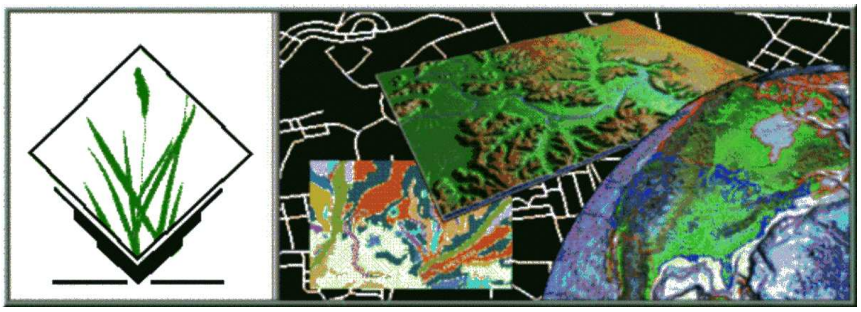

GRASS-News

Geographic **R**esources **A**nalysis **S**upport **S**ystem Volume 2, January 2005

Editorial

by Martin Wegmann

Dear *GRASS* user,

welcome to the second volume of *GRASSNews*. The first volume received a lot of encouragement and recommendations; thank you for the feedback. The *GRASSNews staff* is still improving the Newsletter and happy to receive helpful comments.
The *GRASSNews* Editorial Board applied for an **ISSN** number to make the Newsletter easily accessible for libraries. You can find it at the bottom of all pages and in the imprint.
This volume mainly features the results of the **GRASS survey 2004**, which gives insight into the GRASS user community: How is GRASS used?; Where are improvements necessary? etc.. Subsequent surveys might feature more detailed aspects of GRASS capabilities or just address certain parts of the community (e.g. developers only). Please feel free to contact the authors on the developer list if you would like to contribute to another survey.

Moreover, the *GRASSNews* staff announces a **GRASS Poster Contest** to promote GRASS development and applications.

To broaden the interest in GRASS and in the Newsletter a higher diversity of articles is needed. Please feel free to present your work with GRASS, in the upcoming volumes this spring.

I wish you interesting insights into the GRASS user community.

With best regards

Martin Wegmann

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Contents of this volume:

GRASS Poster Contest

by Andrew Davidson & Martin Wegmann

Calling all artists!!!

The GRASS Project team is looking for posters that can be used to show what GRASS is and what GRASS can do!!
The GRASS community will vote for the best posters. The best three will be made available on the GRASS project website.

We are looking for two types of posters:

1. one poster should focus on motivating GRASS development
2. the other should focus on motivating the use of GRASS.

Detailed instructions regarding poster format, suggested information content, and submission methods can be found by following the appropriate links on the GRASS Project Website or at http://grass.itc.it/newsletter/postercontest.php.

GRASS-Project
http://grass.itc.it and its mirrors
grass5_AT_grass.itc.it
you need to be subscribed in order to send mail onto this list!

GRASS User Survey 2004

by Martin Wegmann & Moritz Lennert

Thanks to all those who participated in the GRASS survey (Nov. 2004). The results will be very helpful for the GRASS development team to understand the needs of the user community, to uncover the drawbacks of GRASS in its different fields, and to improve GRASS for the end-user. In total, 304 GRASS users participated in the survey (the actual number of replies is given for each graph as n =). In particular we thank all the participants (128) who agreed to help in the development of GRASS.

Summary of main results

Version 5.7 is the most installed version, but 5.3/4 is the most run version. As many users install from source as from binaries. Most users run GRASS on GNU/Linux, and it seems that even those that normally use MS Windows for their work, switch over to GNU/Linux for using GRASS. This might reflect the fact that installation and usage via cygwin are still viewed by many as an obstacle. GRASS is used in very diverse fields, with about 50% in environment and geography. About 75% use GRASS either professionally or for their studies, and over half of respondents use GRASS in a university environment, with private companies following at roughly 15%.

GRASS is still mostly used for raster data. Not surprisingly, this is also the field in which GRASS is judged most mature (almost 70% call it either *very good* or *perfect*). The fields that need improvement most of all are vector, visualisation, mapping, and digitising capacities.

Many respondents found the tutorials quite alright, but they could be put more into evidence, as for only 15% they were perfectly easy to find. The new GIS manager in 5.7 is seen as more useful and more intuitive than the 5.4 tcltkgrass + d.dm, and over 50% of respondents plead for a native GRASS GUI, instead of integration with another software package such as QGIS or Thuban. At the same time, over 30% use GRASS in connection to PostgreSQL and over 25% in connection with R.

Last, but not least, it is quite encouraging to see the large number of respondents willing to contribute! However, it is also important to see that almost 40% of those that are interested to contribute but haven't done so up to now, haven't done so because they didn't know how.

Basic information

GRASS users can be found around the world, for instance in Australia, China, Colombia, Cyprus, South Africa or Ukraine (fig. 1). Respondents come from 46 different countries. In figure 2 all countries where more than 2% of respondents are based are displayed.

Concerning the question of which translation project is most wanted, 86 languages were named. To see GRASS in languages like Farsi, Malayan or Afrikaans would be great, however least feasible at the current point unless a few very motivated people start it. A list of the most wanted languages for GRASS can be seen in figure 3.

The GRASS demography is displayed in figure 4, the mean "age" of the community seems to be around 5 years. There are few very experienced users with more than 10 years of experience and a majority of "newbies" using GRASS since 5 years or less, GRASS gains new users.

Web search and colleagues proved to be the major means of initial contact with GRASS (fig. 5). Some form of advertisement might change this pattern.

Linux and Microsoft are named as the operating systems most often used for every day work (fig. 6). Due to the various flavours of Linux, it might be interesting to split Linux into its several distributions for the next survey. This would provide informations which types of binary packages (rpm, deb, etc) are most needed.

Looking at platforms on which GRASS is used, a different picture emerges. GRASS is available on various platforms, the most popular are displayed in figure 7. Compared to figure 6, Linux gains, whereas MS Windows looses significantly. This might indicate that MS Windows users are hampered by the installation routine (this point will be elucidated in the "Installation" section in figure 24). The MacOS users apparently did not change their platform to use GRASS. The installation routine seems to be more suitable for these users than for MS Windows users.

Various GRASS versions are at the moment officially available or rather supported by the development team. The current development version 5.7.0 is running on nearly 40 %, followed by 5.3/5.4 with 38 % of host systems (fig. 8). Version 4.3 does not play a significant role anymore and the number of 5.0 users (20 %) should drop in the close future as well due to the new stable release. When looking at the GRASS version used for the actual work, however, the number of people using 5.7 drops significantly. The version which is used for the actual work is with 43 % version 5.3/5.4, this is 10 % more than 5.7.0 (fig. 9). Also 5.0 holds a large percentage of users, probably because the 5.4 stable version was released only recently.

To estimate the size of the GRASS user community in proportion to other GIS users in the same organisation, we asked for the number of GIS users (fig. 10) and for the number of GRASS users (fig. 11). A large discrepancy between these two graphs can be seen. A large number of users are either solely using GRASS in their organisation or together with 5 to 10 other persons.

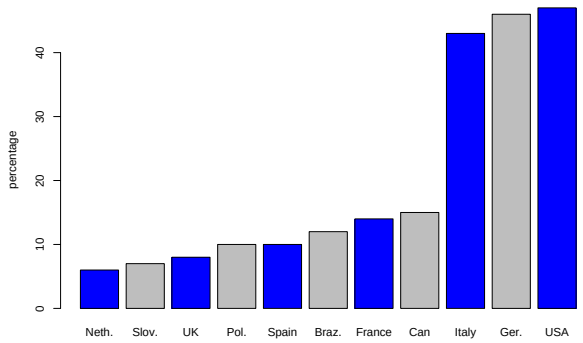

Figure 2: **Where are you based?** All countries where more than 5 % of GRASS users are based (n = 303).

