

## Overlaying GRIB data over NOAA APT weather satellite images using OpenCPN

I receive NOAA weather satellite images which are quite useful when used alone but with GRIB wind and rain data overlaid they can be very useful in checking the validity of the GRIB model's forecast.

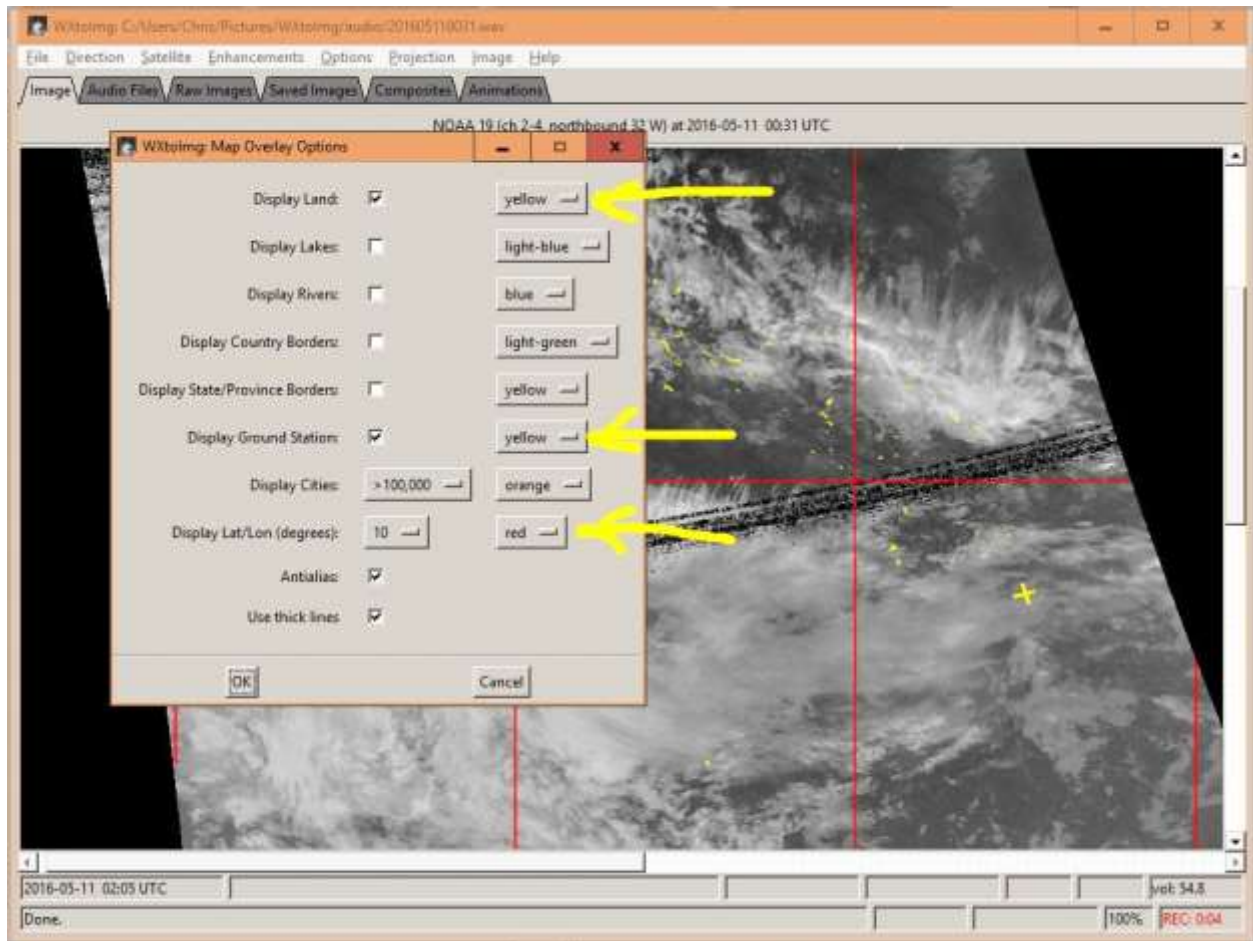
I receive the weather satellite images using an APT-06 receiver with an active crossed dipole MX-137 antenna from [Wraase Electronic](#). The receiver interfaces to my navigation computer via USB for channel control and the microphone input for the audio fax signal. The audio signal is processed using [Wxtolmg software](#). I just leave it on and the passes are recorded and processed automatically. When I sit down for my morning and evening weather sessions I pull up the images and decide which to use.

