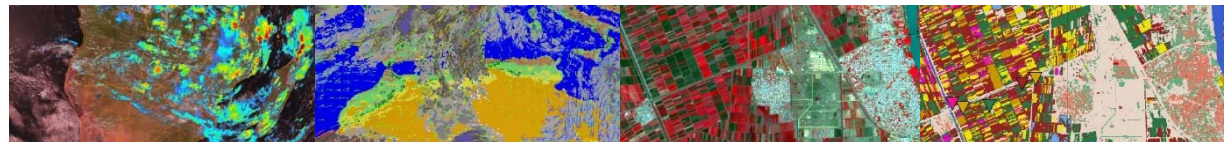




ILWIS COMMANDS

```
IR108SouthAmerica.mpr =  
MapResample  
(  
    '201001202000_IR_108',  
    SouthAmerica.grf,  
    bicubic  
)
```

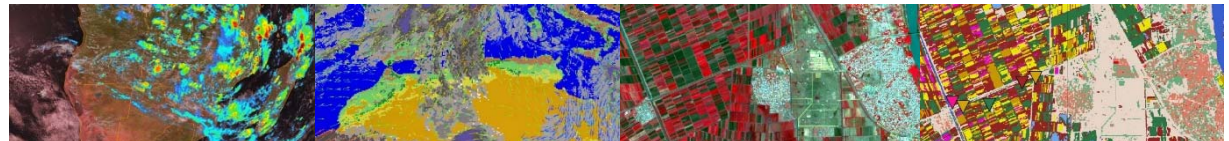
- Input map remains untouched
- A new output map is generated





ILWIS – COMMANDS / MAPCALC

- $\text{mapC} = \text{mapA} + \text{mapB}$
- $\text{mapC} = \text{mapA} * \text{mapB} - \text{mapA} / \text{mapD}$
- $\text{mapC} = \exp(\text{mapA}) * \cos(\text{mapB})$
- $\text{ndvi} = (\text{NIR} - \text{VIS}) / (\text{NIR} + \text{VIS})$





ILWIS SCRIPTS

- Script = a collection of commands that are executed in order
- All non-interactive ILWIS commands can be scripted

