Release 5 Photomontage

The new features are:
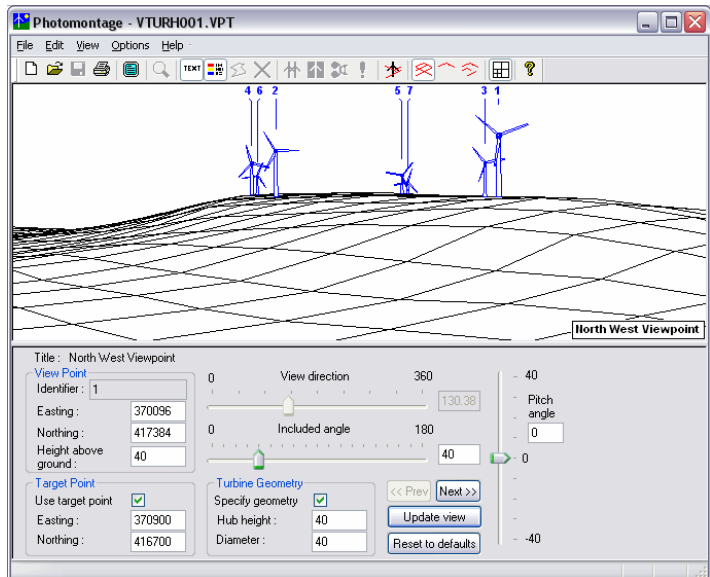
1   The toolbar has been extended to enable easier toggling of some of the display attributes
2   Ridgeline drawing in the wireframe
3   The Sun's direction can be set using date and time
4   Fog can be added to the view of the rendered turbines
5   Aviation lights can be displayed on the nacelle and tower
6   A reprojection tool to convert images from cylindrical projection to planar projection and vice versa

Open the TURH project and use the Options / Select Map Region menu option to select the full 20km region SD60.GTH.

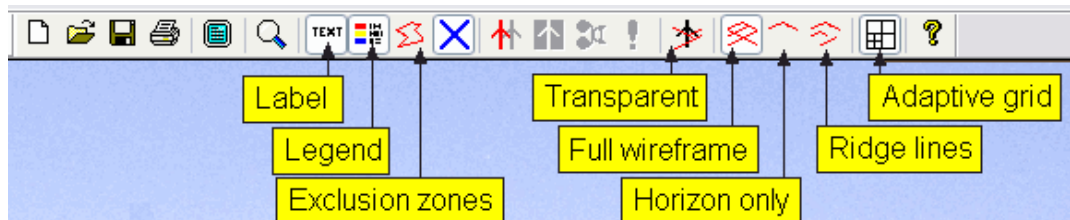Open the initial layout LTURH001.WFL and then start the Photomontage module.

Select the viewpoint file VTURH001.VPT if there are more than one along with the viewing of the full wireframe.

Viewpoint 1 should be shown.

New Toolbar Buttons

Note the new buttons in the toolbar. Most of them are also in the View menu.
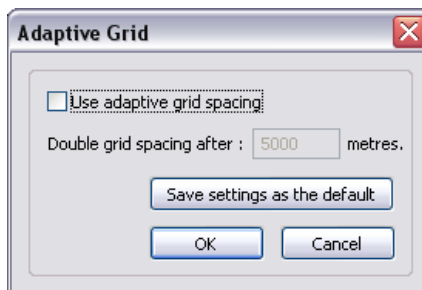

Ridgeline Drawing

Click on the adaptive grid button next to the help button.

