Subject: Re: cgmap_gshhs.pro minarea issue
Posted by pvelissariou on Fri, 22 Nov 2013 02:05:30 GMT
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On Thursday, November 21, 2013 7:09:28 PM UTC-5, Panagiotis Velissariou wrote:
> Apparently, in the recent versions (>= 2.2) of gshhs database
>
> the units of the header.area changed from 1/10 km^2 to 1/10 m^2.
>
> For cgmap_gshhs to work properly the line:
>
> polygonArea = header.area * 0.1 (ok for gshhs < 2.2)
>
> should be changed to:
>
> polygonArea = header.area * 1.0e-7 (for gshhs >= 2.2)

David,
Thank you for the reply. You are right.
The problem is that from version 2.2 and on they have introduced a
magnification factor for the area, see the header structure below:

```
struct GSHHS { /* Global Self-consistent Hierarchical High-resolution Shorelines */
 int id;  /* Unique polygon id number, starting at 0 */
 int n;  /* Number of points in this polygon */
 int flag; /* = level + version << 8 + greenwich << 16 + source << 24 + river << 25 + p << 26 */
 /* flag contains 6 items, as follows:
  * low byte: level = flag & 255: Values: 1 land, 2 lake, 3 island_in_lake, 4 pond_in_island_in_lake
  * 2nd byte: version = (flag >> 8) & 255: Values: Should be 9 for GSHHS release 9
   * 3rd byte: greenwich = (flag >> 16) & 3: Values: 0 if Greenwich nor Dateline are crossed,
  *  1 if Greenwich is crossed, 2 if Dateline is crossed, 3 if both is crossed.
  * 4th byte: source = (flag >> 24) & 1: Values: 0 = CIA WDBII, 1 = WVS
  * 4th byte: river = (flag >> 25) & 1: Values: 0 = not set, 1 = river-lake and GSHHS level = 2 (or
WDBII class 0)
  * 4th byte: area magnitude scale p (as in 10^p) = flag >> 26.  We divide area by 10^p.
  */
 int west, east, south, north; /* min/max extent in micro-degrees */
 int area; /* Area of polygon in km^2 * 10^p for this resolution file */
 int area_full; /* Area of corresponding full-resolution polygon in km^2 * 10^p */
 int container; /* Id of container polygon that encloses this polygon (-1 if none) */
 int ancestor; /* Id of ancestor polygon in the full resolution set that was the source of this polygon
(-1 if none) */
};
```

I have modified the code in cgmap_gshhs.pro as follows:

```
    ; Discriminate polygons based on header information.
    IF version LT 9 THEN BEGIN
```

```
    area_mag = 1.0e-1 ; km^2 / 10 -> km^2
  ENDIF ELSE BEGIN
    area_mag = 10.0 ^ ( - ISHFT(f, -26) ); km^2 / 10^p -> km^2
  ENDELSE
  polygonArea = header.area * area_mag
```

and it seems that gives the correct results.

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