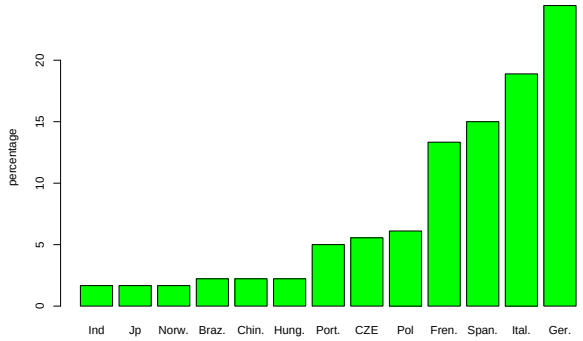

Figure 3: **In which language would you like to see GRASS being translated?** (n = 217)

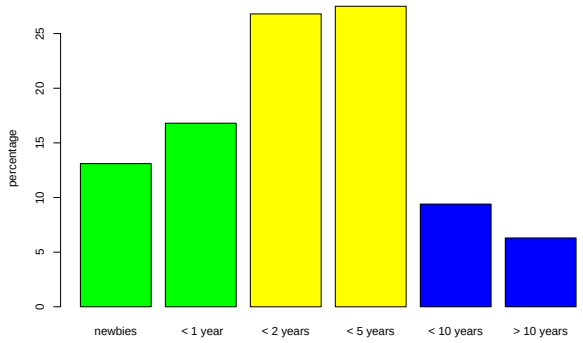

Figure 4: **For how long have you been using GRASS?** (n = 302)

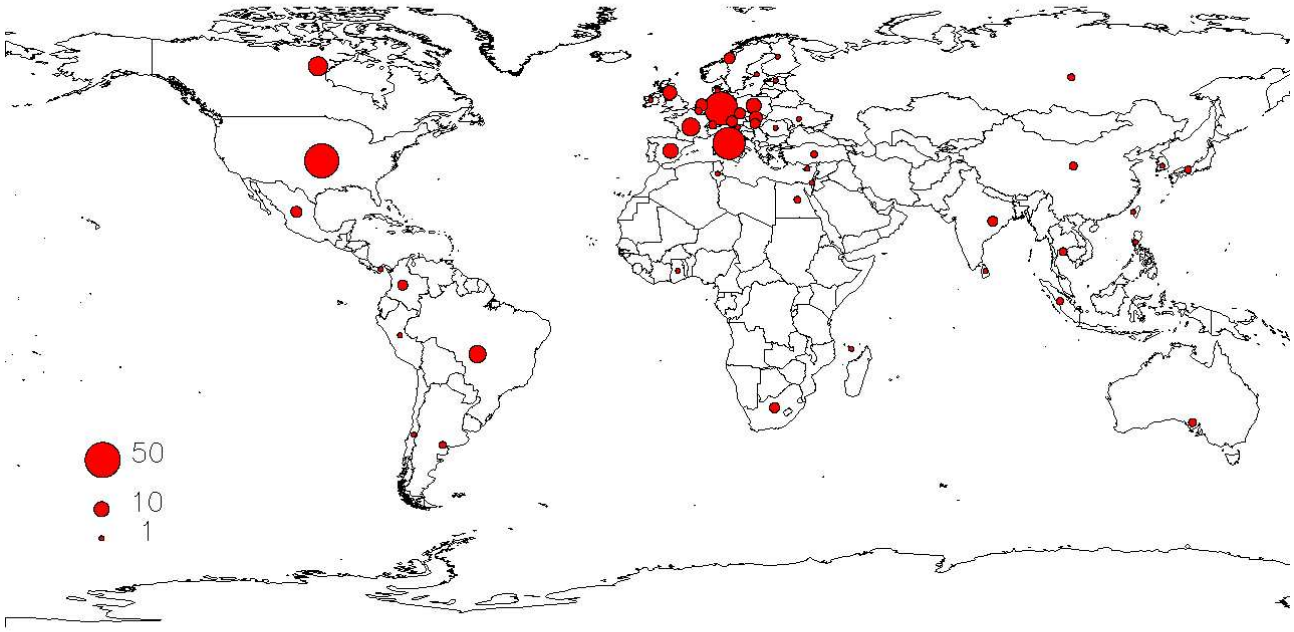

Figure 1: **Where are you based?**

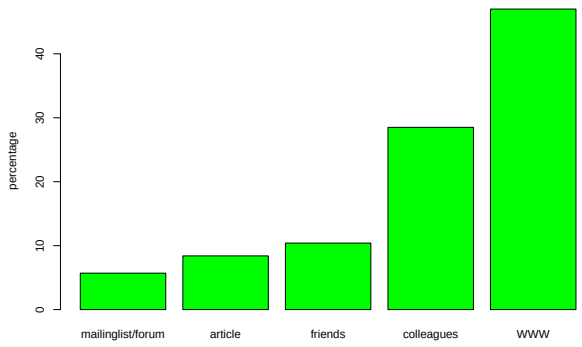

Figure 5: **How did you hear about GRASS?** (n = 299)

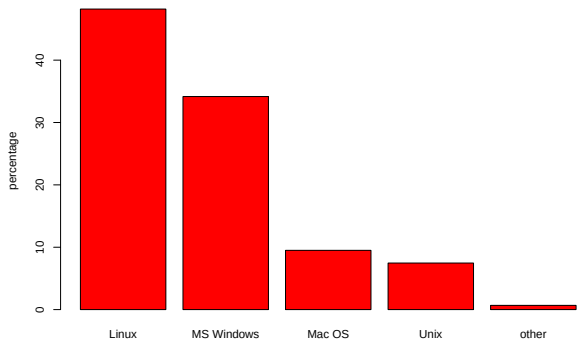

Figure 6: **Which OS do you normally use?**(n = 304)

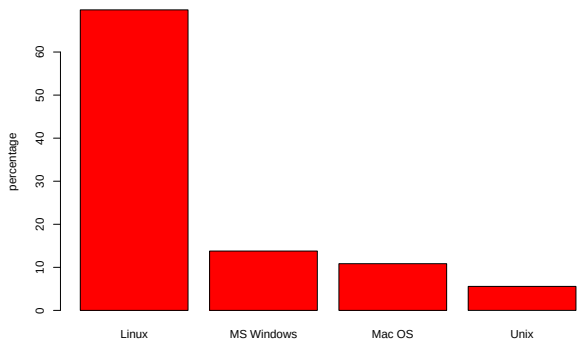

Figure 7: **Which OS do you normally use GRASS on?** (n = 304)

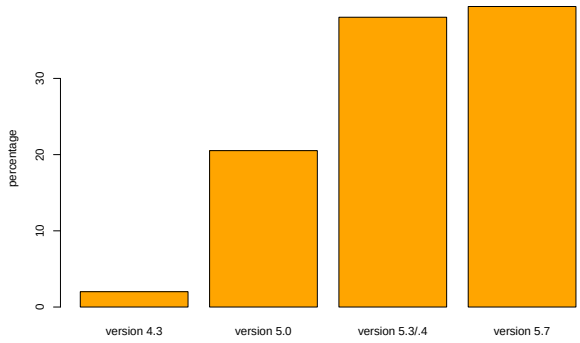

Figure 8: **Which GRASS versions are running on your computer?** (n = 304)

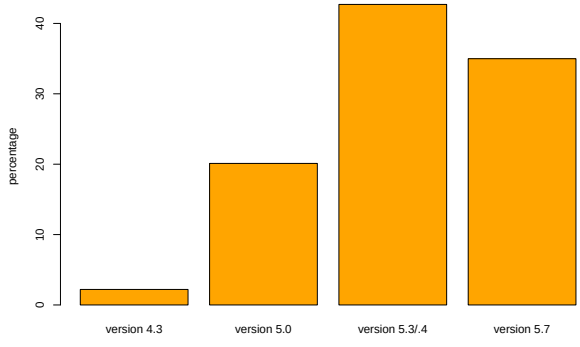

Figure 9: **Which GRASS versions do you use for your work?** (n = 304)

[1] http://grass.gdf-hannover.de/twiki/bin/view

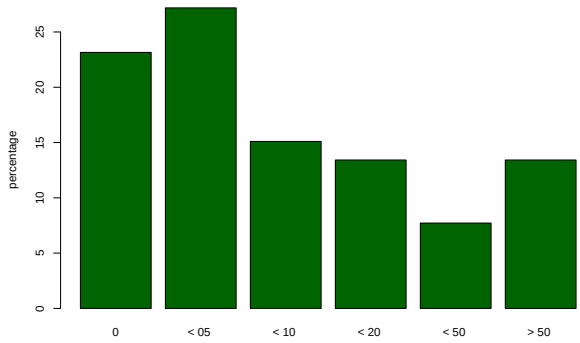

Figure 10: **How many people in your organisation are using GIS/RS capabilities (besides yourself)** (n = 297).

