Subject: Re: "TRUE" map projections
Posted by zawodny on Fri, 27 Jan 1995 17:32:11 GMT
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In article <3gb5au$o3i@post.gsfc.nasa.gov> Serdar Manizade <manizade@osb1.wff.nasa.gov> writes:
> I repost my note since subject was missing. Apologies.
> Serdar Manizade <manizade@osb1.wff.nasa.gov> wrote:
>>
>> zawodny@arbd0.larc.nasa.gov (Joseph M Zawodny) wrote:
>>> possible I use "circular" map projections and the SET_ISOXY routine. But,
>>
>> Where is the SET_ISOXY routine?
>>
>> When I produce a map, I have to pull out my ruler and measure the
>> latitude and longitude scales to see if I got the scaling right. I
>> make adjustments whenever I change my output map aspect ratio or the
>> coordinates of the map. Especially important at high latitudes.
>

This is my version of the routine set_isoxy. It was part of a system of routines writen by the original author. I hacked it a bit to work by itself without the need for the other routines. It works for what I use it for but it may nolonger function as the original author intended. I make no claims of functionality for either myself or the original author. Look it over, try it out and hack it further to suit your needs.

```
PRO SET_ISOXY, XMN0, XMX0, YMN0, YMX0
;+
 ;------------------------------------------------------------ -------
; Name: SET_ISOXY.PRO
; Purpose: Set XY isotropically (equal x and y scale).
; Category: Graphics.
; Calling sequence: SET_ISOXY, XMN, XMX, YMN, YMX
; Inputs:
;   XMN = minimum data x. in.
;   XMX = maximum data x. in.
;   YMN = minimum data y. in.
;   YMX = maximum data y. in.
; Optional input parameters:
; Outputs:
; Optional output parameters:
; Common blocks:  ISOXY_COMMON = what parts of data window to lock in place.
; Side effects:
; Restrictions:
; Routines used:
; Procedure:
```

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; Modification history:
; 3 Sep, 1986.  R. Sterner.  Johns Hopkins U APL
; Jun 14, 1990. J.M. Zawodny NASA LaRC  modified for standalone to V-2.0
 ;------------------------------------------------------- -------
;-
 COMMON ISOXY_COMMON, X_LOCK, Y_LOCK

 IF N_PARAMS(0) EQ 0 THEN BEGIN
   PRINT,'SET_ISOXY, XMN, XMX, YMN, YMX
   PRINT,'  XMN, XMX = desired min and max X.
   PRINT,'  YMN, YMX = desired min and max Y.
   PRINT,' Either XMN, XMX or YMN,YMX will be adjusted to force equal scaling in
   PRINT,' X and Y in the set screen window.  At least the specified range will
   PRINT,' be covered in both X and Y, but a greater range will be covered in one.
   RETURN
 ENDIF

 IF N_ELEMENTS(X_LOCK) EQ 0 THEN X_LOCK = 'XMD' ; defaults.
 IF N_ELEMENTS(Y_LOCK) EQ 0 THEN Y_LOCK = 'YMD'
 XMN = XMN0    ; copy so changing values
 XMX = XMX0    ; won't change them in caller.
 YMN = YMN0
 YMX = YMX0

; if !p.position not set default to largest area possible
 m=where(!p.position ne 0.,count)
 if(count eq 0) then !p.position=[0.,0.,1.,1.]

 IDX = (!p.position(2)-!p.position(0))*!d.x_vsize  ; plot position
 IDY = (!p.position(3)-!p.position(1))*!d.y_vsize ; side lengths
 DX = FLOAT(XMX - XMN)   ; data window side lengths.
 DY = FLOAT(YMX - YMN)
 YMD = .5*(YMN + YMX)   ; data window midpoint.
 XMD = .5*(XMN + XMX)
 IF (DX/DY) GE (IDX/IDY) THEN BEGIN    ; adjust Y range.
   DY2 = .5*DX*IDY/IDX   ; half new Y range.
   DX2 = .5*DX    ; half old X range.
 ENDIF ELSE BEGIN        ; adjust X range.
   DX2 = .5*DY*IDX/IDY   ; half new X range.
   DY2 = .5*DY    ; half old Y range.
 ENDELSE
;---------  lock window  -----------------
 CASE X_LOCK OF  ; lock x.
'XMN': XMX = XMN + DX2 + DX2   ; lock x min.
'XMD': BEGIN     ; lock x mid.
   XMN = XMD - DX2
   XMX = XMD + DX2
 END
```

```
'XMX': XMN = XMX - DX2 - DX2   ; lock x max.
 ENDCASE
 CASE Y_LOCK OF  ; lock y.
'YMN': YMX = YMN + DY2 + DY2   ; lock y min.
'YMD': BEGIN     ; lock y mid.
   YMN = YMD - DY2
   YMX = YMD + DY2
 END
'YMX': YMN = YMX - DY2 - DY2   ; lock y max.
 ENDCASE

 !x.range=[XMN, XMX]
 !y.range=[YMN, YMX]

 RETURN
END
```

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