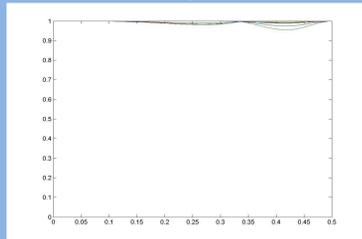


An Update on the Constant MTF Interpolator: An Image Resampler with Minimal MTF Losses and Geometric Error

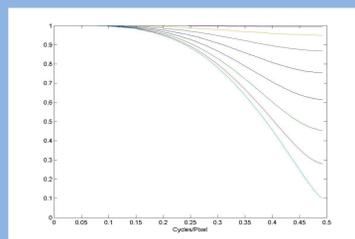
Ellis Freedman (Serious Science, LLC) and Dr. Robert Fleming

The CMTF Interpolator Provides Significantly Better Radiometric, Geometric, Spectral and Image Quality Than Any Other Resampler

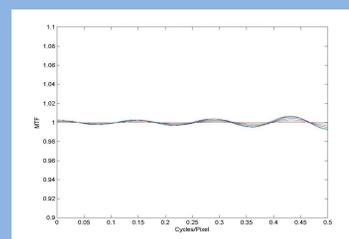
MTFs of 6 Element CMTF with Compensation



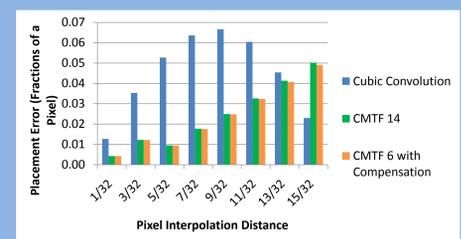
MTFs of 4 Element Cubic



MTFs of 14 Element CMTF

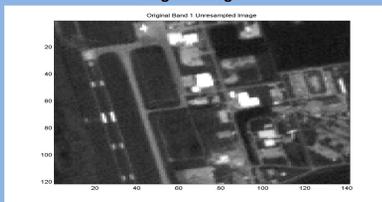


Placement Error vs. Interpolation Distance



All Graphs Include Interpolation Distances of 1/32, 3/32, 5/32, 7/32, 9/32, 11/32, 13/32 and 15/32 of a Pixel

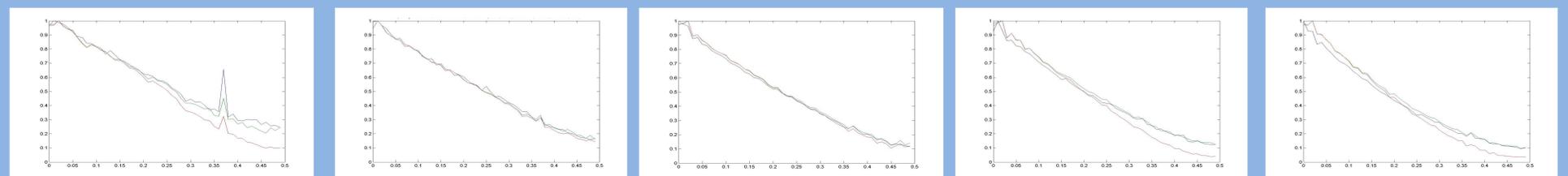
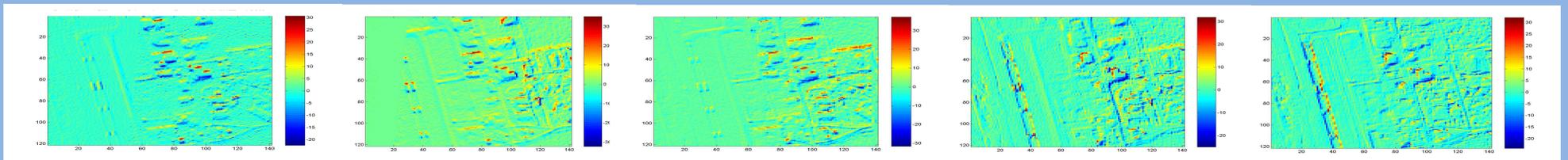
Original Image



