
Subject: Re: Lat/Lon labels ala "gmt"

Posted by [Andy Loughe](#) on Mon, 23 Jun 1997 07:00:00 GMT

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Jack Harlan wrote:

>
> Hi All,
>
> I'm looking for IDL code to create lat/lon labels as in the attached
> GIF file. The "gmt" package apparently does this. Specifically, the
> alternating black/white borders with the appropriate labels.
>
> Hope this attachment works ok for everyone.
>
> Thanks.
>
> jack
> --
> * Jack Harlan
> * NOAA Environmental Technology Laboratory
> * 325 Broadway * Boulder, CO 80303
> * 303-497-6032 PH * 303-497-3577 FAX
>
> -----
> [Image]

Try this rather long routine... but not with IDL 5.0, they have
conveniently removed the !map.out system variable and changed the
number which corresponds to a given map projection!

```
; Procedure to label the lat/lon values around the boundary of a map.  
;  
; Originator: Andrew F. Loughe (2/22/95)
```

```
pro map_label, color=color, charsize=charsize, $  
    lhs=lhs, rhs=rhs, $  
    latdel=latdel, londel=londel, noequ=noequ, $  
    nudgex=nudgex, nudgey=nudgey, help=help  
  
; Print a help message to the IDLTERM.  
if (n_elements(help) gt 0) then begin  
    message, ' map_label, color=color, charsize=charsize,' + $  
        ' lhs=lhs, rhs=rhs, latdel=latdel, londel=londel,' + $  
        ' nudgex=nudgex, nudgey=nudgey, help=help'  
endif
```

```

; Set some defaults
if (n_elements(color) eq 0) then color = !p.color
if (n_elements(charsize) eq 0) then charsize = 0.8

lhs = keyword_set (lhs)
rhs = keyword_set (rhs)
if (lhs eq 0 and rhs eq 0) then lhs = 1

if (n_elements(latdel) eq 0) then latdel = 30
if (n_elements(londel) eq 0) then londel = 30
if (n_elements(noequ) eq 0) then noequ = 0
if (n_elements(nudgex) eq 0) then nudgex = 0
if (n_elements(nudgey) eq 0) then nudgey = 0

on_error, 2

; Get lat/lon boundaries of the map.
lonmin = !map.out(2)
lonmax = !map.out(3)
latmin = !map.out(4)
latmax = !map.out(5)
if (lonmin eq lonmax) then lonmax = lonmin + 360.
DX = abs (lonmax - lonmin)

; Compute number of plots/page
numperpage= (!p.multi(1) * !p.multi(2)) > 1

; Determine character height and width. Apply charsize.
char_ht = convert_coord([0,!d.y_ch_size],/device,/to_norm)
char_ht = char_ht(1) * 1.0
if (!d.name ne 'X' and charsize gt 1.) then $
    char_ht = char_ht * charsize

char_wd = convert_coord([0,!d.x_ch_size],/device,/to_norm)
char_wd = char_wd(1)

; Nudging factor (convert from data to normalized)
y_avg = .5*(latmin + latmax)
nudgex1 = convert_coord( [nudgex,y_avg], /data, /to_norm )
nudgex2 = convert_coord( [nudgex+nudgex,y_avg], /data, /to_norm )
nudgex = nudgex2 - nudgex1
nudgex = nudgex(0)

x_avg = .5*(lonmin + lonmax)
nudgey1 = convert_coord( [x_avg,nudgey], /data, /to_norm )
nudgey2 = convert_coord( [x_avg,nudgey+nudgey], /data, /to_norm )
nudgey = nudgey2 - nudgey1
nudgey = nudgey(1)

```

```

; Test to see how close the lower longitude points are.
; If they are too close, then place longitude labels along EQ.
xypos1 = convert_coord([lonmin, latmin], /data, /to_norm)
xypos2 = convert_coord([lonmin+DX/2., latmin], /data, /to_norm)
bottom = 'yes'
if ( abs(xypos1(0) - xypos2(0)) lt .2/numperpage ) then bottom='no'

```

```

; Plot longitude labels along BOTTOM boundary of the map.
for i = fix(lonmin), fix(lonmax) do begin
  if ( (i mod londel) eq 0 ) then begin
    ii = fix(abs(i))
    if (i gt 180) then ii = abs(360 - ii)

