Customizing a plate for synSwath

(Pim, 02-05-'06)

In synSwath you can upload a plate and examine the ensonification of it. The first steps will be creating a plate with the desired dimensions and features (1). Next you will have to create some additional required files (2) and finally you can view it in synSwath (3).

1) Creating the plate

Typing:

    make_blank -custom

will invoke a menu allowing you to input the name, data type, pixel size, plate dimensions and the features. In the example below I have chosen for a floating point since we're dealing with bathymetry. The x,y dimensions are multiples of the pixel size. Thus in this case the plate is 200x100.

    Warning : no outfile name
    input the blank array file prefix please...
    test_plate
    do you want an 8bit array (1) or floating point array (2)
    2
    input desired mpp :
    0.5
    input x and y dimensions:
    400 200

...the menu continues...

what custom options do you want:

    (0) nothing more
    (1) sine waves
    (2) cubes
    (3) hemispheres
    (4) vertical cylinders
    (5) horiz. half cylinders
    (6) rectangles
    (7) knolls
    (8) ramps
1
enter : wavelength (m), amplitude (m) and azimuth (deg)
8 0.5 045
what custom options do you want:
   (0) nothing more
   (1) sine waves
   (2) cubes
   (3) hemispheres
   (4) vertical cylinders
   (5) horiz. half cylinders
   (6) rectangles
   (7) knolls
   (8) ramps
6
enter : height (m), width (m) length (m) and azimuth (deg) (not used)
5 2 10 0
read in 5.000000 2.000000 10.0000000.000000
centre location (x y pixels)
200 100
read in 200.000000 100.000000
what custom options do you want:
   (0) nothing more
   (1) sine waves
   (2) cubes
   (3) hemispheres
   (4) vertical cylinders
   (5) horiz. half cylinders
   (6) rectangles
   (7) knolls
   (8) ramps
0

It now created a sine wave and at the center of the plate a rectangle of 5x2x10. By hitting 0 the menu is exited and test_plate.blank is a fact. To double check the result we can view it:

jview test_plate.blank
2) Necessary files

To upload a plate in synSwath it needs three files:  *.r4
     *.sun  
     *.BT

to get the *.r4:

tor4 test_plate

this will create test_plate.r4

*.sun:

addSUN test_plate

this will create test_plate.sun.315, thus we have to rename it: mv test_plate.sun.315 test_plate.sun

*.BT:
We will need to convert the r4 first to an 8bit and then rename it to a *.BT:

r4to8bit test_plate
mv test_plate.8bit test_plate.BT

Now we're set to view it in synSwath!

3) synSwath

Running sunSwath with the plate is done by:

    synSwath -plate test_plate -level 1.0
The -level option pushes the plate down. The depth is default equal to the maximum length of the plate dimension. In this case the maximum plate dimension was 400 pixels (=40 meters), therefore the depth will be 400 pixels too. Thus the depth is relative to the maximum plate dimension. This can be modified by simply adjusting the -level factor. For example if the depth would have to be 10 meters we would use:

```
synSwath -plate test_plate -level 0.25
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Now when positioning the mouse in the synSwath 3D window and hitting 'i' the illumination becomes apparent. With a 't', 'r' or 'b' stroke you can choose to view the transmit, receive or product of both.