INTRODUCTION TO ILWIS

BAS RETSIOS / BEN MAATHUIS

FACULTY ITC, UNIVERSITY TWENTE, THE NETHERLANDS
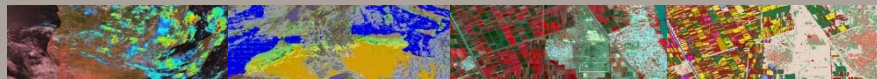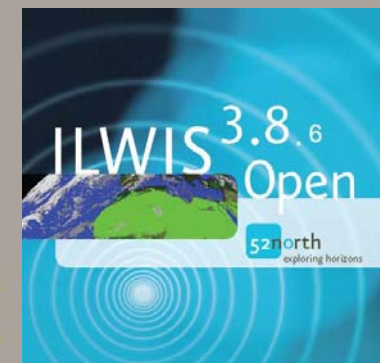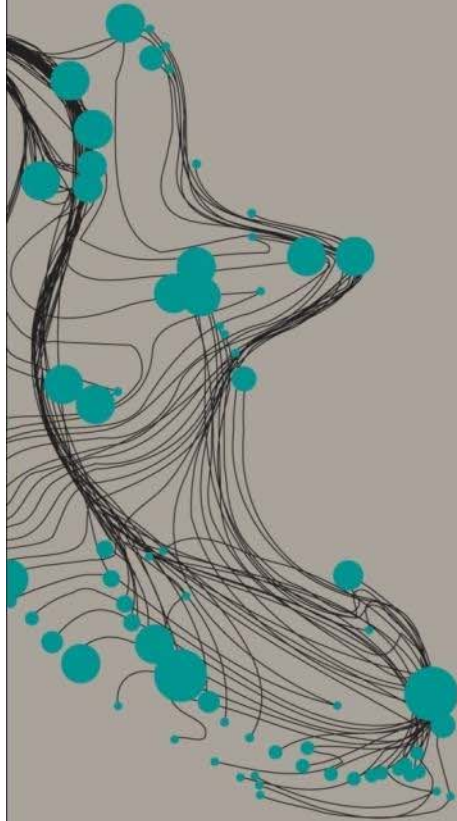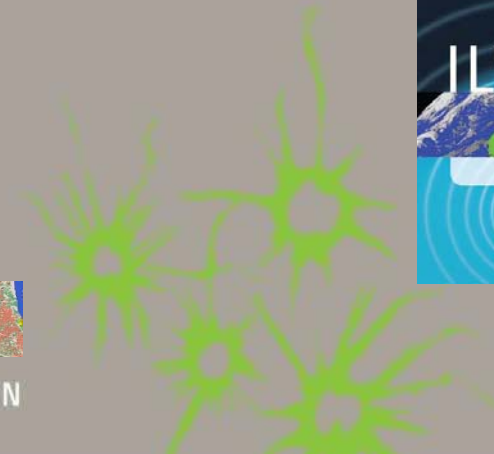
ILWIS

- 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-statisitical 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)
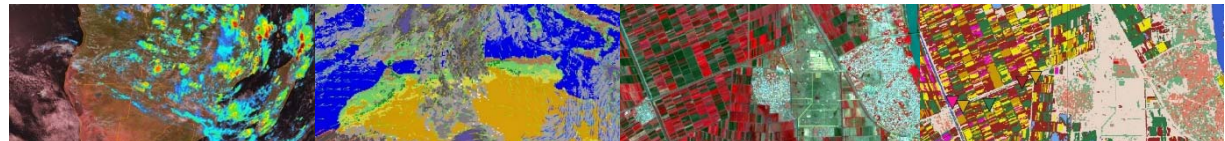
ADVANTAGES

