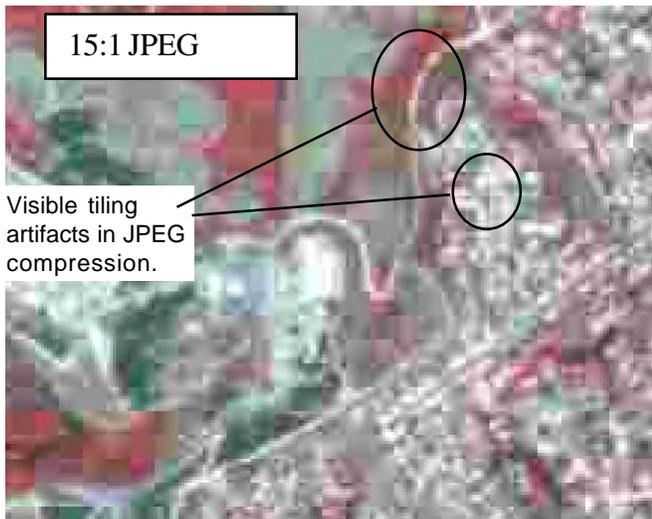


JPEG2000 Versus JPEG “Classic”

JPEG was introduced in 1992. At that time, the accepted practical technology for lossy image compression was the Discrete Cosine Transform (DCT) method used in JPEG. In 1992, wavelet analysis and wavelet coding were still new, computationally intensive technologies. Since then, considerable progress has been made in wavelet compression and computing technology. Rather than incrementally improving on DCT compression, the ISO JPEG standards committee has adopted the completely new Discrete Wavelet Transformation (DWT) used in JPEG2000. The result is much higher compression and/or much lower image degradation at a specified compression level.

Many kinds of project materials and their raster representations are used in geospatial analysis, including scanned line maps, images, digital elevation models, binary masks, discrete polygon maps, and radar images using complex numbers. JPEG2000 was designed for, and does an excellent job of compressing continuous tone images, but other data types require other compression schemes. Be sure to select the appropriate compression method for the type of data distribution and data values.

Original DCT JPEG

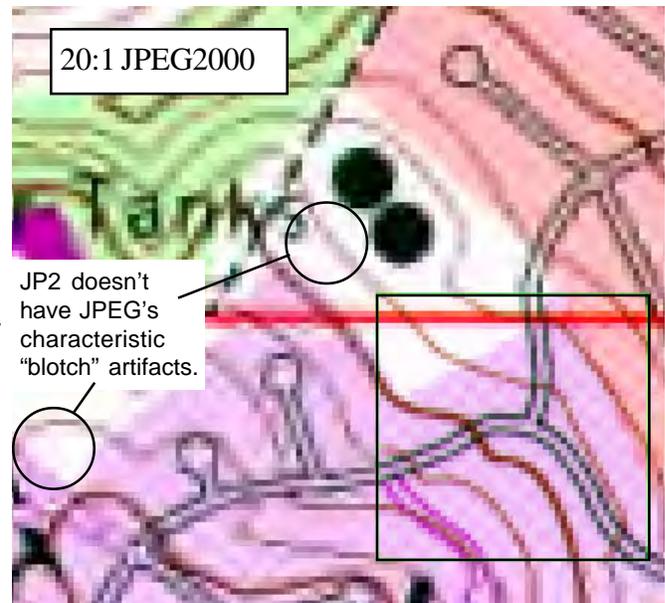
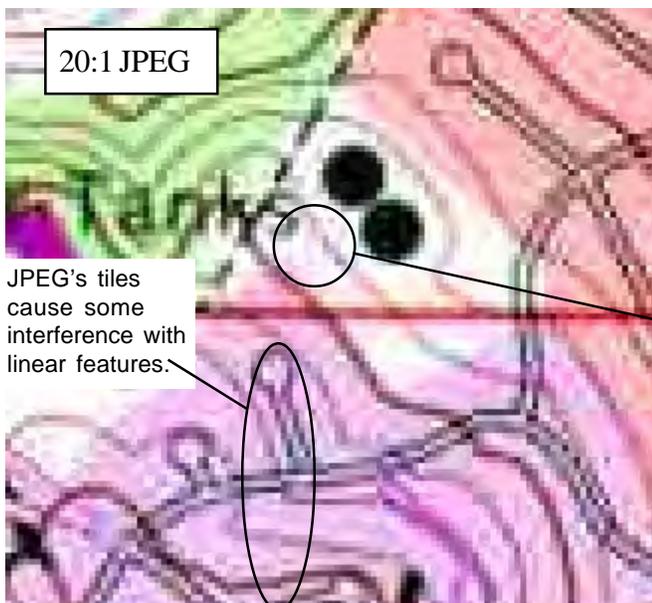


Classic DCT JPEG shows evident tiling artifacts, color degradation, and blurred linear features.

DWT JPEG2000



DWT JPEG2000 retains much more image detail without introducing artifacts. (Inset shows uncompressed original.)



Does JPEG2000 offer any advantage over JPEG for scanned maps? This map was scanned into a 24-bit TIFF image at 300 dpi and then converted to JPEG and JPEG2000. A 20:1 compression result for each method is illustrated. While careful inspection does reveal differences, JPEG2000 offers little or no advantage over classic JPEG at 20:1 compression for scanned maps. (Inset in the JPEG2000 illustration shows uncompressed 24-bit original.)