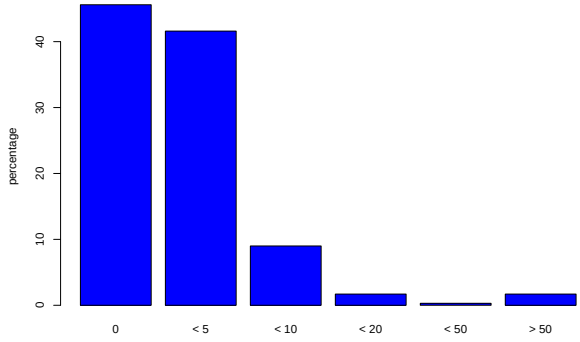

Figure 11: **How many people in your organisation are using GRASS (besides yourself)** (n = 295)

The majority of GRASS users characterise themselves as "user", 10 % would call themselves "contributing users", a minority contributes to ANSI-C, GUI development etc. (fig. 12). However, nearly 45 % of all participants of the survey are interested in contributing to GRASS development (red bar). The interest in the development can be split into several parts, where the translation project holds the major part and the GUI development the smallest (fig. 13). More than 15 % answered, however, that they would like to contribute their ANSI-C programming skills. Translated to actual number of persons, around 20 new C programmers should join the development team, in the best case.

The reasons why people have not contributed so far are very interesting: besides "time constraints", people do not know how (fig. 14). Hopefully this problem has been solved by setting up a developing section on the GRASS-Wiki site [1]. People who stopped contributing did it mainly because they had

no time anymore (fig. 16). In figure 15 the length of contributions can be seen. The majority started participating quite recently (less than 1 year). Just a few percent of developers have been contributing for more than 10 years.

GRASS is used in various fields (fig. 17) mainly for environmental and geographical studies, but also for biological, archaeological, climatic, etc studies. GRASS is mostly used for professional purposes (fig. 18) at the university or other research institutions (fig. 19) and less in the public administration sector and voluntary work. Concerning the reasons to use GRASS, the functionality and the ideology of Open-Source software play a major role (fig. 20). Financial reasons and the ability to create own functions are a reason for $\sim$ 20 % of GRASS users.

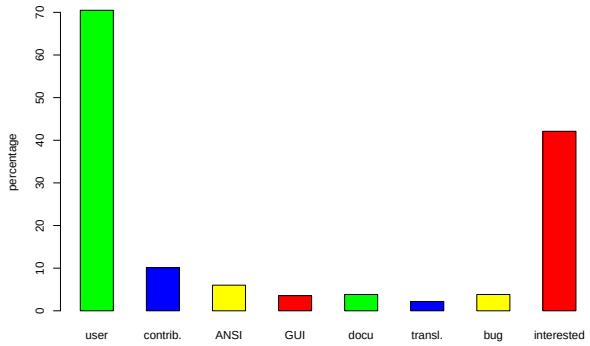

Figure 12: **Are you a user or a contributer? – Are you interested in contributing?** Distribution of users (first bar) vs. contributing users (next 6 bars) (n = 304); far right bar: number of users interested in developing GRASS (128 out of 304 participants)

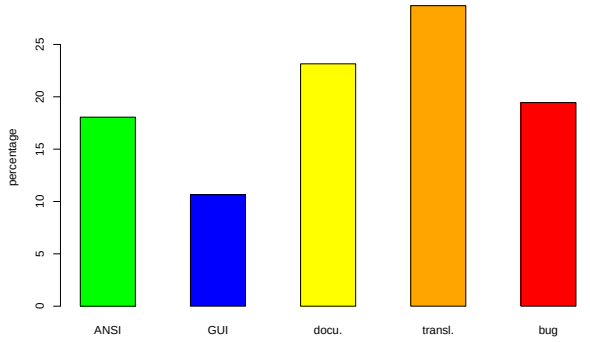

Figure 13: **If you are interested in contributing to GRASS development, what would you like to do in particular?**. List of 5 classes concerning the development of GRASS (n=128).

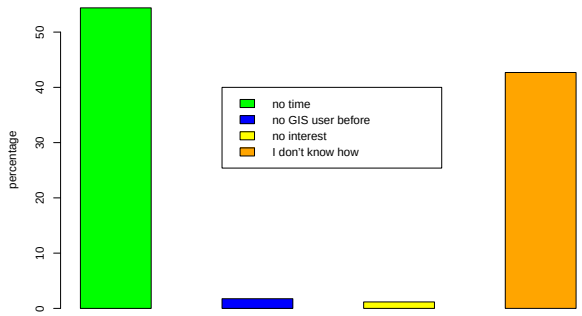

Figure 14: **Why did you not contribute so far?** 4 choices were given, why people have not contributed so far (n=171).

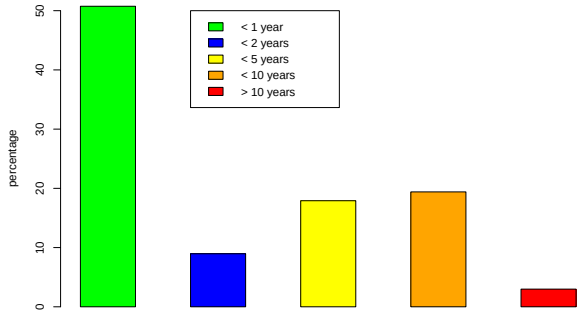

Figure 15: **How long have you already contributed to the GRASS development?** Percentage of contributing GRASS users separated by time classes (n=68).

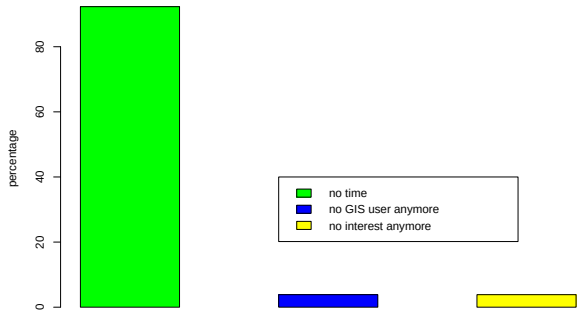

Figure 16: **If contributed before, why not anymore?** List of reasons why people stopped being engaged in GRASS development (n = 26).

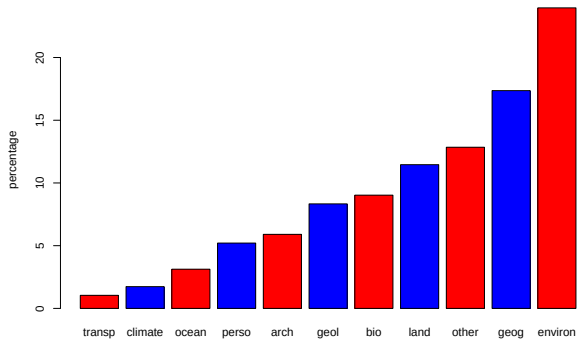

Figure 17: **In which field are you working with GRASS?** (n = 304)

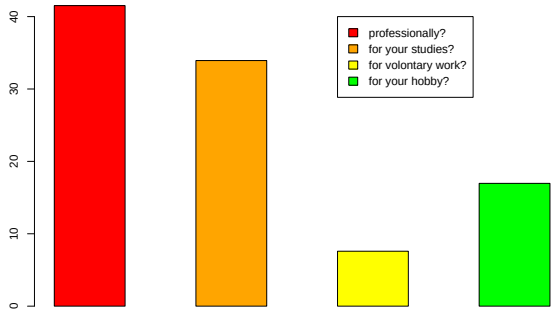

Figure 18: **Are you using GRASS...** (n = 289).

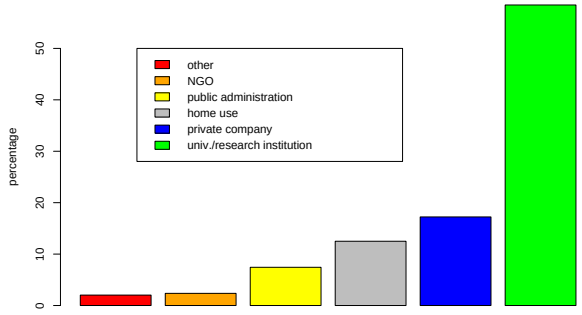

Figure 19: **In what kind of institution are you working with GRASS?** (n = 304).

