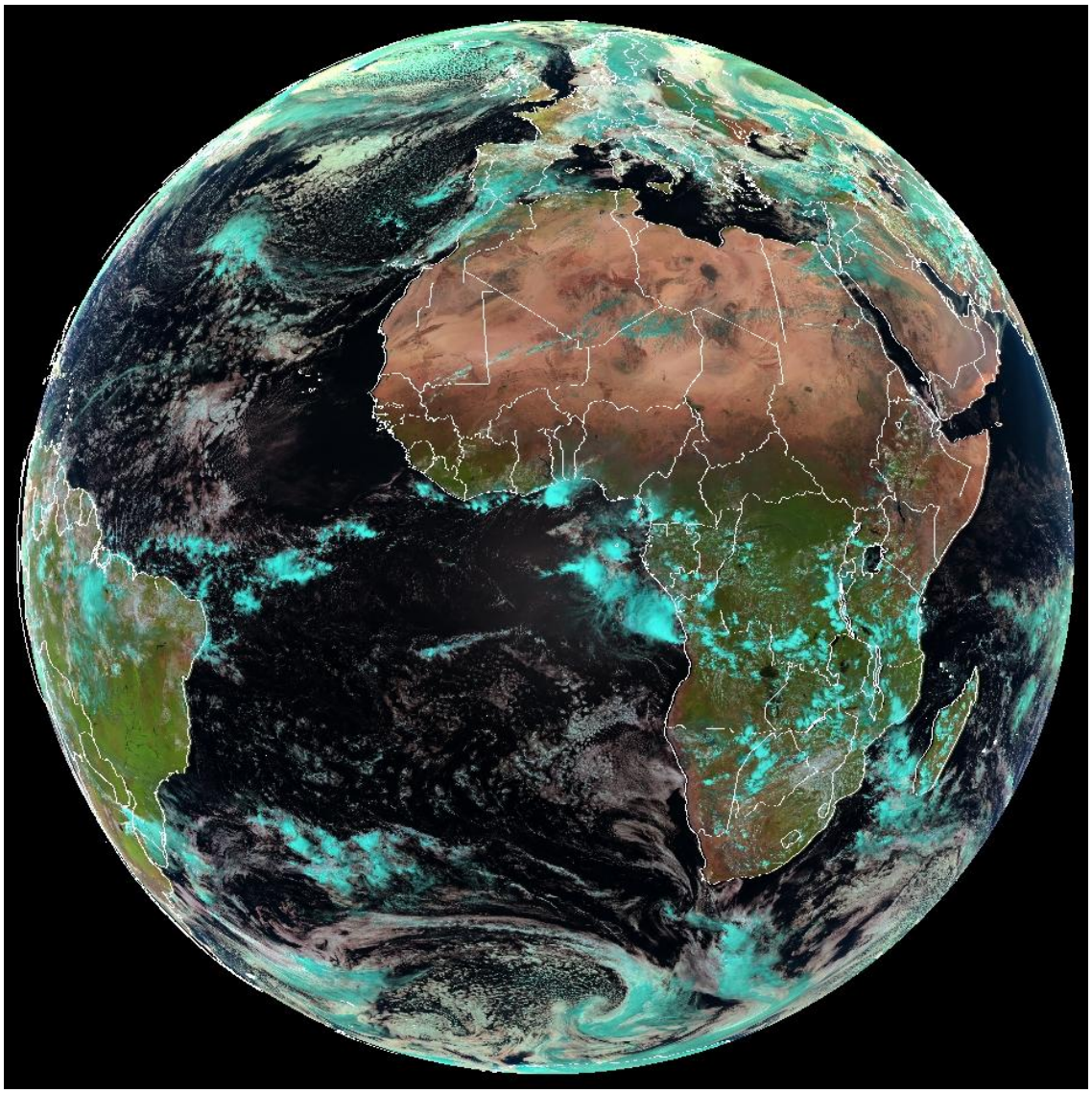
MSGView v.3.0

MSG (METEOSAT Second Generation) Data Processing & Visualization Software

User Guide



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MSGView MSG Data Processing and Visualization Software