I will not go into the setup of the hardware or software here. That information is available on the respective websites.

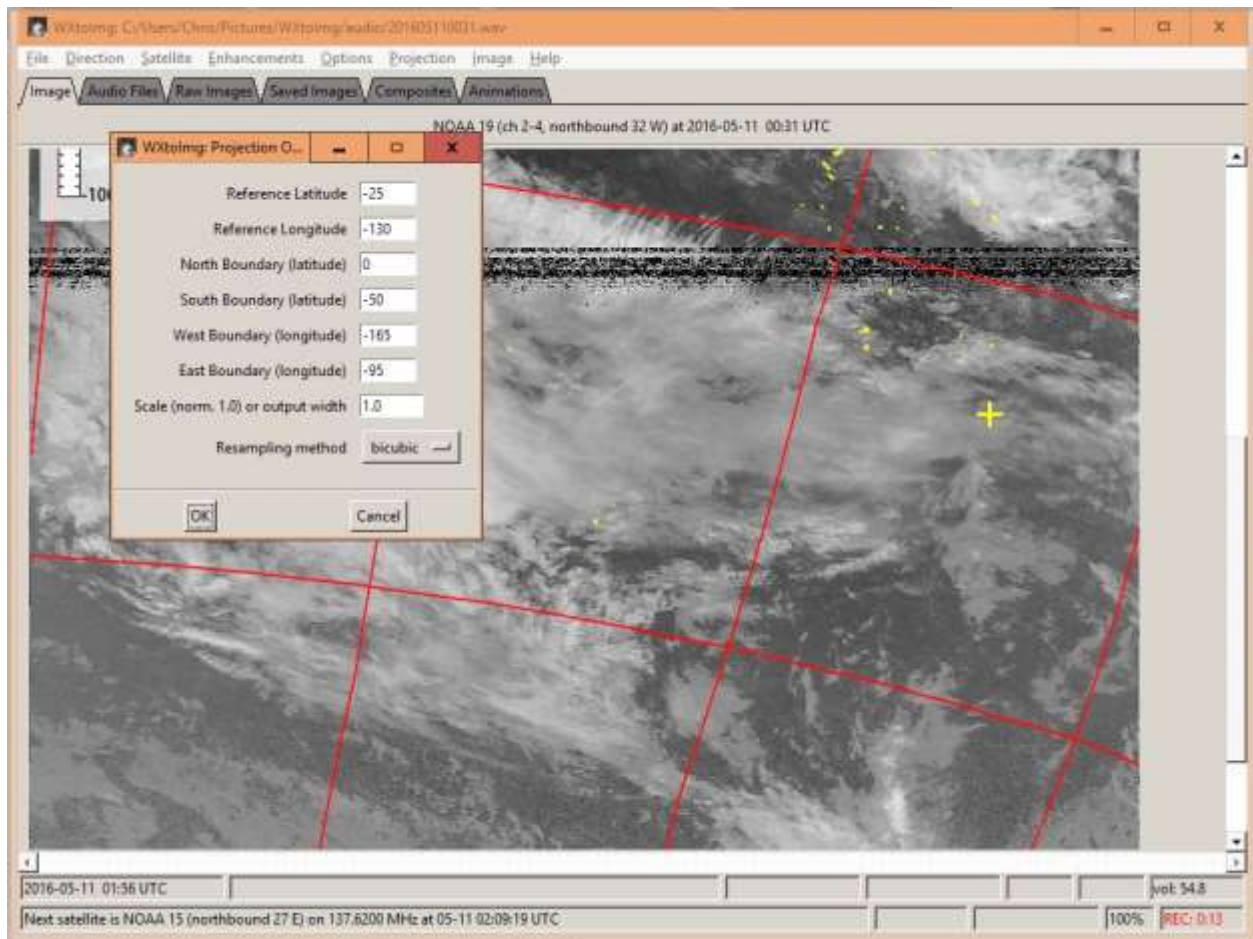
This brief How-To illustrates my method of importing the weather satellite images into [OpenCPN](#) and overlaying GRIB data on top of the satellite image. To be able to follow these instructions you will need Wxtolmg, or equivalent, and OpenCPN with the [Weatherfax plugin](#) installed.

