Subject: Re: MODIS spectral radiance
Posted by Tal on Mon, 20 Aug 2007 09:17:45 GMT
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Subject: Re: MODIS spectral radiance
Posted by James Kuyper on Mon, 20 Aug 2007 11:20:32 GMT
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Tal wrote:
> On Aug 18, 11:08 pm, geonline...@gmail.com wrote:
>> Hi all,
>>
>> Do you have experience in processing MODIS data? I went to the website
>> of MODIShttp://modis.gsfc.nasa.gov/about/specifications.php
>> and was confused with the meaning Spectral Radiance for different
>> bands there. How is the spectral radiance in bands1-19 calculated? Is
>> it based on the sun's temperature?
>>
>> Sorry, this is not an IDL question, but I cannot find a good remote
>> sensing list to post.
>>
>> Qi
>
> ------
> Hi Qi,
>
> Bands 1-19 of MODIS are in the reflective range (up to 2.5 micrometers
> roughly). since an imaging system has only 1000 parameters that will
> make it produce modern art instead of an image, there needs to be some
> normalization between various image pixels so you could make research
> with that.
>
> this normalization is in fact the application of a gain and an offset,
> per pixel, per wavelength, that converts raw image data from digital
> numbers (DN) to units with some physical meaning called radiance.the
> gain is usually measured every now and then, using the camera, in a
> laboratory in front of an integrating sphere, or some other calibrated
> source of light, while the offset is measured during operation by
> closing the shutter in front of the camera. for example, MODIS
> radiance in these bands is in (W m-2 sr-1 µm-1), that is, watts
> (energy flux per unit time) normalized by area (square meters in
> MODIS) and by a solid angle (in sterradians) and by spectral
> resampling of the imaging system (micrometers in MODIS). many other
> radiance units are also possible and you can convert between them.
> this normalization, in fact, calibrates your data and allows you to

> compare values from one image with values from another another. it
> also makes sure that the camera will not be saturated over bright
> areas such as deserts.

I'm not sure I undestand that explanation. Are you saying that the
spectral radiance number listed is the increase in incident spectral
radiance corresponding to an increase of DN by 1?

Subject: Re: MODIS spectral radiance
Posted by Tal on Sun, 26 Aug 2007 09:24:12 GMT
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> ... the spectral radiance number listed is the increase in incident spectral
> radiance corresponding to an increase of DN by 1?

not exactly.
the spectral radiance number listed is the increase in (probably
typical) reflected spectral radiance corresponding to an increase of
DN, but not by 1 necessarily. it depends on the gain and the offset as
i explained.

Tal
