

VTE: User Manual Guide

WALSAIP
UPRM

[VISUAL TERRAIN EXPLORER]

Introduction

Visual Terrain Explorer (VTE) is a terrain visualization tool being develop as part of the WALSAIP. VTE is based on Java and OpenGL, which allows for cross-platform development and deployment and hardware accelerated rendering. VTE is implemented as a modular system, which allows us to easily extend the application functionality and to experiment with various different rendering approaches. The current implementation of the VTE tool provides a basic graphical user interface and support loading different terrains and texture file formats of up to 8k by 8k. A data caching mechanism was also developed which allows modules to stored data resulting from computationally intensive operation which may take considerable time to complete.

1. System Requirements

2.1. Minimum System Requirements

1 GHz Processor
512 MB RAM
OpenGL 1.5 compliant Video Card with 64 MB of Video RAM
Java Run-time Environment version 1.5*

2.2. Recommended System Requirements

2 GHz Processor
1GB RAM
OpenGL 1.5 compliant Video Card with 256MB of Video RAM
Java Run-time Environment version 1.6 Beta 2 (Mustang)*

*The demo version included in the CD is bundled with JRE 1.6.

2. File Support

VTE supports the following file formats:

- Terrain elevation:
 - USGS DEM
 - Binary Terrains (bt)
 - Grayscale images
- Terrain texture
 - BMP
 - JPEG
 - PNG
 - GIF

For proper operation, the dimensions (height and width) of terrain texture files must be a power of 2, and the dimension of the elevation file must be the texture dimension plus one.

3. Launching the Visual Terrain Explorer

To launch the VTE, go to the Run As VTE command in the Eclipse Platform. Once the build has been created it will be possible to launch by double clicking the VTE icon (*.exe).

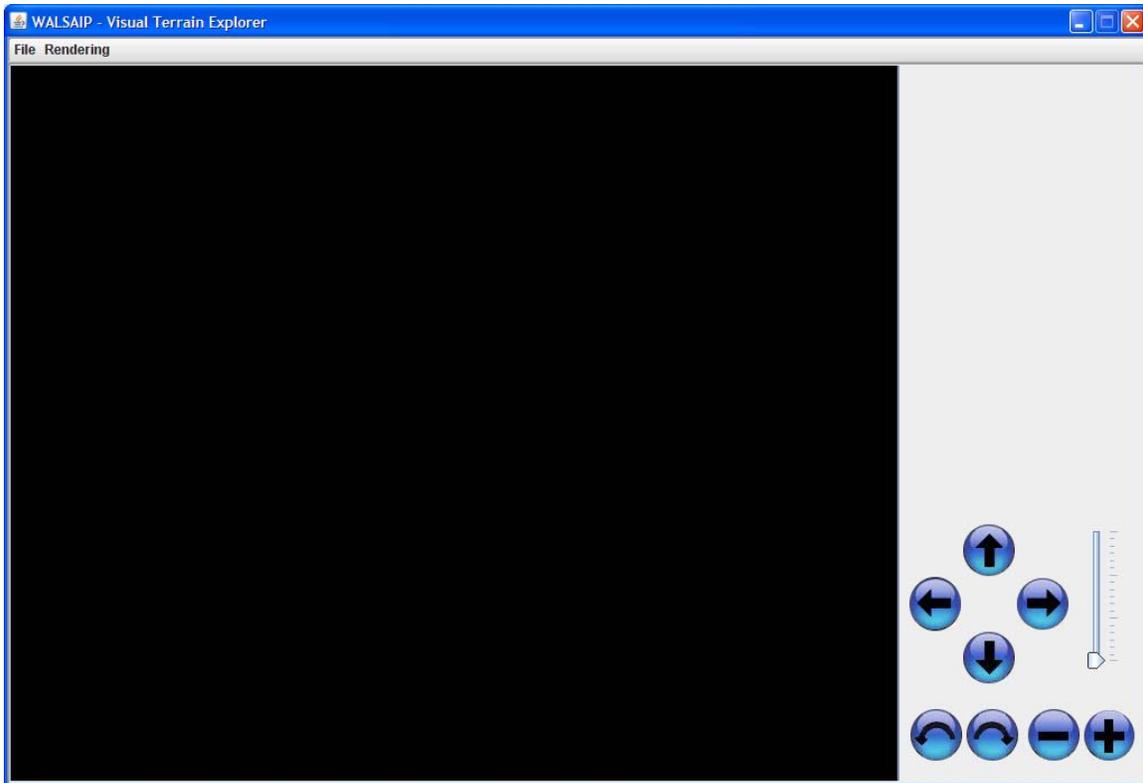


Figure 1 - VTE Main Window

4. Opening a Terrain File

To open a terrain file, select the “File” menu (Fig 2) and click “Open”. Select a file for loading and click “Ok”

