

Instructions for making .AT5 files to display satellite charts on Navico chartplotters Using Historical Google Earth Images by TwoAtSea.com

Let's call this the "stitch" method as there are a number of different ways make .at5 files. After trying a number of different ways, this is my favorite. It's the fastest and the result is very good.

In these instructions, I'll use "Google Earth Images Downloader" to make a big stitched map that can be converted into .at5 files for display on Navico Chartplotters. This program is about \$50 US and well worth the money in my opinion. It works with both the historical Google Earth images as well as the current, default images.

These instructions assume you're using a PC. Sorry but I can't help with Macs.

(I've tried using SAS Planet to get Google Earth historical images - tried and tried with no success. I've changed the cache settings, cache location, different versions of SAS Planet and Google Earth and still no luck. I've seen the internet videos about changing the version number and that didn't work for me. If you know how get SAS Planet to show GE history, please tell me.)

Note: You can use almost the exact same process to get images from other services, MapQuest for instance. To do that, use Universal Maps Downloader instead of Google Earth Images Downloader. Both are from the same company. Both are inexpensive, paid programs. I couldn't find good images for the Lau in Fiji on Google Earth, ESRI, Bing or any of the others I had available. I found stunning images from MapQuest. It was worth it to me to buy both programs.

There's a list of the sources I am currently using for satellite imagery on twoatsea.com where this file resides.

What We'll Be Using:

Google Earth Images Downloader (We'll call it geid. It's at <http://www.allmapsoft.com/geid/>)

Google Earth (any version is OK)

Insight Map Creator

A MicroSD card to go in your chartplotters

Download the map tiles...

Step 1: In Google Earth, turn on Historical Imagery in Main Menu/View. Click forward and backward on the date select window that appears (in the upper left corner) until you find the date with the best images. Make a note of the date. In the image below, it's 3/17/2016. (If you're zoomed out to far, you may just get a month and year. Zoom in and you'll get the exact dates that you'll need to download the images.)

Make sure you check for the best historical image at about the zoom levels you'll be using to create your chart. Sometimes, clouds will appear and disappear at different zoom levels. You'll be making your charts at a Google Earth eye altitude of about 5200 feet (1585 meters). That's roughly equivalent to a zoom level of 18 in SAS Planet. The eye altitude can be found on the bottom right of the Google Earth screen.



Step 2: Make note of the coordinates of the map you want to make. You want this in decimal degrees (like -16.3542552) West and South have a minus sign. You can change Google Earth settings to read this decimal format. On the main menu, select Tools/Options then the 3D View tab. There you can set Decimal Degrees under Show Lat/Long.

You want the following data:

Left Longitude: Right Longitude:
Top Latitude: Bottom Latitude:

(geid has a great converter built in if you'd rather use that. It's on the Main Menu under Misc.)

Step 2: Open Google Earth Images Downloader. Click the Open task button, select a directory you create to hold these images and a name for the task.

Select Google Earth Satellite Historical Imagery as the Maps type. (Or just Google Earth if you want the current images.)

