

Geographic Correction Results

Marvin Smith

September 14, 2012

Test Data

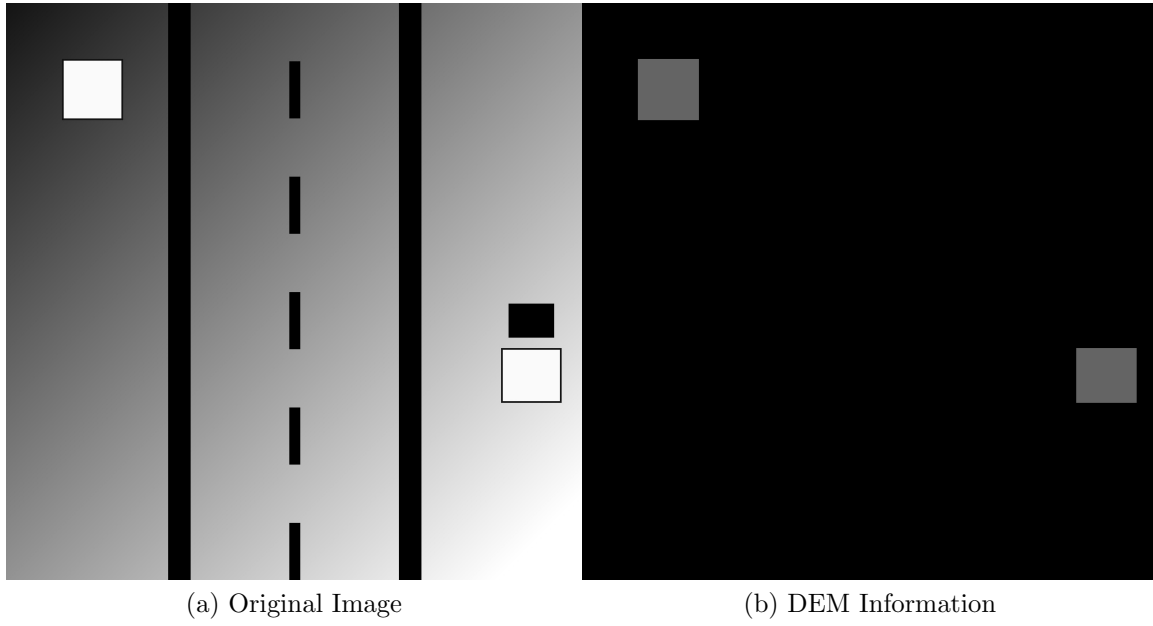
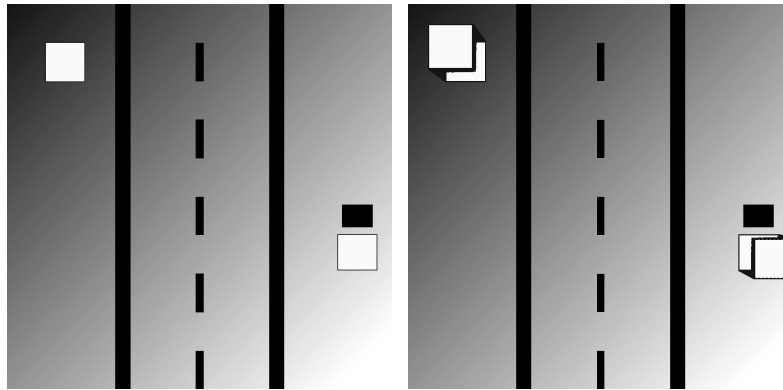


Figure 1: Test image generated prior to rotation. The dem ranges from 0 to 100 meters. The test image is 1K by 1K.