This displays the Adaptive Grid dialog where you should switch off the "Use adaptive grid spacing". Ridgeline drawing can only be done with this off.
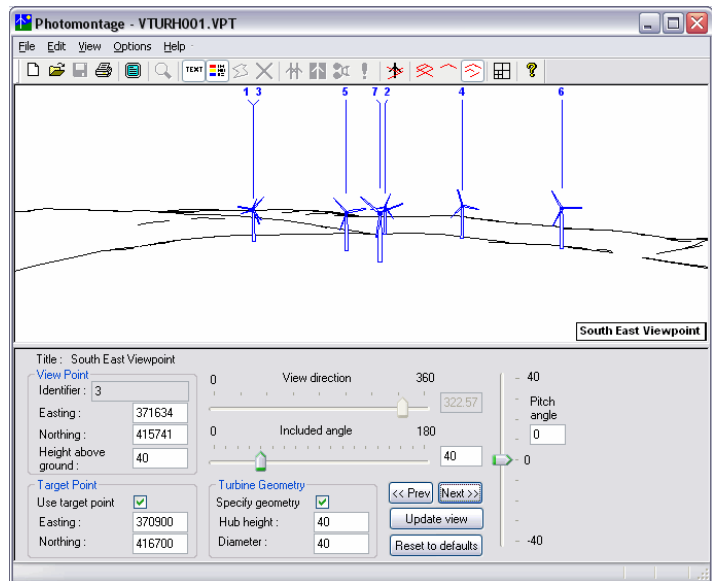
Click on OK.

There are 4 toolbar buttons for controlling the wireframe display:

Transparent wireframe
Full wireframe
Horizon only wireframe
Ridgeline wireframe

Click on the Ridgelines button to show the wireframe as ridgelines and try the different views. The third view is shown here.

Switch off the "Use target point" flag and change the direction to examine the landscape displayed in this way.

When finished reset the flag, switch to full wireframe and switch on the adaptive grid.

Note that because the adaptive grid must be switched off to use ridgelines (you will be warned if it is not off) drawing will be slow.

There is a tendency to have to use more accurate high-resolution height data than the typical 50m grid DTM data. A large amount of 5m data will certainly slow down the drawing tremendously even with the adaptive grid on. The adaptive grid is set by default to 5000m for 50m data, so 500m should be more suitable for 5m data.
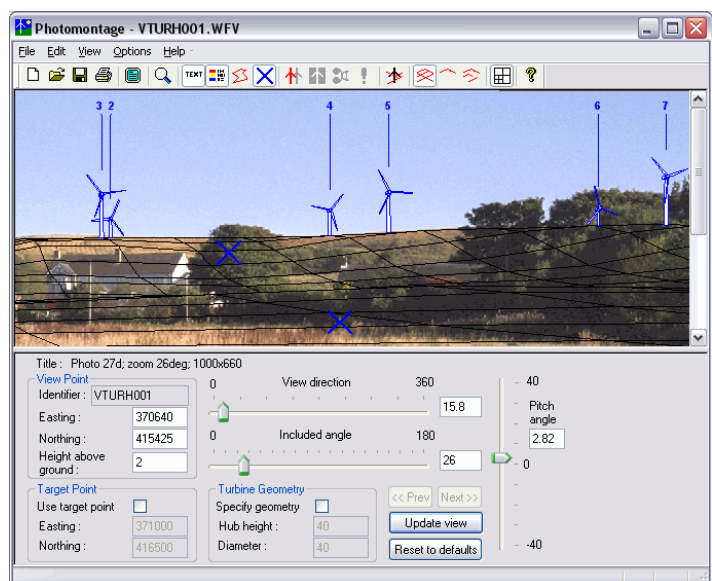
It is suggested that when setting up your photomontages and ZVIs that you use the standard 50m grid spacing and only when you are happy that the run is set up as close as you can get that you switch to a map region at 5m spacing. As it is you may need to draw horizon only in the Photomontage module to avoid a black mess. It will be a lot quicker, but the wireframe will of course be less accurate.

Also, even if using adaptive grid, turbine heights and positions are taken from the full height data set and will be as accurate as interpolation allows.

Sun Direction and Fog Settings

Open the Photomontage run file VTURH001.WFV.