- 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

UNIVERSITY OF TWENTE.
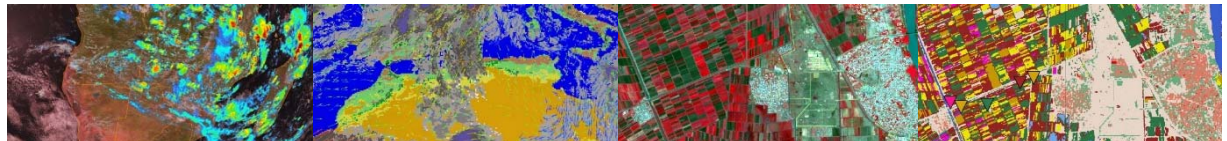
ADVANTAGES – FAST MAP DISPLAY

- 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

ITC

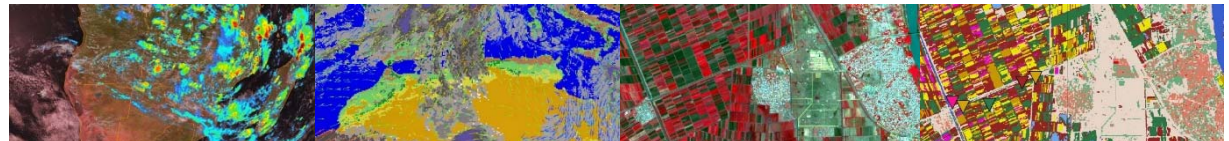UNIVERSITY OF TWENTE.
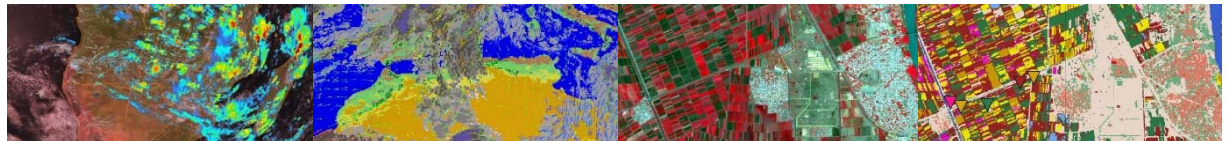
DISADVANTAGES

- 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
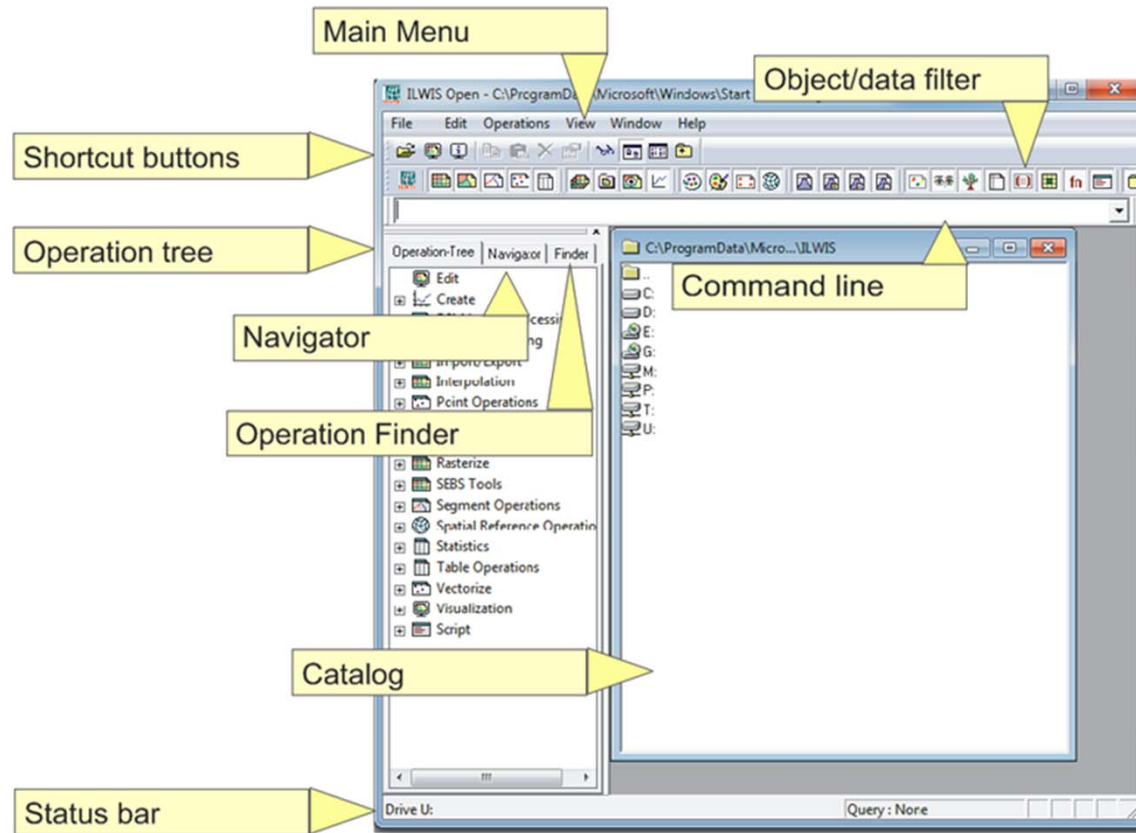- Own scripting language
- Currently few developers

