

*Barebones Quadbuild Manual v1.0*  
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*RIMS program, Copyright (C) 2006, Tony Bernardin*

**See the [Readme.txt](#) file for important information.**

## **1. Prepare input files**

*RIMS can run with just a DEM, but works best with an image (here called a texture) that is draped over a DEM. Use your favorite image processing application to prepare texture and DEM input files with the following criteria, otherwise Quadbuild and RIMS will not run properly.*

*The RIMS portion of my website (<http://www.geology.ucdavis.edu/~cowgill/>) generally has instructions and cookbooks on preparing data for the Quadbuild preprocessor.*

1. Texture pixel size must be exactly  $\frac{1}{2}$  that of the DEM
  - e.g., ASTER VNIR image (15 m pixels) with ASTER DEM (30 m pixels)
2. Texture must have twice the number of rows & columns as the DEM
  - i.e., texture & DEM must cover same area and be in the same projection/datum
3. Texture data must be 3 bands e.g. RGB (even if it's a gray scale image).
4. The x, y, and z values must be in same units (e.g., Transverse Mercator)
5. All data must have positive x, y, z values if mapping is to export properly.
  - check the false easting/northing and minimum elevation of the DEM
  - exporting to \*.bil format will automatically zero negative z values
6. Input files must be in bil format and can be no larger than ~950 MB
  - Size cap may be larger/smaller on machines with more/less than 3GB RAM
  - RIMS runs better with smaller file sizes
7. The DEM input \*.bil file must be in unsigned integer format and the texture input \*.bil file must be in byte format

## **2. Run Quadbuild Preprocessing Utility**

*See troubleshooting guide for tips if needed*

\*Transfer DEM and texture files into project folder that contains quadbuild.exe

\*open a command window and cd into this project folder (e.g., cd c:\RIMS\Quadbuild)

\*type "quadbuild -dem 'XX' 'inputfilename' 'outputfilename'"  
where XX is 32, 64, 128, etc.

\*type "quadbuild -ortho 'YY' 'inputfilename' 'outputfilename'"  
where YY = 2\*XX

\*transfer output files (there should be two for each \*.bil) to folder containing rims.exe

\*launch rims and load the input files to test (see RIMS manual)

NOTE: If you run quadbuild with no parameters it prints out a small help as to how it should be used and what the parameters mean.

NOTE: The XX and YY numbers are the size (in pixels) of the smallest tiles. They must be powers of two for implementation reasons. For an image with 15 m pixel resolution, use of a YY value of 8 results in smallest tiles that are 8 by 8 pixels, corresponding to areas that are 120 m x 120 m. As the G-cubed paper by Bernardin et al explains, RIMS uses a hierarchy of such tiles, thus the next coarser tile is spatially as big as its four child tiles arranged in a square. Smaller tile sizes (XX and YY values) make the base elements smaller and generates a finer level of detail (LOD) hierarchy. This gives more flexibility in the LOD approximation which may produce nicer transitions (e.g., edges of the high-resolution focus area around the interaction cursor more closely approximate a circle and provide a more gradual falloff into the peripheral areas shown at lower resolution). On the downside there are many more elements to process and performance may therefore suffer.

NOTE: Conversely, XX and YY values that are too large can also adversely affect RIMS performance. An XX of 64 and YY of 128 typically work well, although smaller values may be needed to get Quadbuild to run. The sweet spot really depends on the size of the input data, thus some experimentation may be needed.

### **3. Tips on data prep**

\*Prepare a small (e.g., 10 x 10 km patch of 30 m DEM) to test preprocessing first

\*Generate a hill shade from the DEM, and resample so the hill shade pixels are ½ the size of the DEM pixels, and then use this image for the texture image to help ensure criteria 1 & 2 are met. To minimize artifacts in the texture image, resample the DEM and generate the hill shade from that resampled DEM, rather than resampling the hill shade image directly.

\*When using separate DEM and texture data (e.g., SRTM DEM with a Landsat mosaic), get one file to target resolution/dimensions and then crop the other file to the dimensions of the first. To do this in ENVI:

go to basic tools > resize data (spatial/spectral)

select file to be cropped and then choose “spatial subset”

select “subset using file” and then pick the first file to use as template

\*Having RIMS data in the same projection as the final map accelerates e00 import.

\*Transverse Mercator projections work the best. If a different projection is used, then the e00 file produced may not import to Arc..

\*If texture is much finer resolution than the DEM, it works better to decimate the texture resolution than resample the DEM. RIMS projects looks strange otherwise.

\*name bill files differently from the source file to prevent overwriting the source file’s header.