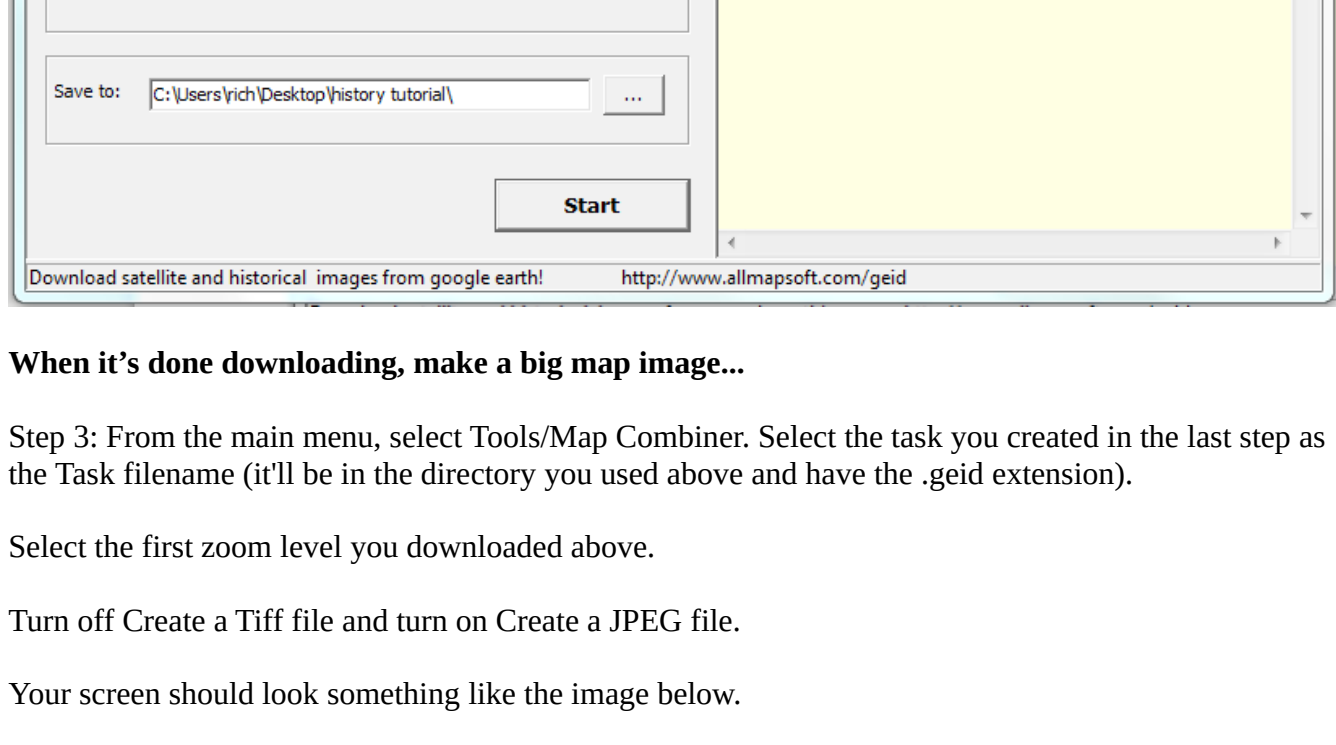
Put in the data you collected above including the date of the images you want to use.

Select the From and To zoom levels. I like 18 for this but sometimes I'll select 17 as well and check to see which is better.

Select the "Save to" directory.

Insure you have a good internet connection and click the Start button.

Before you click Start, your screen should look something like this...



When it's done downloading, make a big map image...

Step 3: From the main menu, select Tools/Map Combiner. Select the task you created in the last step as the Task filename (it'll be in the directory you used above and have the .geid extension).

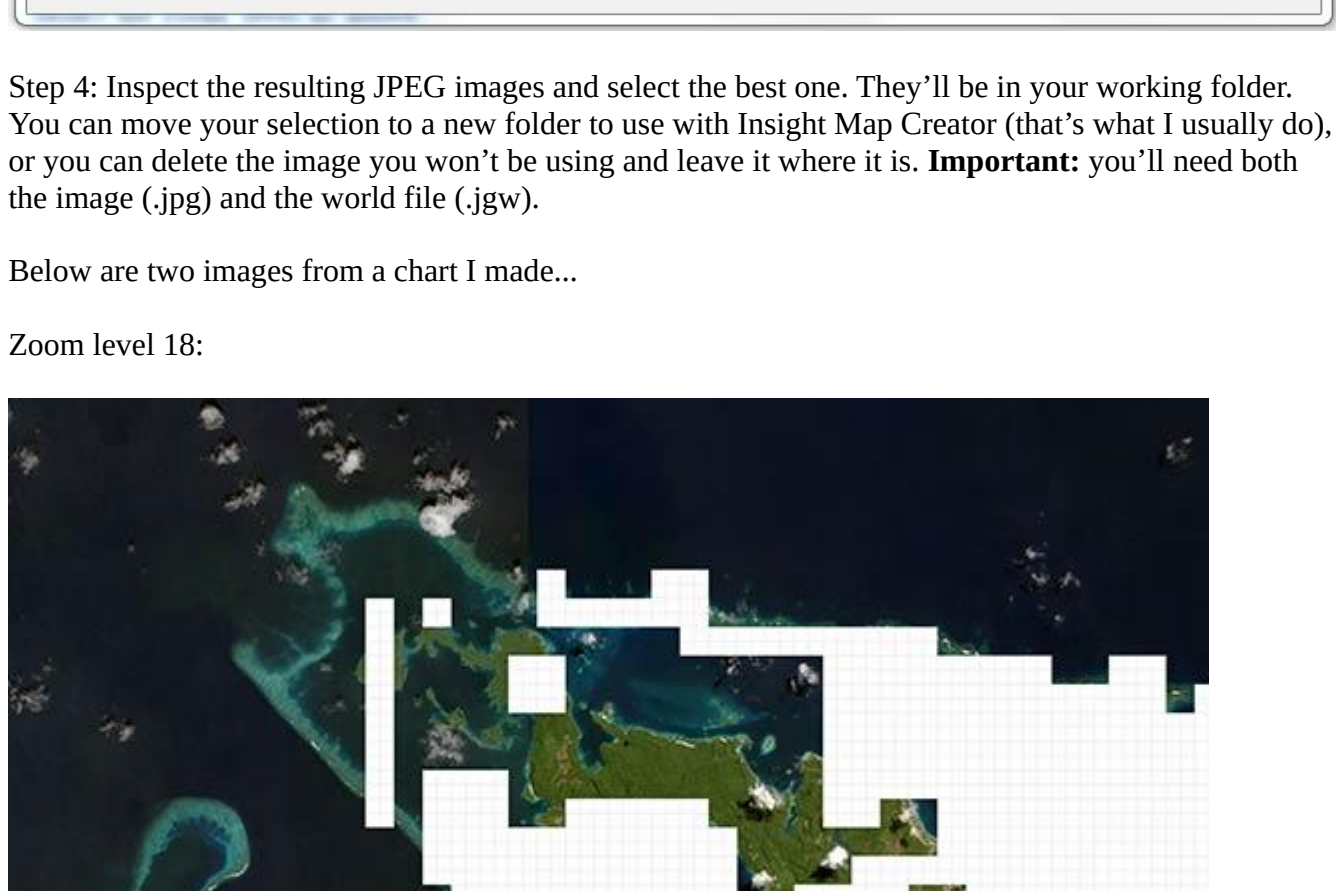
Select the first zoom level you downloaded above.

