

## BGtopoVJ development workflow

1. Collect and analyze the input raster images.
2. Apply suitable filter (e.g. *despeckle*), depending on the input raster images.
3. Select and build a suitable colour palette. For BGtopoVJ we have chosen a palette of 16 colours, which have been found to fit best all 544 map sheets, as well as Garmin™ GPSmap 60CSx®'s colour palette:



The chosen palette includes the following colours:

#19141B	#44413D	#595B5E	#AB612B	#669756	#A99A60
#DAC346	#3668AD	#5F9EC6	#97A0A0	#D8B099	#ABD1B2
#D9E6A7	#A8D2E6	#DDE5D8	#FFFFFF		

Garmin™ GPSmap 60CSx®' colour palette (256 colours) is summarized in the following table:

Red	Green	Blue	Grayscale
00	00	00	000000
39	30	20	101010
7B	65	41	202020
BD	95	6A	313131
FF	CA	8B	414141
	FF	B4	525252
		D5	626262
		FF	737373
			838383
			949494
			A4A4A4
			B4B4B4
			C5C5C5
			D5D5D5
			E6E6E6
			FFFFFF

4. Apply the selected colour palette to all raster images. We have used ImageMagick's<sup>1</sup> function `mogrify` for this purpose, as follows:

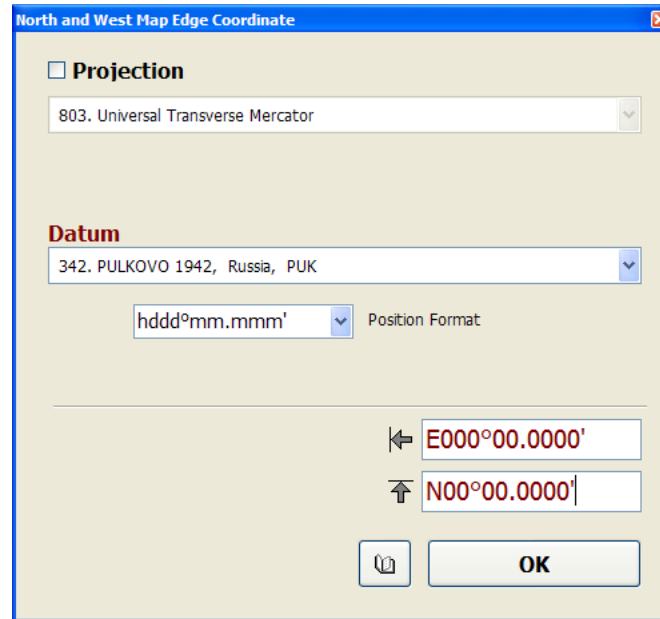
```
mogrify -map data/palette.png +dither data/*.tif
```

where `palette.png` holds one pixel for each of the 16 colours, selected in step 3, and `data` is the folder, containing all input raster images in TIF format.

5. Launch Mapwel and import one raster image (Image -> Import).

<sup>1</sup> <http://www.imagemagick.org/> accessed on August 11<sup>th</sup>, 2009.

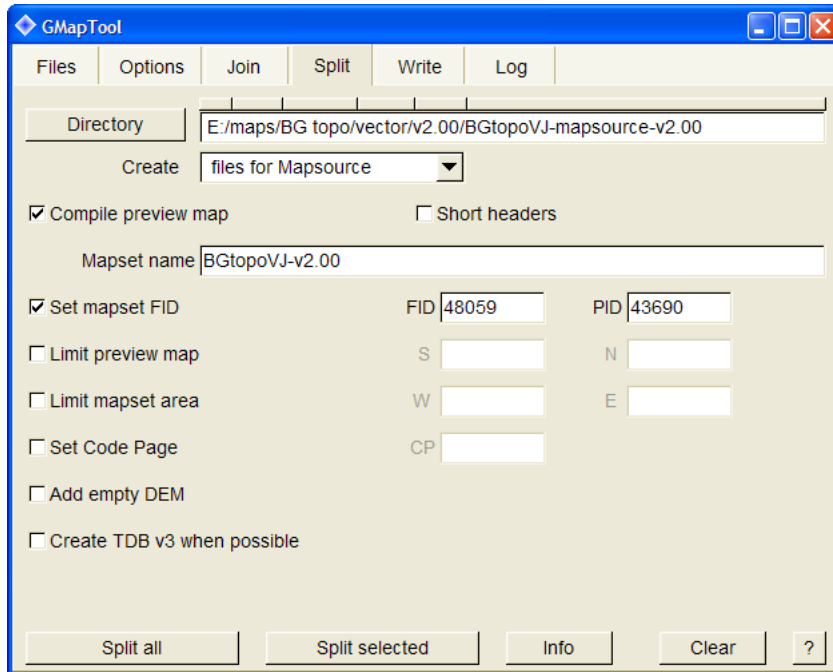
6. Apply the “Straighten Image” transformation (Image -> Straighten).
7. Crop the image, following map borders (Image -> Crop).
8. Enter the NW and SE edges coordinates (no projection, “342. PULKOVO 1942, Russia, PUK” datum), as shown on the following screenshot:



9. Save the georeferenced map as a Mapwel project (MPW) file (e.g. K-34-009-2.mpw).
10. Launch the automatic vectorization dialog (Image -> Automatic Vectorization). Select the highest available pixel count (1536) in the “Split into segments” dialog. If the automatic vectorization process freezes or fails, exit Mapwel, open the saved project file (step 9), set a lower value (1024 or 512) in the “Split into segments” autovectorization dialog and then repeat the process.
11. Patiently repeat steps 5, 6, 7, 8, 9 and 10 for every input raster image.
12. Get and install the latest versions of GMapTool<sup>2</sup> and cGPSmapper<sup>3</sup>.
13. Configure cGPSmapper’s location in GMapTool.
14. Import in GmapTool all IMG files produced by Mapwel in steps 5-11, to be merged in your Garmin™ MapSource® installation.
15. Select the “Split” tab and fill in the required information, as shown on the following screenshot:

<sup>2</sup> <http://www.anpo.republika.pl/download.html> accessed on August 11<sup>th</sup>, 2009.

<sup>3</sup> <http://www.cgpsmapper.com/> accessed on August 11<sup>th</sup>, 2009.



16. Launch the splitting process (Split all) and patiently wait for its completion.
17. Install the map in Garmin™ MapSource® by executing the `install.bat` script, produced by GMapTool in step 16.

**Enjoy the result and share your map!**