

PMTools - a new paleomagnetic software

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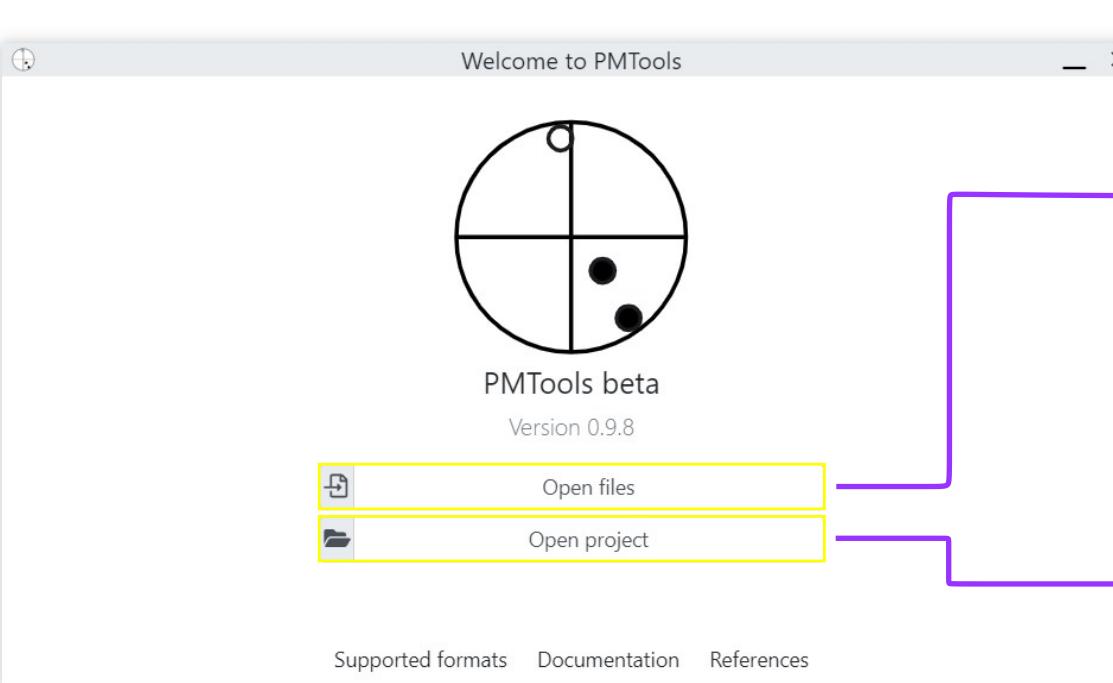
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Abstract

It's well known that all paleomagnetists use different software for analysis and visualization of the paleomagnetic data. These programs provide their unique interface and features, each soft has its pros and cons. In Russia the most usable paleomagnetic software is the paleomagnetic tools by Randy Enkin for DOS. We love these programs because they are easy to use, all operations can be run using hotkeys, and they contain all functions we need. But Enkin's tools have some disadvantages: for example, if you want to insert the graphics from Enkin's software in your publication, you will need to redraw it, that takes some time. Our goal is to create a new software – PMTools, which will be able to work with all widely used paleomagnetic data formats and provide at least the same functionality as Enkin's software provides.

First step. Import your data



PMTools currently supports some standard data-files formats by AGICO and PMGSC (.dir, .pmm, .pmf, .rs3, .jr5, .jr6) and custom .csv and .xlsx. Local formats will be available in the nearest future.