Turn off Create a Tiff file and turn on Create a JPEG file.

Your screen should look something like the image below.

Click the Combine button.

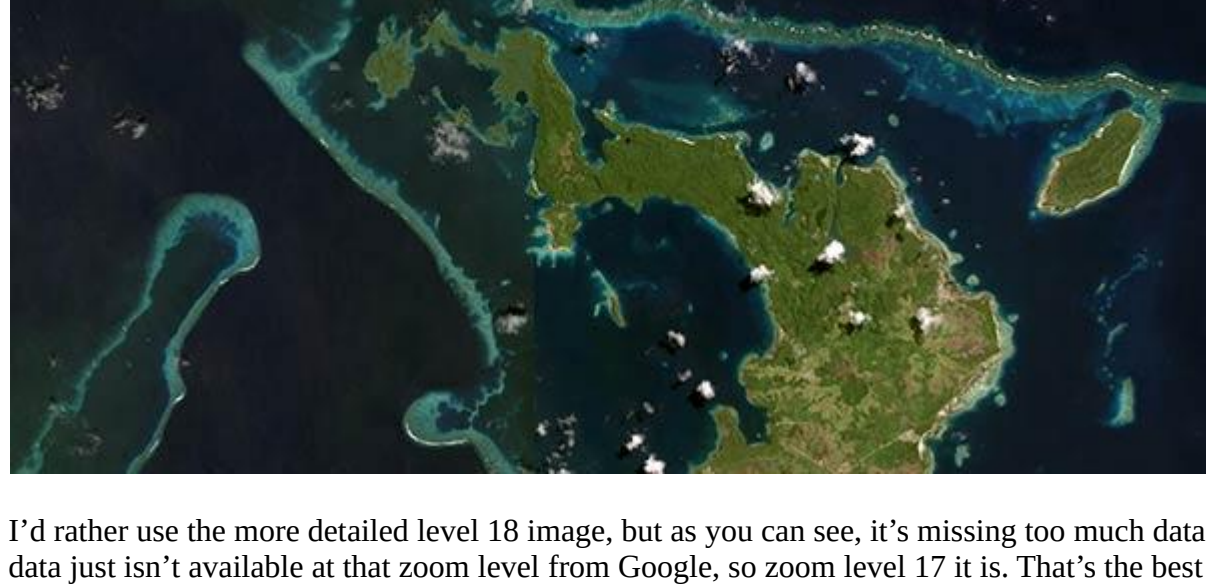
Repeat this process for any other zoom levels you downloaded.