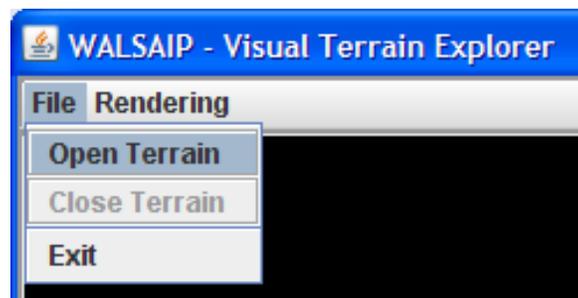


Figure 2 - Opening a File

5. Working with Terrain Views

After loading a terrain, the Terrain View window (Fig 3) will be displayed.

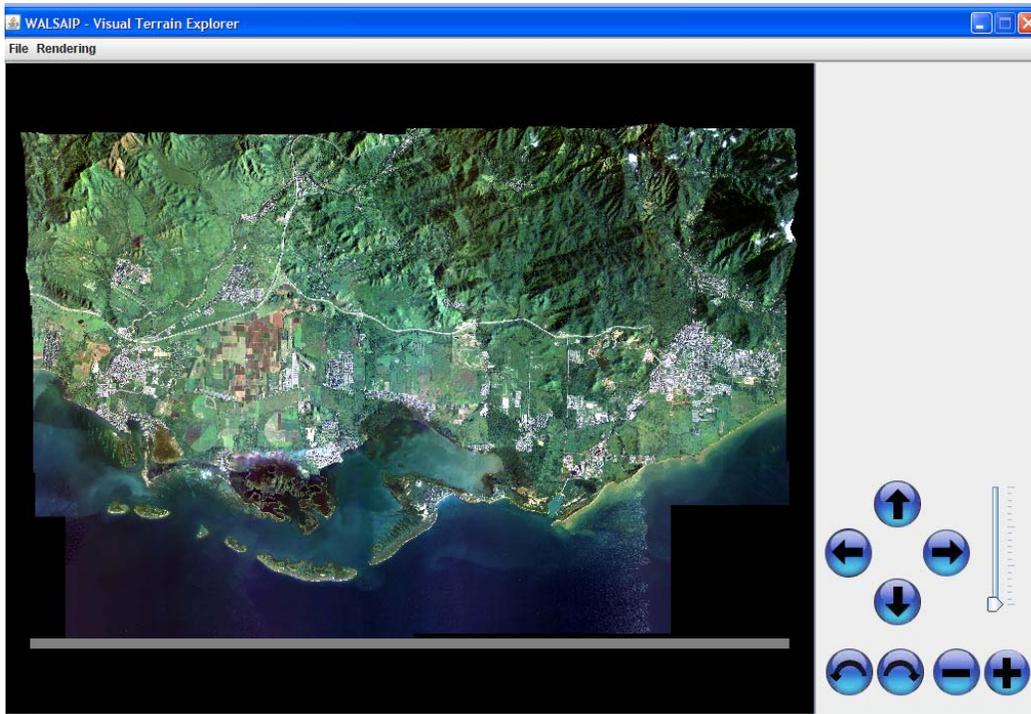


Figure 3 - Terrain View Window

6. Controlling the camera

The VTE provides a virtual camera which you can control in order to explore the 3D visualization of the terrain. The camera control panel (Fig 4) provides buttons for moving and rotating the camera as well as buttons for controlling the incline of the terrain with respect to the camera.