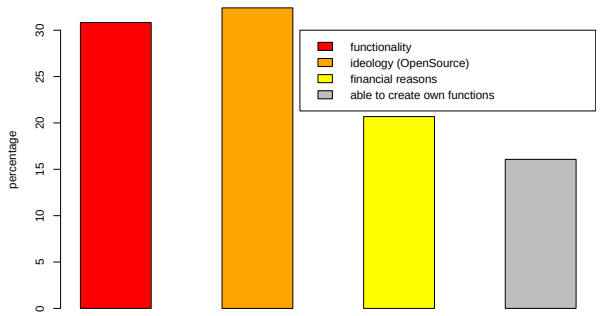

Figure 20: **Why are you using GRASS?** (n = 304).

GRASS installation

This section will cover how GRASS is installed and if it is considered as difficult. Around 35 % installed precompiled binaries or a source snapshot. Just a minority acquired csv source or used the distribution packages (fig. 21). Concerning the debian packages, this might be due to the outdated versions which are currently available.

If you compare figure 21 and figure 22 it is quite suprising that the installation is mainly considered as *easy*, even though a majority is not using distribution packages, which are the easiest way to install GRASS. Also the question of whether the lack of binaries is a drawback (fig. 23) shows that the current user community is not hampered by this fact. It is important to keep in mind, however, that the people who answered this survey were GRASS users and most of them did conquer the installation procedure, because they were probably already familiar with this kind of installation.

For MS Windows users, however, the need to use cygwin seems to be a major reason not to install/use GRASS. See also figure 6 and figure 7 which shows the operating systems used normally and for running GRASS.

GRASS documentation

Documentation is an essential part of the system, beside the actual software. GRASS tutorials are already considered as *good* by the community, yet not perfect. It seems that 1/4 to 1/2 of users are still missing information in the tutorials (fig. 25). The tutorials are mainly considered as *well written* but can be improved (fig. 26). The same pattern can be found concerning the question whether the tutorials were found easily. A majority of replies were marked moderate to good (fig. 27).

A similar pattern to the tutorial survey can be seen for the manual replies (fig. 28 and fig. 29), except that many users found the manuals without any problems (fig. 30). However, these results might be already outdated due to restructuring of the GRASS homepage.

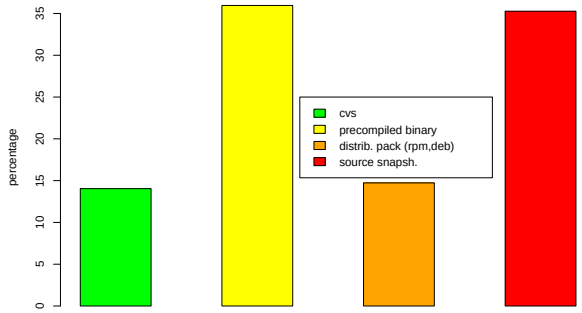

Figure 21: **How did you install GRASS?** (n = 293).

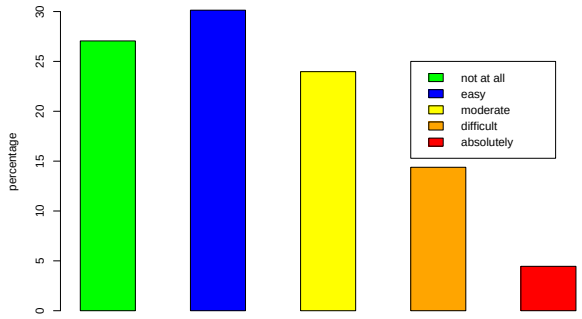

Figure 22: **Did you find the installation difficult?** (n = 293).

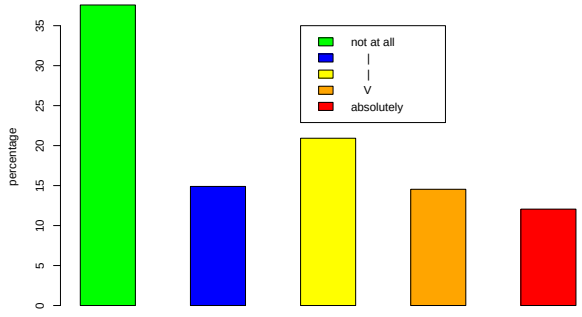

Figure 23: **Do you consider the lack of binaries as a reason for not using GRASS?** (n = 283).

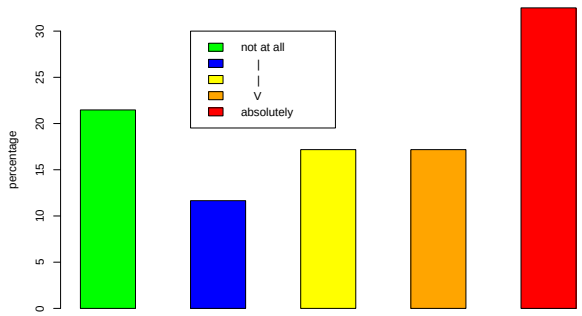

Figure 24: **If you are a MS Win user, do you consider the need to use cygwin as a major drawback?** (n = 164).

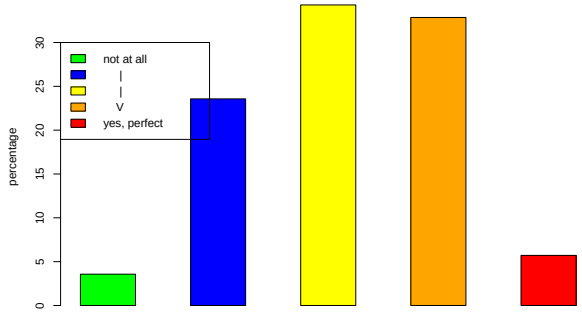

Figure 25: **Do the tutorials provide sufficient informations?** (n = 281).

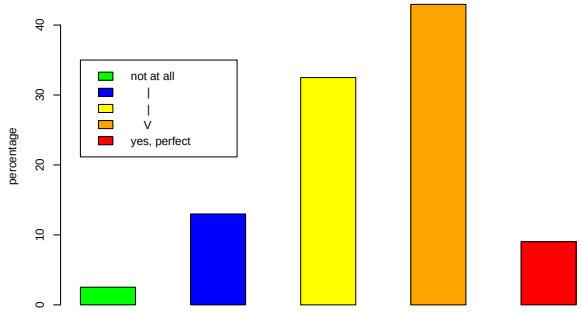

Figure 26: **Are the tutorials well written?** (n = 278).

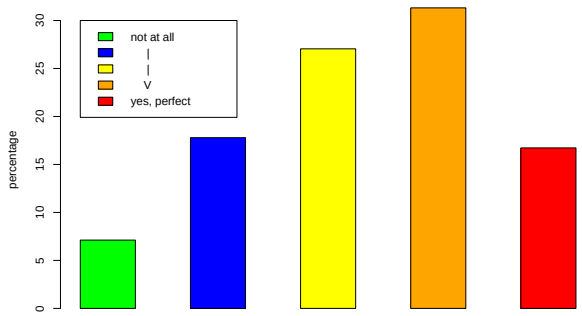

Figure 27: **Did you find the tutorials easily?** (n = 282).

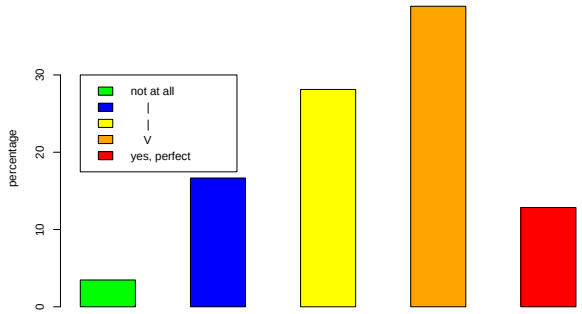

Figure 28: **Do the manuals provide sufficient informations?** (n = 289).

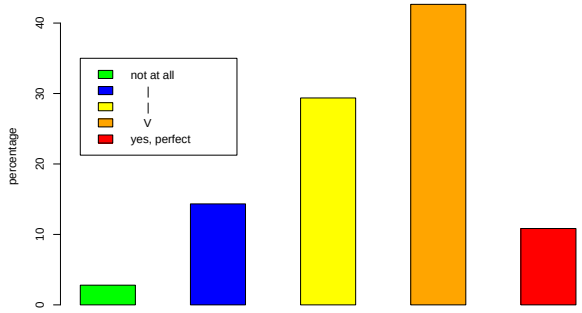

Figure 29: **Are the manuals well written?** (n = 287).

