

Instructions for making .AT5 files to display satellite charts on Navico chartplotters From 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 SAS Planet. With SAS Planet, you can make .at5 charts from any of the map sources available in SAS Planet including my favorite: ESRI ArcGIS.Imagery. I'm using a PC. If you're a Mac, I'm afraid I can't help you.

(If you want to make .at5 charts from Google Earth historical images, there's a way but that's in another tutorial. Hint: Download the map files with an inexpensive program called Google Earth Images Downloader located at <http://www.allmapsoft.com/geid/>. Make the stitch using their Map Combiner function in the Tools menu.)

What We'll Be Using:

SAS Planet
Insight Map Creator
A MicroSD card to go in your chartplotter

Download the map tiles...

Step 1: Open SAS Planet, go to the area of interest and find the Maps source that has the best images. I'm using SAS Planet version 160707. There's a list of sources I use on twoatsea.com (on the page where this file lives).

I've found that some later versions of the current SAS Planet have my favorite ESRI ArcGIS.Imagery listed as a map source. You can download the current SAS Planet map settings. Search Google for `sas_team-sas.plus.maps` or `sas_team-sas.maps`. Download the file, unzip it/them and install as instructed. That should give you all the currently available maps on SAS Planet.

Step 2: Find the zoom level with the best detail available. To find out what zoom level this is, try zooming in until no more data loads, then zoom out one step. You can read the zoom level on the left side of the screen. Sometimes different zoom levels might be obscured by clouds or water reflections and the greatest detail may not be in the highest zoom level. I like to use 18 when I can get it.

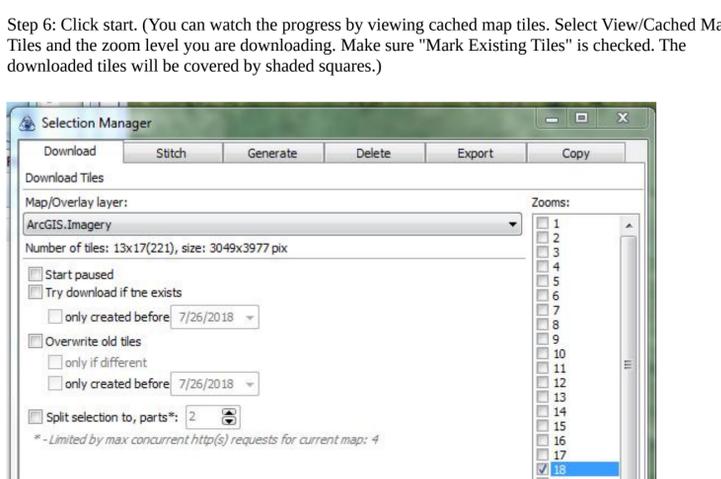
Step 3: Go to Operations/Selections Manager and select the selection method – rectangle, polyline, polygon, etc. If the area is large, you might want to use a polygon to eliminate land areas.



Step 4: Draw the selection around the area of interest. When you're done, find the little window with a check mark in it (it can be anywhere on your desktop) and select the check mark. The Selection Manager window should open.

Step 5: With the Download tab selected at the top of the Selection Manager window, select the zoom level that has the greatest detail available. (See step 2 above.) Make sure Map/Overlay layer box shows the map source you want to use.

Step 6: Click start. (You can watch the progress by viewing cached map tiles. Select View/Cached Map Tiles and the zoom level you are downloading. Make sure "Mark Existing Tiles" is checked. The downloaded tiles will be covered by shaded squares.)



Step 7: When this process finishes, the window will say "Task is Complete." Click Quit.

Make a big map...

Step 8: From the main menu, select Operations/Selection Manager/Last Selection. This will bring back the Selection Manager window.

Step 9: Select the stitch tab at the top of the window.

Step 10: Make an empty folder to store the chart data. I usually put it on my desktop for easy access during the process. Enter that folder and a name for the chart in the "Save to" box.

Select the zoom level as above.

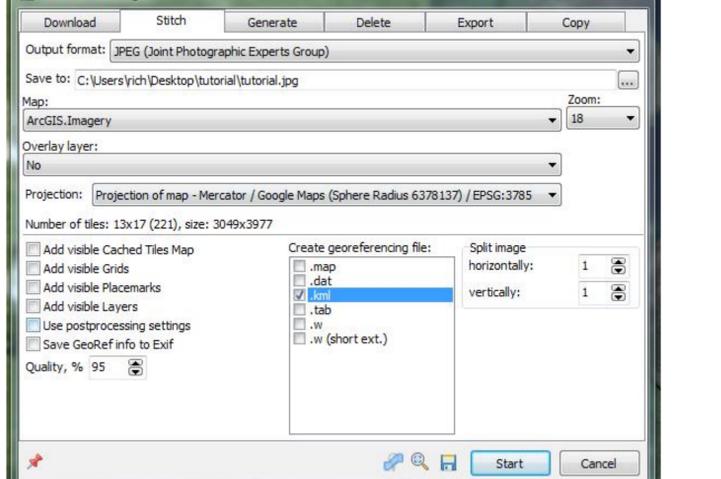
Make sure the Map box is set to the map data you want to use for your chart.

