
Subject: Re: IDL/ENVI SPOT-5 Level 1a (DIMAP format) - simple(?) gain problem
Posted by [jeffnettles4870](#) on Mon, 23 Aug 2010 16:53:30 GMT

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On Aug 22, 5:15 pm, Maxwell Peck <maxjp...@gmail.com> wrote:

> On Aug 23, 2:31 am, D2 <dennis.d...@gmail.com> wrote:

>

>

>

>> Hi all,

>

>> It's a Sunday afternoon and I'm pulling my hair out trying to do
>> something I thought was going to be relatively easy, but instead has
>> turned into a bit of a nightmare for a beginner at IDL/ENVI.

>

>> I've got a geotiff of SPOT-5 level 1a imagery that I bring in by
>> opening up the supplied *.DIM file so that I get most of the important
>> metadata (e.g., band wavelengths, standard gains and offsets, etc).

>

>> So, the question is this: how can I apply separate gains and offsets
>> to each of my 4-bands, and then write those new results together into
>> a separate file, or even the original file? In other words, the
>> original file + 4 new "bands" added to it, or new file (with all
>> projection metadata, etc. intact) with 4 new band).

>

>> The original file is in 8bit "digital number" (aren't they all
>> "digital"?? heh.) and I'm calculating 32-bit floating point values, so
>> it's your standard "radiometric calibration" process.

>

>> I've tried using the "apply gain and offsets" module, but that
>> multiplies when I want to divide values. I've also tried using band
>> math, but I seem to be only able to apply one equation to one band at
>> a time, and then it only outputs the results to a single file. I'd
>> like to apply 4 separate equations to their respective bands, and then
>> output these new results to a single file, or just write them into the
>> original file.

>

>> There's a user submitted code on the ENVI user forum that basically
>> does what I need to do (calibrate_spot.sav), but I'd like to get under
>> the hood to tweak parameters and begin to teach myself to understand
>> IDL. What I'm looking to do is apply my own custom gains and offsets
>> instead of using those supplied in the metadata file.

>

>> I do want to learn, and I'm eagerly awaiting my Morton Canty book to
>> arrive, but I'd like to make some headway on this now.

>

>> Any pointers (and sample code) would be immensely appreciated!

>

>> Cheers,
>
>> Dennis
>
> From memory the gain/offset routine applies them in the 'remote
> sensing' sense, that is $GAIN * (DN - OFFSET)$. If you adjust your
> offset accordingly the routines will do what you want.

I've used envi's gain/offset very little, and a long time ago at that,
so i could be wrong but i think that that routine applies the same
gain/offset to every band, and the OP mentioned a different gain/
offset for every band.

Assuming that's the case, what I would do is assemble all the gain's
into a "spectrum" (a linear array with one element per band containing
all the gains), and then do the same thing for the offsets. From that
point what you'd want to do is actually spectral math:

$s1 * s2 + s3$;adjust equation as you need to

where:

s1 - input file (use "Map variable to input file" button)

s2 - gain "spectrum"

s3 - offset "spectrum"

Of course, if you were going to be doing this several times, and have
ENVI+IDL, i'd just write code to do this.

Jeff