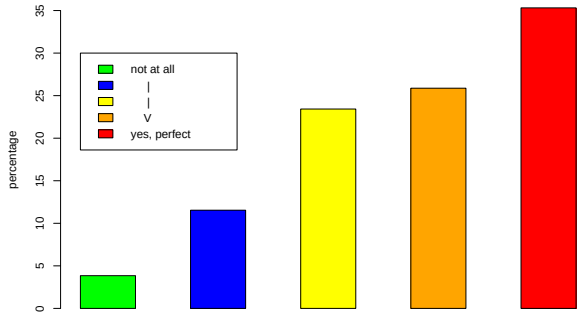

Figure 30: **Did you find the manuals easily?** (n = 287).

GRASS usage

The most used part of GRASS seems to be its raster capabilities. Less used are 3d processing and modelling (fig. 31). The vector functionality lies inbetween but nevertheless with a strong tendency towards *sometimes*. However, looking at graph 34 which compares GRASS versions and the usage of vector functionality reveals that the vector usage has increased slightly with newer versions. Looking at these graphs, it has to be taken into account that the number of answers differs, but this problem will be elucidated in the next section. Moreover, these graphs also reflect the requirements of functions and not the actual use of these functionalities.

Compared to other programs, the raster capabilities of GRASS are dominantly used as well as its visualisation (NVIZ) and modelling functionalities (fig. 32). The vector functionality of GRASS is mainly used *occasionally*.

GRASS usage in comparison to used GRASS versions

The GRASS versions used for the every day work have been compared to the raster, vector, 3d, nviz and modelling capabilities of GRASS to investigate whether new versions increased the usage of certain functions. However the sampling size of these plots has to be regarded carefully, because just 8 persons actually still use GRASS 4.3 in comparison to 74, 156 and 128 for the versions 5.0, 5.3/4 and 5.7, respectively. This discrepancy makes it very difficult to actually compare the replies. However, the answers are plotted in percentage of the whole replies separated for each version.

Figure 9 and 32 have been merged in figure 33 for raster functions, figure 34 for vector capabilities, figure 35 for 3d, figure 36 for visualisation and figure 37

for modelling. Generally, a tendency can be seen that 5.3/4 or 5.7 is used more often for raster and vector processing. In figures 38 and 39 the usage of GRASS 5.3/4 and 5.7 are shown. These graphs hold the same informations as the previous ones but are separated by the two most recent versions rather than the functionality.

Did the percentage of the usage of GRASS capabilities changed between versions in relation to other GIS/RS software packages? The graphs 9 and 32 have been merged in figure 40, figure 41, figure 42, figure 43 and figure 44 separated by raster, vector, NVIZ, 3d and modelling functions, respectively. A slight tendency can be seen for all functionalities indicating that GRASS is used more often compared to other programs.

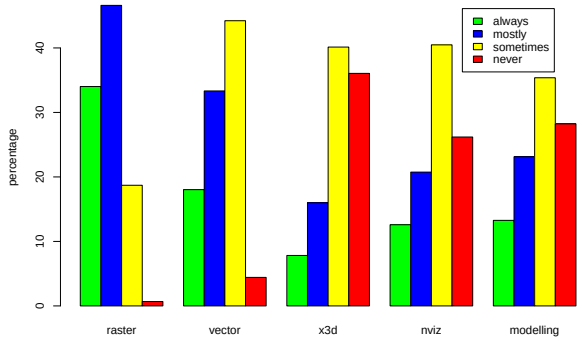

Figure 31: **Do you use GRASS for: ?** (n = 295).

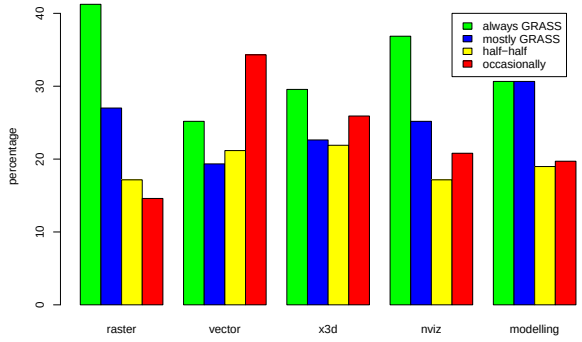

Figure 32: **How much do you use GRASS in comparison to other GIS/RS software packages for this purpose?** (n = 275).