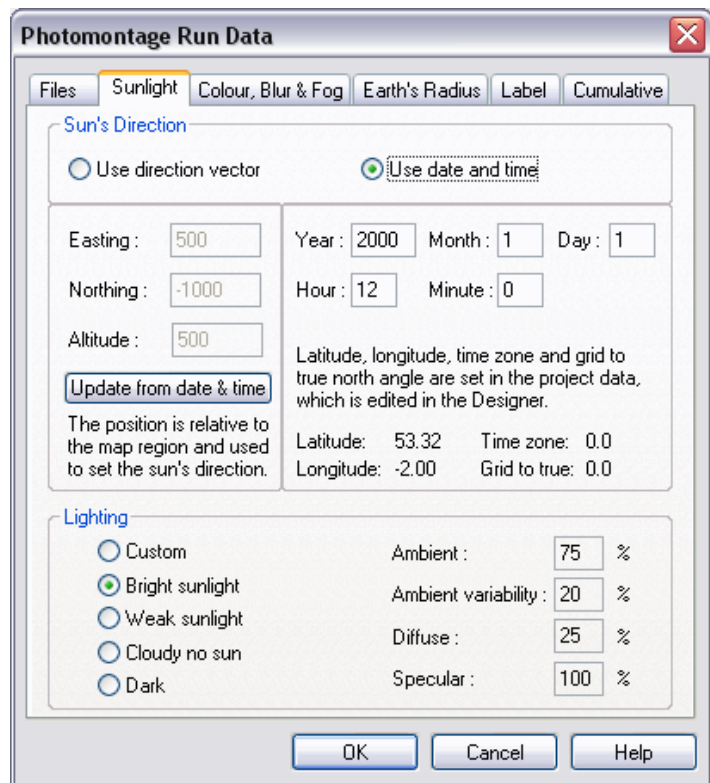Select the Edit / Run Data menu option.

The Sunlight page now allows date and time to be set.

At the top you can select to use the direction vector or date and time.

To use the date and time option the longitude and latitude must be set in the project data. See the tutorial on Shadow Flicker for setting these values.

Once date and time have been set the Sun's direction vector can be updated from those settings.

Also on this page is a new lighting setting of "Dark", which can be used in conjunction with aviation lights as explained later.
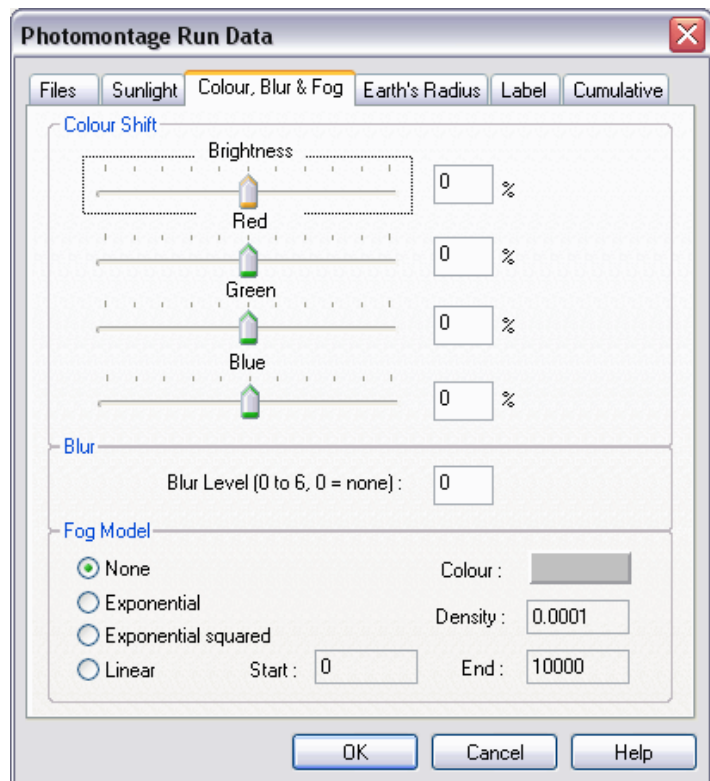
The Colour and Blur page has been changed to Colour, Blur and Fog.

