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# Free and Open Source Software (FOSS) for Teaching Geography in Upper Level Secondary Schools

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# FOSS

- FOSS development is emerging as an alternative approach for developing large software systems.
- New types and new kinds of software processes are emerging within FOSS projects, as well as new characteristics for development project success, when compared to those found in traditional industrial software projects and those portrayed in software engineering textbooks.
- As a result, FOSS offers new types and new kinds of processes to research, understand, improve, and practice.

# FOSS

- The main advantages of FOSS software are:
  - the availability of the source code and the right to modify and use the software in any way;
  - not tied to a single vendor;
  - big community to support;
  - good security, reliability & stability;
  - very good standard compliancy;
  - lower implementation cost.
- Open source software products provide access to the source code (or basic instructions) in addition to executable programs, and allow for this source code to be modified and redistributed.
- The result is a community of developers spread around the world working to improve a product.

# FOSS for Geomatics (FOSS4G)

- Geomatics is a modern discipline that includes the acquisition, storing, processing, and delivering of geographic data or spatially referenced data.
- It can offer to Geography teachers a standard based work methodology and technique for organizing, analyzing and presenting geographic data.
- Open source Geographical Information System (GIS) applications have been highly developed throughout the last years.
- These applications approach all the levels of the geospatial data usage cycle.



## FOSS4G Developers/Users



# Educational FOSS

- FOSS is being used also for developing educational applications
- The European Space Agency (ESA) is one of the promoters of developing such applications:
  - LEOWorks
  - Interactive Meteosat
- ESA main instrument for educational activities is the Eduspace website

# Eduspace

- It is the ESA Earth Observation (EO) educational website for secondary schools
- It is available in 8 languages, free of charge
- [http://www.esa.int/SPECIALS/Eduspace\\_EN/](http://www.esa.int/SPECIALS/Eduspace_EN/)

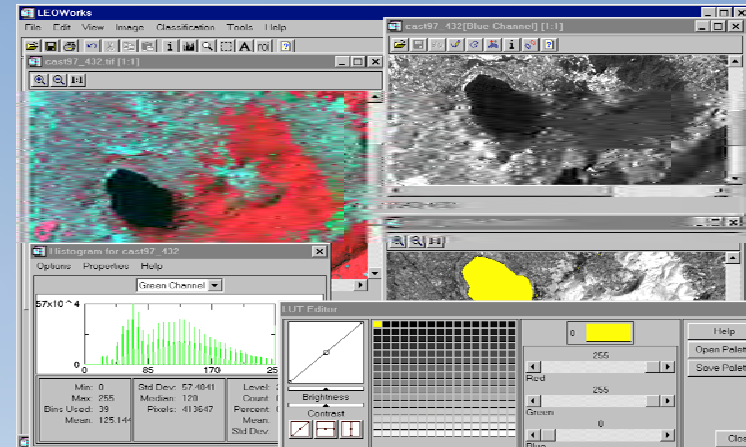


Eduspace website

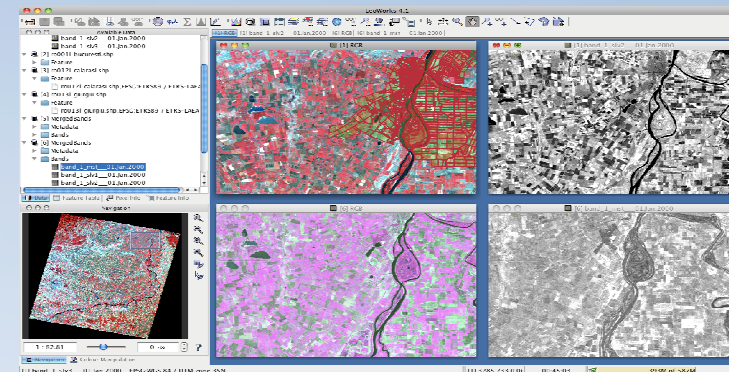


# LEOWorks

- Image processing/Geographic Information System (GIS) software for educational purposes (2008 – 2011, within the ESA Plan for European Cooperating State)
- ASRC is Principal Investigator
- It is a free educational open source application for inspecting and analyzing satellite images



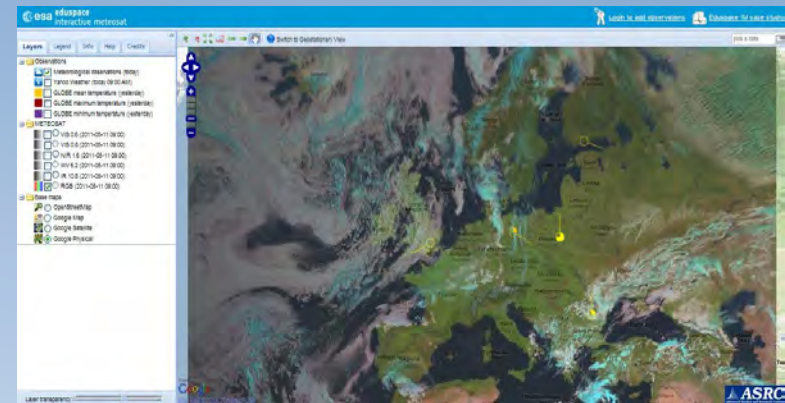
**LEOWorks 3.0 Toolbox**



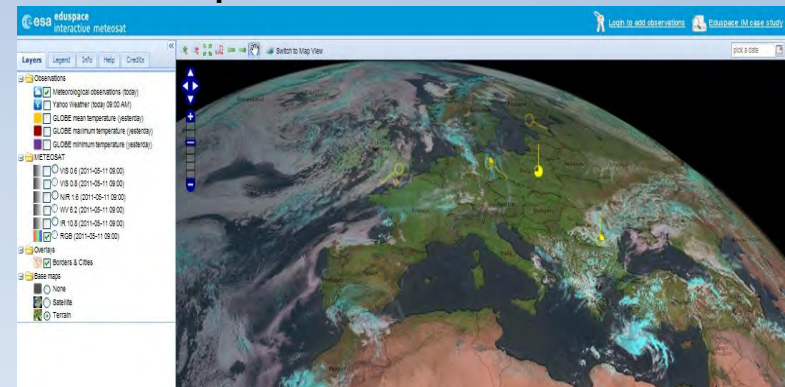
**LEOWorks 4.0 Generate viewers combining layers derived from both raster and GIS vector data**

# Interactive Meteosat

- Meteorological Application (2009 – 2010, within the ESA Plan for European Cooperating State)
- ASRC is Principal Investigator
- Through a simple and intuitive web interface, IM offers users functionalities such as: zooming, panning, introducing quantitative geotagged data, uploading photographs and text describing the weather.
- [http://www.asrc.ro/en/event\\_afisare/index/Interactive-Meteosat-ESA-Educational-Software-for-Meteorological-Applications](http://www.asrc.ro/en/event_afisare/index/Interactive-Meteosat-ESA-Educational-Software-for-Meteorological-Applications)



A simple and intuitive web interface



Display imagery from Meteosat Weather Satellite



# GEOSPACE

- Geomatics Center for Complementary Training of Geography Teachers (2010 – 2013, within the Sectoral Operational Programme Human Resources Development)
- Coordinator: "Babes-Bolyai" University in Cluj-Napoca
- Partner: ASRC
- Project objectives: to create a training center in order to introduce modern training programmes and interactive educational methods in Geography studies
- <http://geospace.geografie.ubbcluj.ro>



**Historical cartography is combined with high resolution satellite images**



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**Thank you for your attention!**