RapidEye Performance with Bicubic and CMTF Interpolation

Upper Row: Ratio of CMTF Image to Bicubic Image

Lower Row: Measured Crosstrack MTF of Unresampled Image (blue,) and Images Resampled with Bicubic (red) and CMTF (green)



Band 1

Band 2

Band 3

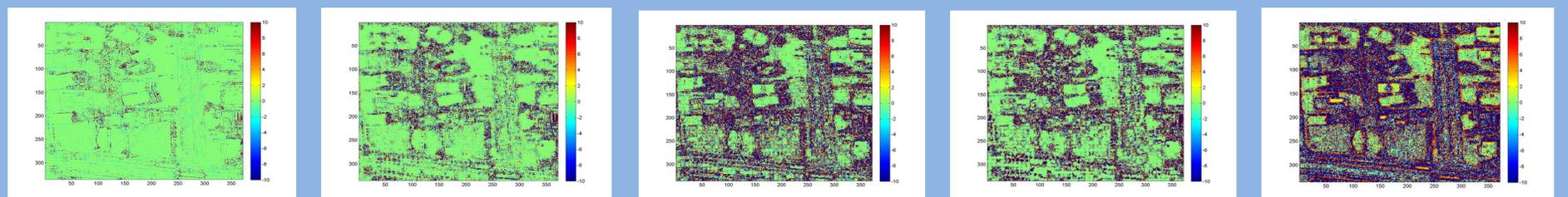
Band 4

Band 5

Original Image



Percent Difference Between Original Image and Image Interpolated 3/32, 5/32, 7/32, -15/32, 1/32, 1/32, 11/32, and -13/32 Pixels in X and Y Directions with Different Interpolators



CMTF 6 Element Kernel with Compensation

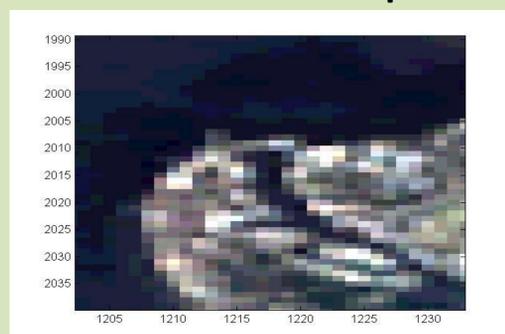
CMTF 14 Element Kernel

Bicubic 4 Element Kernel

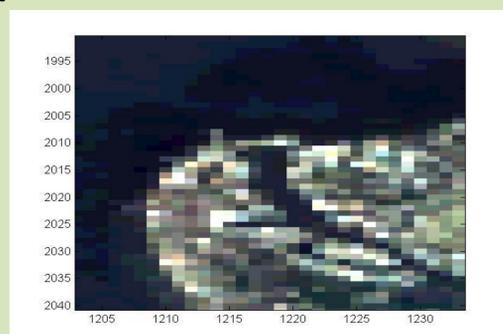
Lagrange 14 Element Kernel

BSpline 4 Element Kernel

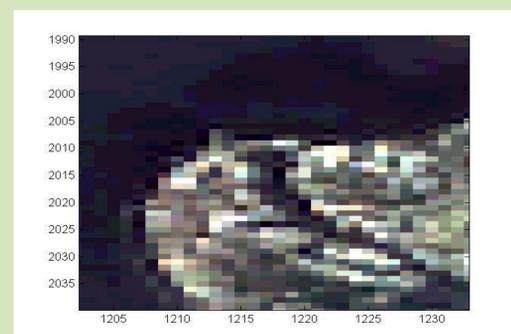
A Comparison of Simulated 30 Meter True Color Imagery Interpolated 11/32 of a Pixel in the X and Y Directions



Bicubic



Unresampled



CMTF 14 Element