

Landsat Update

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New Thermal Band Resampling: 30-meter pixels

Free Landsat data is currently delivered with the following pixel sizes:

<p><u>Landsat 7 Enhanced Thematic Mapper Plus (ETM+)</u></p> <ul style="list-style-type: none"> • Multispectral: 30 meters • Thermal: 60 meters • Panchromatic: 15 meters 	<p><u>Landsat 4 & 5 Thematic Mapper (TM)</u></p> <ul style="list-style-type: none"> • Multispectral: 30 meters • Thermal: 60 meters <p><u>Landsat 1-5 Multispectral Scanner</u></p> <ul style="list-style-type: none"> • Multispectral: 60 meters
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Commercial software has difficulty aligning the 30 meter multispectral data of Landsats 4-7 with the dissimilar thermal pixel size (see Figure 1). This forces users of the Landsat thermal band to resample data. To remedy this issue, the USGS, in consultation with the Landsat Science Team - particularly Dr. Richard Allen of the University of Idaho Research and Extension Center, will set the pixel size for all thermal data at 30 meters (Figure 2) as of February 17, 2010. This new pixel size will align the thermal band with the multispectral bands.

All data newly processed on February 17, 2010 and later will have the new pixel size. Anything previously processed will have the 60-meter thermal pixels. The data with 60-meter pixel sizes will roll off gradually over the next six months. Also, by changing the pixel size of the thermal band to 30 meters, the size of the thermal bands will increase by 4x. This will result in an average increased scene size of 14 percent for ETM+ data and 12 percent for TM data.

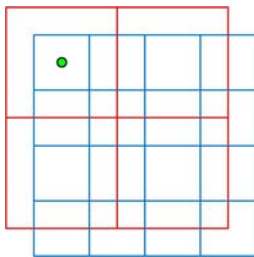


Figure 1. The USGS Landsat processing system uses pixel centers for resampling, which causes an offset in commercial software packages. The blue frame represents a 30-meter ETM+ multispectral pixel, while the red frame represents the 60-meter ETM+ thermal pixels. (J.Kjaersgaard and R.Allen, 2009)

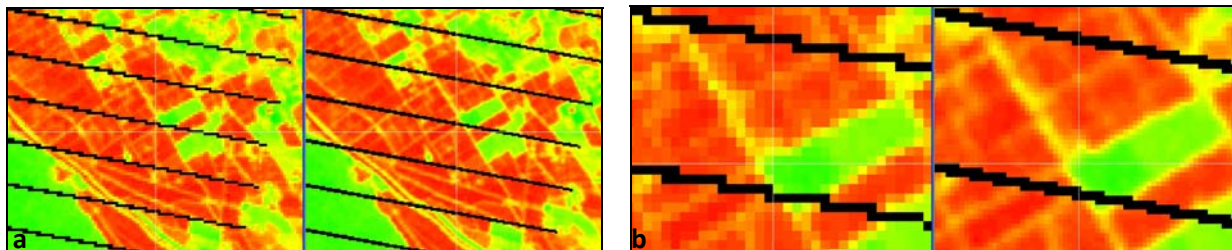


Figure 2. a) Thermal band resampled to 60 meters (left) and USGS prototype 30 meters (right) for an area south of Las Cruces, NM. b) Close-up of the thermal band resampled to 60 meters (left) and prototype 30 meters (right), NM. DN=0 is black; DN 130-150 red through yellow; DN 150-170 yellow through green. (J.Kjaersgaard and R.Allen, 2009)