*Note: Just a reminder that for any of this to produce meaningful results you must have your vessel position set correctly in Wxtolmg (it can take it from the NMEA data stream from the GPS, the satellite Keplerian elements must be up to date (File -> update elements) and the PC clock must be set absolutely correctly. If any of those are off the image will appear displaced and the GRIB data will not overlay correctly.*

The received images in Wxtolmg need to be displayed in the Mercator projection with a suitable grid overlaid.

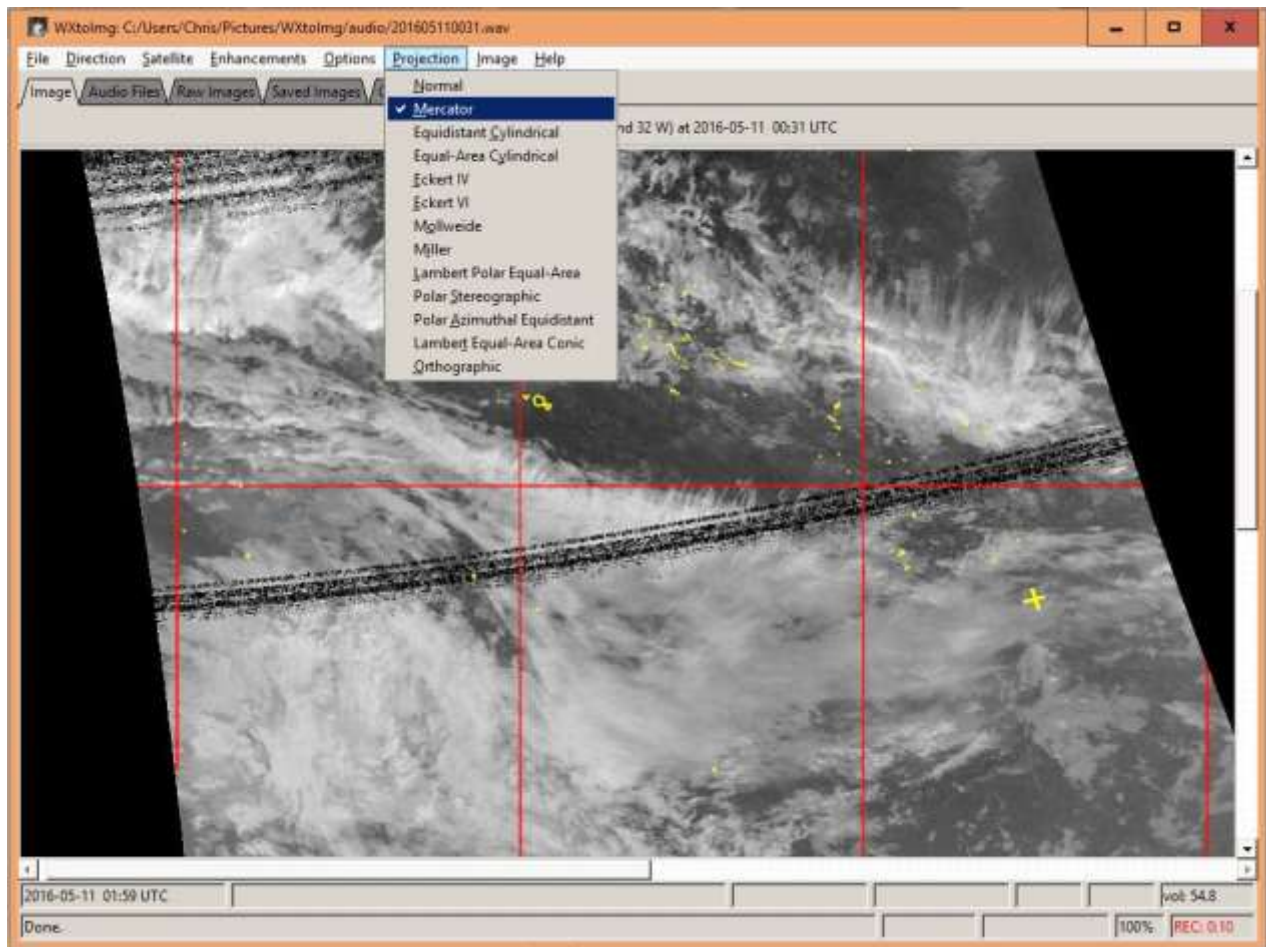


You need to set the projection options to suit your position. I usually set the boundaries to approximately +/- 25 degrees north and south of my position and +/- 35 degrees in longitude, depending on my latitude.