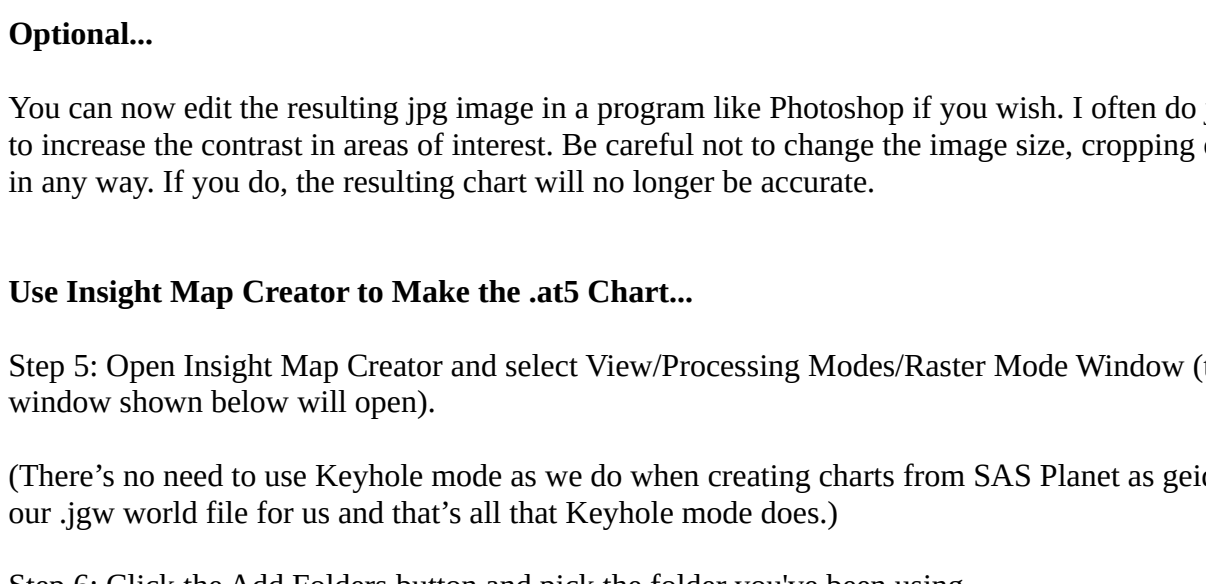
Step 4: Inspect the resulting JPEG images and select the best one. They'll be in your working folder. You can move your selection to a new folder to use with Insight Map Creator (that's what I usually do), or you can delete the image you won't be using and leave it where it is. **Important:** you'll need both the image (.jpg) and the world file (.jgw).

Below are two images from a chart I made...

Zoom level 18:



Zoom level 17:



I'd rather use the more detailed level 18 image, but as you can see, it's missing too much data. That data just isn't available at that zoom level from Google, so zoom level 17 it is. That's the best I can do for this area. (This is the Bay of Islands area in Eastern Fiji. It's really, really hard to get good satellite images for much of Fiji. If anyone knows a good image source, please tell me!)

Optional...

You can now edit the resulting jpg image in a program like Photoshop if you wish. I often do just that to increase the contrast in areas of interest. Be careful not to change the image size, cropping or rotation in any way. If you do, the resulting chart will no longer be accurate.

Use Insight Map Creator to Make the .at5 Chart...