MSGView software displays HDF5 formatted HRIT and LRIT MSG SEVIRI data. The software has been developed by Aydın Gürol ERTÜRK from Turkish State Meteorological Service to support operational meteorology, satellite meteorology researches and also training activity. It is running at the forecast centers of TSMS as operational, at the Istanbul Technical University (Turkey), Cukurova University (Turkey) and University of Alagos (Brazil) for research and at the EUMETSAT User Service for evaluation of potential contribution training events. It is bilingual software which are Turkish and English.

Some of the features of MSGView software are given below:

- Full disc or partial display.
- Single channel, channel difference, RGB and channel difference RGB display.
- Histogram equalization, contrast enhancement, land/sea mask and inverse display.
- Lookup tables.
- Support HDF5 format.
- Last image automatically display (optional)
- Save as image in JPEG format.
- Save as a physical value (BT, Reflectance, Radiance)
- Zoom (2X, 3X, 4X)
- Animation
- Last image automatically add into animation (optional)
- Show pixel information (BT or Reflectance, latitude and longitude etc.) at the status bar.

MSGView interface is given at Figure 1.

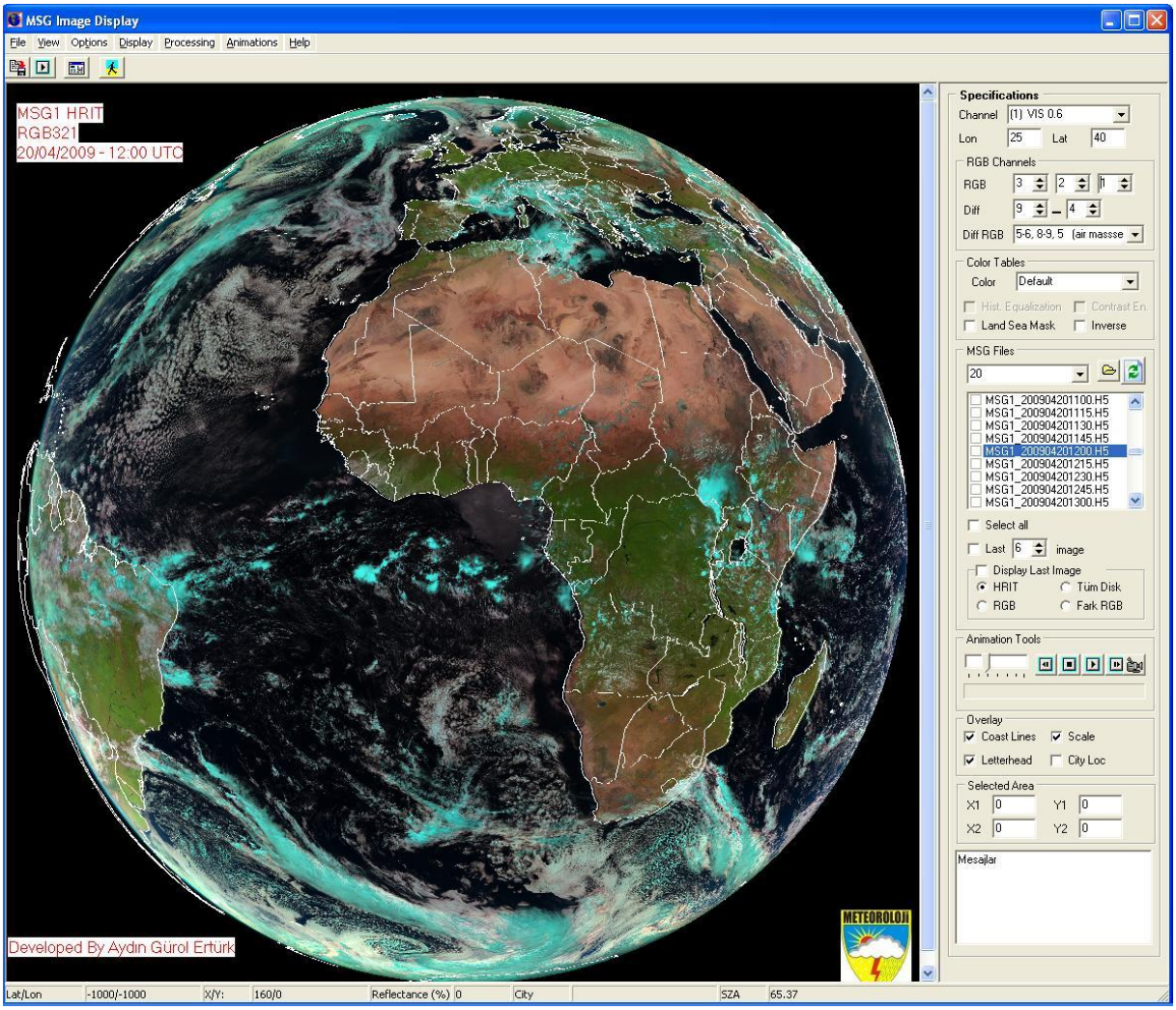


Figure 1. ***Interface of MSGView software.***

Installation