Test 1

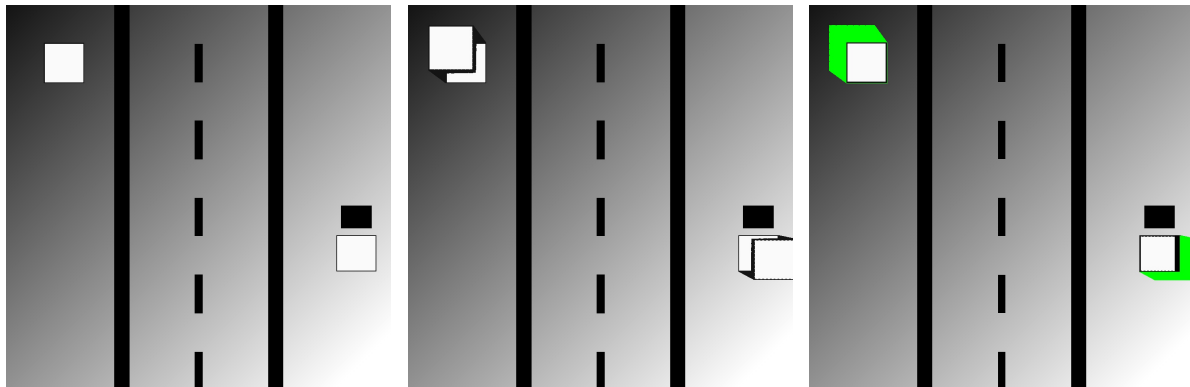
Rotation angle: 0

Rotation axis: $(1, 0, 0)$



(a) Without Perspective

(b) With Perspective



(c) Rectified w/out Perspective

(d) Rectified w/out DEM Data

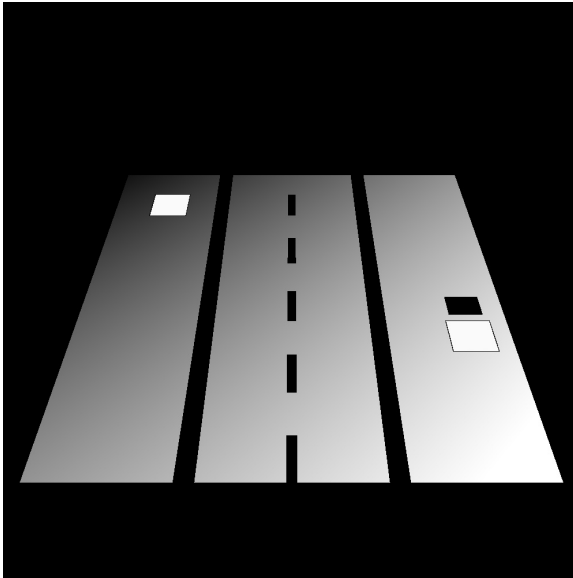
(e) Rectified with DEM Data

Figure 2: Results from test. Note that the green represents invalid regions where the point was occluded. Most of the images look alike, as there is no rotation, just a conversion from perspective projection into parallel projection.