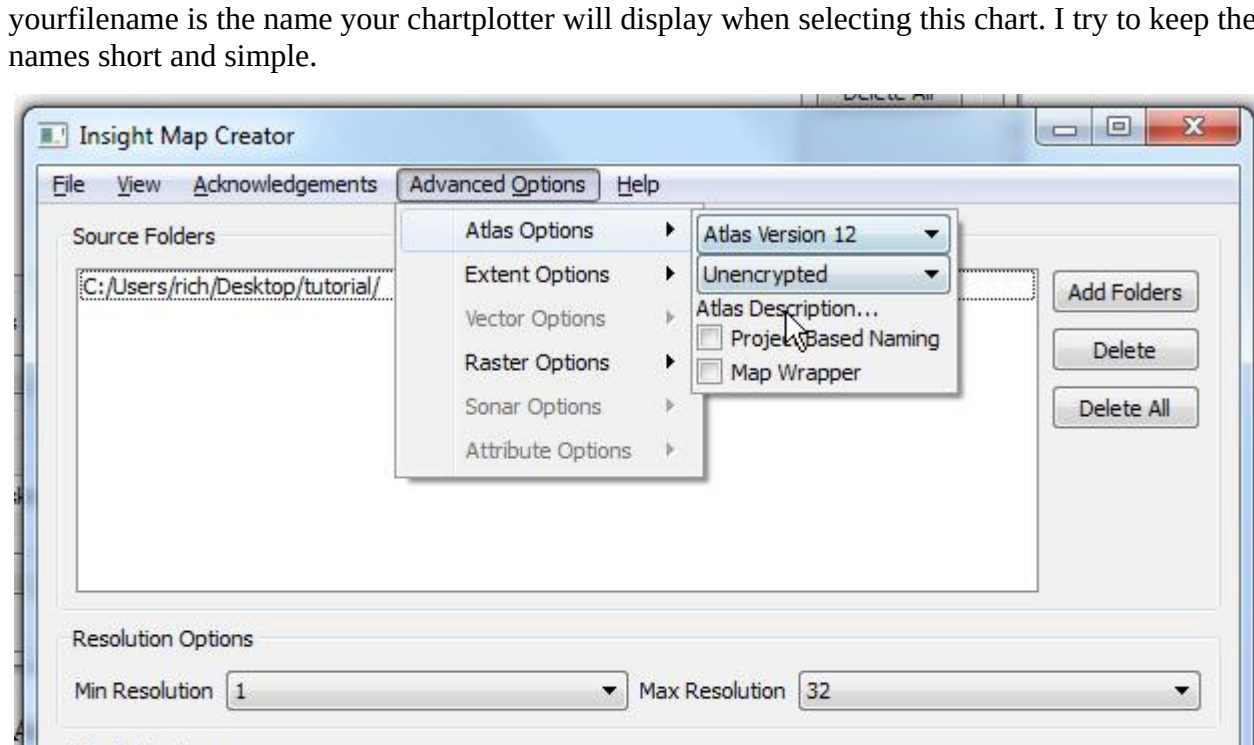
Step 5: Open Insight Map Creator and select View/Processing Modes/Raster Mode Window (the window shown below will open).

(There's no need to use Keyhole mode as we do when creating charts from SAS Planet as geid makes our .jgw world file for us and that's all that Keyhole mode does.)

Step 6: Click the Add Folders button and pick the folder you've been using.

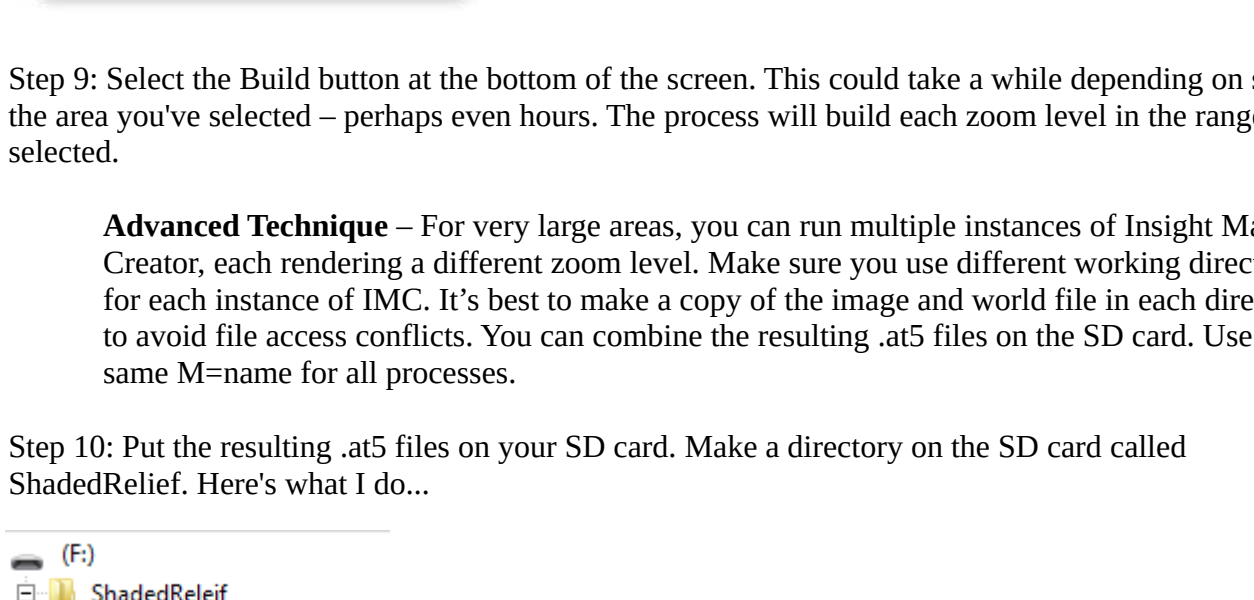
Make Min Resolution 1 and Max Resolution 32. You can go lower than 1 but I've seen no benefit and it'll take a long time to render. Greater than 32 is no problem but I've not seen any benefit.