If you want to use composite images, which I usually do, you must also set the same options in Options-> Auto Processing Option -> Composite Image Options

With everything setup you need to project the received image to Mercator projection



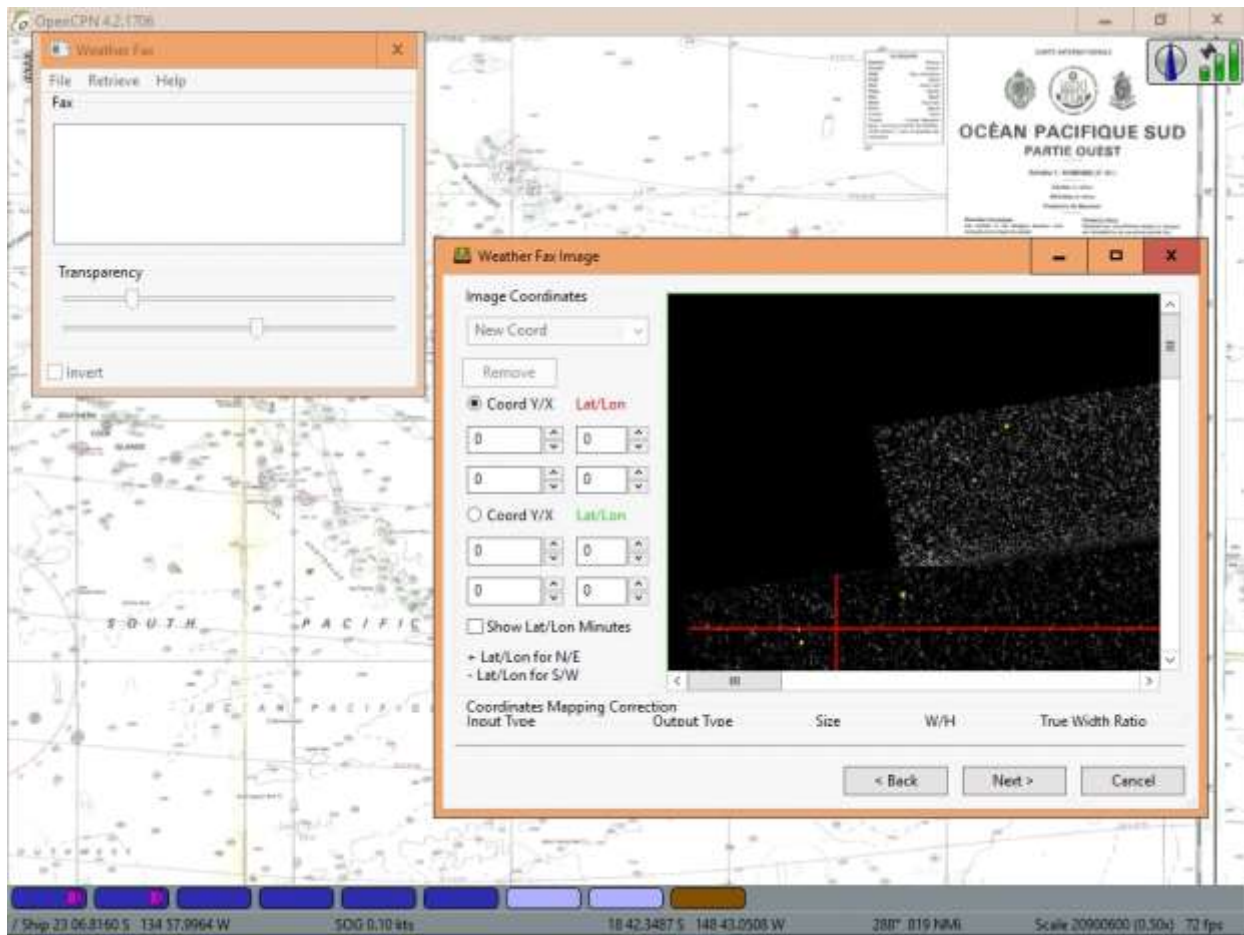
You can see that the image is now distorted to fit the mercator projection and as a check you should see the lat and lon gridlines vertical and horizontal, straight and parallel.