Most countries would not want fog added to a photomontage (it is somewhat subjective). However, France, for example, requires its use to give a more realistic impression of a wind farm, especially offshore.

For the fog settings see the tutorial WindFarm3D-1.pdf which has the OpenGL formulations.

Note you need to set the fog colour to the background colour near the turbines in order to get a good blend.

You can only use one colour so if there is any significant variation in background colour near the turbines in the photograph it will not work very well.
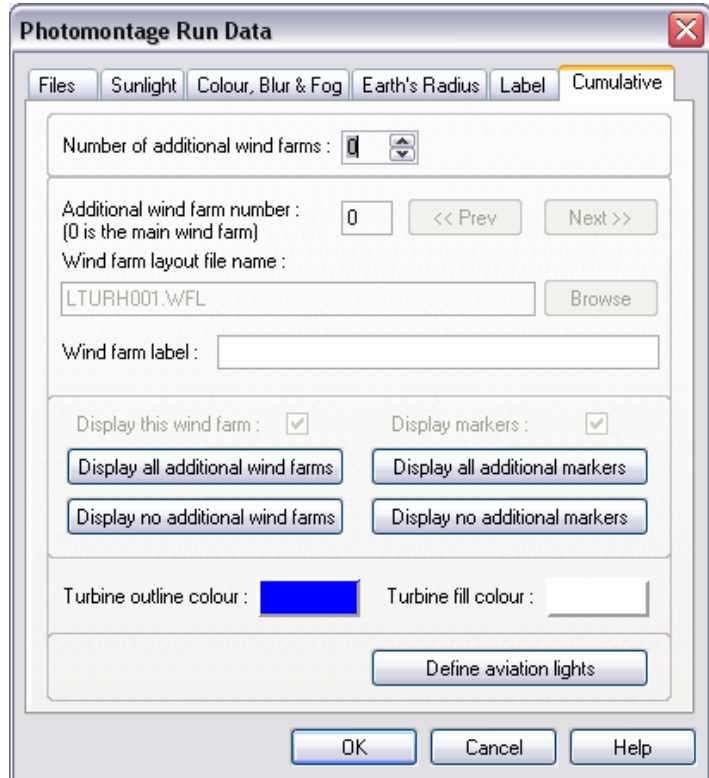
Aviation Lights

Aviation lights on the nacelle and tower can be displayed.

Select the Cumulative page of the run data editing dialog where they are specified.

This also includes the specification for the main wind farm (wind farm 0) even if it is not a cumulative run.

Click on the "Define aviation lights" button.
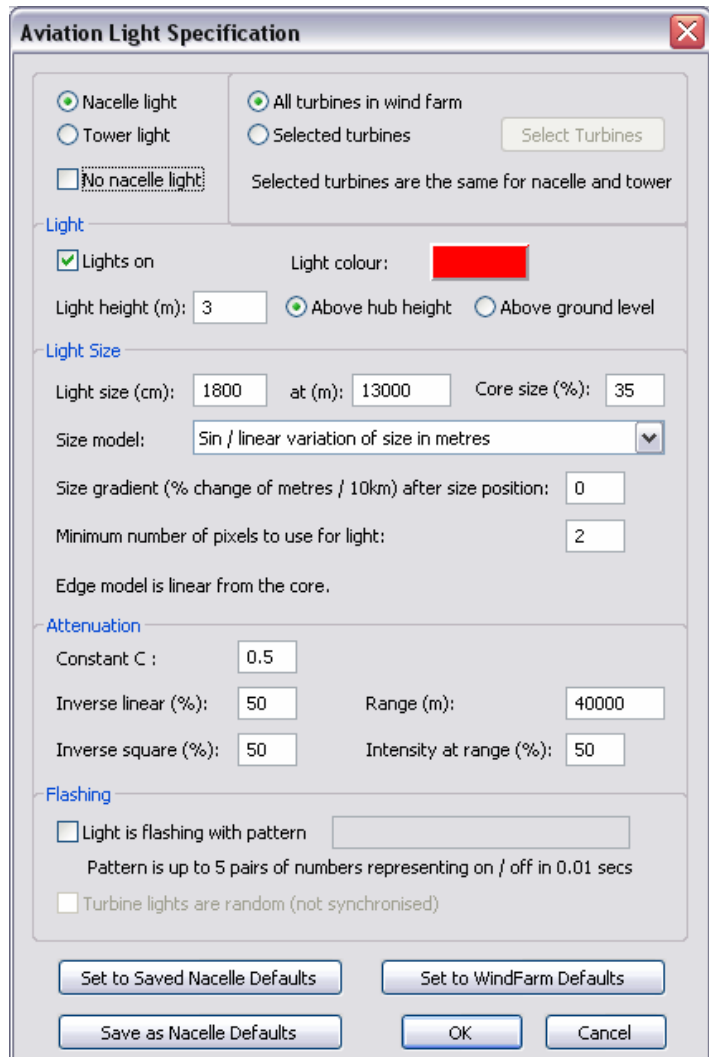
The Aviation Light Specification dialog will be shown.