There is a setup file to install MSGView software to MS Windows based PC. Double click setup.exe and follow the instructions. It is required to install it a root directory such that C:\MSGView or D:\MSGView. If it is installed under Program Files directory some of the features of MSGView software cannot be worked properly.

MSGView Menus

MSGView has two menus one is main menu the other is pop-up menu. Most useful menu items have been put into pop-up menu for quick access. In addition to this, double click properties have been used for quick access.

Main Menu

MSGView main menu has following menu items; File View, Options, Display, Processing and Help. First two and last menu items are a classic MS Windows items but the others have main functions of software. The main menu of MSGView is given Figure 2.

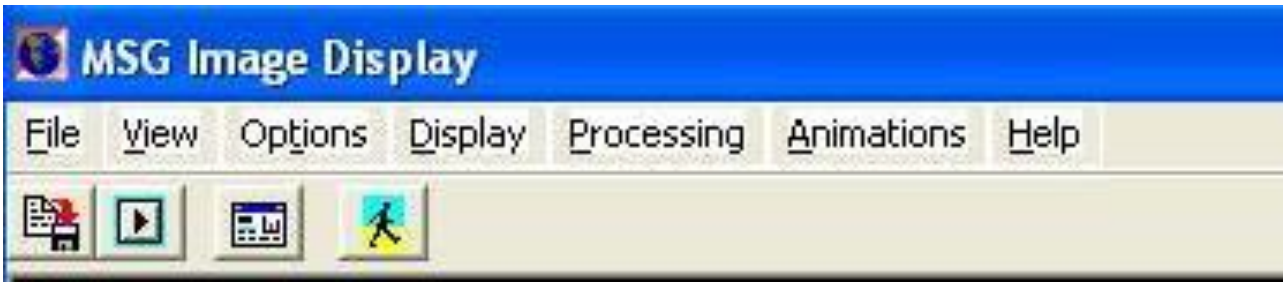


Figure 2*1. Main menu.*

Menu items and their functions are given below:

File Menu

Open HDF5: Open HDF5 formatted MSG file for display.
Set HRIT Working Dir: Set working directory which contains MSG data.
Save as JPEG: Save images as a JPEG format.
Save as Physical Value: Save image as physical value such that BT, reflectance and radiance into text file.
Exit: Exit from application.

View Menu

Show Spec: Show or hide specifications panel.
Zoom: Zoom selected area with zoom factor 2, 3, or 4.

Options Menu

Histogram: Draw histogram displayed channel.
*Lat/Lon Grid***:** Draw latitude and longitude grid for only full disc image.