Save the image to a directory and with a file name that you can remember!

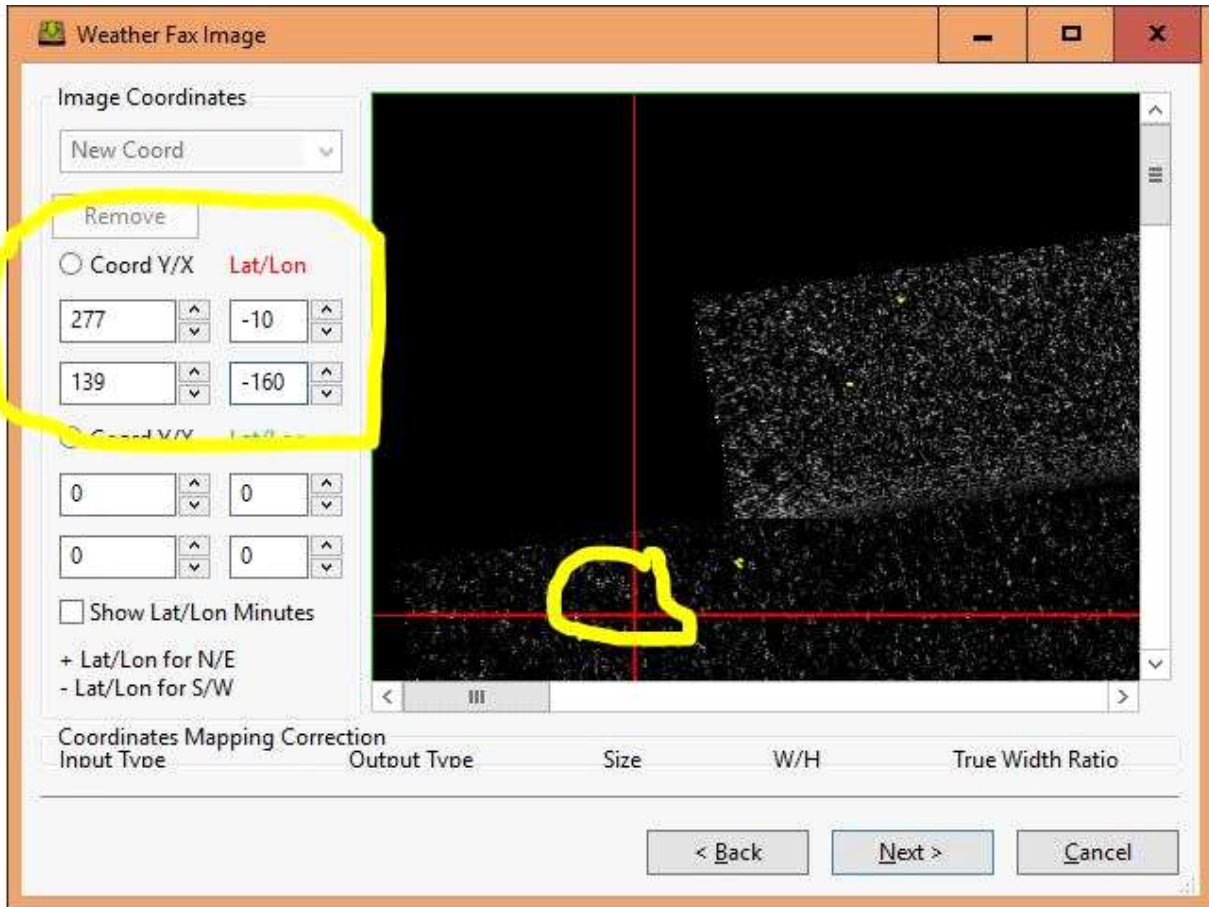
Now we switch to OpenCPN and open the WeatherFax plugin



Click File -> Open and navigate to your satellite image and open it. You will end up at a screen similar to this one.



