An Italian tutorial for GRASS learning

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Abstract

A new tutorial has been developed using the experience of several courses. It is written in Italian language to help new Italian users approaching GRASS for the fist time without the language barrier. The tutorial has been written using Hypertext Markup Language (HTML) to follow the reasoning paths and logical jumps of operative practice, overcoming the stillness of traditional manuals.
The aim of the tutorial is to show and describe gradually and in a friendly way the main functions of GRASS, so that GRASS learning can be fast and new users can be productive in a short time.
A first working version is described, while future improvements, also with users' feedback, are planned.

1. Introduction

The real diffusion of a software application heavily depends on the impact on the new users approaching the system for the first time. A good learning curve is a prerequisite for any software system, especially for such complex systems as geographical information systems.
Several tools are usually available to guide new users in the training process: printed and electronic documentation (on and off line), data samples, tutorials and specific classes.
The choice of the right tool depends, besides its actual availability, on several factors such as prior knowledge (specific to the area or not), depth of the study required and time span scheduled.
Systems relaying on open source software usually benefit from their “openness” the availability of large collections of documents, describing the system and its use, the source code being the “ultimate documentation” itself. The reason behind this is that open source projects have their strength in the public information exchange, therefore the more documentation is around the better chances for further developments are.
In this GRASS can be regarded as a specimen, as its spreading and development boosted after its development control has been taken over by the Hannover University and it has been licensed under GPL (GNU public license).
A huge documentation is already available for GRASS (see http://www.geog.uni-hannover.de/grass/gdp/index.html), including introductory papers, user’s manuals, installation/compiling/programming manuals, tutorials, on line courses and specific tools manuals.
However a new trend has emerged lately with the availability of localised documentation, allowing non English speaking users to access the power of the GRASS GIS. While the use of national languages limits the diffusion of these documents (and the knowledge of the English language as an “internet language” is strongly advisable), these new efforts are fundamental for attracting new users.

In this context a new tutorial has been written in the Italian language, accessible at http://www.ing.unitn.it/~ciolli/tutorial/tutorial.htm,using the public Spearfish dataset.

2. Motivations for a new Italian tutorial

Several reasons lay behind the development of a new Italian GRASS tutorial. When the project started the only Italian GRASS tutorial was based on the 4.3 GRASS version. While this is not a drawback for the general system description, it may cause troubles to novice users for the interface changes and for the different options and layouts available.
Both the authors have an extensive experience in GRASS, and in general in GIS, classes. This experience has been used to design the layout of the tutorial, in particular underlining those point usually tougher for the students.
The new tutorial exploits the HTML language capability to build a multiface document rather than a monolithic one. HTML links explicitly mimic the logical links between procedures, GRASS commands and interface operations. Multiple paths are possible within the tutorial, following the user's attitude.
A troubleshooting section allows novice users to deal with initial problems which can be easily overcome with experience. The description of the main GRASS commands and their functionality have been rewritten in Italian as well as most of the man pages.

3. Purpose of the tutorial

The purpose of this work is to make available an Italian GRASS tutorial which uses freely distributable data. Therefore the well known Spearfish dataset (http://www.geog.uni-hannover.de/grass/data.html) has been chosen. Some additional data, such as isolines, have been generated for exercises on data conversion and map development. Moreover the tutorial is structured so that it can be useful both for novices and expert users.
In particular the first time approach has been assisted both by starting with simple procedures and providing a troubleshooting section.
The tutorial is not meant to be exhaustive of all the GRASS potential nor it claims to examine each module and its possible use. It rather aims to make GRASS logic clear, building a base for further studies.

4. Structure of the tutorial

The tutorial is built in five sections:
1. introduction and GRASS description;
2. exercises;
3. module descriptions;
4. troubleshooting;
5. useful links.

Students should use the tutorial following the proposed sequence: while the first exercise are very easy and describe each procedure in detail leading the user step by step, the last ones just outline the procedures without going deep in each command syntax.
However each student may choose her entry point in the tutorial, depending on her previous knowledge about GRASS.

