I have tiled many large geo-referenced .tif file sets.
This uses openGL, gdal, etc..

The lowest resolution level is often referred to as lztd (Level Zero Tile Degrees)
The pow2 doesn't make any difference as far as I am concerned.
That started real early as a concept that dividing by two made sense. Google Earth still uses it.

Another reason pow2 made any sense was with sets of images that covered a full globe like the Earth, Moon, etc. is so they matched at the poles and the dateline (+/- 180 degrees).
As long as the lztd divides into 360 evenly they match at the poles/dateline.

I tiled all the U.S. FAA Charts. The merged Sectional and WAC charts use 10 deg, the TAC at 1 deg, the separate Sectionals at 2 deg.
http://www.nlneilson.com/

Many of the NASA WorldWind Satellite image tiles are 36 deg.

GlobalMapper started with pow2, I suggested to Mike to change that so his app could be used with the NASA WW project which it does now.

Nawak coded dstile to merge and tile images.
http://worldwindcentral.com/wiki/Making_Layers

Just today I pulled down the source of what_nick's mod of Nawak's code for Windows.
http://whatnick.dyndns.org:8080/tisham/DsTileQtGUI.zip

Trying to compile in MSVC 10 (it was in 8) but get this error:
1>LINK : fatal error LNK1181: cannot open input file 'gdal_i.lib'
I have that linked to C:\FWTools2.4.7\lib and C:\OSGeo4W\lib

I would like to do that in Upp, any help/suggestions would be appreciated on getting the dstile code to work in theIde.

The BIGGEST difference in performance is the tiles should be in the .dds format so the GPU does not have to do it. I modified Chiss's code and it uses the DDSConverter.java from the latest NASA WWJ SDK, it's an executable .jar.
http://www.nlneilson.com/apps/jpg2dds.jar
or Chiss's
   http://forum.worldwindcentral.com/attachment.php?attachmenti d=1594&d=1208570928

Any questions on this I will be glad to help if I can, UppGL is a good idea.
Maybe this can be combined with Mirek's "rainbow" concept.