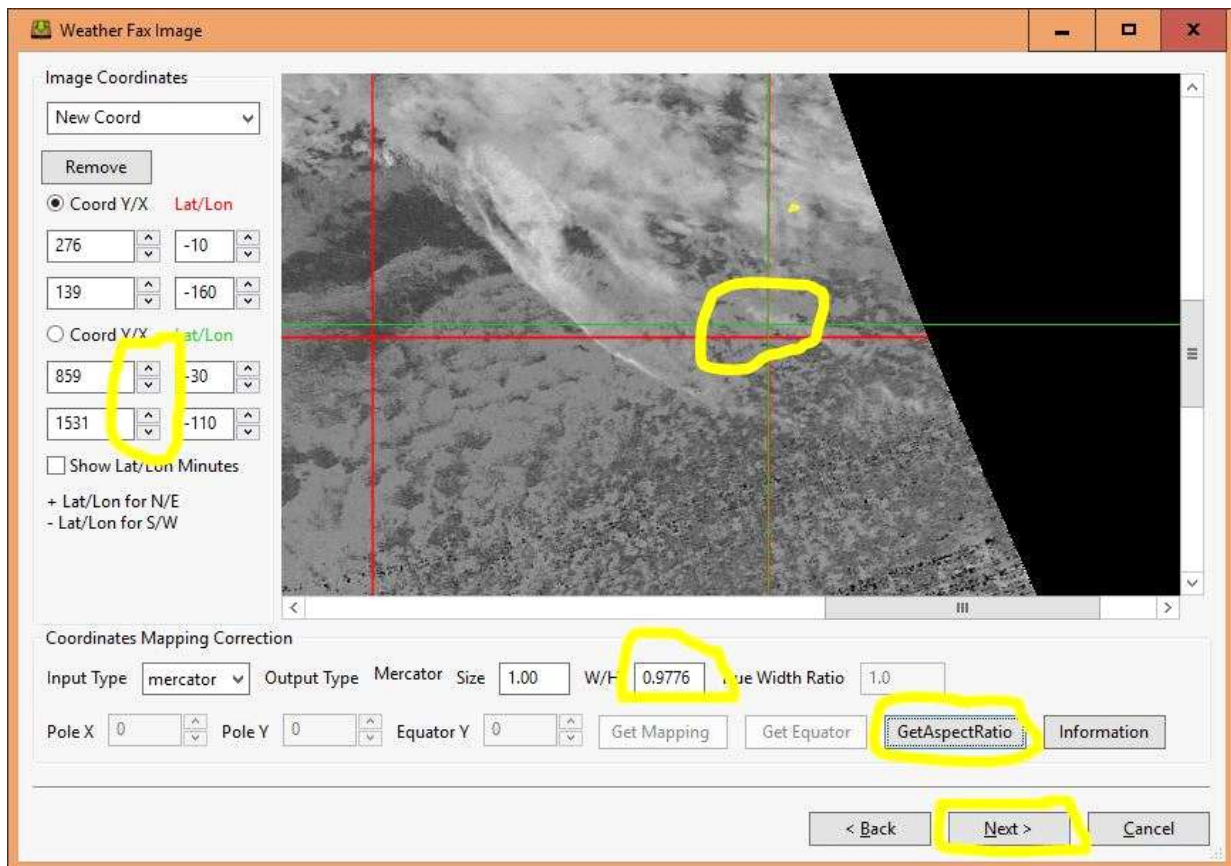
In the Weather Fax Image window click a grid line intersection which will set the x and y pixel values and enter the corresponding lat and lon. (negative for south lon and west lat)



Move the image window scroll bars to display a lower right grid line intersection, click it and set the lat lon.