UNIVERSITY OF TWENTE.
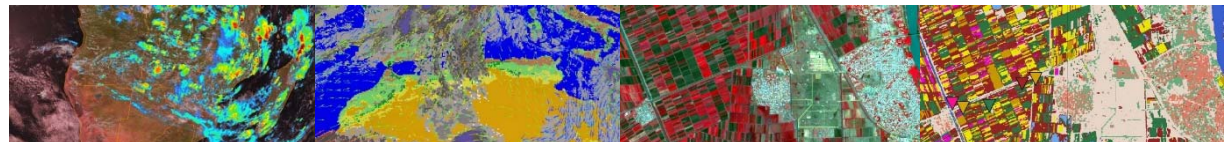
METADATA CONCEPTS

- 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
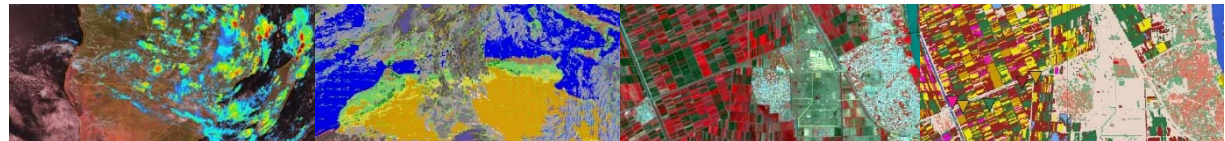
NAVIGATOR AND OPERATION TREE
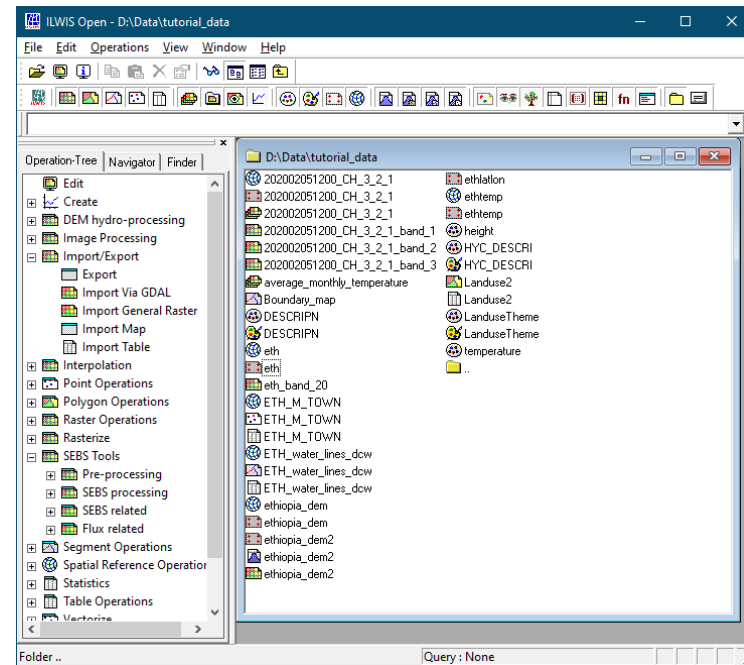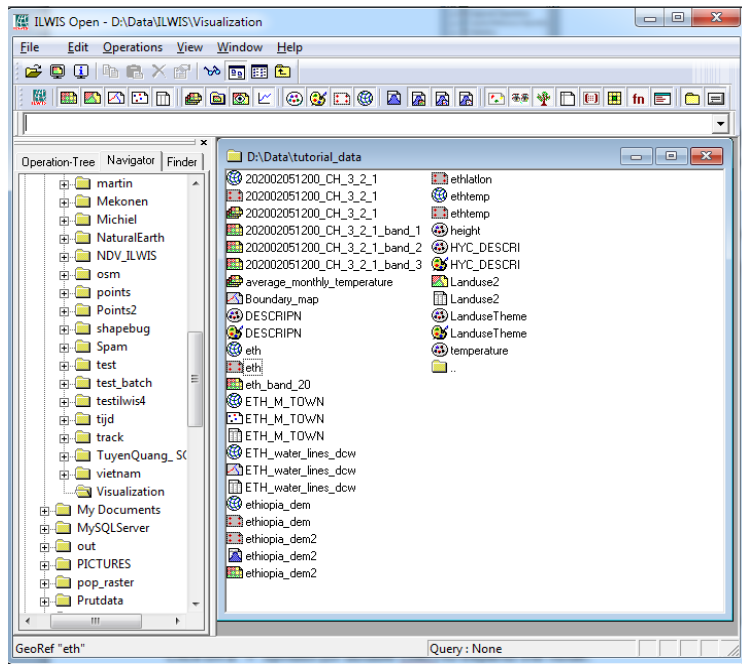
Data Filter for catalog data visualization
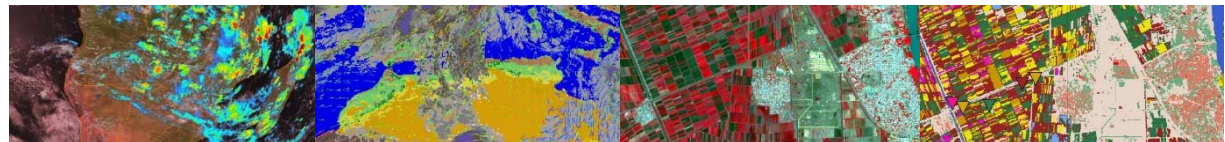

