

#### **INTRODUCTION TO ILWIS**

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

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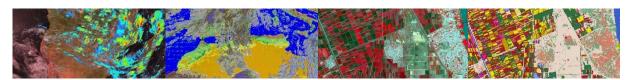


FACULTY OF GEO-INFORMATION SCIENCE AND EARTH OBSERVATION

## 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:
  - Iand use planning
  - watershed management studies
- Until 2007 in average 5 developers
- Commercial software until July 2007
- Since then, free and open source

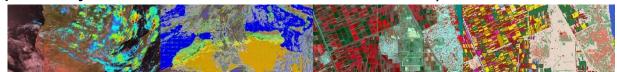




### **FEATURES**

- 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)

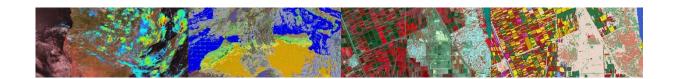




## ADVANTAGES

- 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

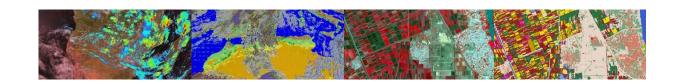




# ADVANTAGES – FAST MAP DISPLAY

- 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

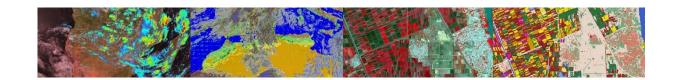




## DISADVANTAGES

- 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

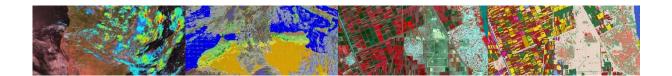




# **METADATA CONCEPTS**

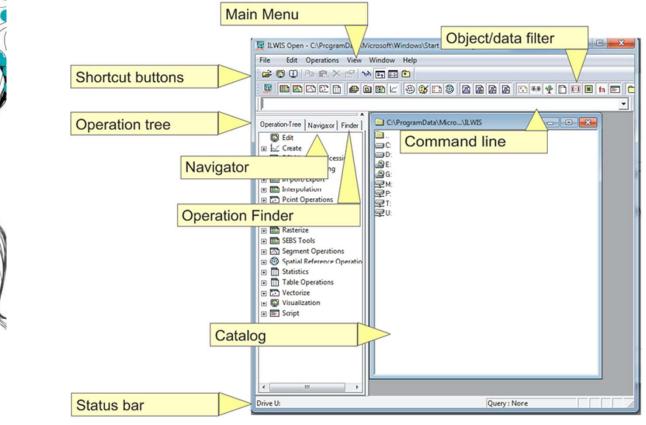
- An ILWIS Raster Image
  - has a Georeference
  - has a Domain
  - optionally has an Attribute Table
- An ILWIS Georeference
  - has a Coordinate System
- An ILWIS Vector Image
  - has a Coordinate System
  - has a Domain
  - optionally has an Attribute Table



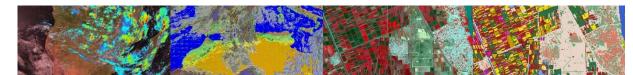




#### **ILWIS – USER INTERFACE**









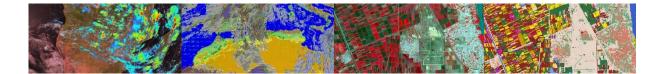
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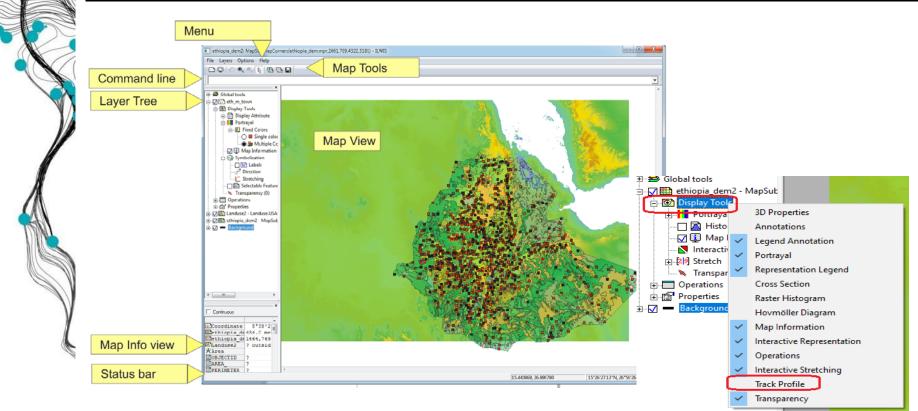
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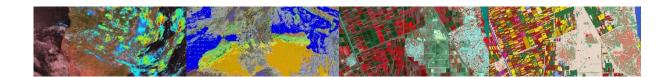