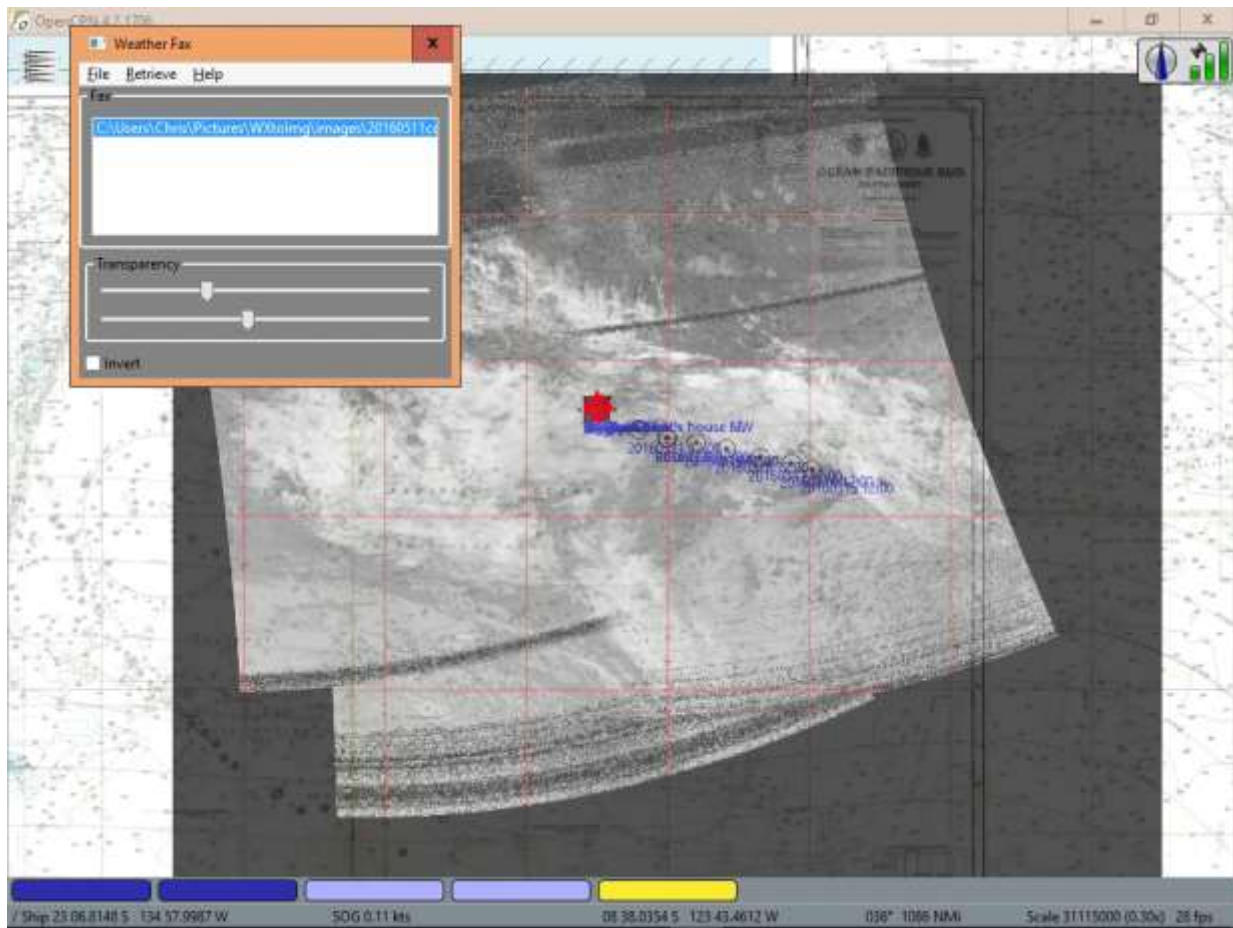
My window in the above screen clip is a bit small. If I expand it you will see some further options.

Click get aspect ratio. This should be close to 1. If you have been a little erratic with your mouse clicks you can correct it now by adjusting the pixel values for each point. The lower right corner has green guides and the upper left red guides. The following image shows the green guides slightly offset from the satellite image grid and I am correcting it by adjusting the pixel values until the guides overlap the grid exactly.



Once you are happy click <NEXT> and <FINISH> on the following screen.

You will now see your satellite image overlaid over your charts. By playing with the transparency slider you can verify that the gridlines match those on your chart if you have any.