UNIVERSITY OF TWENTE.

MAP WINDOW
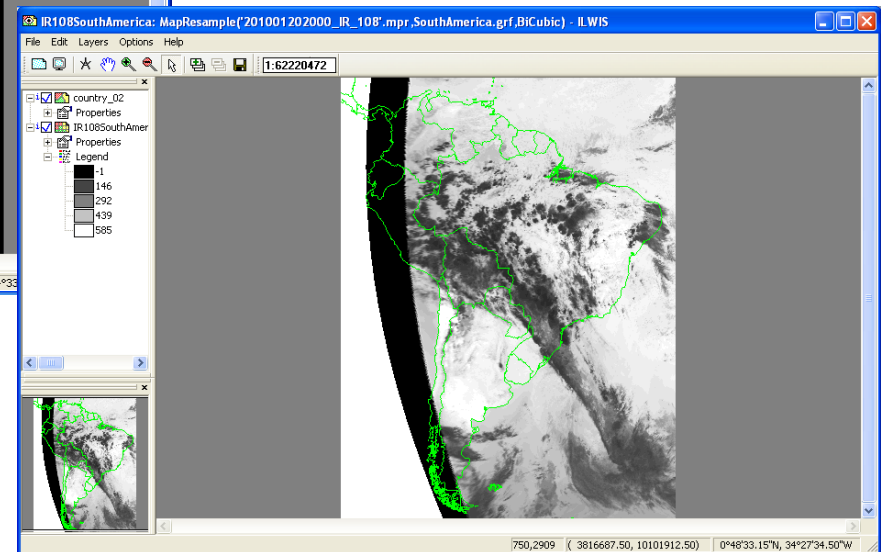
ILWIS RESAMPLE COMMAND
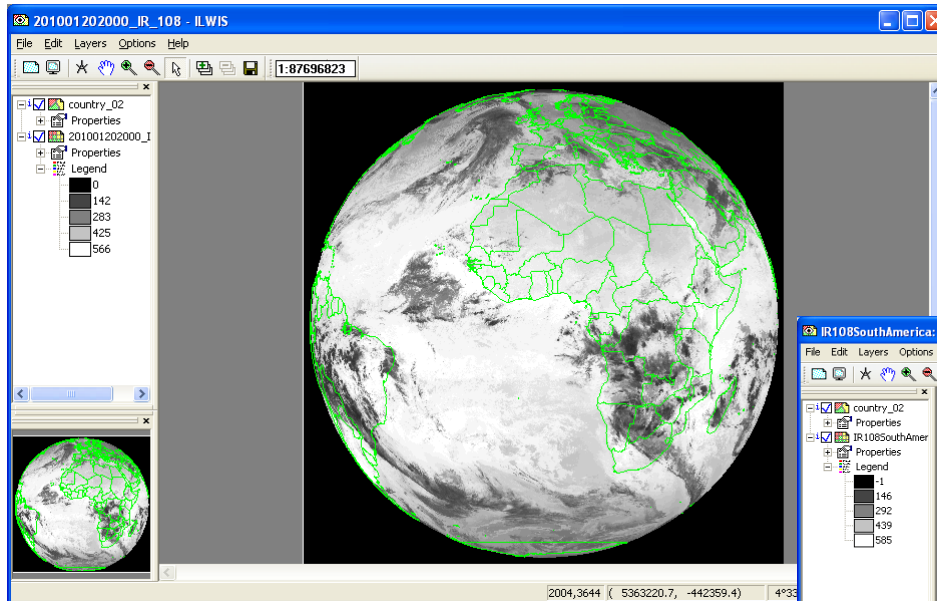

