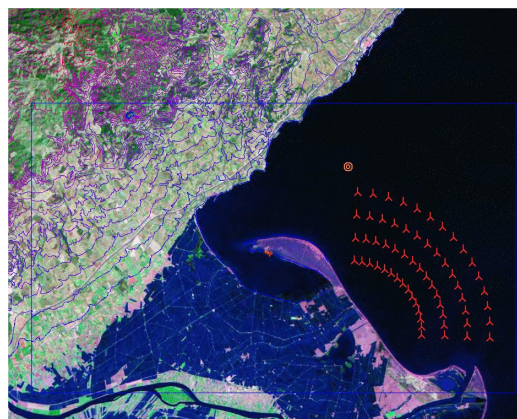


The One-Page Guide for Adding Free Satellite Images as Background Maps in WindPRO

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Introduction

Several free sources of relative high-resolution satellite images now exist on the Internet. These images are available in a resolution down to approximately 15-30 meters per pixel, thus opening for the possibility to identify details as large roads and houses. In WindPRO these photos may be used as background maps and as nice textures for virtual reality presentations (3d animator).



Brief on Satellite Imaging and Remote Sensing

Many of the free satellite photos come from the Landsat Series of Satellites, where the images of an area are not recorded in true colours. The satellite carries a camera instrument that records images of the Earth using different filters (wave lengths). The Landsat TM (thematic mapper) instrument on Landsat 5 used seven different bands, each sensible to the different parts of the reflected solar energy. It is possible to convert individual bands into either true colour pictures or artificial (false) colour pictures. The option of using artificial colour pictures are widely used within the field of remote sensing, i.e. when studying changes in global vegetation, pollution etc.

Processing satellite data from NASA ESAD

This dataset covers the whole earth except the northern Siberia in a 30-meter resolution. The images are in false colour but are looking very nice (see the picture from WindPRO on this page).

1. Open your web browser to the NASA ESAD location: <https://zulu.ssc.nasa.gov/mrsid/> (NOTE: clicking this link may fail – instead try to copy the link to your browser)
2. Locate your site by clicking the map and choose to select image. Finally download the file using the MrSID format (a geo-referenced image format). The files are approximately 30 Mb in size.
3. Get the software for extracting a GEO-TIF file from the MrSID images. A free tool – the MrSID GeoViewer 2.1 – can be downloaded from <http://www.lizardtech.com> (go to the download section).
4. Open the MrSID image file using the MrSID GeoViewer.
5. Zoom to your area. Click the export button. Choose to export as a TIFF image.
6. Now export again (do not change the area selection). Select to export as a world file (*.tfw).
7. If you are not pleased with the colouring of the picture, then you may now edit the image in a editor like Paint Shop Pro (Shareware from: <http://www.jasc.com>)
8. Open WindPRO; add your image as a GEO-file. The coordinate system is UTM WGS84 with the appropriate zone. Note that you need both the TIF file and the world file.

Processing satellite data from University of Maryland Global Land Cover Facility (GLCF)

This dataset covers the most of the earth, holding data from several satellites. For some parts of the world, it is possible to acquire data with a 15-meter resolution (requires some data processing). The detailed images are saved in bands, thus requiring data processing to obtain true or false colour images.

1. Open your web browser to CLCF: <http://glcf.umiaccs.umd.edu>. Go to the data section and find/click the Landsat data. The Landsat 4+5 TM data covers most areas. Search your data through the map interface.
2. Zoom to your area of interest. When your area holds less than 300 images, then you are able to preview, browse and download the actual image files (click the preview and download button). Note that the files may appear in grey scale.
3. Now download the files for the image you want. Each image may hold up to 10 files or more (depended on the number of bands recorded). Note that the pictures are very large > 15 Mb each.
4. Now you need to combine the different bands into a colour image. This can be done in Paint Shop Pro, following the guidelines available through <http://www.terrainmap.com/rm29.html#HSL>. Otherwise, you may choose to use a single grey-scale picture.
5. Now cut out and save a smaller image covering your area (using Paint Shop Pro).
6. Open WindPRO and add the file as a geo referenced new map.
7. You will have to identify the position of three known points on your map in order to add the map in WindPRO (see the WindPRO manual for further details).

Further reading / resources

Resource on terrain mapping: <http://www.terrainmap.com>

An Introductory Landsat Tutorial: <https://zulu.ssc.nasa.gov/mrsid/tutorial/Landsat%20Tutorial-V1.html>