Create a working directory to contain the .at5 files and select it as the Working Directory.



Step 7: In the Main Menu/Advanced Options, select the Atlas Version and make it 12 or 13. I've been using 13 for my evo3 chartplotters. Some chartplotters need a lower atlas version.

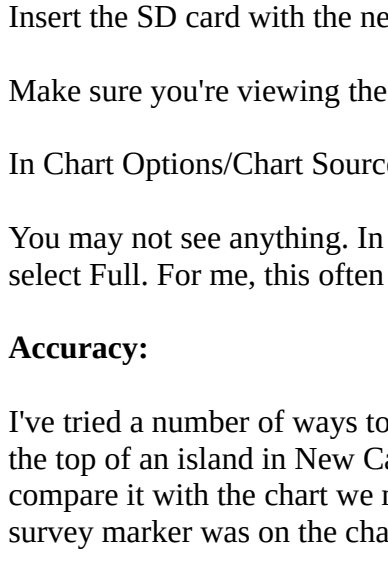
Step 8: Again in Main Menu/Advanced Options, click on the words Atlas Description (it looks like a label and not a button). In the Atlas Description window that pops up, enter M=yourfilename where yourfilename is the name your chartplotter will display when selecting this chart. I try to keep the names short and simple.



Step 9: Select the Build button at the bottom of the screen. This could take a while depending on size of the area you've selected - perhaps even hours. The process will build each zoom level in the range you selected.

Advanced Technique - For very large areas, you can run multiple instances of Insight Map Creator, each rendering a different zoom level. Make sure you use different working directories for each instance of IMC. It's best to make a copy of the image and world file in each directory to avoid file access conflicts. You can combine the resulting .at5 files on the SD card. Use the same M=name for all processes.

Step 10: Put the resulting .at5 files on your SD card. Make a directory on the SD card called ShadedRelief. Here's what I do...



In the above example, "matagi" is the name of one of the charts I made. Note that the directory name is not the name that appears on your chartplotter. That would be the M= name you selected when making the chart.

Selecting your new chart...

On my evo3 chartplotters, here's what I do:

Insert the SD card with the new chart(s),

Make sure you're viewing the area of your new chart.

In Chart Options/Chart Source, select the chart from the list.

You may not see anything. In this case, you'll need to select Chart Options/View/Photo Overlay and select Full. For me, this often reverts to Off and I have to reset it.

Accuracy:

I've tried a number of ways to verify the accuracy of the resulting charts. We found a survey marker at the top of an island in New Caledonia. We were able to find the lat and long online for that marker and compare it with the chart we made. It was off by about 5 meters but it was hard to see exactly where the survey marker was on the chart.

I've compared marks on features on Navionics charts with the same feature on my .at5 charts only to prove beyond any doubt that Navionics charts are not accurate.

I've compared features on different .kap files I've made with the same feature on the .at5 files and found a range of difference between 0 and 10 meters.

I was disappointed with any inaccuracy at all. I expect all things computer to be computationally perfect. But then I remember that the underlying source of the position data is GPS and I seldom see an accuracy greater than 3 meters and it's often 10 meters. I try to keep this inaccuracy in mind to help avoid ECDIS Assisted Groundings (Electronic Chart Display and Information Systems). That's a real term in marine navigation and one of my new favorite expressions.

Conclusion: I believe the resulting .at5 files are as good as they can be and have been incredibly valuable in our navigation.

You can also use the image files you've used to create the .at5 charts to make .kap files that can be displayed in openCPN. I've posted a tutorial about that.

Happy Boating!

-Rich
www.twoatsea.com