UNIVERSITY OF TWENTE.

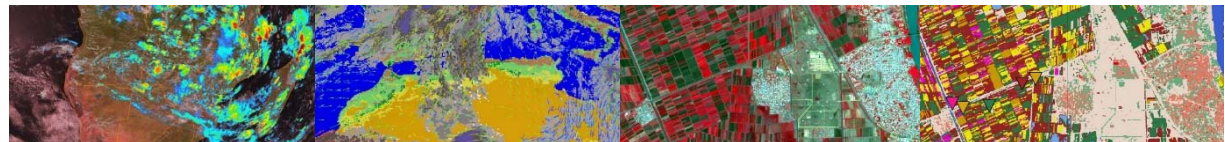# MAP WINDOWS SHOWING ORIGINAL MSG AND RESAMPLED MSG IMAGE

ILWIS COMMAND LINE
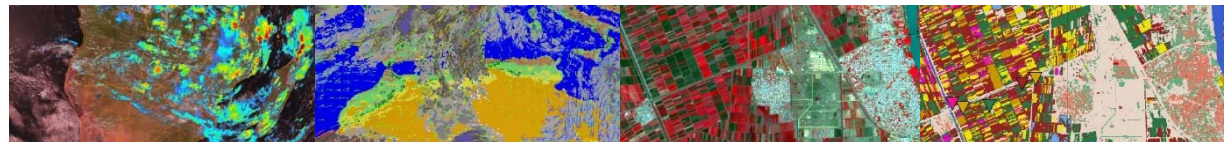
ILWIS COMMANDS

```
IR108SouthAmerica.mpr =

MapResample

(

    '201001202000_IR_108',

    SouthAmerica.grf,

    bicubic

)
```
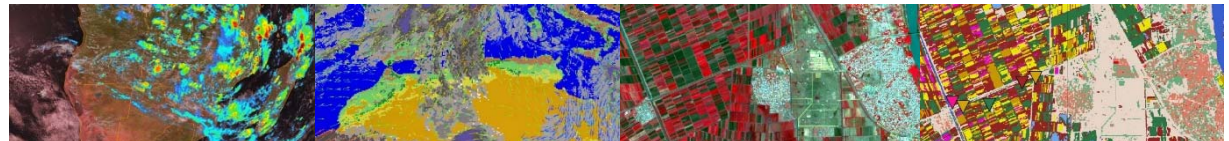