Important: Select .kml in the "Create georeferencing file" window.

The projection should be set as it is in the image below.

You can up the quality (at the lower left of the window) to 100% if you want.

Select Start. (It shouldn't take very long to complete.)



The window will close when finished. You should now have two files in your working folder: a jpeg image and a .kml file of the same name as the image.

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 11: Open Insight Map Creator, Select View/Processing Modes and select Keyhole Mode Window.

Step 12: Click on Add Files and select the .kml file in your working folder. Click the Build button. It shouldn't take long to complete. There will be a "Process complete" message when it finishes. This step creates a world file (.jgw) with the same name as your jpg. There will now be three files in your working folder.

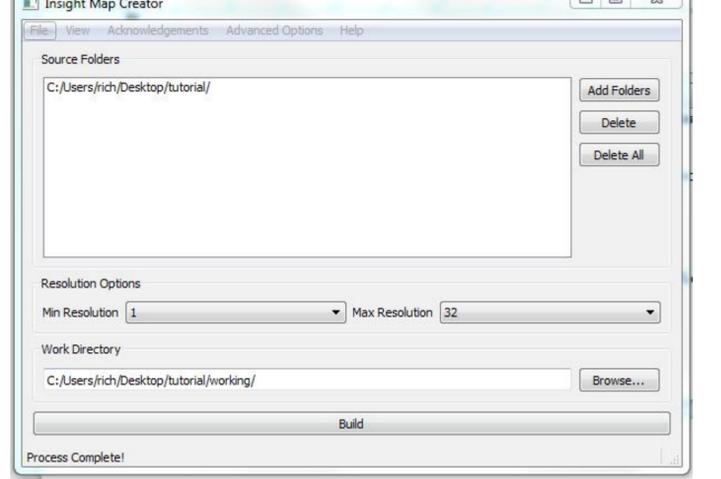
Step 13: Create a working folder to hold the created .at5 charts. I usually name it working and put this in the same folder I've been using up to this point.

Step 14: Select View/Processing Modes/Raster Mode Window (the window shown below will open).

Step 15: Click the Add Folders button and pick the folder you've been using.

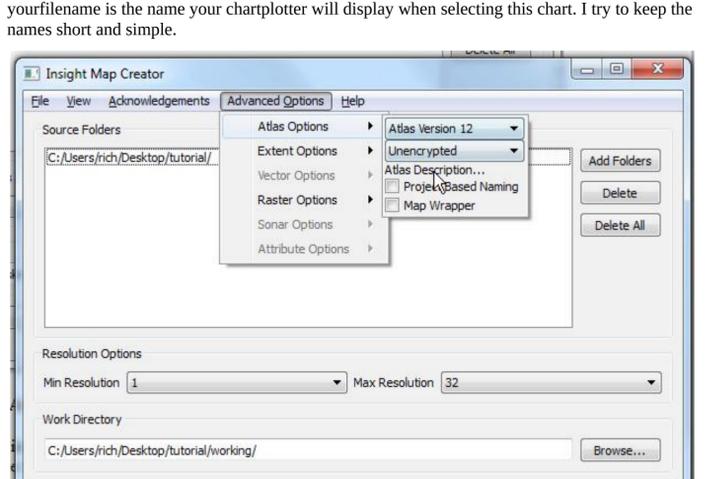
Make Min Resolution 1 and Max Resolution 32. You can go lower than 1 but I've seen no benefit and it'll take a long time to render. Greater than 32 is no problem but I've seen any benefit.

Make the Work Directory the working directory you created to contain the .at5 charts.



Step 16: 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.

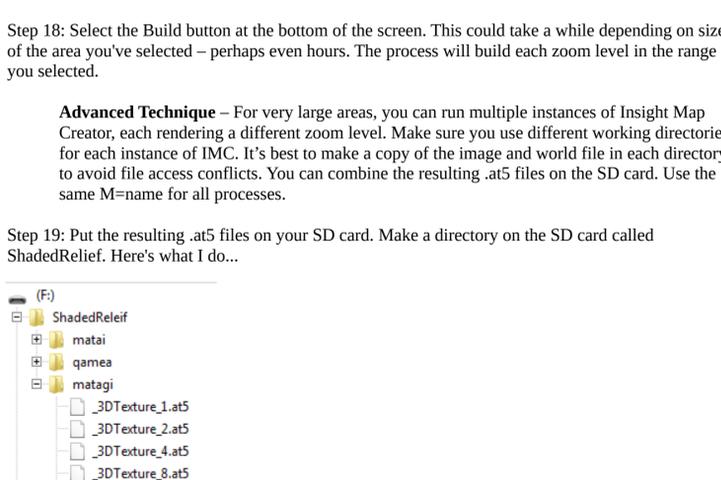
Step 17: Again in Main Menu/Advanced Options, click on the Atlas Description (it looks like a label and not a button). In the Atlas Description window that pops up, enter M=yourfilename where yourfilename is the name your chartplotter will display when selecting this chart. I try to keep the names short and simple.



Step 18: 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 19: 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.

After selecting your new chart, 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 to see 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 a 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