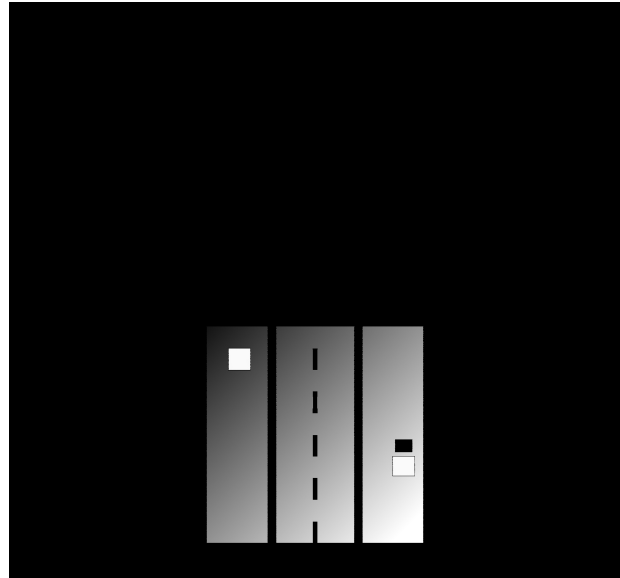
Test 2

Rotation angle: 45

Rotation axis: $(1, 0, 0)$

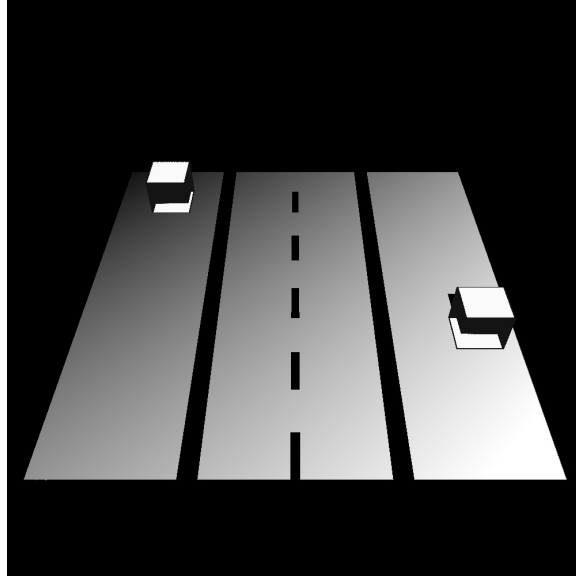


(a) Without Perspective

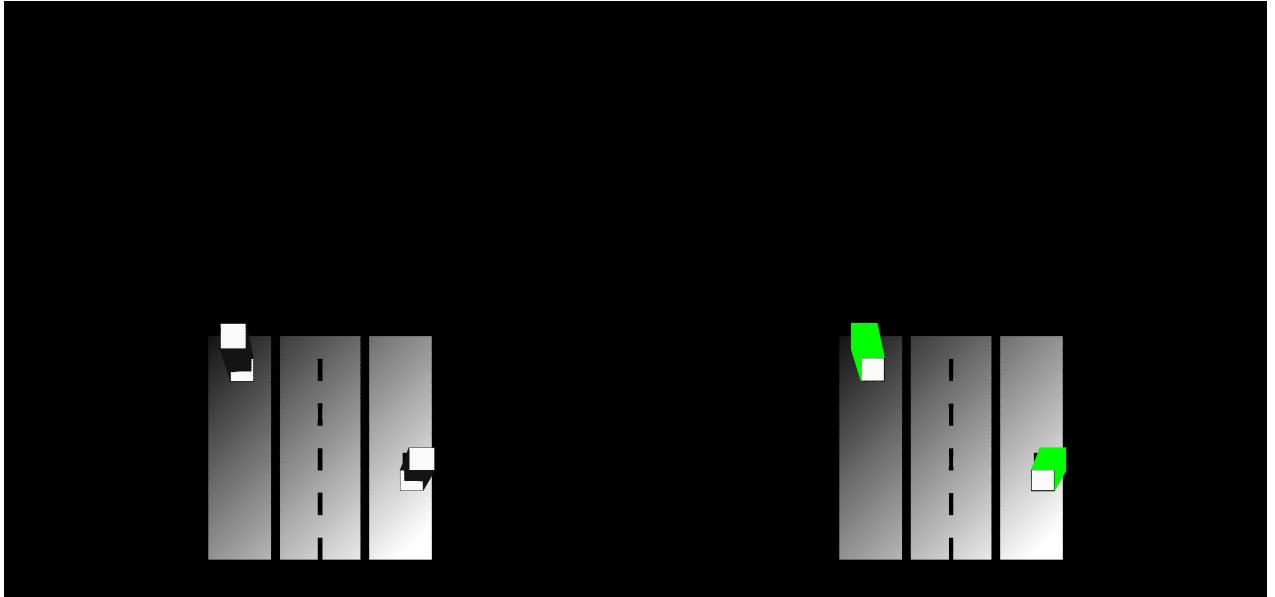


(b) Rectified

Figure 3: The rectified box is actually the same size as the original image. The rectified image is just much, much larger. This is due to the corners of the full "earth plane" extending past the box. If this was a geographic image and contained full information as not shown in the image without perspective, the tails of this image would be severely stretched.