It should be recognised that it is very difficult to simulate aviation lights. Please read the technical document AviationLights.pdf, which explains a number of the settings available in the dialog.

When activating lights for a wind farm most of the dialog will be disabled because the "No nacelle light" flag will be on. Switching this off enables the dialog controls.

You select which of the nacelle or tower light you want to set. By default the nacelle light is red and specified at a height relative to the hub, whilst the tower light is white specified relative to the ground.

You set the apparent size of the lights and the attenuation. The defaults are a reasonable first step.

If you want to stop the display of the light, but retain the settings, then use the "Lights on" check box.

Clicking on the "Tower light" button shows the tower settings.

Change the light height to 20.

A flashing light is more likely to be required on the nacelle light. When selected it is specified as on/off pairs in 0.01 sec intervals. Therefore 1 sec on followed by 1 second off would be 100,100.

There may be a requirement to flash a "W" in Morse on offshore turbines, which is dot, dash, dash. A typical timing for the "W" would be 10,10,30,10,30,30.
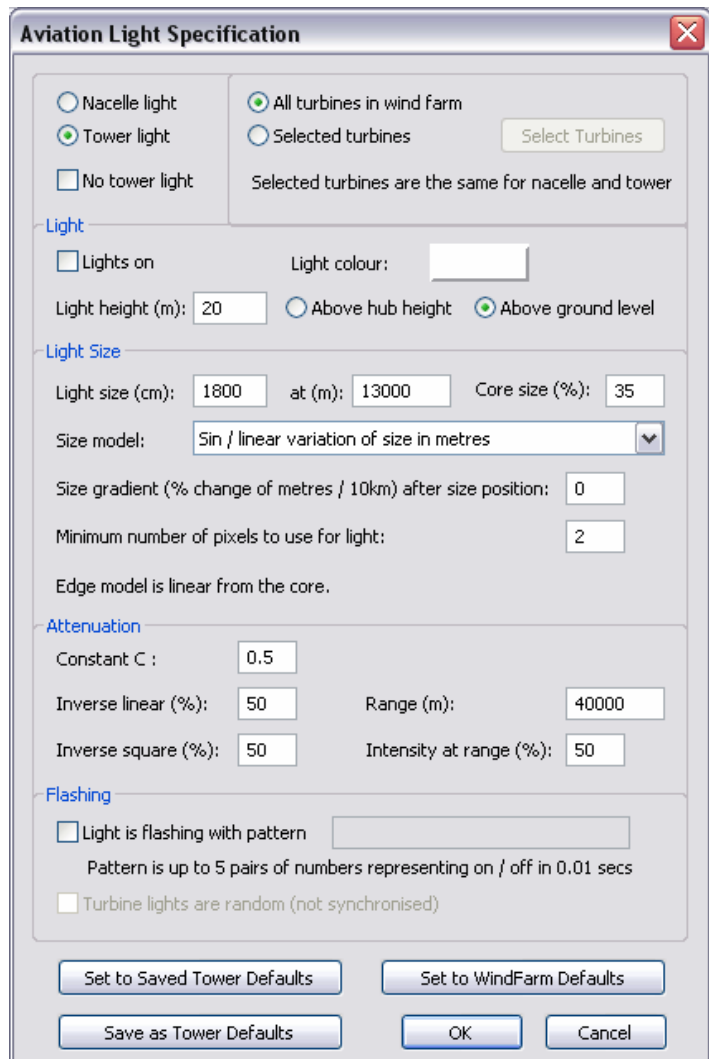
If using this with a photomontage animation you will probably need a lot of frames to be done unless you relax the timing tolerance to 10%. It will depend on the length of the flash sequence and the rpm of the turbines.