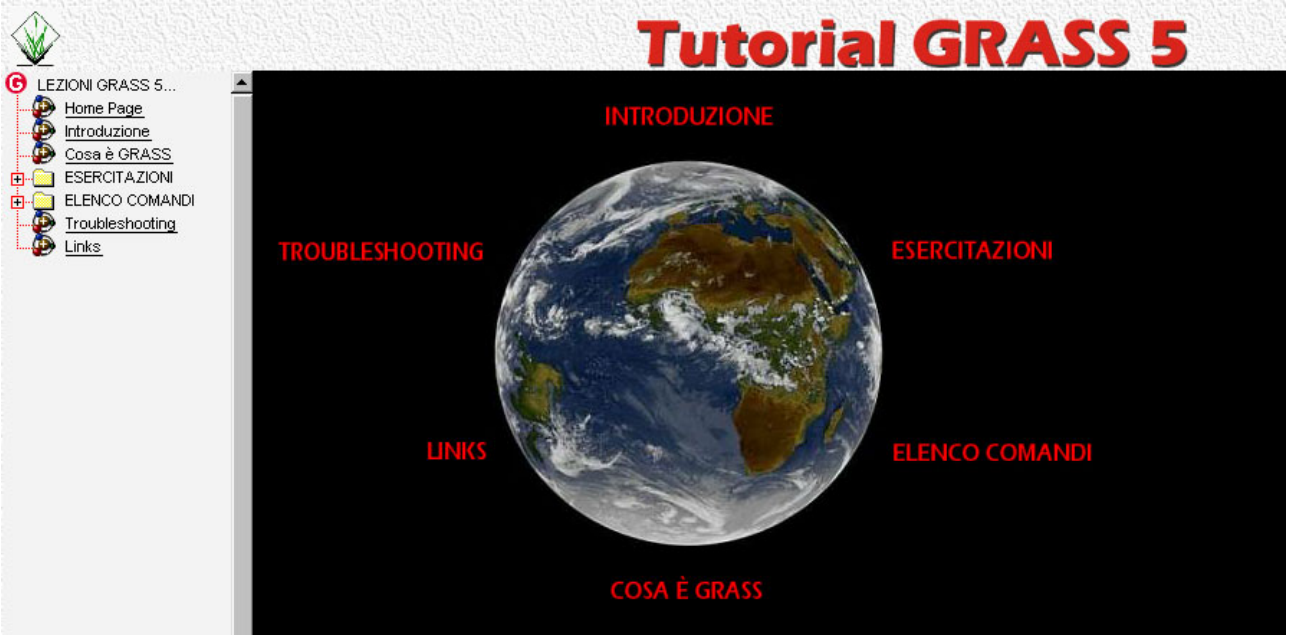

Figure 1 –.main tutorial page.

5. Section 1 - introduction

In the first section general information about GRASS and the tutorial are given. The motivations behind this new Italian GRASS tutorial, as outlined in paragraph 3, are explained.
A general description of the GRASS system is given, describing its story, structure and general usage. This section reports the present status of GRASS, its availability and system requirements for its use. Finally, references for downloading GRASS and its documentation, as well as hint for further studies on GRASS, are reported,

6. Section 2 - exercises

Exercises, which should be carried out in the proper order, allow a gradual learning with growing complexity and information. While some of the exercise are set up to show the use of specific data format, such as raster data in GRASS, other are more generic and guide the user on a logical path to create environmental and decision models.
The following exercises are currently available:

Exercises

- Entrare in GRASS (how to run the program)
- Console o Menù (how to enter commands via terminal or via menù)
- Aprire un monitor (how to display a monitor)

Uso dei RASTER:

- Definizione regione (Definition of a region)
- Visualizzare un raster (Display a raster map)
- Consultazione (Query of a raster map)
- Cambio Risoluzione (Change of resolution)
- Zoom
- Report (Report on raster map)
- Reclass (Reclassification of a raster map)

DTM:

- Importazione (Import)
- Creazione DTM (DTM generation)
- Carte dal DTM (Production of Maps from DTM)
- Analisi Bacini (Basin analysis)

Mining:

- Analisi mineraria (Analysis of a mining area)

While some exercises are original and have been developed by the authors of the tutorial, other are based on tutorial available on the internet. In particular the last exercises are based on the tutorial by John Mackenzie of the Delaware University (http://www.udel.edu/johnmack/frec682/682syll.html).

7. Section 3 - module description

This section offers GRASS modules' descriptions in Italian, with their synopsis and an overall report.
These descriptions are fully integrated in the tutorial, since each time the module is mentioned or used in the exercise section, a link is provided to the module's description page.
Modules descriptions are sometimes modified translations of the original modules man pages and sometimes original texts suggested from the use of the module.
For each module a link to the original manual page (in English) at the official Hannover site is available.

8. Section 4 - troubleshooting

This section provides an on-line help to the most common problems encountered by novice users. It uses a "query and answer style" to address the basic questions coming from students. It is based on the quinquennial experience of the authors in GRASS classes.
This section is obviously open and suggestion from students and experienced users are welcome for its improvement.

9. Section 5 - links

The link page provides internet references for accessing more information on GRASS. In particular, links to the Italian users site, carrying further GRASS documentation in Italian, and to the GRASS European headquarters in Hannover are provided.

Links:

- Official GRASS GIS Web Site at Baylor University (http://www.baylor.edu/~grass/);
- Official GRASS GIS Homepage - European Headquarters (http://www.geog.uni-hannover.de/grass/index2.html);
- Mirror Italiano (Universita' di Parma) (http://www.geo.unipr.it/~gis/);
- Laboratorio di Geomatica dell' Universita' di Como - Geomatics Workbooks (http://geomatica.ing.unico.it/);
- GRASS at ITC-Irst, Trento, Italy (http://pan.itc.it:8008/).

10. Conclusions

A new tutorial for GRASS GIS learning in Italian has been written. This provides a new tool for supporting the diffusion of GRASS in Italy, in particular by attracting new users. At the same time this tutorial assists GRASS teachers in Italy, giving them a path for GRASS exercises.
While this is not today a complete Italian guide to GRASS, it can usefully support new users toward GRASS learning.
A significant effort has been made to exploit the hypertext potential of the HTML language, providing a structure where links allow a personal path through the tutorial.

The better description of the work is provided by the tutorial itself, as can be found at http://www.ing.unitn.it/~ciolli/tutorial/tutorial.htm

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