(a) With Perspective



(b) Rectified w/out DEM Data

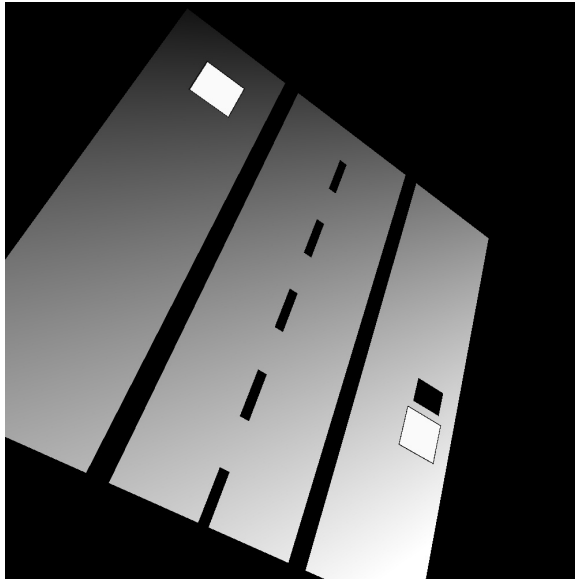
(c) Rectified with DEM Data

Figure 4: Results from test. Note that the green represents invalid regions where the point was occluded.

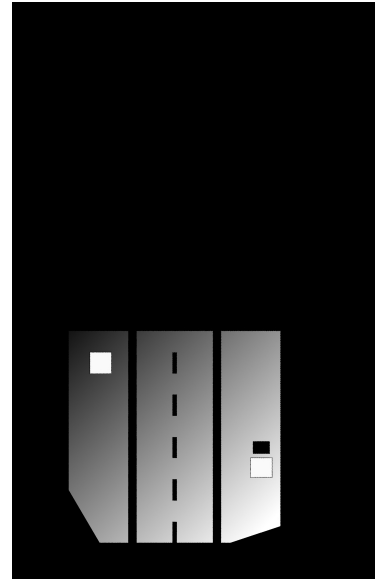
Test 3

Rotation angle: 45

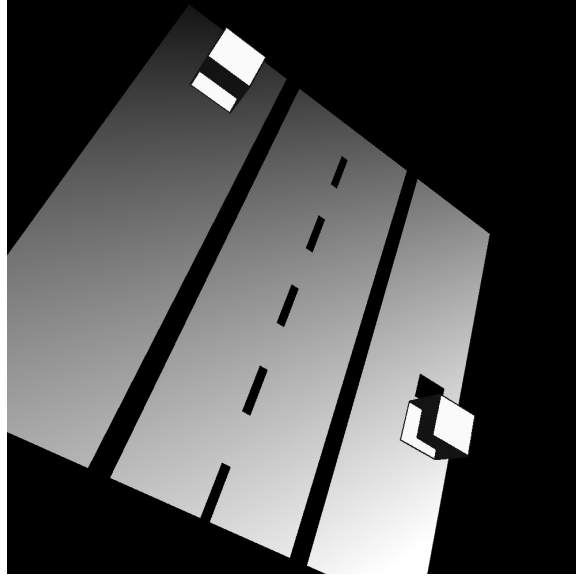
Rotation axis: $(1, 1, 1)$



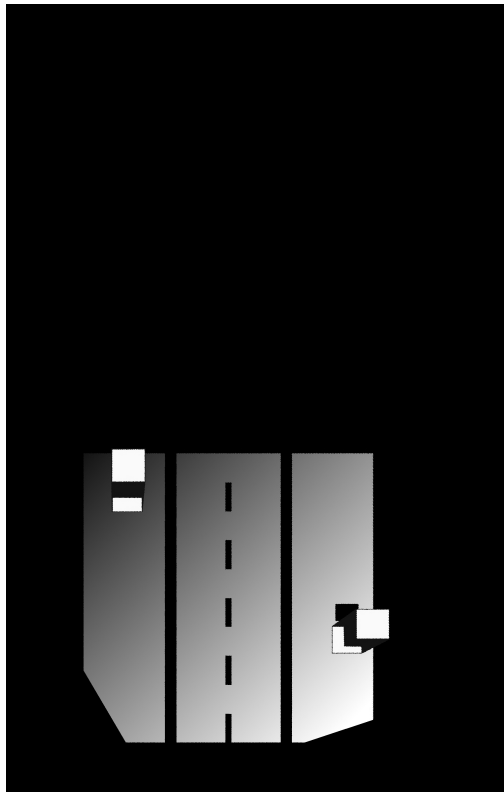
(a) Without Perspective



(b) Rectified



(a) With Perspective



(b) Rectified w/out DEM Data

Figure 5: Results from test. Note that the green represents invalid regions where the point was occluded.