Display Menu

All displayed images are subjected to Specification Panel.

Rapid Full: Display full disc image for selected channel in ¼ downscaling.

HRIT Display: Display partial single channel image with selected channel and selected center.

Channel Difference: Display channel difference image selected channels.

RGB Display: Display RGB image with selected channels.

Temp Diff RGB: Display channel difference RGB with selected application.

Full RGB: Display full disc RGB image with selected channels in ¼ downscaling.

Processing

Histogram Equalization: Apply histogram equalization onto displayed image.

Contrast Enhancement: Apply contrast enhancement process onto displayed image.

Gamma Correction: Apply gamma corrections onto displayed image

Gen Diff RGB: Generate channel difference and channel difference RGB by using given parameters.

NDVI: Produce daily NDVI product.

Show Graph: Show scatter plot graph using MSG channels and its difference for selected area.

Animation

All animated images are subjected to Specification Panel.

HRIT Animation: Make a single channel animation (partial).

RGB Animation: Make a RGB animation (partial)

HRIT Full Animation: Make a single channel full disc animation.

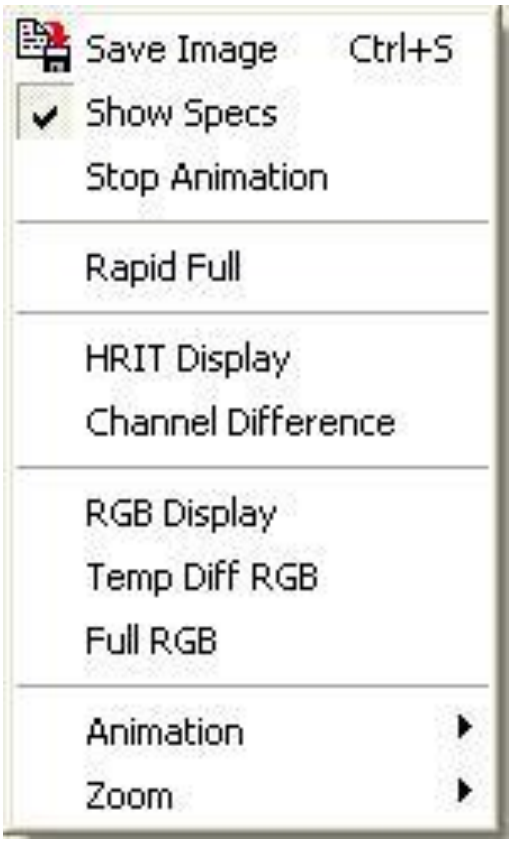
Diff RGB Animation: Make a difference RGB animation (partial)

Help

About: Information about software and license.

Popup Menu

Click right Mouse button to reach popup menu. The mostly useful menu items have been taken place at the popup menu. Beside Stop Animation menu items has been added into popup menu to make possible stop current animation. Popup menu is given at Figure 3.



2*Figure 3** ***Popup menu of MSGView software.

All menu items which popup menu contains have been explained above.

Specification Panel

While displaying an image with MSGView software specific parameters should be defined at Specification Panel. The main specifications are latitude and longitude of center point, channel selections, MSG cycle, lookup table etc… Specification panel figures are given as two parts at Figure 4, and 5.

