## Instructions for making .AT5 files to display satellite charts on Navico chartplotters from openCPN kap files. From TwoAtSea.com I wasn't going to make this PDF or video but a friend asked about doing this and I thought, that won't

be hard to do. The reason I wasn't excited about converting KAPs to AT5 files was that KAPs only have 127 colors (like the limited color palette of a GIF file). Reducing the colors to 127 can result in a significant loss of detail. It turns out that if the KAPs are of good quality, the AT5 files turn out very well, and there's a significant time savings from using existing KAPs that are available from many sources on the internet (or from fiends on other boats). I'm using a PC. If you're a Mac, sorry but I'm afraid I can't help you.

What We'll Be Using:

mapc2mapc **Insight Map Creator** 

A MicroSD card to go in your chartplotter

The sources of the above programs are on our website, twoatsea.com under Cruising Info / Navigation (where this PDF lives).

wad image for calibration

Make the JPEG and geographical data files...

We're going to use mapc2mapc to convert the .kap file to a .jpg image and a .kml geographical data file. Step 1: Open mapc2mapc and select File/Load Calibrated Map from the main menu.

MAPC2MAPC v576 Map Calibration and Conversion Registered to RICHARD WEST

Utilities Batchbuilder File Edit View Print MergeMaps Help Load Calibrated Map

cal\mapc2mapc.log

interface

Open via GDAL Build MAP from Map Source

```
Write calibrations
         Write Garmin Custom Map (KMZ)
Then select BSB Charts(*.kap) from the list on the right bottom of the screen. Optionally, you can type
*.* in the file box, hit enter, then select your KAP.
    Ozi Map files (*.map)
   GPSU GUX files (*.gux)
   MM JPR files (*.jpr)
8 K GMI calibration files(*.gmi)
    MCD Calibrations (*.mcd)
   World files (*.tfw,*.pgw,,*.pngw,*.jgw)
```

Cal files (\*.cal) CompeGPS files (\*.imp) Google Earth Overlay kml/kmz (\*.kml;\*.kmz) Own calibration file(\*.p2g)

→ 6- Search kap to at5 test

BSB Charts(\*.kap)

Cancel

See

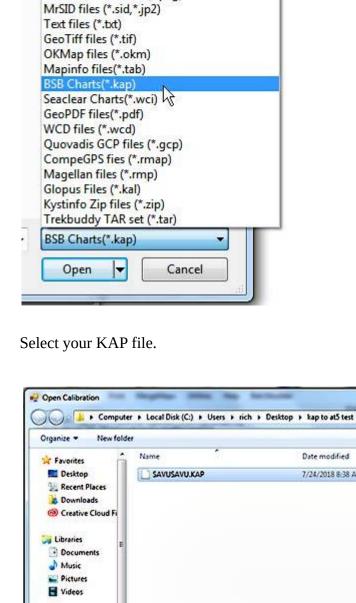
3,538 KB

Type

7/24/2018 8:38 AM KAP File

o

8



Local Disk (C:) - 960 ssd (D:) File name: SAVUSAVU.KAP

> 8:41:36 AM Polycropped 8:41:36 AM Cropped

File

Organize \*

\* Favorites Deskton

Recent Places **Downloads** @ Creative Cloud Fi

Edit

View

Load image for calibration

Build MAP from Map Source Write map and calibrations り Write Garmin Custom Map (KMZ) Write Garmin Custom Route Map Write Map for Mobile device

Load Calibrated Map

Write Trekbuddy Map

Write ANDROZIC MAP+OZF2 Write Maps n Trax for iPhone

Computer > Local Disk (C:) > Users > rich > Desktop > kap to at5 test

Write JNX file

New folder

8:56:12 AM Map has 6 calibration points 8:56:12 AM Calibration file and image loaded 8:56:12 AM Input datum is WGS 84 8:56:12 AM Map is 3561 wide by 1861 high

8:56:12 AM Projection mercator

8:56:12 AM New image is 3560 by 1860

10 AM Output datum is WGS8 8:57:10 AM -16.762339 179.319314 0 0 8:57:10 AM -16.781554 179.319314 0 1859 8:57:10 AM -16.762339 179.357498 3559 0 8:57:10 AM -16.781554 179.357498 3559 1859 8:57:10 AM Rotation 9.20099422173329E-11

8:56:14 AM Metres/pixel(mm1b)=1.1433839992319

Write Calibrations

And in your output folder, you'll have files like this...

kap to at5 test

Tools

8:56:14 AM Average projection inaccuracy in original grid=.0000

8:56:12 AM Cropping 8:56:12 AM 0 cpxy 0

8:56:50 AM -

File Edit

Desktop

Libraries

Recent Places

Documents

Resolution Options Min Resolution 1

Work Directory

Process Complete!

names short and simple.

Insight Map Creator

Acknowledgements

C:/Users/rich/Desktop/tutorial/

File View

Source Folders

Resolution Options

Min Resolution 1

C:/Users/rich/Desktop/tutorial/working/

23

Work Directory

Process Complete!

Atlas Description

level in the range you selected.

ShadedRelief. Here's what I do...