- Input map remains untouched
- A new output map is generated
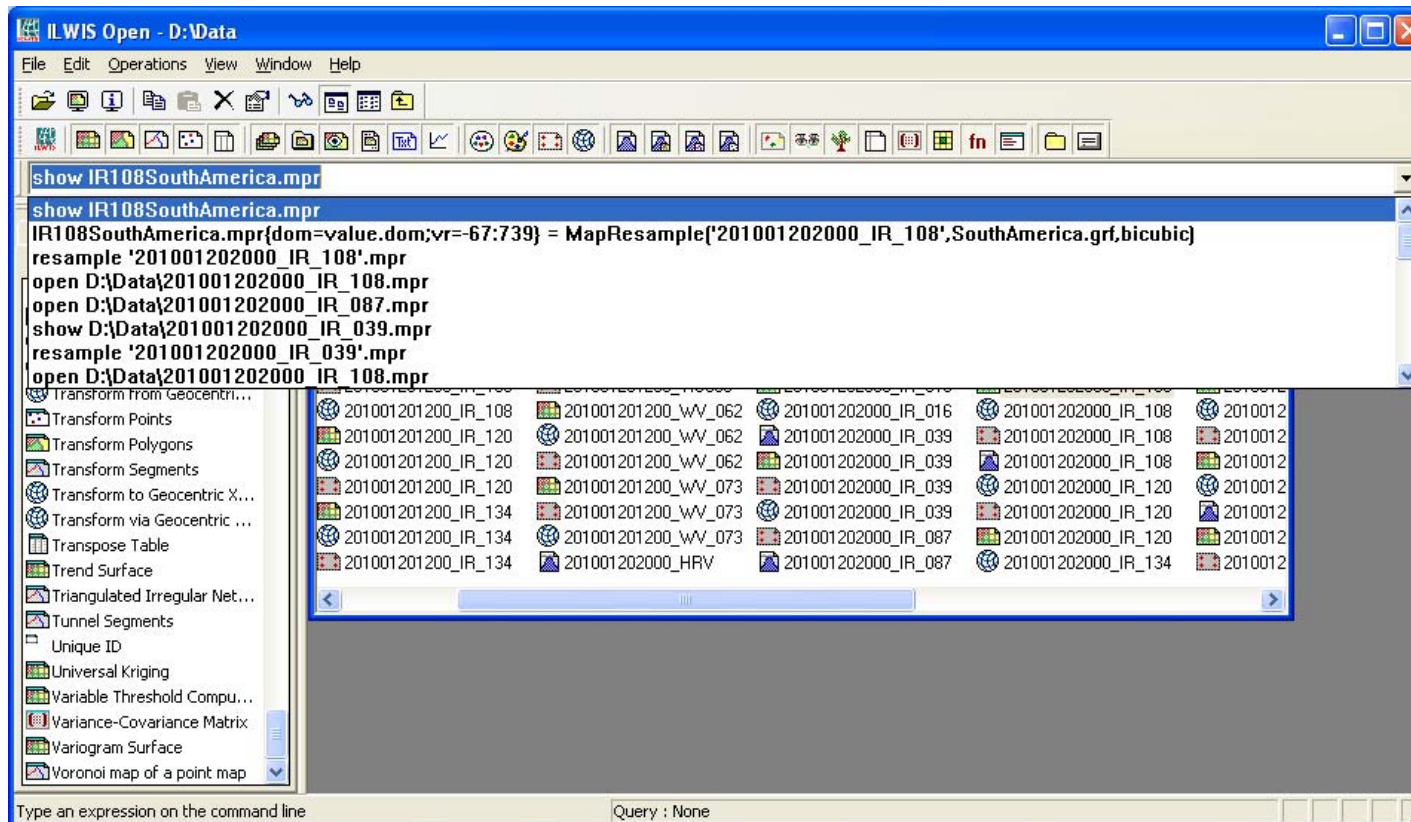
UNIVERSITY OF TWENTE.

ILWIS – COMMANDS / MAPCALC

- `mapC = mapA + mapB`
- `mapC = mapA * mapB – mapA / mapD`
- `mapC = exp(mapA)*cos(mapB)`
- `ndvi = (NIR-VIS)/(NIR+VIS)`

UNIVERSITY OF TWENTE.

ILWIS SCRIPTS

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