Subject: Re: Reading individual bits of MODIS BRDF quality files
Posted by Wout De Nolf on Fri, 18 Sep 2009 12:05:11 GMT

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On Fri, 18 Sep 2009 02:54:55 -0700 (PDT), emitchard
<emitchard@googlemail.com> wrote:

> I am running IDL 7.0.6 on Windows vista (with ENVI 4.6). I am using
> MODIS BRDF corrected 500 m data (MCD43A4). I have sucessfully written
> a program to open the HDF files and produce the output vegetation
> indices I'm interested in. However, I need to filter out cloud-
> contaminated pixels, and am having problem reading the bit-packed
> quality control file (MCD43A2).
>
> I have written a program to extract the layer I'm interested in from
> the HDF file and save it as a 32-bit unsigned integer. However, I
> really need to extract the raw values of the first 12 bits of this
> number (the values of the remaining fields do not matter to me). I
> started writing a program to list all the numbers (from 0-4294967295)
> that result from my required bit combination of these first 12 bits,
> but that approach is not going to work as there are several million
> 'allowable' numbers.
>
> Is there a function in IDL that can read individual bits, or any other
> clever way to produce an array of 1s and 0s from a 32-bit integer?
>
> Many thanks for your help,
>
> Edward Mitchard

Maybe I don't understand what you want, but to extract the first
12bits from a 32bit integer:

a=54564L
b=a and 'FFF'xl

Subject: Re: Reading individual bits of MODIS BRDF quality files
Posted by emitchard on Fri, 18 Sep 2009 12:05:48 GMT

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Please ignore this, I've solved the problem by writing to a temporary
file, opening it using readu as a byte array with four times as many
lines, reading the needed bytes and allowing the values I need through
an 'if' statement.

Apologies,

Edward

On Sep 18, 10:54 am, emitchard <emitch...@googlemail.com> wrote:
> I am running IDL 7.0.6 on Windows vista (with ENVI 4.6). I am using
> MODIS BRDF corrected 500 m data (MCD43A4). I have sucessfully written
> a program to open the HDF files and produce the output vegetation
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> Many thanks for your help,
>
> Edward Mitchard

Subject: Re: Reading individual bits of MODIS BRDF quality files
Posted by pgrigis on Fri, 18 Sep 2009 13:25:44 GMT
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On Sep 18, 5:54 am, emitchard <emitch...@googlemail.com> wrote:
[skip]

> Is there a function in IDL that can read individual bits, or any other
> clever way to produce an array of 1s and 0s from a 32-bit integer?

For the record (in case somebody needs that):

IDL> x=2LL^45+2LL^35+2LL^32+2LL^31+2LL^25+2LL^15+2LL^5-1 & print,x
        35225207865375

;get only 32 bits
IDL> a=string(ulong(x),format='(B)') & print,a
10000010000000001000000000011111

;get all bits
IDL> a=string(x,format='(B)') & print,a

10000000001001100001000000001000000000011111

Ciao,
Paolo

>
> Many thanks for your help,
>
> Edward Mitchard

Subject: Re: Reading individual bits of MODIS BRDF quality files
Posted by wita on Mon, 21 Sep 2009 08:38:49 GMT
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>
> Is there a function in IDL that can read individual bits, or any other
> clever way to produce an array of 1s and 0s from a 32-bit integer?

Hi Edward,

Compile the function below and run it trough ENVI Band math and it
will return an 0/1 map of the bit position that you specify. So for
retrieving
bit position 7 (integer value 128) use:

cgi_map_bitwise_flag(b1, 7)

with best regards,

Allard


```
FUNCTION cgi_map_bitwise_flag, statusmap, bitposition
  return, BYTE((statusmap AND (2UL^bitposition))/(2UL^bitposition))
END
```