--- 3DTexture\_1.at5 - 3DTexture\_2.at5 \_\_\_\_3DTexture\_4.at5

M=tutorial

(F:)

□ BhadedReleif 🗓 📗 matai 🗓 📗 qamea ⊟ 🌆 matagi

C:/Users/rich/Desktop/tutorial/working/

Creative Cloud Files

Downloads

8:56:14 AM Polycropped 8:56:14 AM Cropped

8:57:10 AM .kml file written 8:57:10 AM done

View

8:56:12 AM Calibration point -16.762339 179.319314 0 0 8:56:12 AM Calibration point -16.771952 179.319314 0 930 8:56:12 AM Calibration point -16.781564 179.319314 0 1860 8:56:12 AM Calibration point -16.762339 179.357509 3560 0 8:56:12 AM Calibration point -16.771952 179.357509 3560 930 8:56:12 AM Calibration point -16.781564 179.357509 3560 1860

Open via GDAL

Print

8:41:36 AM Metres/pixel(mm1b)=1.1433839992319

8:41:36 AM Average projection inaccuracy in original grid=.0000

- Homegroup Computer

```
And hit the Open button. You'll get a screen like the one below when it's done.
  MAPC2MAPC v576 Map Calibration and Conversion Registered to RICHARD WEST
     File
            Edit
                                                   Utilities
                                                                       Batchbuilder
                   View
                           Print
                                    MergeMaps
                                                              Help
     8:41:33 AM
                      Open Calibration
     8:41:33 AM C:\Users\rich\Desktop\kap to at5 test\SAVUSAVU.KAP
     8:41:33 AM Map name is SAVUSAVU
     8:41:33 AM 3561 wh 1861
     8:41:34 AM Map has 6 calibration points
     8:41:34 AM Calibration file and image loaded
     8:41:34 AM Input datum is
     8:41:34 AM Map is 3561 wide by 1861 high
     8:41:34 AM Calibration point -16.762339 179.319314 0 0
     8:41:34 AM Calibration point -16.771952 179.319314 0 930
     8:41:34 AM Calibration point -16.781564 179.319314 0 1860
     8:41:34 AM Calibration point -16.762339 179.357509 3560 0
     8:41:34 AM Calibration point -16.771952 179.357509 3560 930
     8:41:34 AM Calibration point -16.781564 179.357509 3560 1860
     8:41:34 AM Projection mercator
     8:41:34 AM Cropping
     8:41:34 AM 0 crxy 0
     8:41:34 AM New image is 3560 by 1860
```

Step 2: Make the JPG and KML files. Select File/Write map and calibrations from the main menu.

Utilities

4 0 1860

9 3560 0

19 3560 930 19 3560 1860

al grid=.0000

SAVUSAVU.KAP

Help

Batchbuilder

· 69 Search kap to at5 test

P

8

Cancel

Add Folders

Delete

Delete All

Browse...

- -

Add Folders

Browse...

 $\Sigma S$ 

MAPC2MAPC v576 Map Calibration and Conversion Registered to RICHARD WEST

MergeMaps

Give you output file a name and select the Save button. Save image file

Date modified

Type

No items match your search.

**Documents** Music Pictures **■** Videos Homegroup File name: kap2at5 test Save as type: JPG files(\*.jpg) Mide Folders The screen should look about like this when the program is done. MAPC2MAPC v576 Map Calibration and Conversion Registered to RICHARD WEST File Edit View Print MergeMaps Utilities Help Batchbuilder 8:41:36 AM Cropped 8:41:36 AM Metres/pixel(mm1b)=1.1433839992319 8:41:36 AM Average projection inaccuracy in original grid=.0000 8:56:11 AM -- Open Calibration 8:56:11 AM C:\Users\rich\Desktop\kap to at5 test\SAVUSAVU.KAP 8:56:11 AM Map name is SAVUSAVU 8:56:11 AM 3561 wh 1861

Include in library ▼ Organize \* Share with ▼ Burn Name ▲ ★ Favorites

kap2at5 test.jgw

kap2at5 test.jpg

kap2at5 test.kml

kap2at5 test.map kap2at5 test.p2g SAVUSAVU.KAP

```
We're only interested in the .kml and the .jpg files. Delete the rest. They will cause an error in Insight
Map Creator.
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.
Make the AT5 Charts
Step 3: Open Insight Map Creator, Select View/Processing Modes and select Keyhole Mode Window.
Step 4: Click on Add Files and select the .kml file you just made. 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 5: 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 6: Select View/Processing Modes/Raster Mode Window (the window shown below will open).
Step 7: 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.
       Make the Work Directory the working directory you created to contain the .at5 charts.
  Insight Map Creator
   File View Acknowledgements Advanced Options
    Source Folders
     C:/Users/rich/Desktop/tutorial/
```

Project Based Naming Delete Raster Options Map Wrapper Sonar Options Delete All Attribute Options

Build

Step 10: 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 for very large maps. The process will build each zoom

Step 11: Put the resulting .at5 files on your SD card. Make a directory on the SD card called

▼ Max Resolution 32

Build

Step 8: In the Main Menu/Advanced Options, select the Atlas Version and make it 12 or 13. I've been

Step 9: 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

Atlas Version 12

Atlas Description...

Unencrypted

▼ Max Resolution 32

using 13 for my evo3 chartplotters. Some chartplotters need a lower atlas version.

Advanced Options

Atlas Options

Extent Options

Vector Options

\_\_\_\_\_3DTexture\_8.at5 \_\_\_\_\_3DTexture\_16.at5 -- 3DTexture\_32.at5

```
Options/View/Photo Overlay and select Full. For me, this often reverts to Off and I have to reset it.
Accuracy:
```

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

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 maker and compare it with the chart we made. It was off by about 5 meters but it was hard to see exactly where the

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

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