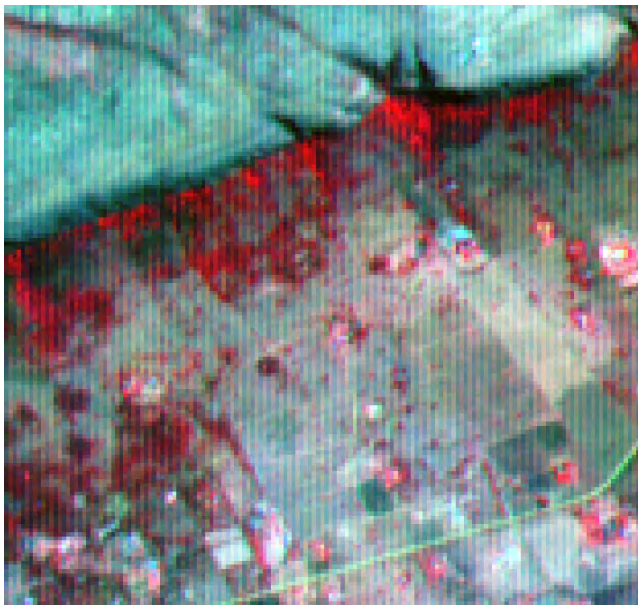
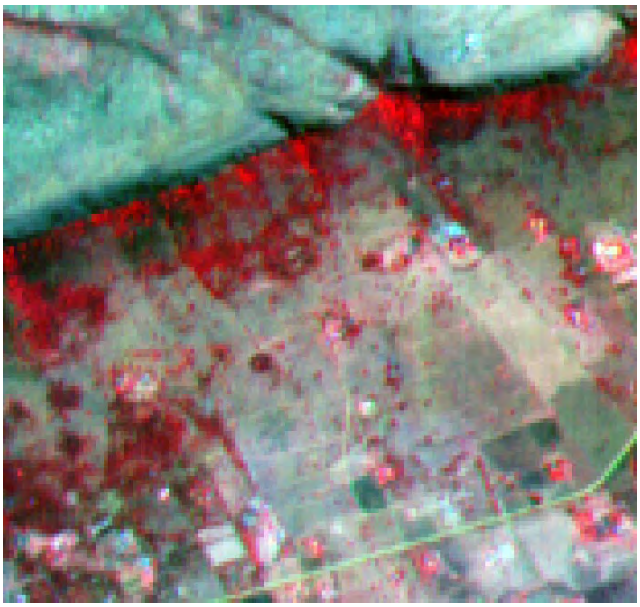
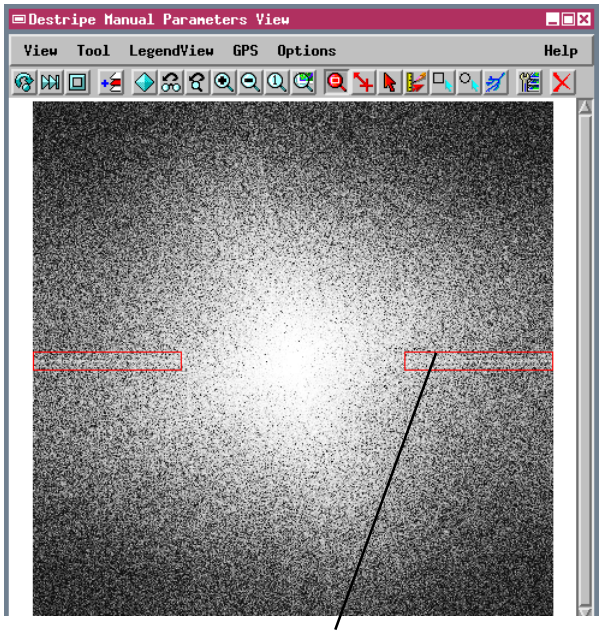
Destriping ASTER Images



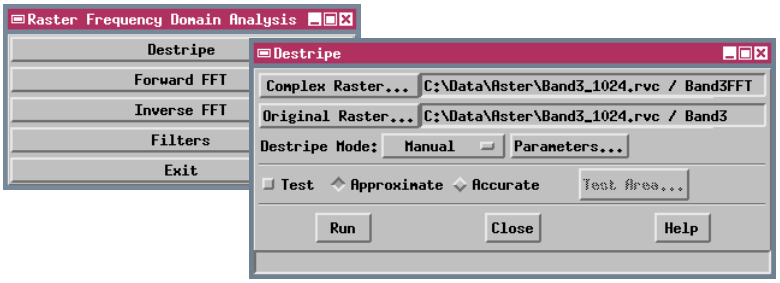
Close-up of a color display of three bands of a raw ASTER Level 1A image. Red = Band 3 (near-infrared), Green = Band 2 (red), Blue = Band 1 (green). Prominent vertical striping is evident. For these wavelength bands, all image values in a horizontal line of cells are acquired simultaneously by a linear array of detectors. Each vertical column represents the sequential output of a single detector, and differences in calibration between adjacent detectors give rise to the striping.



Same image area after the Forward FFT (Fast Fourier Transform) and Destripe procedures were run on the individual bands. Striping has been completely suppressed with no blurring or degradation of ground features.



The Manual Destriping mode was used to process the ASTER image shown here. In this mode the Parameters window lets you outline areas in the FFT (Fast Fourier Transform) raster representing the striping frequencies, and define the amount of suppression to apply to them. A Test option lets you preview the destripe result for your designated sample area.



The Destripe operation in the TNTmips Raster Frequency Domain Analysis process (Process / Raster / Filter / Frequency Filter...) allows you to remove striping (periodic sensor noise) from aerial or satellite images acquired using arrays of electronic detectors. Striping appears as distinct linear stripes of varying brightness in single-band displays (or of varying color in composite-color displays).

Raw (Level 1A) images acquired by the ASTER* sensor aboard the NASA Terra (EOS AIM-1) satellite exhibit significant striping because of calibration differences between adjacent detectors. Destriping was applied to a sample ASTER image of Pretoria, South Africa (data provided courtesy of GEODATEC in South Africa). This procedure completely suppressed the striping noise with no noticeable blurring or degradation of the ground features shown in the image.

*Advanced Spaceborne Thermal Emission and Reflection Radiometer