#### **MAP WINDOW**



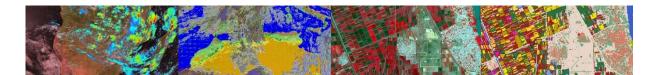




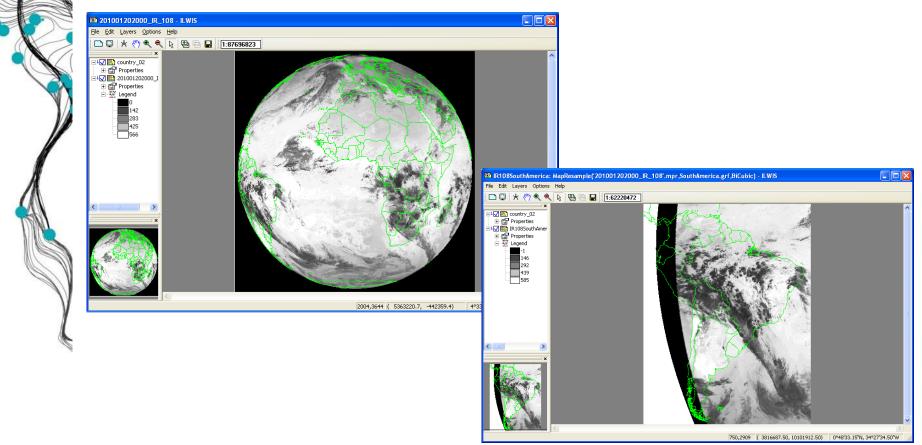
#### **ILWIS RESAMPLE COMMAND**

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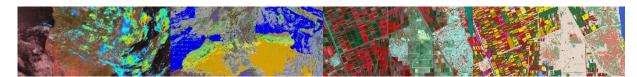




# MAP WINDOWS SHOWING ORIGINAL MSG AND RESAMPLED MSG IMAGE





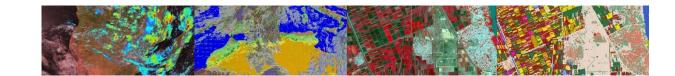




#### **ILWIS COMMAND LINE**

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show IR108SouthAmerica.m						^	
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Transform Polygons	201001201200_IR_120	201001201200_WV_062		201001202000 IR 108	2010012		
Transform Segments	201001201200_IR_120	201001201200_WV_073		201001202000_IR_120	2010012		
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#### **ILWIS COMMANDS**

IR108SouthAmerica.mpr =

MapResample

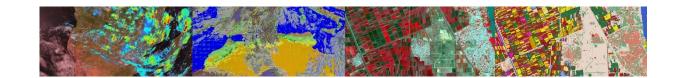
'201001202000\_IR\_108',

SouthAmerica.grf,

bicubic

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

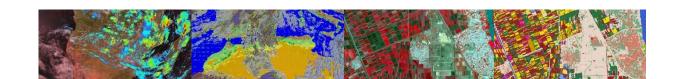




## ILWIS – COMMANDS / MAPCALC

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





#### **ILWIS SCRIPTS**

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

Script "dattutdut" - ILWIS —	× Script "dattutdut"	$\rangle$
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Daily values:		
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mbda%2.mpr{dom=VALUE.dom;vr=1.00000:1.00000:0.0000}:=le%22(le%2+h%2)	~	