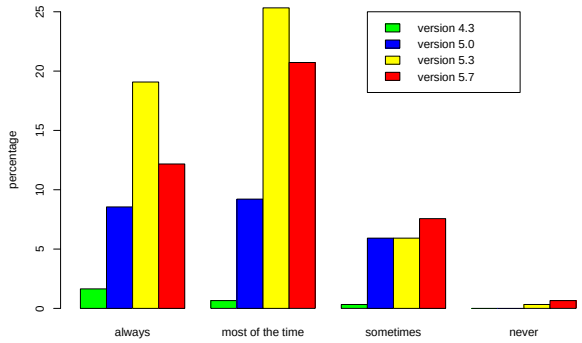

Figure 33: **Which GRASS version is used for raster processing?**

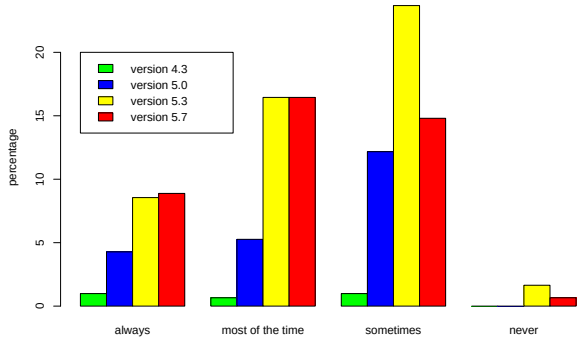

Figure 34: **Which GRASS version is used for vector processing?**

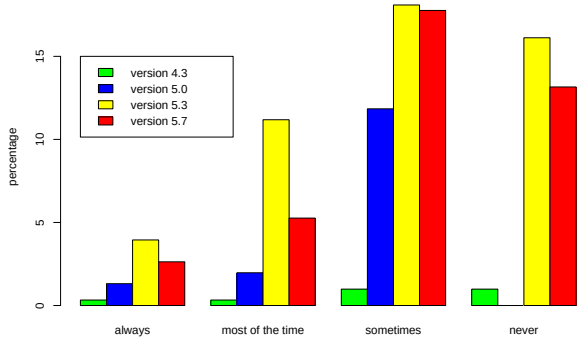

Figure 35: **Which GRASS version is used for 3d processing?**

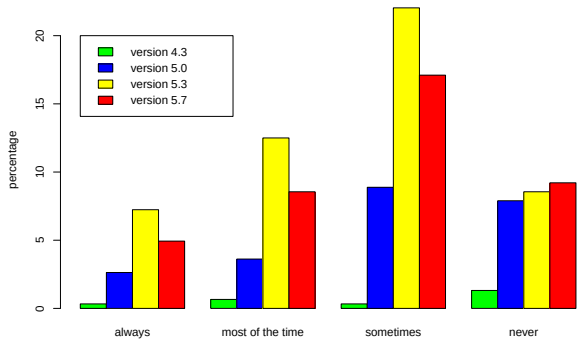

Figure 36: **Which GRASS version is used for NVIZ?**

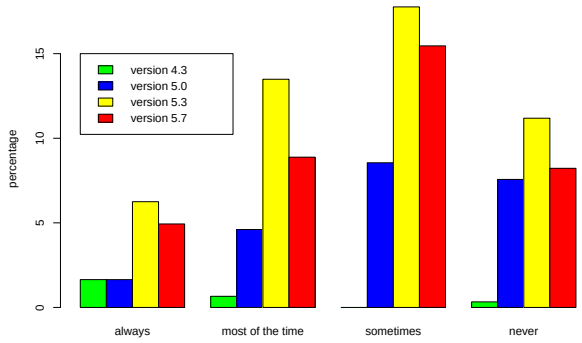

Figure 37: **Which GRASS version is used for modelling?**

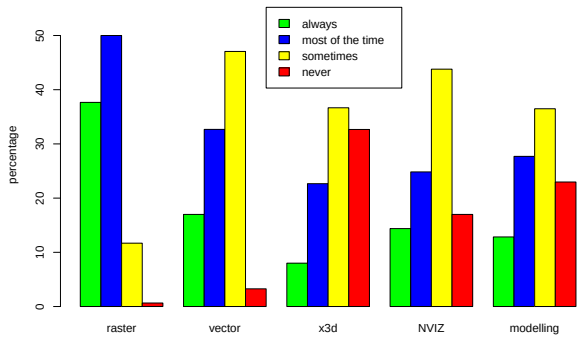

Figure 38: **Do you use GRASS for (respondents using version 5.3/4): ?**

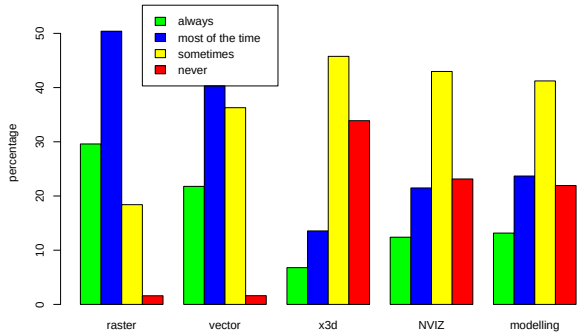

Figure 39: **Do you use GRASS for (respondents using version 5.7): ?**

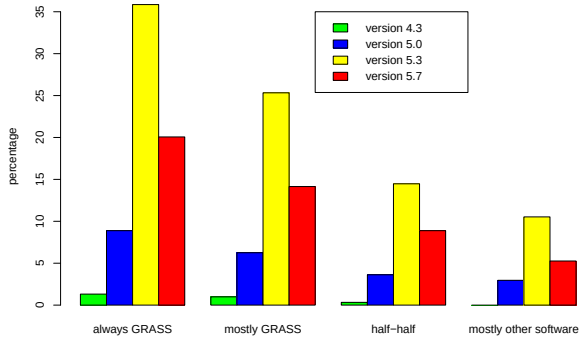

Figure 40: **How frequently are the different GRASS version used for raster processing in comparison to other GIS/RS software packages?**

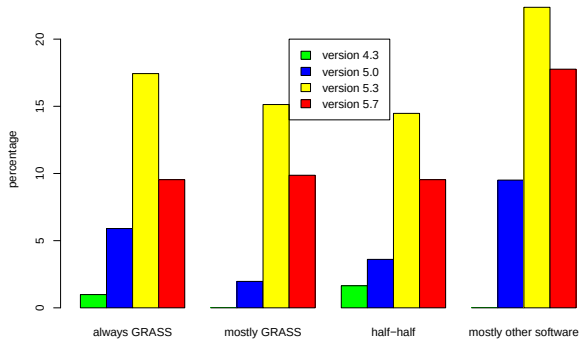

Figure 41: **How frequently are the different GRASS version used for vector processing in comparison to other GIS/RS software packages?**

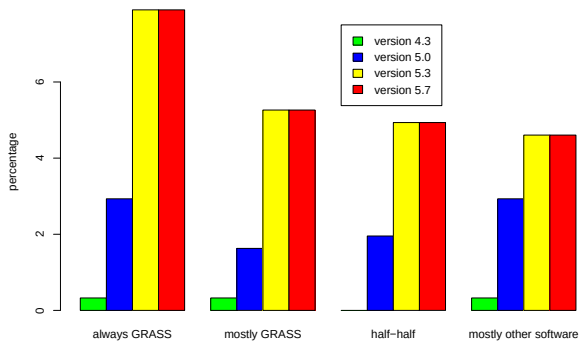

Figure 42: **How frequently are the different GRASS version used for 3d processing in comparison to other GIS/RS software packages?**

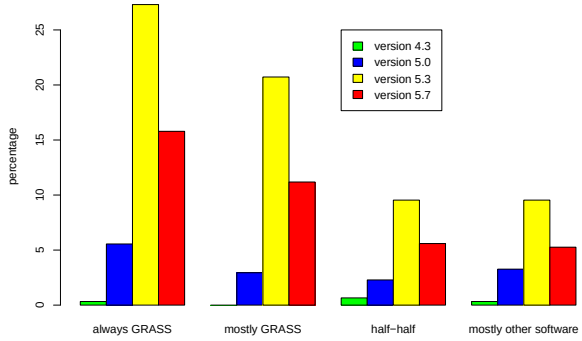

Figure 43: **How frequently are the different GRASS version used for visualisation (NVIZ) in comparison to other GIS/RS software packages?**

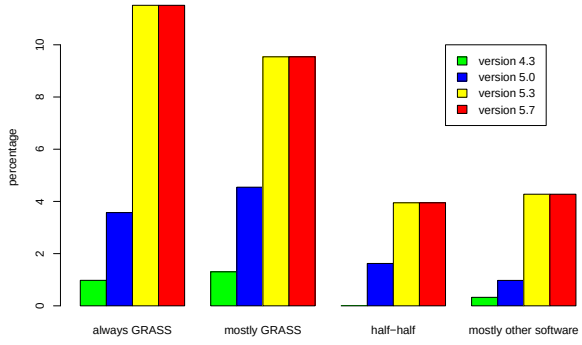

Figure 44: **How frequently are the different GRASS version used for modelling in comparison to other GIS/RS software packages?**

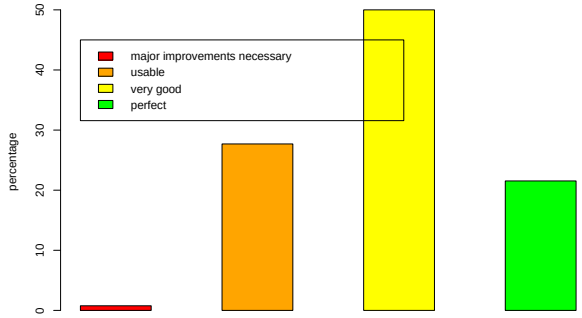

Figure 45: **Would you like to see GRASS being improved in its capabilities concerning raster processing?** (n = 261) .

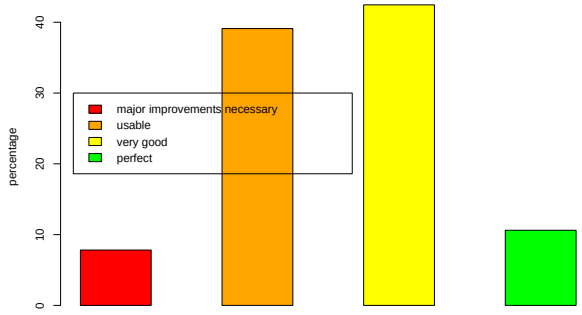

Figure 46: **Would you like to see GRASS being improved in its capabilities concerning modelling?** (n = 180) .

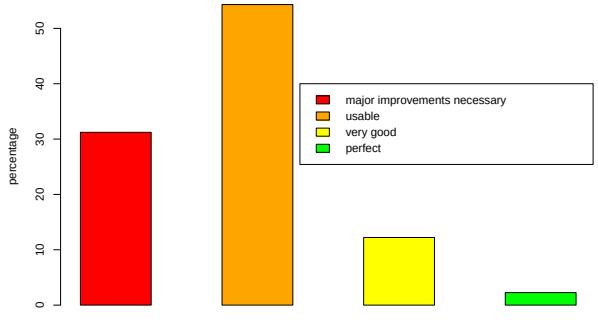

Figure 47: **Would you like to see GRASS being improved in its capabilities concerning mapping?** (n = 222) .

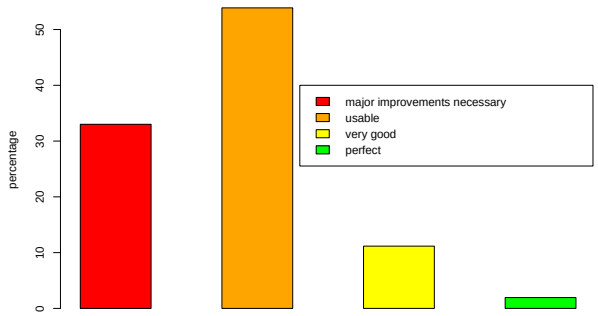

Figure 48: **Would you like to see GRASS being improved in its digitising capabilities?** (n = 207) .

Figure 49: **Would you like to see GRASS being improved in its capabilities concerning vector processing?** (n = 260) .

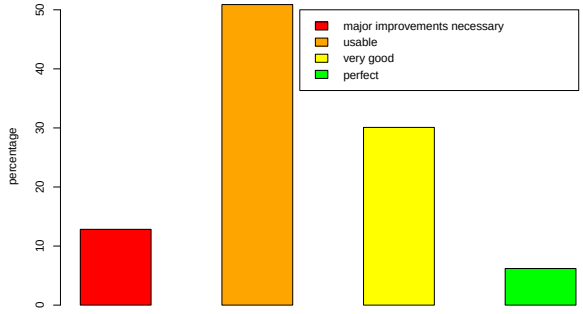

Figure 50: **Would you like to see GRASS being improved in its capabilities concerning NVIZ?** (n = 227) .