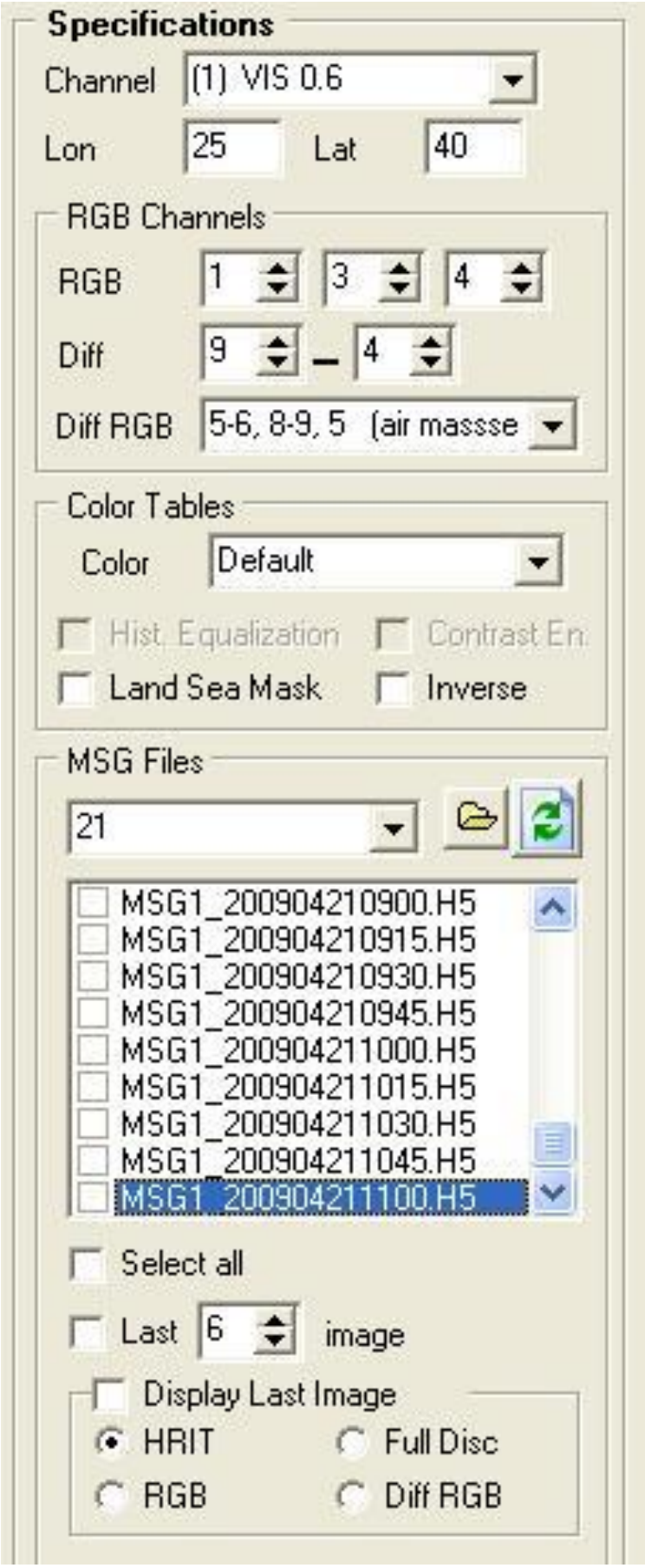
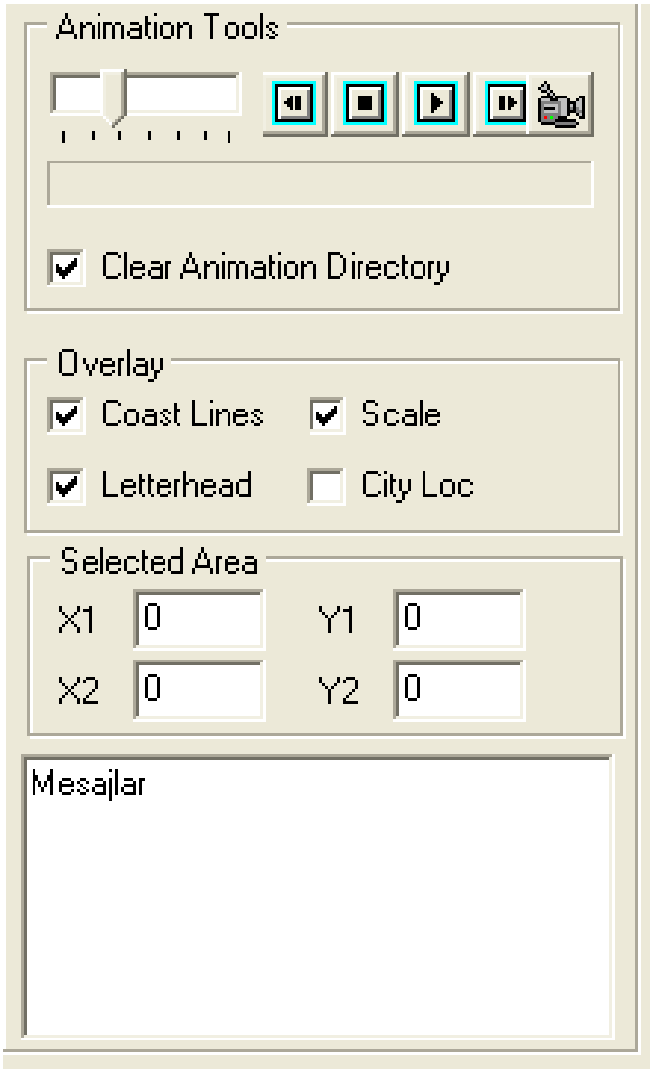