```

```

; Determine text of longitude label.
  append = "
  if (i gt 0 and i lt 180) then append='E'
  if (i lt 0 or i gt 180) then append='W'
  if (i gt 360 and i lt 540) then append='E'
  if (i gt 540 and i lt 720) then append='W'
  if ( (abs(i) mod 180) eq 0 ) then append=""
  if ( (abs(i) mod 360) eq 0 ) then ii='0'
  label = strcompress(string(ii), /rem) + append

```

```

; Determine where to place longitude label.
  xypos = convert_coord([i, latmin], /data, /to_norm)
  x = xypos(0)
  y = !y.window(0) - (char_ht)*1.2 + nudgey

```

```

; Some projections have longitude labels at EQ.
  if ( bottom eq 'no' and noequ eq 0 ) then begin
    xypos = convert_coord([i, .5], /data, /to_norm)
    x = xypos(0)
    y = xypos(1)
    if ( x ge !x.window(0)+char_wd*2. and $
        x le !x.window(1)-char_wd*2. and $
        y ge !y.window(0)+char_ht and $
        y le !y.window(1)-char_ht ) then $

```

```

xyouts,x,y,label,charsize=charsize,color=color,align=.5,/nor m

```

```

endif

```

```

  if ( bottom ne 'no' ) then begin
; Plot longitude labels at bottom of the map.
  if ( x ge !x.window(0)-char_wd*2. and $
      x le !x.window(1)+char_wd*2. ) then $

```

```

xyouts,x,y,label,charsize=charsize,color=color,align=.5,/nor m
endif
endif

endfor ; i

```

; Plot latitude labels along LEFT or RIGHT boundary of the map.

```

for i = fix(latmin), fix(latmax) do begin
  if ( (i mod latdel eq 0) ) then begin
    ii = fix(abs(i))

```

```

; Determine text of latitude label.
  append=""
  if (i lt 0) then append='S'
  if (i gt 0) then append='N'
  if (i eq 0) then ii='EQ'
  label = strcompress(string(ii), /rem) + append

```

; Determine where to place latitude label.

```

; Work in from the far left to find the y position.
  if (lhs eq 1) then begin
    for x1 = lonmin-10., lonmax, .1 do begin
      xypos = convert_coord( [x1, i], /data, /to_norm)
      xypos2 = xypos
      xypos2(0) = xypos2(0) - char_wd
      xypos2(1) = xypos2(1) + char_ht
      if (xypos2(0) ge !x.window(0) and xypos2(1) ge $
        !y.window(0) and xypos2(1) le !y.window(1)) $
        then goto, jump2
    endfor

```

```

; Work in from the far right to find the y position.
  endif else begin
    for x1 = lonmax+10., lonmin, -.1 do begin
      xypos = convert_coord( [x1, i], /data, /to_norm)
      xypos2 = xypos
      xypos2(0) = xypos2(0) + char_wd
      xypos2(1) = xypos2(1) + char_ht
      if (xypos2(0) le !x.window(1) and xypos2(1) ge $
        !y.window(0) and xypos2(1) le !y.window(1)) $
        then goto, jump2
    endfor
  endelse

```

```
jump2: y = xypos(1) - (char_ht*.25)
```

```
; Move end latitudes around a bit.
```

```
  if (i eq latmax) then y = xypos(1) - (char_ht *.2)
```

```
  if (i eq latmin) then y = xypos(1)
```

```
; Find lefthand or righthand side of the plot boundary.
```

```
  if (lhs eq 1) then x = !x.window(0) - (char_wd*.5) + nudgex
```

```
  if (rhs eq 1) then x = !x.window(1) + (char_wd) + nudgex
```

```
; Plot latitude label.
```

```
  xyouts, x, y, label, charsize=charsize, color=color, $
```

```
    align=(lhs eq 1), /norm
```

```
  endif
```

```
endfor ; i
```

```
end
```

```
--
```

```
Andrew F. Loughe
```

```
|
```

```
afl@cdc.noaa.gov
```

```
University of Colorado, CIRES Box 449 |
```

```
http://cdc.noaa.gov/~afl
```

```
Boulder, CO 80309-0449
```

```
| phn:(303)492-0707
```

```
fax:(303)497-7013
```

```
-----  
"I do not feel obliged to believe that the same God who has endowed us  
with
```

```
sense, reason, and intellect has intended us to forego their use."
```

```
-Galileo
```