User Guide of AnisView

Peter Vogt and Michel M. Verstraete

European Commission, Joint Research Centre (JRC), TP 261
I-21027 Ispra (VA), Italy
Release: Version 1.5, May 2021

This file serves as a simple user guide and provides information on the various menus, options and features of the AnisView software package.

1. Windows and menus

The following graphical elements can be used to interact with AnisView:

- ❖ A horizontal menu bar (top of the display)
- ❖ A main graphical output window (central part of the display)
- ❖ A window to select the type of graphical output (top left of the display)
- ❖ A window to report statistical results (center left of the display)
- ❖ A window to set the geometry of illumination and observation (top right of the display)
- ❖ A window to set the values of the model parameters (center right of the display)
- ❖ A window to exhibit messages (bottom of the display)

2. The top menu bar

The top menu bar offers 4 pull-down menus:

- ➢ File
- ➢ Options
- ➢ Settings
- ➢ Help

2.1 The File pull-down menu

The File pull-down menu offers the following four options:

➢ Save data
➢ Save image
➢ Restore data
➢ Exit

2.1.1 Save data

This option allows you to store on disk the current state of AnisView, including the values of the geometric and physical variables. If the 'Calculate statistics' button was turned on, then these statistics and a subset of the values describing the BRF field are also saved in the file. The default file name is made up from the name of the model in use (RPV or MRPV), the date and the time. The default directory is the current working directory.

❖ If you are saving an IDL '.sav' file, the numerical values, the color table and the Xpalette are saved.
❖ If you are saving an ASCII file, only the numerical values are saved, and the color table and Xpalette are assumed to be the default ones.

2.1.2 Save image

This option allows you to save the content of the graphical display (central window) in one of several graphical file formats. The corresponding file can then be manipulated, embedded, printed or used in other contexts and by other applications.

Note: If you are using a demo version of IDL (active for 7 minutes only), you will not be able to save any file. You must have a properly licensed IDL software to use the save option within this AnisView software package.

2.1.3 Restore data

This option allows you to reset the program in the state in which it was at the time you saved it (see option 2.1.1 above).

❖ If you are restoring from an IDL '.sav' file, the program parameters, the color table and the Xpalette will be reset to their earlier values.
❖ If you are restoring from an ASCII file, only the model parameters will be reset, and the default color table and Xpalette will be used.

Note 1: You should use this option only in conjunction with files that were originally created by this software.

Note 2: Under the IDL.sav-file option, you should not try to (in fact will not be allowed to) restore the file 'AnisView.sav' itself, even though it will appear in the list of '.sav' files. Only restore appropriate files that have been generated originally by this program.

Note 3: Under the ASCII-file option, you should not try to restore non-ASCII files or ASCII files that originate from another program. If the AnisView does not recognize the content of a regular ASCII file, it will set the values of the variables to some 'legal' but uninteresting values. Only restore appropriate files that have been generated originally by this program.

2.1.4   Exit:

Quit the program (as well as IDL, if it was started as part of the call to this package) and return to the operating system.

2.2   The Options pull-down menu

The Options pull-down menu offers the following options:

- ➢ Xloadct
- ➢ Xpalette
- ➢ RT-model
- ➢ Sensor

2.2.1   Xloadct

This option allows you to select and load one of the 40 different color tables defined by IDL to display the range of numerical values in 2-D and 3-D graphs. The default color table is 'Rainbow + white' (near the bottom of the list).

Note 1: If you select a color palette that uses the same color for background as for text (e.g., 'Rainbow + black'), you may not see the labels anymore.

Note 2: The results may or may not look pleasant: You assume full responsibility for your choices.

Note 3: If you get lost in the color options, just select the default color table ('Rainbow + white') near the bottom of the list, or select the 'Initial settings' in the 'Settings' menu. This latter choice will also change the numerical values of the geometric and model parameters.

2.2.2   Xpalette

This option allows you to select and impose your own color palette, i.e., to assign specific colors to particular values of the displayed field. To save such a setting for future use, you must use the IDL '.sav' file' option in the 'File' menu.

2.2.3   RT-model

This option allows you to switch between the original RPV model, published by Rahman et al. (1993), and the modified version of this model, known as MRPV, published by Engelsen et al. (1996). The latter is easily linearizable and particularly useful in inverse mode.

2.2.4   Sensor

This option allows you to overlay, on some of the 2-D and 3-D configurations, the typical angular sampling that may be available with the selected sensor. This feature is not available for 'Geometry', 'Single BRF value', and '3-D polar plot'. The sensors for which the angular sampling can be displayed are 'None' (default), 'ATSR', 'AVHRR/MODIS', 'MISR', and 'SPECTRA'.

2.3   The Settings pull-down menu

The Settings pull-down menu offers the following three options:

- ➢ Initial settings
- ➢ Isotropic settings
- ➢ Lambert settings

2.3.1   Initial settings

Selecting this option will reset all numerical variables, as well as user-defined options (including the selected color table) to their default values. This is the only active option when the 'Geometry' radio button is selected.

2.3.2   Isotropic settings

This option is applicable (and active) only when numerical values of the BRF are required (1-D, 2-D, or 3-D selections). This setting shows the BRF field of a theoretical surface which scatters equally in all directions, but where the reflectance level (or equivalently the absorption coefficient of the corresponding geophysical medium) is user-selectable.

2.3.3 Lambert settings

This option is identical to the 'Isotropic settings' above, except that the reflectance level is set to 1.0 exactly (no absorption allowed).

2.4 The Help pull-down menu

The Help pull-down menu offers the following two options:

- ➢ User Guide
- ➢ Physics
- ➢ Homepage
- ➢ License
- ➢ Changelog
- ➢ About AnisView

2.4.1 User Guide

This option requests the visualization, in a separate window, of this file. It provides general information on the organization of the display and the nature and functionality of the various menus and options.

2.4.2 Physics

This option similarly exhibits, again in a separate window, additional information on the physical underpinnings of the RPV and MRPV models. This is not meant to replace the original publications, but, rather, to provide a convenient introduction to these documents.

2.4.3 Homepage

This option will open the AnisView homepage in your web-browser.

2.4.4 License

This option will open the AnisView EULA (End-User License Agreement).

2.4.5 Changelog

This option will display the changelog of AnisView.

2.4.6 About AnisView

This option provides a short list of the current version of AnisView, its location on the WWW, and the contact address of the authors of this application.

3. References

Engelsen, O., B. Pinty, M. M. Verstraete, and J. V. Martonchik (1996). Parametric bidirectional reflectance factor models: Evaluation, improvements and applications. Technical Report EUR 16426 EN, EC Joint Research Centre.

Rahman, H., B. Pinty, and M. M. Verstraete (1993). Coupled surface-atmosphere reflectance (CSAR) model. 2. Semiempirical surface model usable with NOAA Advanced Very High Resolution Radiometer data. *Journal of Geophysical Research 98*, 20,791 - 20,801.