Generally flashing turbine lights are synchronised, but a random setting is available if required.

The default is to show the aviation lights on all turbines in a wind farm. However, this is not always the case and therefore you can select specific turbines to be lit.

Click on "Selected turbines" and then "Select Turbines".

A dialog will be displayed that allows you to select specific turbine IDs to have lights.
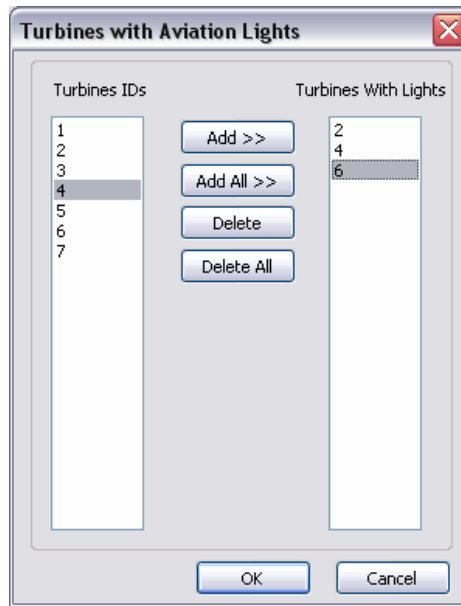
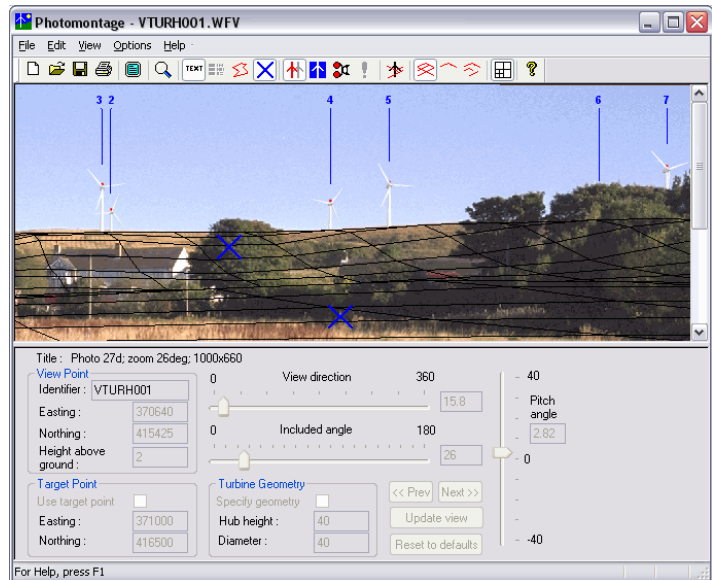The buttons are used to select turbine IDs from the list on the left and add them to the list on the right.

The "Add" and "Delete" button are only enabled when an ID is selected in either the left or right list.