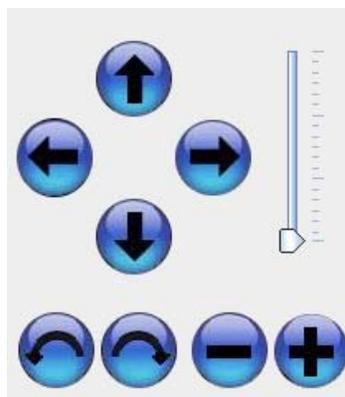
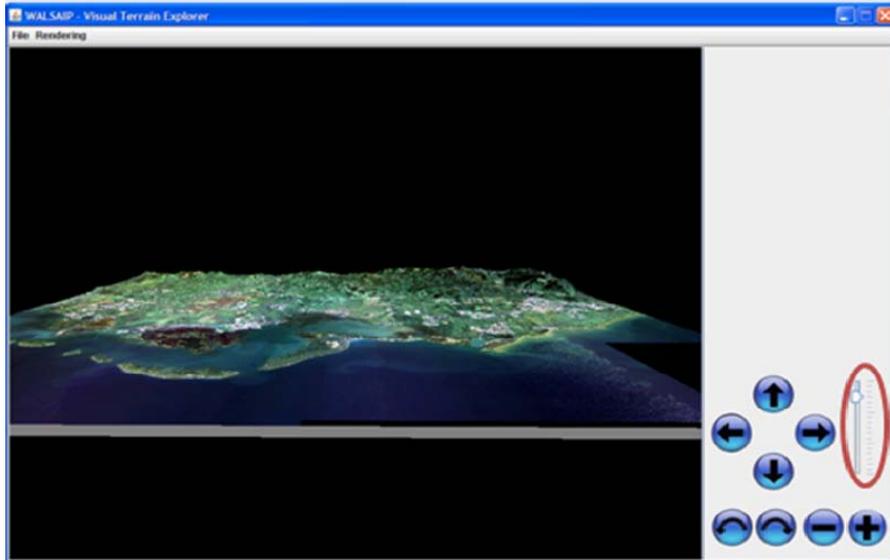


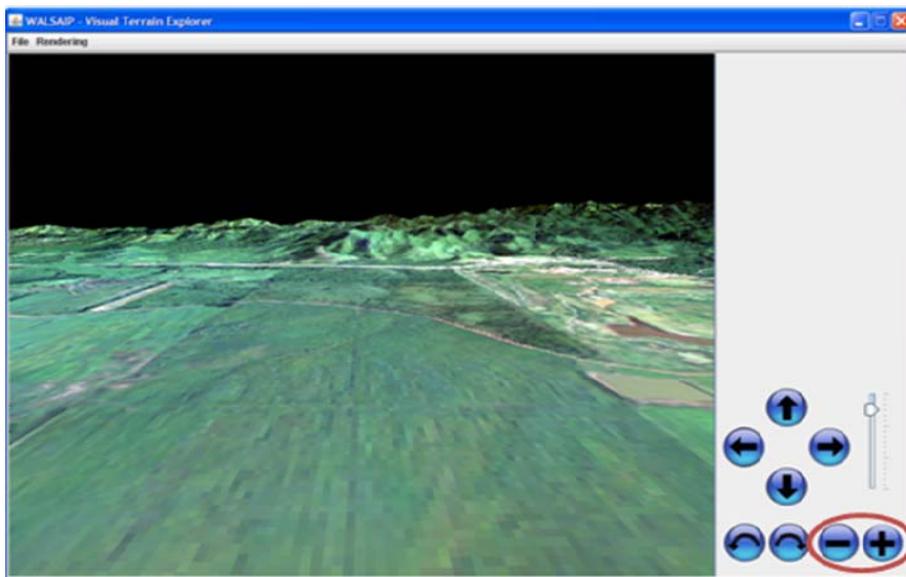
Figure 4 - Camera control panel

The buttons will have the following effects:

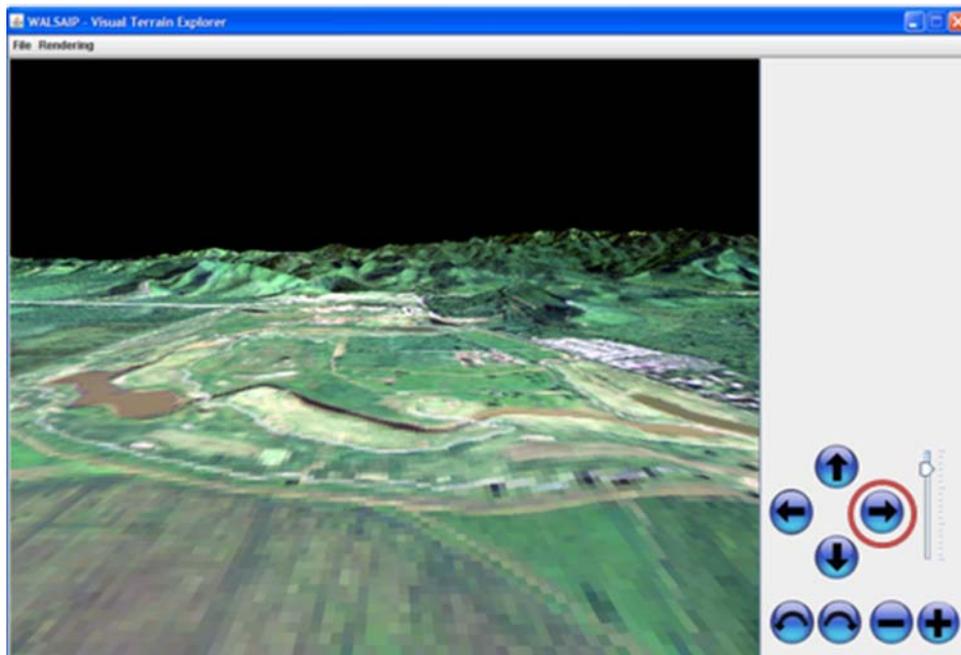
- a) *The level will change the terrain inclination until it reaches the horizon level.*