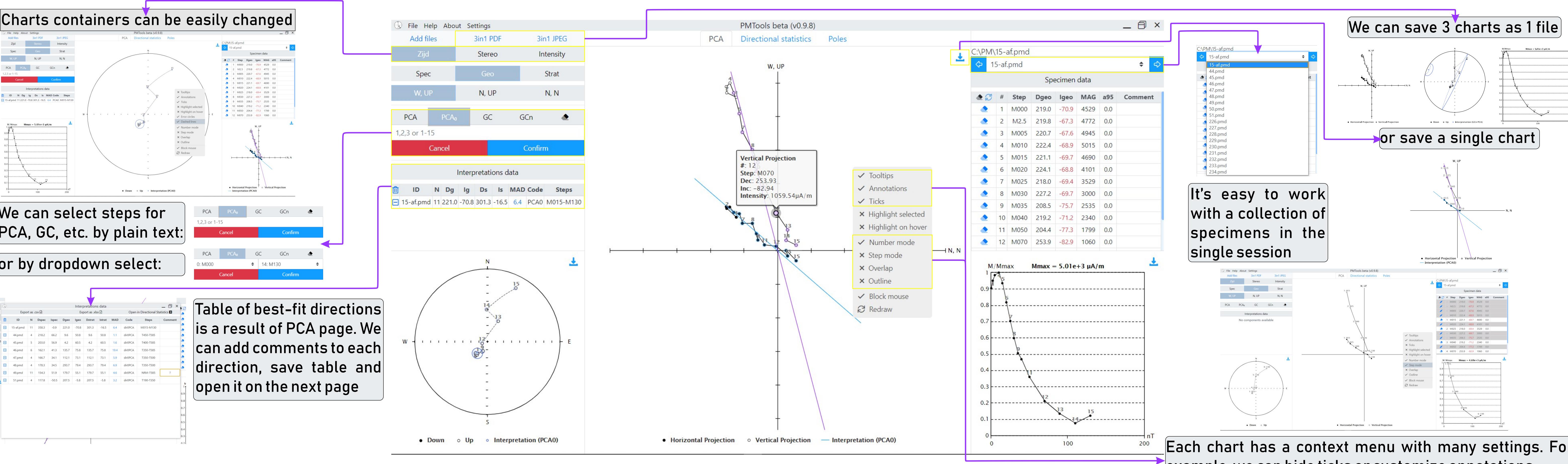
Also it's an option to load project instead of standard files. Project is a.json file with all information about your session: opened files, chart settings, statistics, etc.

Main features

PMTools is a cross-platform software for statistical analysis and visualization of paleomagnetic data. Its main features include (1) using Enkin's like hotkeys for the data processing, (2) comfortable work with many files of any format simultaneously, (3) ability to perform a full cycle of routine paleomagnetic operations, (4) all graphics created in PMTools is adapted for direct using in publications and presentations and can be exported in vector format.

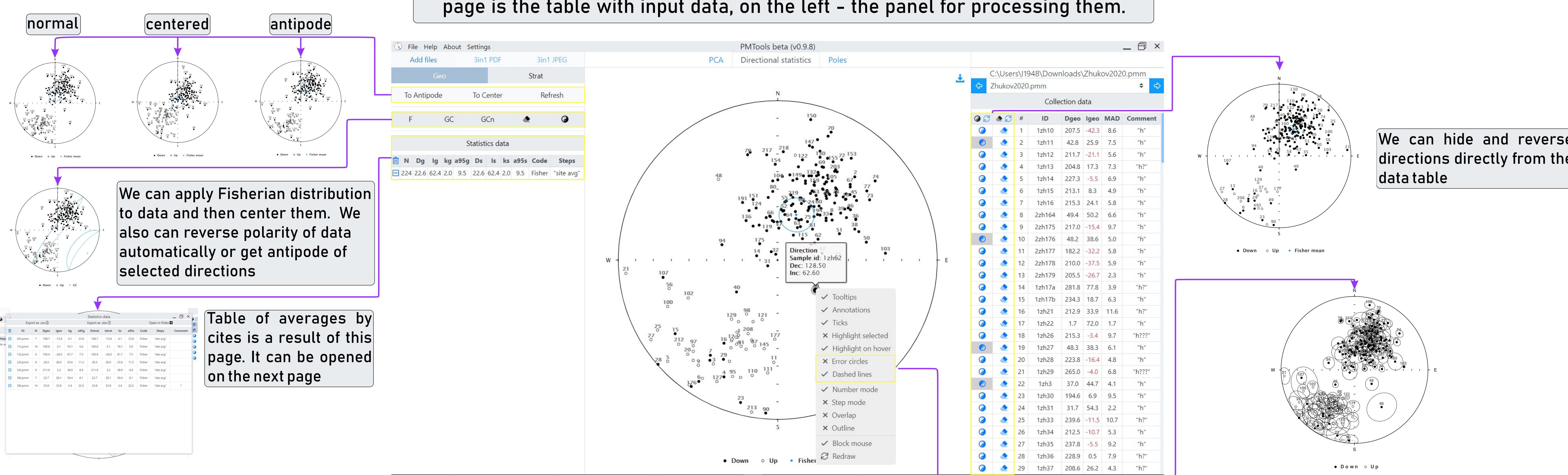
2nd step. Principal Component Analysis (PCA)