When finished click on Cancel and then select "All turbines in wind farm" in the Aviation Light Specification dialog and then click on OK.
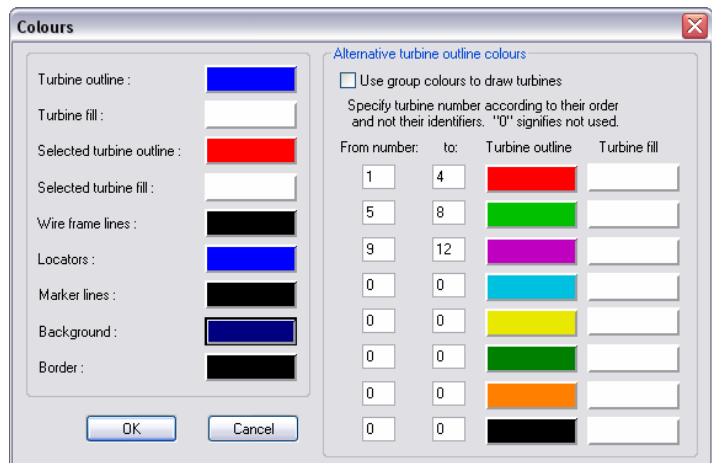

Click on the rendered turbine button in the toolbar and aviation lights will display with the turbines.

Of course this would be done with a nighttime photograph. To simulate this select Colours from the Options menu.
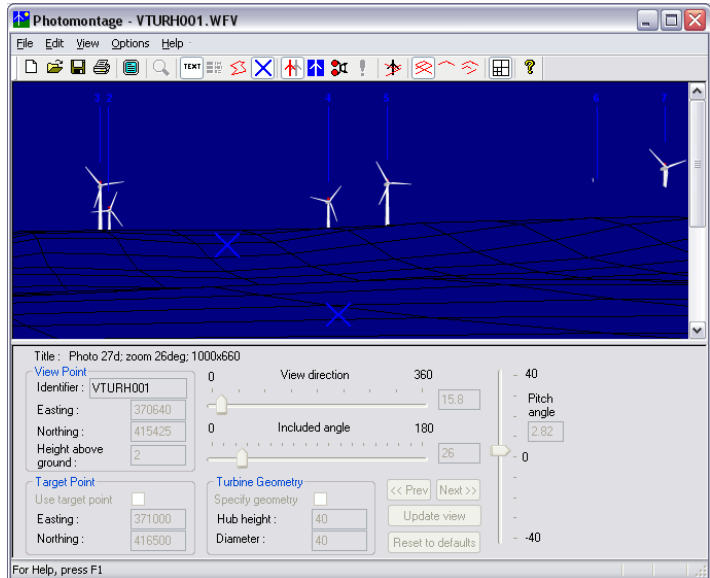

In the Colours dialog click on Background and select a dark colour or black.
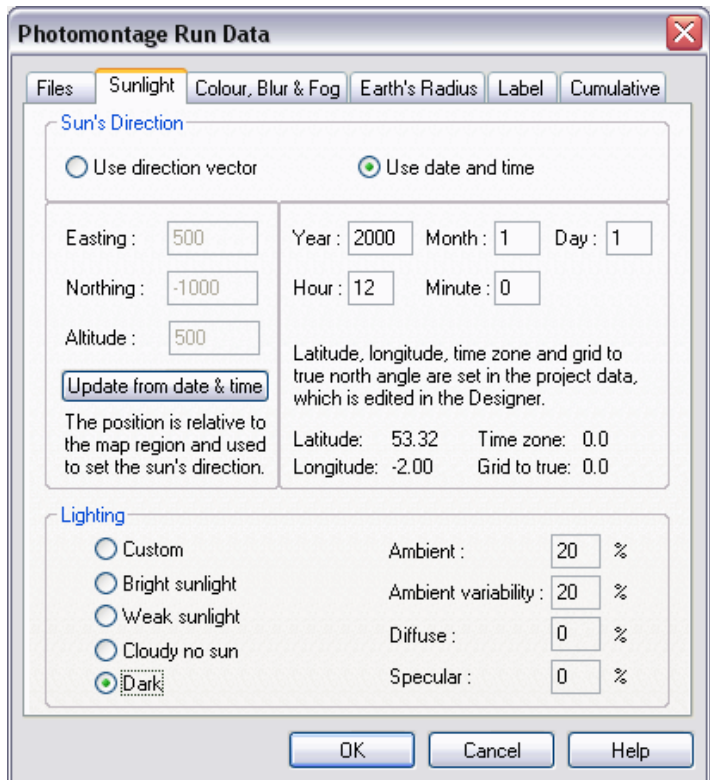
Click on OK.