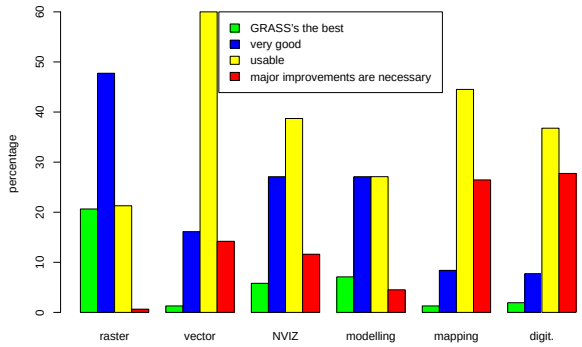

Figure 51: **In which field would you like to see GRASS being improved (respondents using version 5.3/4) ?** (n = 155) .

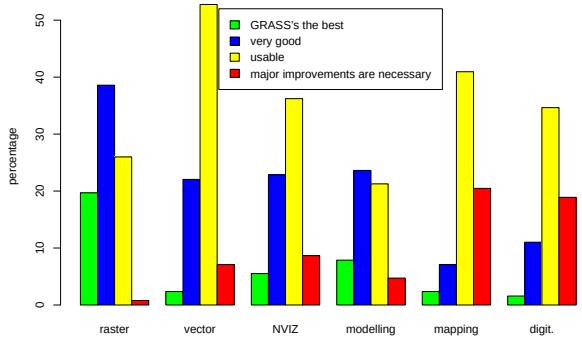

Figure 52: **In which field would you like to see GRASS being improved (respondents using version 5.7)?** (n = 127) .

In which field would you like to see GRASS being improved?

The raster capabilities of GRASS are already regarded as *very good*, just a few percent think that major improvements are necessary (fig. 45). In all other fields, however, improvements are required. Especially in mapping (fig. 47) and digitising (fig. 48) functionality improvements are necessary. Vector (fig. 49) and NVIZ (fig. 50) are mainly marked as *usable* to *very good*. GRASS modelling capabilities received moderate good results, see figure 46.

The figures 45-50 present the findings irregardless of the GRASS version. Splitting up the results by the respective version might increase the informational impact. In figure 51 and 52 the results for GRASS version 5.3/4 and 5.7 are displayed. A tendency towards a better classification of 5.7 compared to 5.3/4 can be seen.

Results from the free text comments

It is obviously difficult to give a standardised and synthetic vision of the many interesting and useful comments that were made in the free text comment fields. We have identified those that were voiced by more than one respondent, although this is partly based on our interpretation of what the comments meant.[2]

The following are thus some of the wishes expressed in the survey:

- RASTER:

  No specific wish stood out particularly for raster data. The main ones were transparent overlay of maps and stereo photogrammetry, followed immediately by the desire for easier colour assignment and several suggestions related to import of rasters, such as not to rely on gdal alone, or a raster equivalent of v.external. Several respondents would like to see the possibility to import ecw which currently seems to be supported by gdal under MS Windows only.

- VECTOR:

  Because of the important change in the vector api (thanks to Radim Blazek's work), we have only taken into account remarks that pertained to version 5.7. The most frequent remarks concerned the remaining difficulties of the attribute/database management. People complain about the necessity of knowing SQL and about the general difficulty of using PostgreSQL. The second most voiced wish was for easier (or even automatic) attribute-based classification and colouring, a logical consequence of the new vector features which invite people to use GRASS for vector-based, thematic cartography. This includes the possibility to define line types and widths and polygon fill patterns. Possible responses to these wishes obviously depend on the choices made for future GUI development (integration with QGIS or others vs. native GUI). Two other wishes expressed more than once were dxf/dwg import and rubber-sheeting for vectors, i.e. some form of "v.rectify".

- NVIZ and 3D:

  The most frequently voiced desire was for the possibility to place legend, scale, and a north-arrow. Other issues include the inclusion of more dimensions (4D and 5D), easier export to mpeg and the possibility to view the same layers simultaneously in Nviz and in 2D.

  Several respondents suggested that the 3d modules should be integrated into the Nviz infrastructure.

- MODEL:

  A graphical modelling language seems desirable to some users. In general, there is a desire to see more statistical functions directly integrated into GRASS, including things like fuzzy logic, neural networks, and kriging. Others wished for easier integration of GRASS with existing external models such as MODFLOW and SWAT and for the integration of decision support system functions into GRASS.

GRASS GUI

With the rapidly evolving GRASS GUI project it is interesting to explore whether the enhanced interface meets the requirements of the use community. Comparing the 5.4 and 5.7 user interface it becomes visible that this project is heading in the right direction (thanks to Radim Blazek's and Michael Barton's efforts). The number of people considering the GUI as very useful (fig. 53 and 55) and intuitive (fig. 54 and 56) is increasing from 5.4 to 5.7.

Many free text comments were made concerning the GUIs. Again, in view of the important developments that have taken place between version 5.4 and 5.7, we have only taken into account remarks that are valid for both.

The most often voiced criticism concerned the look&feel of the tcl/tk interface, a discussion that regularly comes up on the mailing lists. The impression seems to be that new users are repelled by GRASS's less than state-of-the-art GUI. Suggestions on which toolkit to use instead include Java, gtk, Qt, aqua and fltk. A second, quite frequent, remark pertains to the too-large number of windows that are opened simultaneously by the GUI, thus cluttering the screen. Other issues include more intuitive zoom and pan functionalities, more explanations concerning GUI usage, a more task-oriented organisation, keyboard shortcuts, and the inclusion of location management as a GUI functionality.

Use of other software with GRASS and GRASS scripts

Various other open source programs are used by the community in conjunction with GRASS. A list of selected programs can be found in figure 57. Other

[2] This also does not mean that those suggestions that were only voiced once are not of any interest. The entire list of suggestions can be found on the following web page: http://moritz.homelinux.org/grass_survey/results/text_comments.html

listed programs are grasslinks, octave, geoserver, ArcView, MySQL, The Gimp, CAD software, and several more.

Concerning the question if GRASS should continue developing its own GUI or if the development should focus on interaction with other GUI-oriented software packages (QGIS, Thuban)? 53 % think that the internal GUI is very important, while 29 % would prefer that GRASS development focus on GIS functionality, and let other programs handle the GUI part (fig. 58.

41 % of the GRASS users know scripts and 32 % and 27% respectively actually use them or write own scripts using bash, python etc. to run GRASS commands (fig. 59).

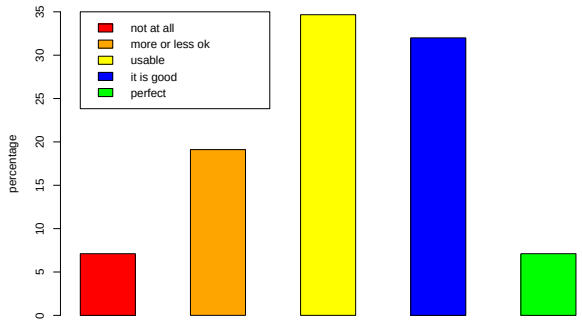

Figure 53: **Is the GUI of GRASS 5.3/4 (tcltkgrass and d.dm) useful?** (n = 226).

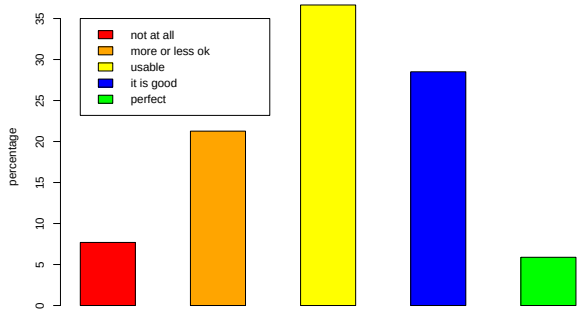

Figure 54: **Is the GUI of GRASS 5.3/4 intuitive and easy to use?** (n = 222.

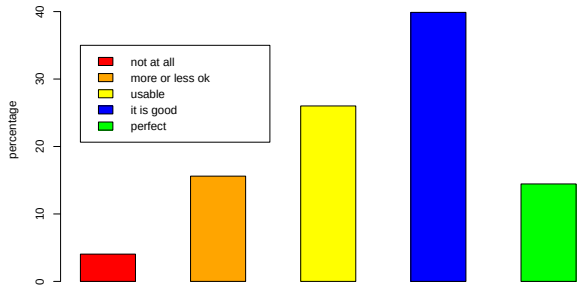

Figure 55: **Is the GUI of GRASS 5.7 (GIS Manager) useful?** (n = 174).

