
Subject: Re: Associating GeoTIFF tags with basic Mercator projection parameters?
Posted by [David Fanning](#) on Tue, 04 Jan 2011 07:06:48 GMT

[View Forum Message](#) <> [Reply to Message](#)

Barry Lesht writes:

> I've been through the GeoTIFF threads here and, as often advised, have
> tried to make sense of the GeoTIFF standard (<http://remotesensing.org/geotiff/spec/geotiff6.html#6.3.3>) without success. I'm hoping that
> someone with knowledge of using IDL to write GeoTiff files can give me
> some help with the following problem.

>
> I have a set of images that were created by transforming satellite
> data onto a basic (single standard parallel at the equator) Mercator
> projection. The projected images were created using IDL with a
> minimal set of parameters; I know the size of the image (pixels,
> lines), its geographic limits, the central meridian, and that it is
> isotropic. Here is a header dump of the mapped files (which are hdf).

>
> Sample:Projection Category = "IDL" ;
> Sample:Projection Name = "Mercator" ;
> Sample:Limit = 38.8744010925293, -92.41079711914062,
> 50.60269927978516, -75.86920166015625 ;
> Sample:Projection ID = 9 ;
> Sample:Latitude Center = 0. ;
> Sample:Longitude Center = -84.13999938964844 ;
> Sample:Rotation = 0. ;
> Sample:Position = 0., 0., 1., 1. ;
> Sample:Isotropic = 1 ;
> Sample:Scale = 0. ;
> Sample:Central_Azimuth = 0. ;

>
> I do some manipulation of these files in my code and need to create
> output mapped images of an extracted region in the form of GeoTIFF
> files that can be read by ArcMap. The problem is that I seem to
> unable to find the correct set of GeoTIFF tags to accomplish this.

> For example:

>
> g_tags = { \$
> ModelPixelScaleTag: [0.016153906d, 0.011453418d, 0d], \$
> ModelTiepointTag: [0, 0, 0, -84.813, 46.580, 0.], \$
> GTModeTypeGeoKey: 1, \$; Projected
> GTRasterTypeGeoKey: 1, \$; Pixel represents
> area
> GeographicTypeGeoKey: 4326, \$; WGS84
> GeogLinearUnitsGeoKey: 9001, \$; meters
> GeogAngularUnitsGeoKey: 9102, \$; angular degree
> ProjCoordTransGeoKey: 7, \$; Mercator

```
> ProjNatOriginLongGeoKey: -84.13999d, $
> ProjNatOriginLatGeoKey: 0.0    $
> }
> WRITE_TIFF, tif_name, new_comp_image, /FLOAT, GEOTIFF=g_tags
>
> Produces files that "lack spatial reference data" when read by
> ArcMap. I'd sure appreciate some guidance - maybe there is a better
> way to accomplish this?
```

I'm not a GeoTiff expert, but every GeoTiff file I've ever dealt with had tie points in Cartesian coordinates (projected meters). It looks to me like yours are in units of latitude/longitude. In any case, you say they are in meters (9001), so...

You can see how I created a GeoTIFF image (once!) in this article:

http://www.dfanning.com/map_tips/goesmap.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.")

Subject: Re: Associating GeoTIFF tags with basic Mercator projection parameters?

Posted by [BLesht](#) on Tue, 04 Jan 2011 17:42:49 GMT

[View Forum Message](#) <> [Reply to Message](#)

Thanks, David. I tried that early on, but went to the angular measure (adding the GeogAngularUnitsGeoKey) for some reason (maybe I saw a different example somewhere). I'll give it another go. By the way, have nice recollections of IDL course you taught way back "in the day." Still telling "Coyote stories?" Barry

Subject: Re: Associating GeoTIFF tags with basic Mercator projection parameters?

Posted by [BLesht](#) on Wed, 05 Jan 2011 03:38:09 GMT

[View Forum Message](#) <> [Reply to Message](#)

Just to close this thread with something that may be of use to anyone

who has a similar problem, David's suggestion of following the steps described in his article

http://www.dfanning.com/map_tips/goesmap.html

was right on.

Because I already had a projected image, I skipped the warping part and started with using MAP_PROJ_INIT to set up the projection. I used the GCTP version of the Mercator projection and specified the equator as the TRUE_SCALE_LATITUDE. Because my files were based on a subset of the original map, I used the subset geographic boundaries to define the LIMIT vector in the MAP_PROJ_INIT and in the MAP_PROJ_FORWARD procedure. The resulting GeoTIFF files have the correct map information.

```
MercMap = MAP_PROJ_INIT(105, /GCTP, $ ; Mercator
                      ELLIPSOID = 8, $ ; WGS84
                      LIMIT = [lr_lat, lr_lon, ul_lat, ul_lon], $ ; Corners
should be enough
                      CENTER_LONGITUDE = center_lon, $
                      TRUE_SCALE_LATITUDE = 0.0)
```

```
uv = MAP_PROJ_FORWARD([left_lon, top_lon, right_lon, bottom_lon], $
                      [left_lat, top_lat, right_lat, bottom_lat], $
                      MAP_STRUCTURE=MercMap)
```

```
xscale = ABS(uv[0,0] - uv[0,2])/(s[0])
```

```
yscale = ABS(uv[1,1] - uv[1,3])/(s[1])
```

```
tp = [uv[0,0], uv[1,1]]
```

```
;
```

```
g_tags = { $
```

```
    ModelPixelScaleTag: [xscale, yscale, 0], $
```

```
    ModelTiepointTag: [0, 0, 0, tp, 0], $
```

```
    GTModeTypeGeoKey: 1, $ ; Geographic
```

```
    GTRasterTypeGeoKey: 1, $ ; Pixel represents
```

```
area
```

```
    GeographicTypeGeoKey: 4326, $ ; WGS84
```

```
    GeogLinearUnitsGeoKey: 9001, $ ; meters
```

```
    GeogAngularUnitsGeoKey: 9102, $ ; angular degree
```

```
    ProjectedCSTypeGeoKey: 32767, $ ;
```

```
    ProjectionGeoKey: 32767, $ ;
```

```
    ProjCoordTransGeoKey: 7, $ ; Mercator
```

```
    ProjLinearUnitsGeoKey: 9001, $ ;
```

```
    ProjNatOriginLongGeoKey: center_lon $
```

```
    ProjNatOriginLatGeoKey: 0.0, $
```

```
    ProjFalseNorthingGeoKey: 0, $
```

```
    ProjFalseEastingGeoKey: 0, $
```

```
ProjScaleAtNatOriginGeoKey: 1.    $  
}
```

Thanks again, David.

On Jan 4, 11:42 am, Barry Lesht <ble...@gmail.com> wrote:
> Thanks, David. I tried that early on, but went to the angular measure
> (adding the GeogAngularUnitsGeoKey) for some reason (maybe I saw a
> different example somewhere). I'll give it another go. By the way,
> have nice recollections of IDL course you taught way back "in the
> day." Still telling "Coyote stories?" Barry