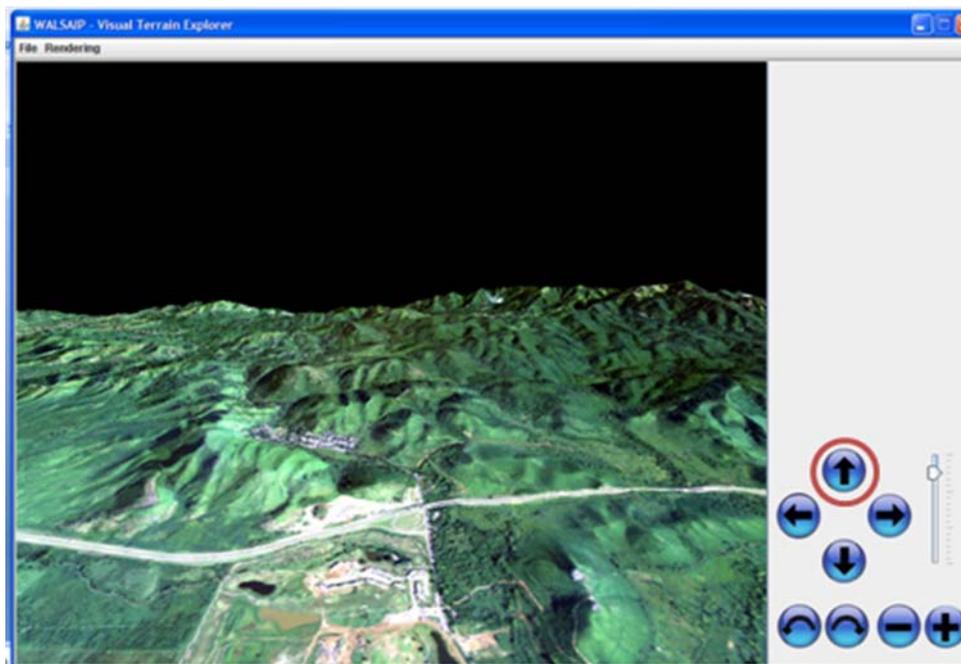
- b) *The zoom buttons will move the terrain towards or away from the camera.*



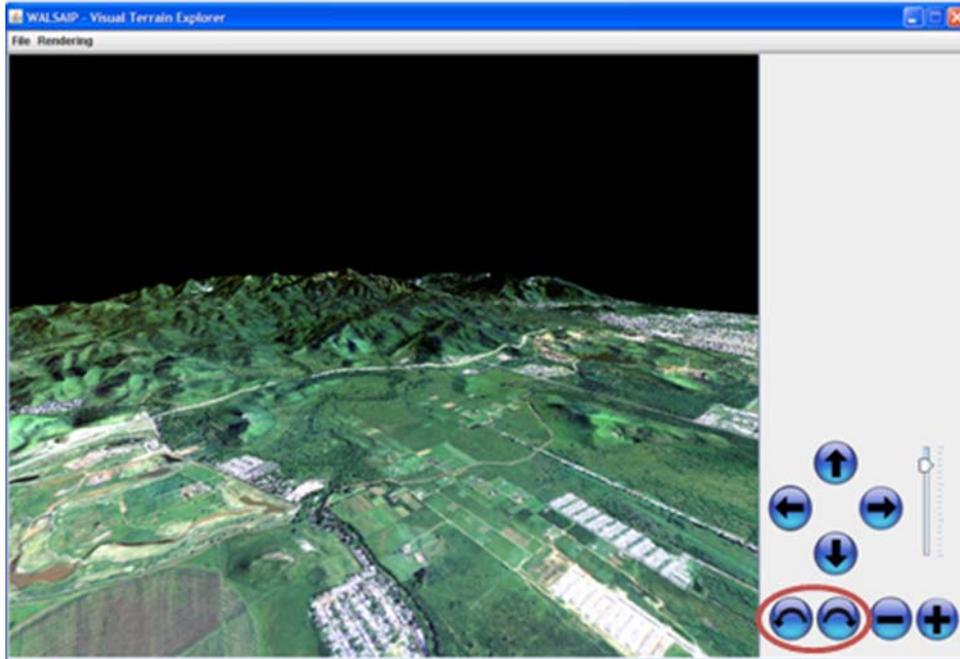
- c) *The left & right buttons will move the camera upward and downward, relative to the visualization point.*



