Subject: Re: Routine for Converting DN to Radiance to Temperature
Posted by James Kuyper on Fri, 27 Jul 2007 22:08:02 GMT
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Paul van Delst wrote:
> Conor wrote:
>> On Jul 26, 5:12 pm, Marsh...@gmu.edu wrote:
>>> Hi dears:
>>> Can someone help me how to write routine for converting Digital Number
>>> to Radiance to Temperature for MASTER bands (HDF format) in IDL?
...
> But, given that the MASTER instrument has been used pretty extensively,
>
> http://master.jpl.nasa.gov/

Following that link, I learned that MASTER data is stored in the same format as MAS data, and the format is documented at <http://mas.arc.nasa.gov/reference/hdfread.txt>. The CalibratedData SDS has an SDS attribute named "scale_factor" which is a 50 element array, and another one named "units" with a value of "watts/meter2/steradian/micron". The middle dimension of the CalibratedData array is also 50, which appears to be the number of bands of data. Therefore, I'd hazard a guess that, in order to obtain a value with those units for a given band, you just calculate:

radiance = CalibratedData[*,band,*]*scale_factor[band]

The file specification has many references to temperatures, but they look like instrument temperatures, whereas I suspect you're interested in the brightness temperature. However, if you know what the brightness temperature is, you should know how to calculate it from the radiance.

If you need help reading HDF data, look in the IDL online help for HDF_SD_Start()/HDF_SD_Close, HDF_SD_NameToIndex(), HDF_SD_Select()/HDF_SD_EndAccess, HDF_SD_GetData, HDF_SD_AttrFind(), and HDF_SD_AttrInfo().