Request and download a GRIB file with an area matching your satellite image



Write and send eMail request

Profile

Mail To   Moving Grib

Forecast Model

Resolution ° Interval  Hours Time Range  Days

Area Selection

Manual Selection    Max Lat  S    Max Long  W

Use Always this Area    Min Lat  S    Min Long  W

Data Selection

Wind     Pressure     Wind Gust

Rainfall     Cloud Cover     Air Temperature(2m)

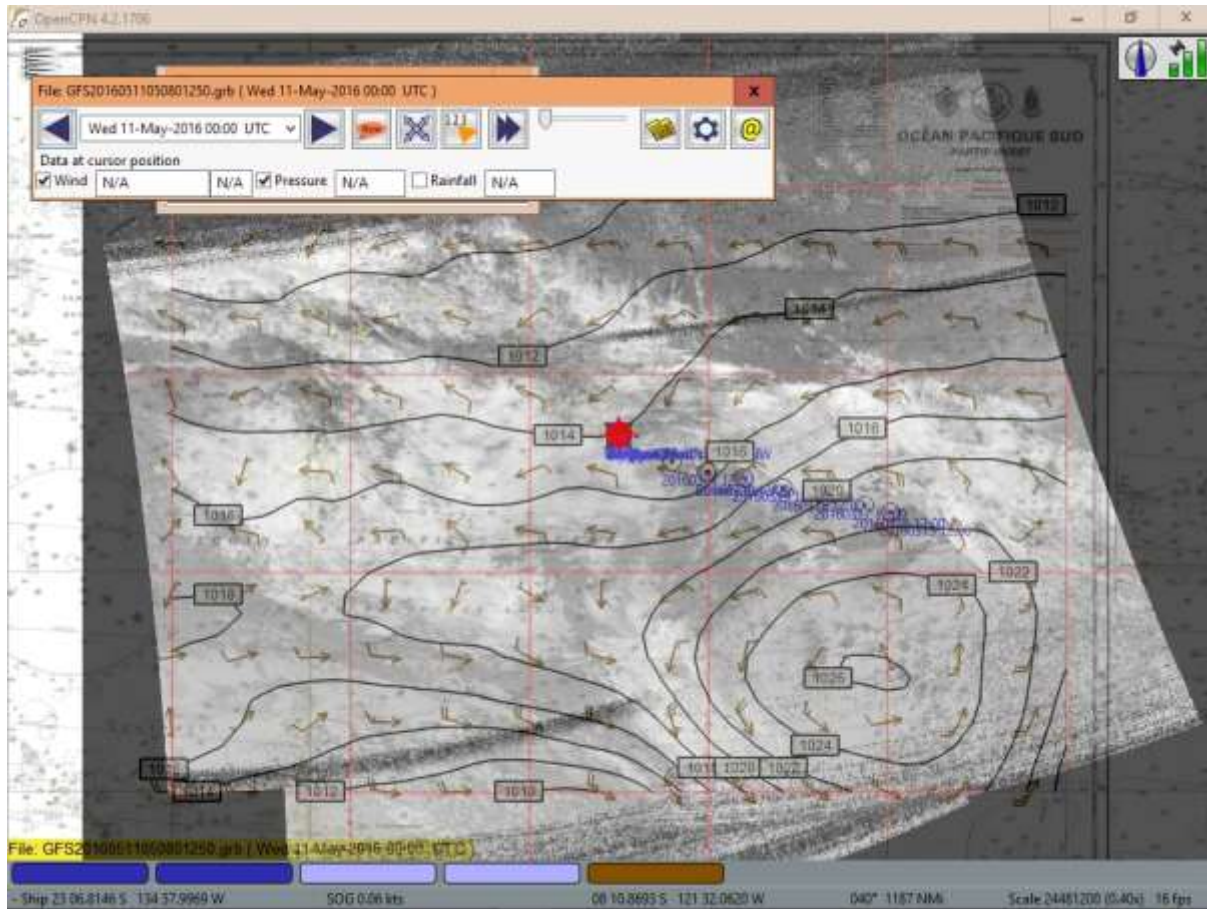
Sea Temperature(surf.)     Current     CAPE

Waves     Geopotential Height

Mail

Estimated File Size 0.21 MB

When it arrives in your email open it and select the time that matches the time that you received your satellite image.



You will have to play with the transparency settings in both the Weatherfax and the GRIB plugins to achieve a display that suits your needs.

If you have any queries or suggestions on this please get in touch via the contact page on this site.  
<http://www.tweedsworld.com>

Version 1.0 - Chris Harris - 10 May 2016