Now switch off the photograph in the View menu. The turbines will be rendered again.
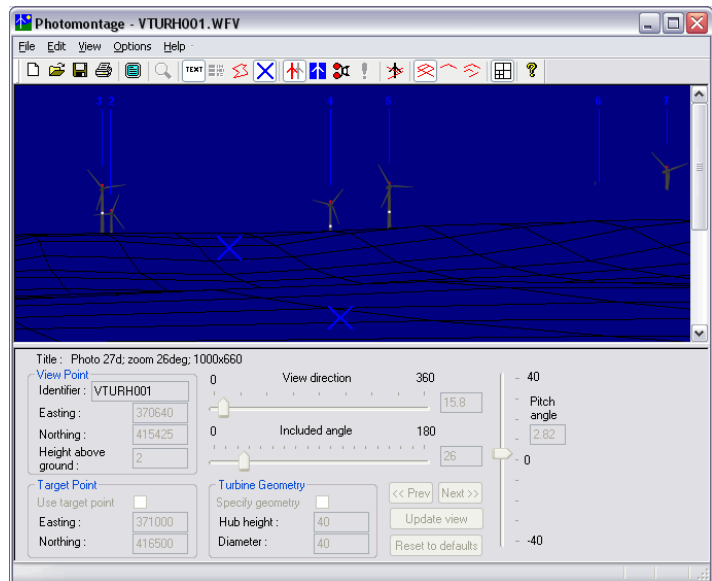
Select the Edit / Run Data menu option.

On the Sunlight page select "Dark" for the lighting and then click on OK.

You will now see the final display with nacelle and tower lights showing where they are visible.

Reset the background colour to white and switch on the photograph in the View menu.

Reprojection Tool

A reprojection tool has been added to convert images from cylindrical projection to planar projection and vice versa. It works independently of the photomontage run file.
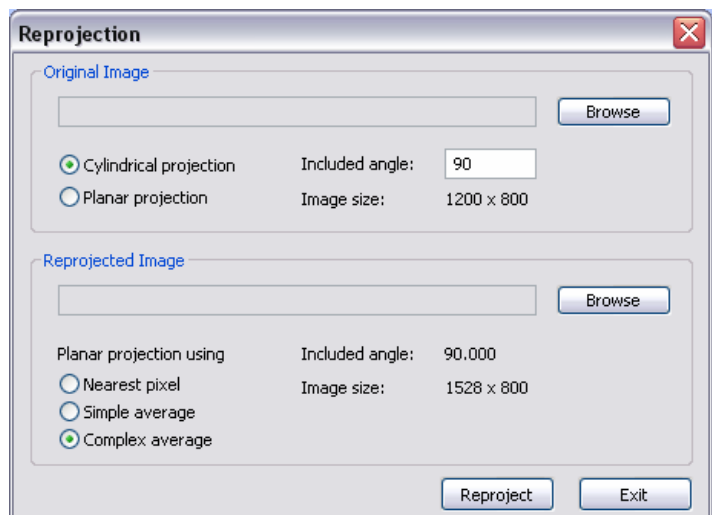
Select Options / Photograph Reprojection from the Options menu and the Reprojection dialog will be displayed.

After selecting the photograph that you want reprojected you specify the photograph's included angle and whether it is cylindrical or planar.

The details of the reprojected image will be updated in the lower part of the dialog based on the pixel size of the original photograph.

Complex pixel averaging gives the best result. Using JPEG as the output format is not recommended because it loses information.

Click on Reproject to complete the conversion.

Summary

The following new features have been explained:

1   The extended toolbar
2   Ridge line drawing in the wireframe
3   Setting Sun's direction using date and time
4   The addition of fog
5   Adding aviation lights
6   Reprojection tool