With the specimens data loaded, we can begin component analysis. Below is the page for this. On the right side, we have the table with input data. On the left is the menu for data processing and data table with the results of processing. All the remaining space is occupied by charts.



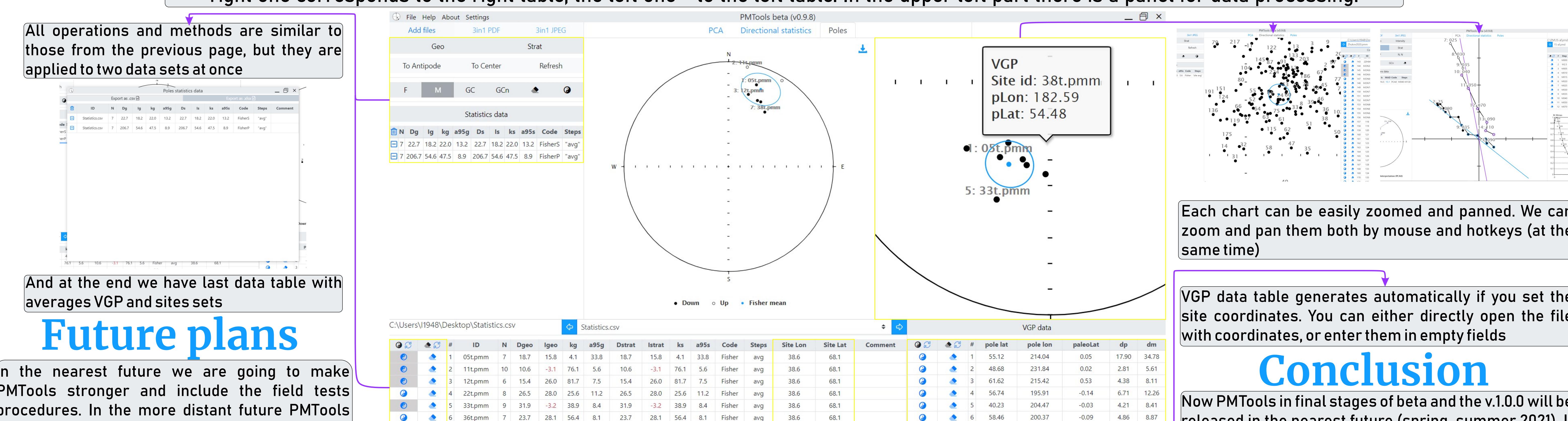
3rd step. Directional statistics

The next step is to find the average directions for sites. On the right side of the page is the table with input data, on the left – the panel for processing them.



4th step. Poles calculation

The last stage is finding the virtual geomagnetic poles (VGP) and their mean. A table with input data is presented in the lower left corner, then based on the data from it, a table with VGP in the lower right corner is generating. There are 2 stereograms above the tables, the right one corresponds to the right table, the left one – to the left table. In the upper left part there is a panel for data processing.



Future plans

In the nearest future we are going to make PMTools stronger and include the field tests procedures. In the more distant future PMTools will become a modular open source app, so that each user will be able to add its own modules, thereby expanding the program's functionality.

Conclusion

Now PMTools in final stages of beta and the v.1.0.0 will be released in the nearest future (spring-summer 2021). If you would like to get access to the beta version, please contact us.