Ferrous Minerals Normalized Difference Ratio

This ratio is the same conceptually as the ferrous minerals ratio available in ERDAS Imagine Spectral Indices Tool, but normalized instead of a simple ratio. Normalized difference Landsat band ratio using band 5 (shorter wavelength SWIR) and band 4 (NIR).

File: ferrous_index_5_4.gmd (ERDAS Imagine Model Maker model, v. 2014 and prior)** OR ferrous_index_5_4_modeler.gmdx (ERDAS Imagine Spatial Modeler model, v. 2013 and later)**

**Input:** Landsat 5 or 7 image containing at least bands 4,5*

Output: single layer image with data values ranging from -1 to 1; Pixels with higher values can be interpreted as pixels with higher possibility of ferrous minerals influence.

You will be prompted for the input image, and to name the output image.

The model open in ERDAS Imagine Model Maker:

n8_PROMPT_USER

5 - 4

5 + 4

$n8_PROMPT_USER(5)

$n8_PROMPT_USER(5)

n3_memory

n5_memory

EITHER 0.000000000000001 IF

n11_PROMPT_USER
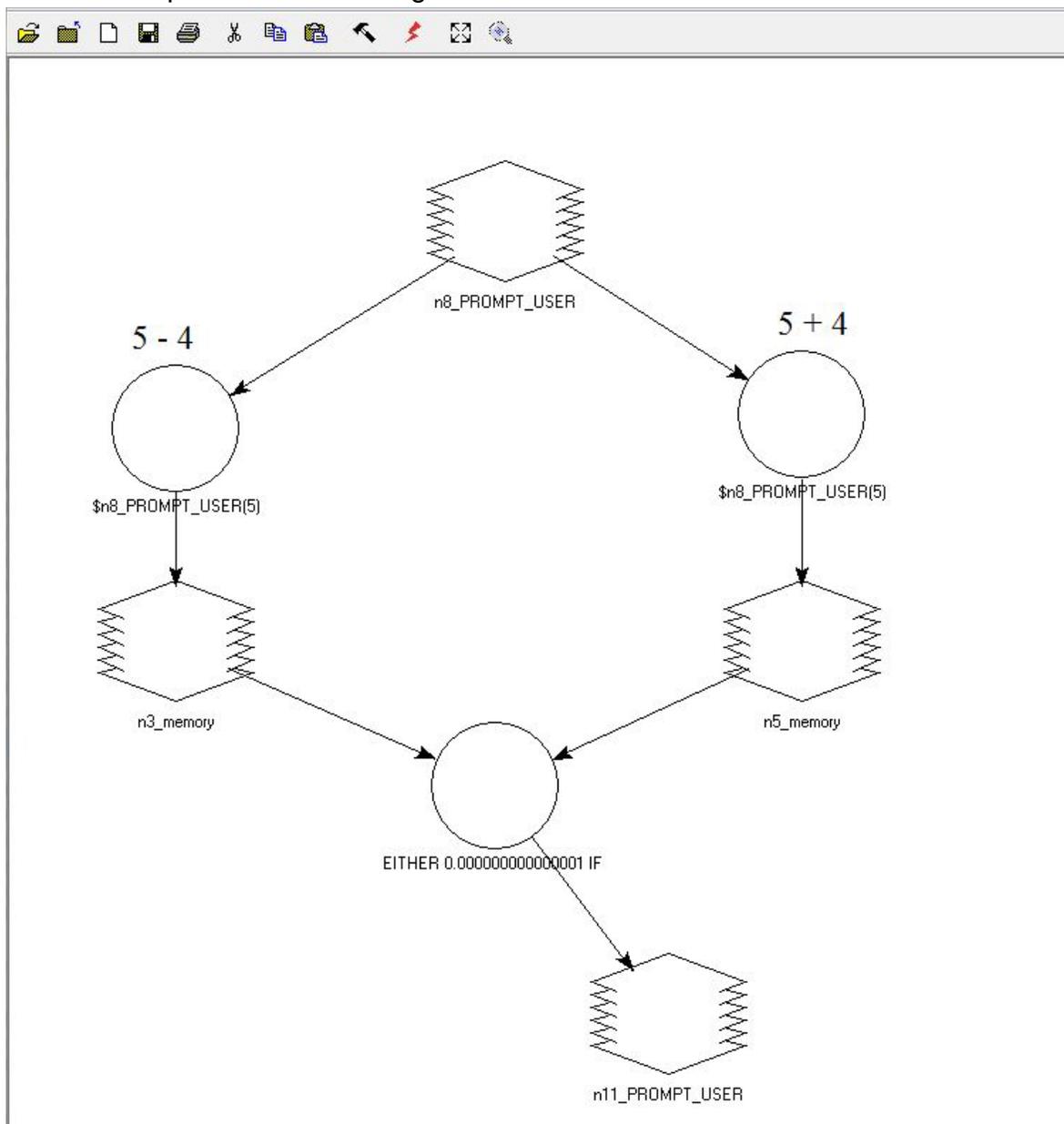
The model open in ERDAS Imagine Spatial Modeler:
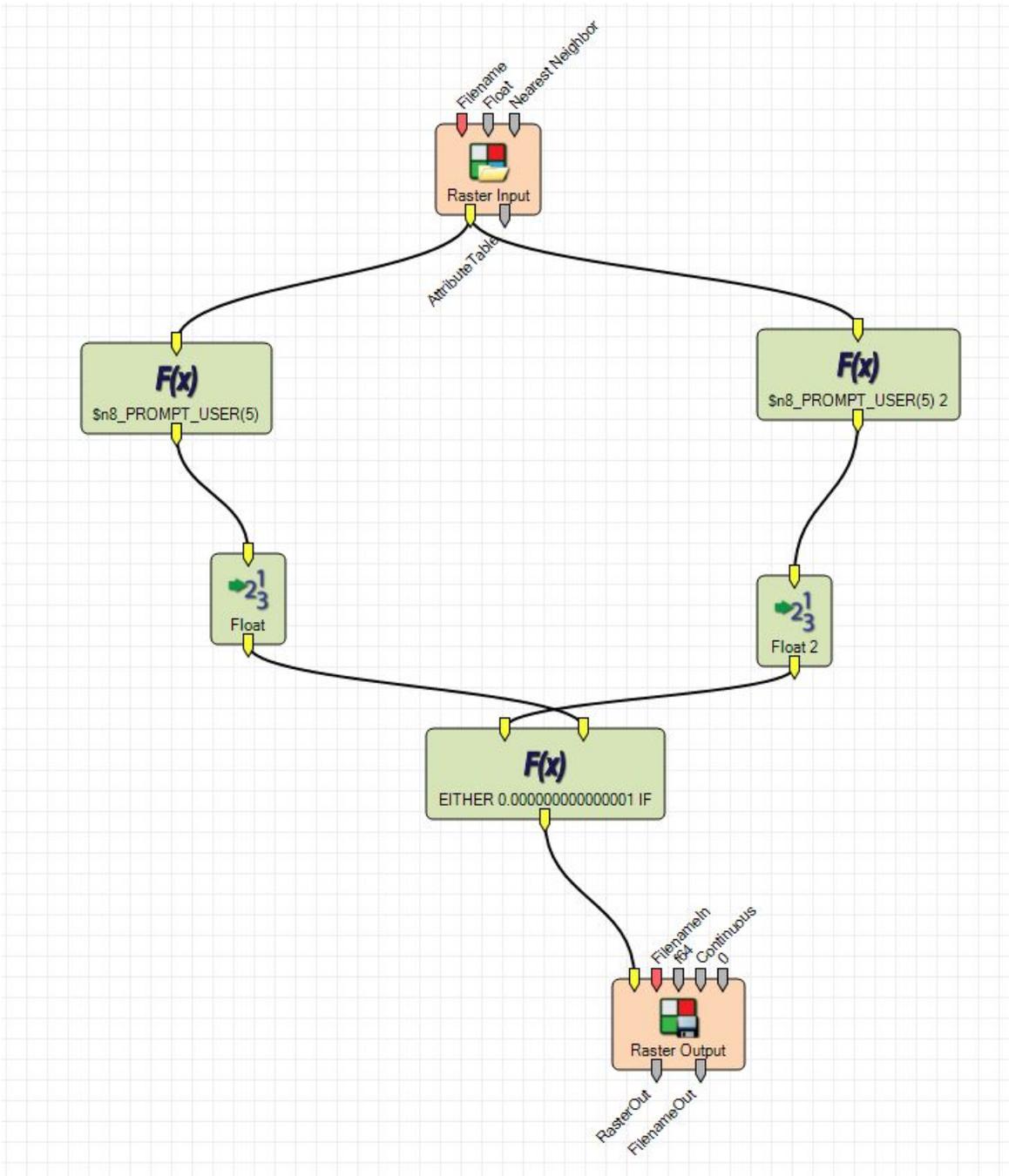
Example normalized ferrous minerals ratio output image over hillshade. Bright pixels have higher data values and can be interpreted as areas of potentially higher ferrous minerals influence:
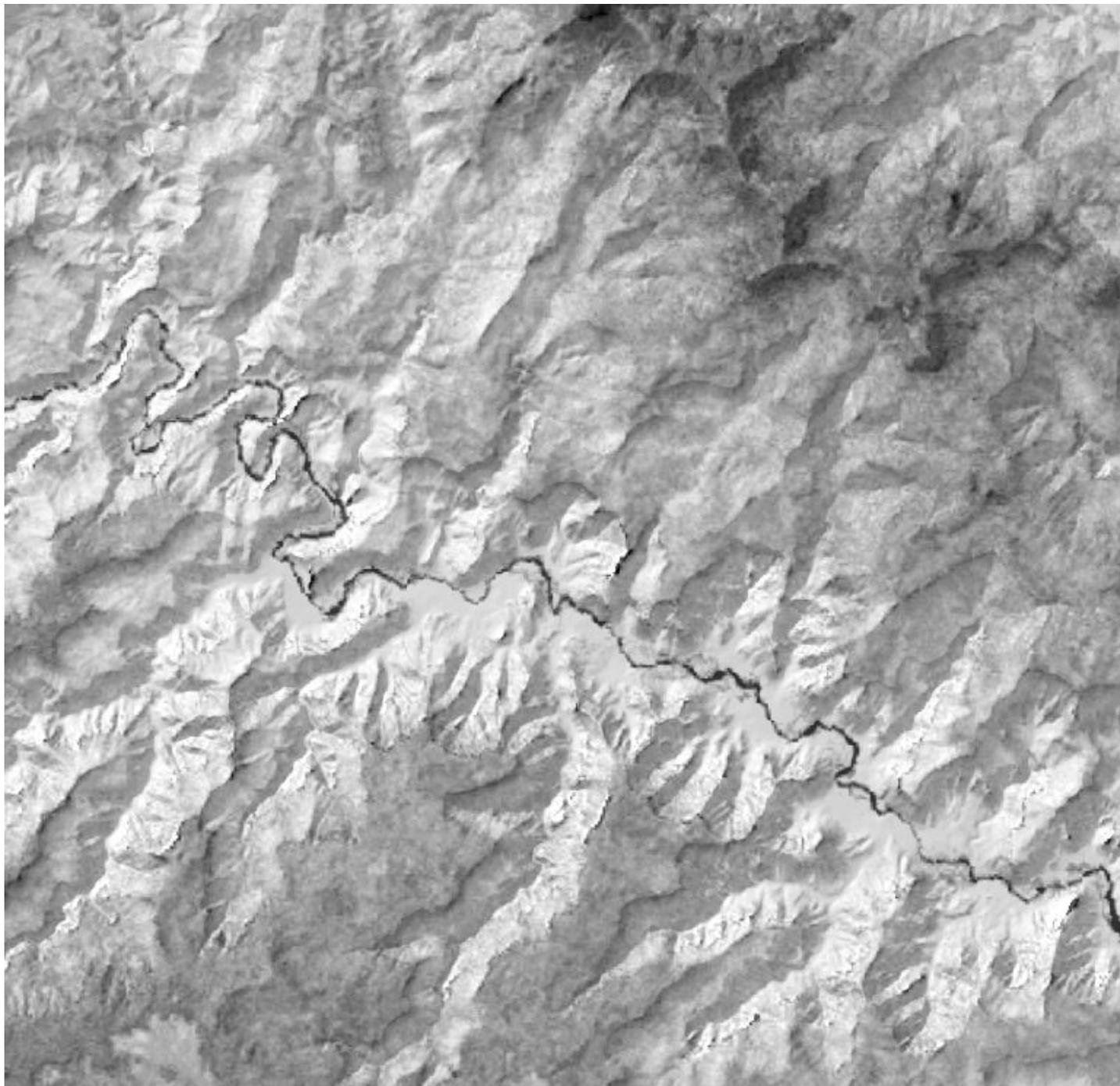
*Remember ratios must always be calculated on images which have had an atmospheric correction or image standardization applied. Resources for image standardization:
http://earth.gis.usu.edu/imagestd/

** ERDAS Imagine Model Maker files (.gmd) can be opened in ERDAS 2014 and all previous versions of Imagine using Model Maker. Starting with ERDAS 2013, the ERDAS Imagine Spatial Modeler is available and requires the .gmdx file type. The results produced by the model should be

the same for either model interface. At some version after 2014, the Model Maker and .gmd files will be obsolete.

While these ratios were developed for Landsat bands, they could be modified and used with data from any sensor with bands capturing the same part of the electromagnetic spectrum as the indicated Landsat bands.

Enhanced Thematic Mapper Plus (ETM+)	Landsat 7	Wavelength (micrometers)	Resolution (meters)
	Band 1	0.45-0.52	30
	Band 2	0.52-0.60	30
	Band 3	0.63-0.69	30
	Band 4	0.77-0.90	30
	Band 5	1.55-1.75	30
	Band 6	10.40-12.50	60 * (30)
	Band 7	2.09-2.35	30
	Band 8	.52-.90	15