d) *The up & down, will move the camera upward and downward, relative to the visualization point.*



e) The rotation buttons will rotate the camera toward the left or the right in a circular mode.



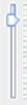
Button	Function
	Zooms the camera toward or away from the terrain.
	Moves the camera position relative to the viewing direction.
	Rotates the camera left or right
	Changes the terrain inclination.

Table 1 - Camera buttons

7. Changing rendering options

The current VTE implementation provides three terrain rendering modes: solid, wireframe and points, and a menu options for disabling the colored rendering.

In order to change the rendering mode, click on the Mode option of the Rendering menu (Fig 5) of the Terrain View and select the desired option.

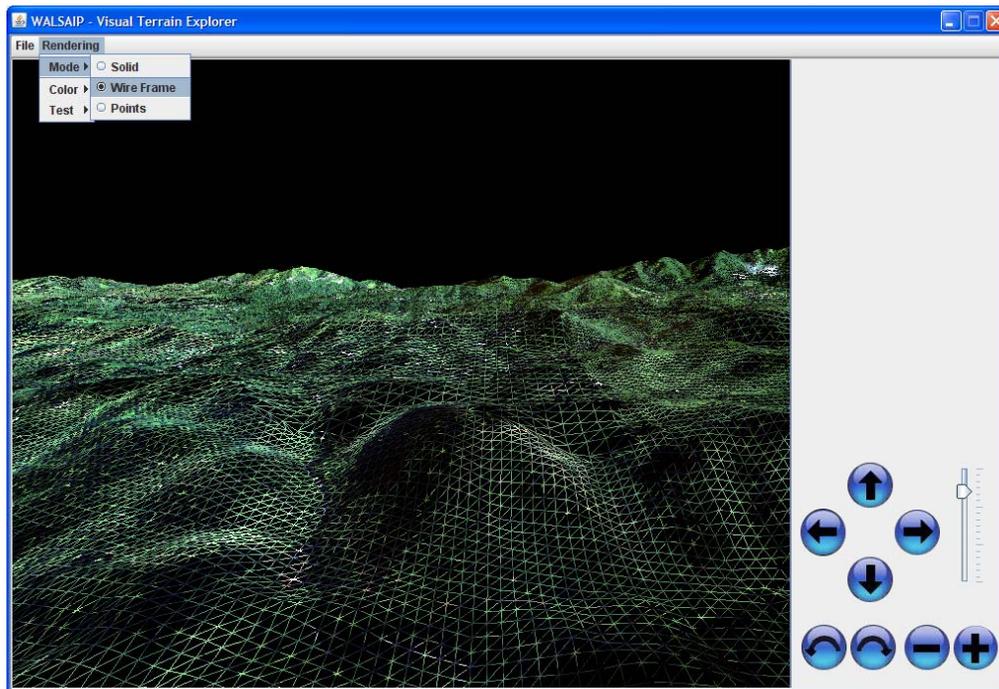


Figure 5a - Rendering option: Wire Frame

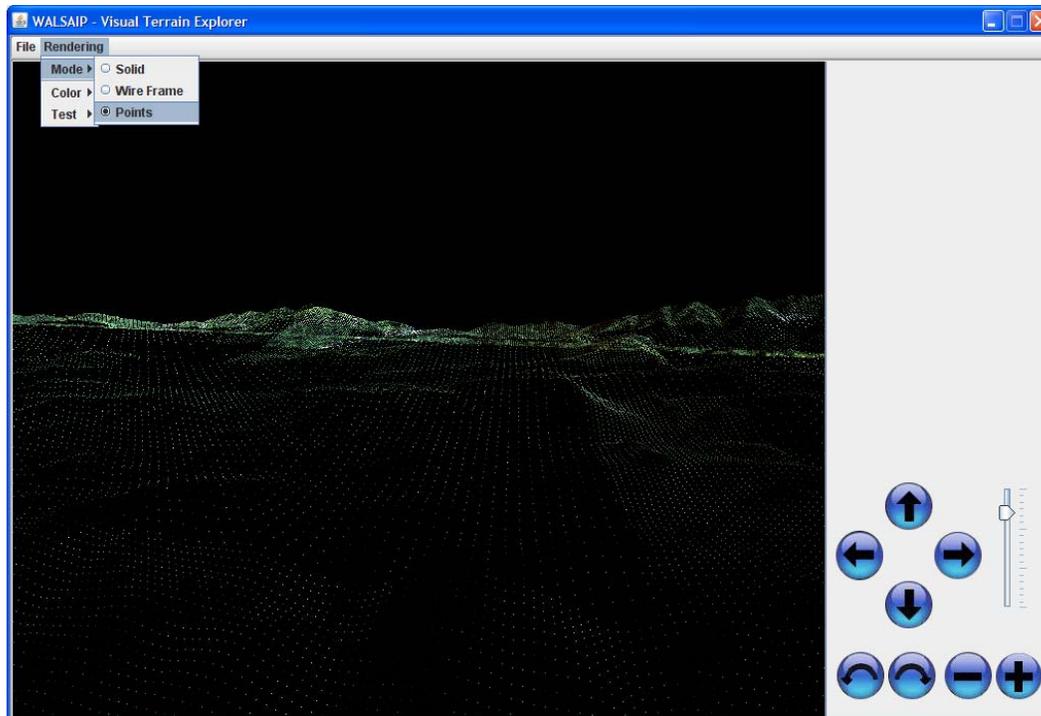


Figure 5b - Rendering option: Points

In order to change the color mode, click on the Color option of the Rendering menu (Fig 6) of the Terrain View and select the desired option.

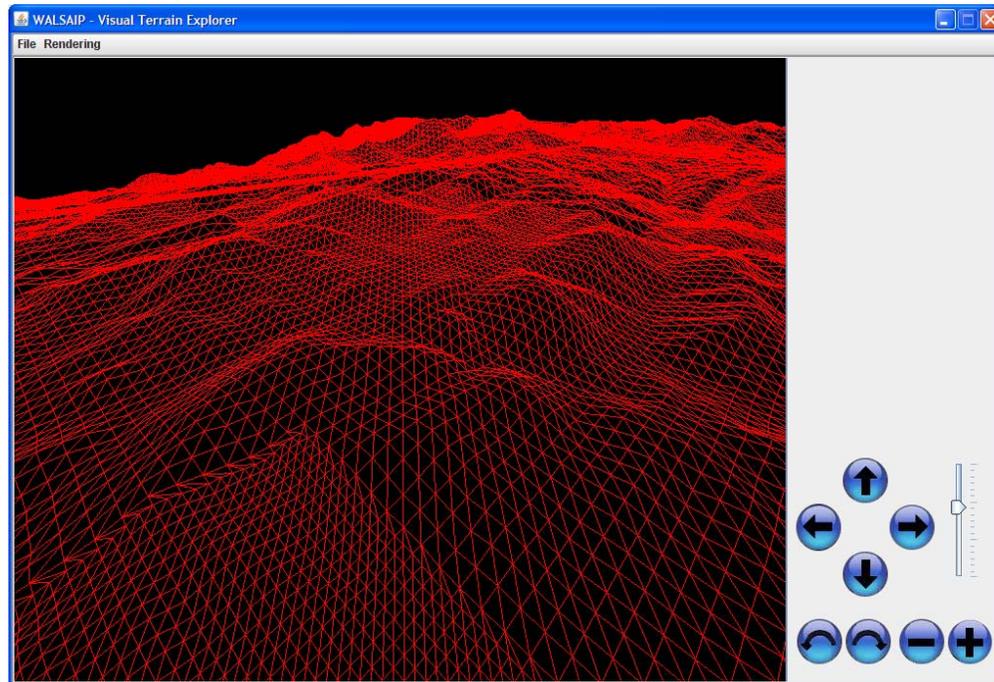


Figure 6 - Color options

8. Further Information

This software is part of an ongoing research project. Please send error reports, inquiries and any comments or suggestions to the developers. We will greatly appreciate you help. Thanks.

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