Figure 43. ***Specification panel of MSGView software (1).***

For single channel display one of the MSG SEVIRI channels between 1 to 12 has been selected from *Channel* combo box. The center latitude and longitude have been entering just below text box. Besides, if make a double click with mouse left button then display image take a center point of mouse position. To make RGB, channel difference or channel difference RGB applications channel selection has been made from *RGB Channels* group box. It is possible to display single channel with a lookup table as select a color table from *Color* combo box. Besides to apply Land/Sea mask and inverse color are possible with their check box.

While using *Directory* button it is possible to set working directory and all directories under working directory (generally date number) will be come into *MSG Files* combo box. For operational use HDF5 directory at the receiving PC should be set as a working directory to see real time MSG data. Select interested date from combo box and all MSG cycles belongs that date will come into list box. While clicking *Refresh* button the latest MSG data cycles will appear into list box. While double click any MSG cycle on the list box than image displayed according to selection of *Display Last Image* group box (i.e. HRIT partial single channel, full disc single channel, partial RGB or difference RGB) . If select *Display Last Image check* box the latest image automatically displayed every five minutes. During animation the latest image will be added into animation if this check box is checked.

To add into animation any of MSG cycles to be selected while clicking check list box. For easy use *Select All* and *Last X Image* check box can be used. After selected MSG cycles Animation can be made while select a menu item from Animation menu or popup menu.



4*Figure 5.** ***Specification panel of MSGView software (2).

Animation tools are shown at Figure 5. It is possible to change animation speed (trough left speed up, trough right speed down). And also Next, Previous, Stop and Start buttons are available. When the *Clear Animation Directory* check box checked the program automatically will be erased previous animation files according to their dates.

The selections and their functions of *Overlay* group box are given below:

Coast Lines: When the check box selected the coast lines will be drawn.

Scale: Show or hide scale bar at the below of image.

Letterhead: Show or hide legend which contains date, time and channel information of image at the upper left corner.

City Loc: While this check box checked some of the capitals over world and some small cities will be shown on the image. The location and name of the capitals are in the capitals.txt file and the small cities and their location are in the cityloc.txt files. Both files are in the initial directory and can be customized by users. Capitals are shown with first three letters and small cities are show as a white dot. While moving around the dot the name of city will be shown on the *Status Bar* (Figure 6).

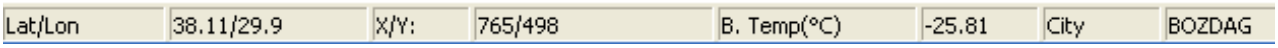


Figure 6 ***Status bar of MSGView software.***

Beside while moving over image with mouse latitude and longitude, reflectance or brightness temperature value, x and y numbers and sun zenith angle are shown at the status bar.

X and Y numbers of selected area are shown at the Selected Area group box. Error messages are shown at Mesajlar list box.