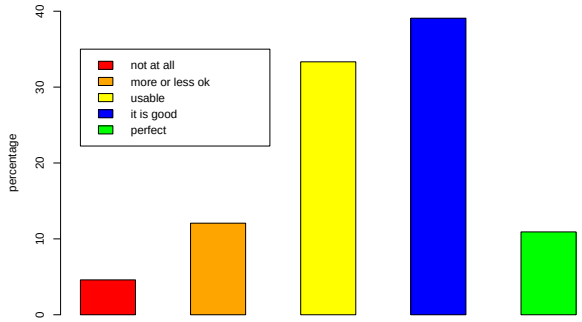

Figure 56: **Is the GUI of GRASS 5.7 intuitive and easy to use?** (n = 175).

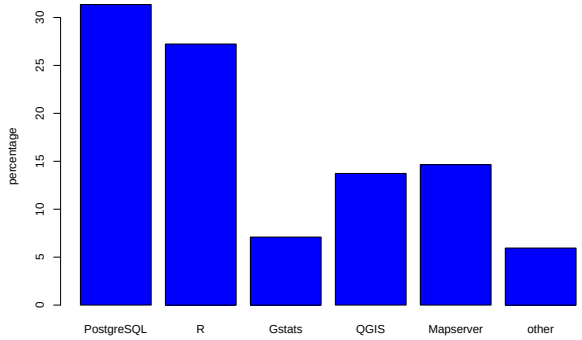

Figure 57: **Have you used other programs in combination with GRASS?** number of replies in the above order: 137, 119, 31, 60, 64, 26 .

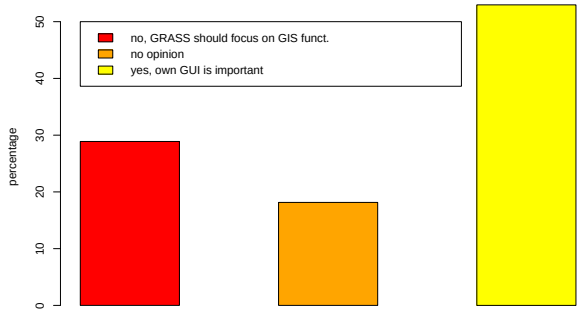

Figure 58: **Should GRASS continue developing its own GUI or should the development focus on interaction with other GUI orientated software packages (QGIS, Thuban, etc.) ?** (n = 271).

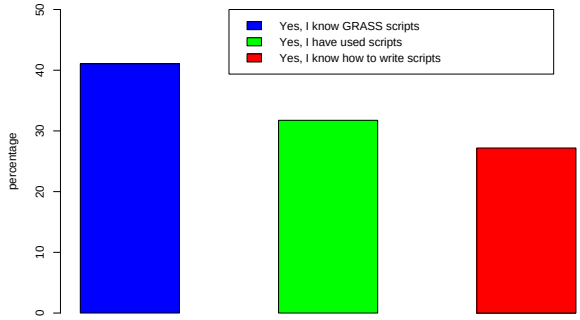

Figure 59: **GRASS scripts (using bash/python/etc to run GRASS commands.** (n = 216, 167, 143).

Other comments

The two most often voiced general wishes for GRASS were more intuitive printing, including more control of the map layout, and more tutorials and howtos. Even though ps.map does offer quite extensive functionalities, it is frightening to some. A specific ps.map tutorial might, therefore, be helpful. Despite the efforts in recent years, there still seems to be a need for easy-to-use tutorials, and very specific task-related howtos.

Other issues include a native MS Windows port (or at least easier installation via cygwin), automatic initial map import and database&location creation (something that has already been discussed before, but has never been implemented), more self-contained binaries to avoid "dependency hell", more symbols for sites (for instance via fonts like in ArcView), and an interface for scription languages that would allow direct access to vector and raster data. The latter could also facilitate GUI creation.

Final remarks ...

This survey has given a general overview of the GRASS users' community and some of the general desires expressed by the users. Many suggestions can be taken over into the the wishtracker at http://grass.itc.it/bugtracking/wish.html. Please feel free to voice your desires via this system as it allows a systematic and centralised management. It might also be useful to do more frequent, but much shorter and more focused surveys in order to explore different aspects that were only touched upon superficially by this survey.

To know the wishes of users is great and can inspire some development, but only if the amount of human-power invested into GRASS increases significantly. Currently there are very few developers and they are already quite overloaded with the general maintenance of GRASS and their own development projects. So if you want to see some of your wishes become reality, the best would be to code yourself or to find a friend to code it with you. If this interests you, see http://grass.gdf-hannover.de/twiki/bin/view for a to-do list or subscribe to the GRASS development mailing list http://grass.itc.it/devel/index.php. You can also pay a GRASS developer to develop the functionalities you need. This is often less expensive than buying proprietary solutions and will allow you to profit of the feedbacks of the entire GRASS user base. See http://grass.itc.it/community/commercial.php for more information.

GRASS-Project
http://grass.itc.it and its mirrors
grass5_AT_grass.itc.it
you need to be subscribed in order to send mail onto this list!

GRASS 6.0.0 beta1 release

12 January 2005

What's new in GRASS 6.0.0

Vector geometry management:

GRASS 6.0.0beta1 comes with a completely overhauled vector engine which is extended to manage 2D and 3D topological vector data. The new internal vector data format is portable between 32bit and 64bit platforms. In addition, a new spatial indexing system accelerates vector data access and a category indexing system accelerates attribute queries. Vector data from other GIS software can be imported (allowing for topological data clean-up) as well as live-linked into the GRASS database as virtual maps. The new Directed Graph Library provides support for vector network analysis. Vector map overlays, intersections and extraction of features are implemented.

Attribute management:

The new vector engine includes full and flexible integration of database management systems (DBMS) for attribute management (currently PostgreSQL, mySQL, DBF, and ODBC are supported). SQL statements are used to manage attributes. Graphical updating of vector attributes has been implemented as well.

User interface:

A graphical user interface (GUI) for every module is now generated on the fly. A new display manager has been implemented, which is supplemented by an updated version of the classic 'tcltkgrass' GUI menu structure. NVIZ, the included visualization package, is enhanced to display 3D vector data. Additionally, a completely new graphical tool for digitizing has been implemented.

Internationalization:

The framework to translate GRASS user messages has been implemented. Currently, the system is actively translated into several languages including Asian languages volume (voxel) visualization.

Multibyte FreeType Font Support:

Support has been added to display FreeType Font in the GRASS display system including multibyte support for Asian characters.

Multi-session:

Users can now run concurrent GRASS 6.0 sessions. It is also possible to run GRASS 5.4.x and 6.0.0beta1 in parallel in the same LOCATION.

Volume visualization:

NVIZ now supports volume (voxel) visualization.

Generating new GRASS LOCATIONs:

New LOCATIONs with automatically set projection information can be generated by EPSG code number from the start-up screen. Within a GRASS session, LOCATIONs can be automatically created from existing datasets (raster data as well as vector data).

Interoperability:

GRASS 6.0.0beta1 is integrated with the GDAL/OGR library to support an extensive range of raster and vector formats. OGC-conformal Simple Features vector data are converted into the topological GRASS format; conversely, export into Simple Features is also possible.

Enhancements included from 5.4.0:

This release bundles the new vector capabilities with all the improvements from GRASS 5.4.0 (e.g. support for datum transformation, use of external PROJ4 and GDAL/OGR libraries, shared libraries making binary distributions significantly smaller, G3D 3-D Raster Voxel tools). The raster capabilities of 6.0.0beta1 are almost identical with those of 5.4.0 except for the addition of Large File Support (LFS).

Platforms supported by GRASS:

GNU/Linux, Sun Solaris (SPARC/Intel), Silicon Graphics Irix, Mac OS X/Darwin, Microsoft Windows with Cygwin, HP-UX, DEC-Alpha, AIX, BSD, iPAQ/Linux and other UNIX compliant platforms (32/64bit).

Software download/CDROM:

- http://grass.itc.it
- http://grass.ibiblio.org

GRASS-Project
http://grass.itc.it and its mirrors
grass5_AT_grass.itc.it
you need to be subscribed in order to send mail onto this list!

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