
Subject: Get Latitude and Longitude from Tiff files
Posted by [Lucia](#) on Wed, 27 Jun 2007 01:52:59 GMT
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I wonder how to get latitude and longitude of each point of the files
(such as tiff format) that have already included detailed projection
parameters. Thank you !

Subject: Re: Get Latitude and Longitude from Tiff files
Posted by [KRDean](#) on Tue, 03 Jul 2007 20:17:37 GMT
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On Jul 3, 2:08 am, titan <thunder...@inwind.it> wrote:

> On Jun 27, 5:33 am, David Fanning <n...@dfanning.com> wrote:

>

>

>

>

>

>> Lucia writes:

>>> I wonder how to get latitude and longitude of each point of the files

>>> (such as tiff format) that have already included detailed projection

>>> parameters.

>

>> I presume you mean a GEOTiff file, not just a TIFF file.

>> You can presumably pull the information you need out of

>> the GeoTiff file itself. Here is an example written for

>> a slightly different reason that will give you some idea

>> of how to go about this:

>

>> http://www.dfanning.com/map_tips/geotiffreg.html

>

>> Cheers,

>

>> David

>

>> --

>> David Fanning, Ph.D.

>> Fanning Software Consulting, Inc.

>> Coyote's Guide to IDL Programming:<http://www.dfanning.com/>

>> Sepore ma de ni thui. ("Perhaps thou speakest truth.")

>

> I have the same problem and I tried to follow the example mentioned

> before but unfortunately the informations I have are different:

> GeoTiff image Structure

> ** Structure <9d0b28c>, 6 tags, length=140, data length=138, refs=1:

> MODELTRANSFORMATIONTAG

```
>          DOUBLE  Array[4, 4]
> GTMODELTYPEGEOKEY
>          INT      2
> GTRASTERTYPEGEOKEY
>          INT      1
> GEOGRAPHICTYPEGEOKEY
>          INT      4326
> GEOGLINEARUNITSGEOKEY
>          INT      9001
> GEOANGULARUNITSGEOKEY
>          INT      9102
>
> In this case are there any possibilities to obtain latitude and
> longitude of each point of the GEOTiff image??
> Thank you- Hide quoted text -
>
> - Show quoted text -
```

Well...

GTMODELTYPEGEOKEY : 2 : Geographic
GTRASTERTYPEGEOKEY : 1 : Pixel is Area
GEOGRAPHICTYPEGEOKEY : 4326 : WGS 84
GEOGLINEARUNITSGEOKEY : 9001 : meter
GEOANGULARUNITSGEOKEY : 9102 : degree

This tag is considered obsolete by the Cartographic Application Group.

MODELTRANSFORMATIONTAG

According to the IDL Help, this is a 4x4 matrix of doubles.

I haven't seen this in any GeoTIFF that I played around with, but the tags seem reasonable to perform some kind of pixel to degree computation. An Affine Transformation takes a 4x4 matrix to do the conversion from pixel to degrees. Try that!

Kelly Dean
Fort Collins, CO

Subject: Re: Get Latitude and Longitude from Tiff files
Posted by [Lucia](#) on Wed, 04 Jul 2007 03:08:29 GMT
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According to David Fanning's instruction, I have found a method that can obtain latitude and longitude of each of point of GeoTIFF. The source code is as follows.

```

pro get_latlon
filename='F:\data\A2007098.0235\mod43.Albedo_BSA_Band1.tif'

image = Read_Tiff(filename, GEOTIFF=geotag) ; GeoTIFF info in
"geotag" structure.
image = Reverse(image, 2) / 10000 ; Reverse Y direction, divide by
10000 to give correct values

; Find the image dimensions. Will need later.
s = Size(image, /Dimensions)
UTM_Map = MAP_PROJ_INIT('UTM', CENTER_LAT=0.0,
CENTER_LON=0.0,ZONE=50,datum=8,/gctp)
; Calculate corner points from GeoTIFF structure obtained from file.
xscale = geotag.ModelPixelScaleTag[0]
yscale = geotag.ModelPixelScaleTag[1]
tp     = geotag.ModelTiePointTag

xOrigin = tp[3]
yOrigin = tp[4]

lon=fltarr(s[0])
lat=fltarr(s[1])
lat[0]=xorigin
lon[0]=yorigin

for i=1,s[0]-1 do begin
  lon[i]=xorigin+xscale*i
endfor

for i=1,s[1]-1 do begin
  lat[i]=yorigin-yscale*i
endfor

lat=transpose(lat)
lat=rebin(lat,s[0],s[1],/sample)
lon=rebin(lon,s[0],s[1],/sample)
latitude=fltarr(s[0],s[1])
longitude=fltarr(s[0],s[1])

for i=0,s[0]-1 do begin
  lat1=lat[i,*]
  lon1=lon[i,*]
  a = MAP_PROJ_INVERSE(lon1,lat1,map_structure=UTM_Map)
  longitude[i,*]=a[0,*]
  latitude[i,*]=a[1,*]
endfor

```

```
filename='F:\data\A2007098.0235\latitude.dat'
openw,lun,filename,/get_lun
writeu,lun,latitude
free_lun,lun
filename='F:\data\A2007098.0235\longitude.dat'
openw,lun,filename,/get_lun
writeu,lun,longitude
free_lun,lun

end

^V^
```

Subject: Re: Get Latitude and Longitude from Tiff files
Posted by [David Fanning](#) on Wed, 04 Jul 2007 03:18:23 GMT
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Lucia includes the following FOR loops in the example code:

```
> for i=1,s[0]-1 do begin
>   lon[i]=xorigin+xscale*i
> endfor
>
> for i=1,s[1]-1 do begin
>   lat[i]=yorigin-yscale*i
> endfor
```

Yikes! Here are a couple of cases where you almost get vectorization for free. Help stamp out FORTRAN coding in IDL!!!

```
lon = xorigin + xscale * Indgen(s[1])
lat = yorigin - yscale * Indgen(s[0])
```

Cheers,

David

--

David Fanning, Ph.D.
Fanning Software Consulting, Inc.
Coyote's Guide to IDL Programming: <http://www.dfanning.com/>
Sepore ma de ni thui. ("Perhaps thou speakest truth.")

Subject: Re: Get Latitude and Longitude from Tiff files
Posted by [Lucia](#) on Wed, 04 Jul 2007 06:24:01 GMT

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Oh,yes!! haven't flinged FORTRAN away. Thanks a lot for David's instruction!

Subject: Re: Get Latitude and Longitude from Tiff files

Posted by [titan](#) on Thu, 05 Jul 2007 07:26:17 GMT

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to kBob:

the tiff image I'm referring has been obtained using ENVI georeference tool from input geometry.

that's why, probably, you haven't seen this in any GeoTIFF before.

could you please be a little bit clear when you say "An Affine Transformation takes a 4x4 matrix to do the conversion from pixel to degrees"?

to Lucia:

I have tried to use the David Fanning's instructions but unfortunately the structure I have from my geotiff don't match to the ones you have.

Could someone tell me if I can add other informations to my geotiff? I mean in order to obtain those info in the geotag structure mentioned in the code above xscale, yscale, tp ?

Thank you
