
Subject: "TRUE" map projections
Posted by [afl](#) on Tue, 24 Jan 1995 21:34:05 GMT
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How can one obtain (for example) a "true" Mercator map projection in IDL? Sounds rather academic, doesn't it?
But in a given window if one issues

```
IDL> map_set, /merc, /cont, /grid, /usa, limit=[15,-130,50,-60]
```

vs.

```
IDL> map_set, /merc, /cont, /grid, /usa, limit=[15,-180,50,-30]
```

I guarantee you the "shape" of the geographical boundaries will be different. There must be a single, proper aspect ratio for a map to be called a "true" Mercator projection. Is IDL capable of producing "true" map projections, or is one able to arbitrarily re-shape the projection into any form he wishes such that the specification of the projection is all but pointless? Does one simply say "hmmmm, looks good to me" and move onto the next task?

--

Andrew F. Loughe email: afl@cdc.noaa.gov
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Subject: Re:"TRUE" map projections
Posted by [Serdar Manizade](#) on Fri, 27 Jan 1995 16:00:30 GMT
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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.

Subject: Re: "TRUE" map projections
Posted by [zawodny](#) on Fri, 27 Jan 1995 17:32:11 GMT
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In article <3gb5au\$03i@post.gsfc.nasa.gov> Serdar Manizade <manizade@osb1.wff.nasa.gov> writes:

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> Serdar Manizade <manizade@osb1.wff.nasa.gov> wrote:
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>> 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 written 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 no longer 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:
; 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': XMX = 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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TCP/IP: ko4lw@ko4lw.ampr.org  Packet: ko4lw@n4hog.va.usa.na
```

Subject: Re: "TRUE" map projections
Posted by [Serdar Manizade](#) on Mon, 30 Jan 1995 19:33:33 GMT
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afl@bjerknes.NoSubdomain.NoDomain (Andy Loughe) wrote:

```
> ...
> than I--> "Use the /ISO keyword in your map_set call."
>
> Is the ISO keyword a documented feature in IDL?
>
> "No comment."
```

Perhaps you are speaking tongue-in-cheek, but I am gullible, so I tried it. I did not find iso mentioned in the on-line documentation for map_set. (I am running: IDL. Version 3.6 (sunos sparc).)

```
IDL> map_set
% Compiled module: MAP_SET.
IDL> map_set,/iso
% Keyword ISO not allowed in call to: MAP_SET
% Execution halted at $MAIN$ .
```

Subject: Re: "TRUE" map projections
Posted by [afl](#) on Mon, 30 Jan 1995 22:54:49 GMT

In article <3gjeud\$t4g@post.gsfc.nasa.gov>, Serdar Manizade <manizade@osb1.wff.nasa.gov> writes:

```
|> afl@bjercknes.NoSubdomain.NoDomain (Andy Loughe) wrote:
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|> I tried it. I did not find iso mentioned in the on-line documentation
|> for map_set. (I am running: IDL. Version 3.6 (sunos sparc).)
|>
|> IDL> map_set
|> % Compiled module: MAP_SET.
|> IDL> map_set,/iso
|> % Keyword ISO not allowed in call to: MAP_SET
|> % Execution halted at $MAIN$ .
|>
|>
```

I am running IDL Version 3.6.1a (sunos sparc), and the /ISO keyword works with map_set. I cannot vouch for earlier versions.

--

Andrew F. Loughe email: afl@cdc.noaa.gov
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Campus Box 449 fax: (303) 497-7013
Boulder, CO 80309-0449 USA

Subject: Re: "TRUE" map projections
Posted by [Serdar Manizade](#) on Tue, 31 Jan 1995 13:54:28 GMT
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```
afl@bjercknes.NoSubdomain.NoDomain (Andy Loughe) wrote:
>
> In article <3gjeud$t4g@post.gsfc.nasa.gov>, Serdar Manizade
> <manizade@osb1.wff.nasa.gov> writes:
> |> afl@bjercknes.NoSubdomain.NoDomain (Andy Loughe) wrote:
> |> > ...
> |> > than I--> "Use the /ISO keyword in your map_set call."
```

> |> > Is the ISO keyword a documented feature in IDL?
> |> > "No comment."
> |> ...
> |> I tried it. I did not find iso mentioned in the on-line documentation
> |> for map_set. (I am running: IDL. Version 3.6 (sunos sparc).)
> |> ...

> I am running IDL Version 3.6.1a (sunos sparc), and the /ISO
> keyword works with map_set. I cannot vouch for earlier versions.

Thanks to Andy Lough and Marion Legg. I updated to 3.6.1a and
now have the /iso keyword to map_set. Now if only I had some
documentation to understand what it does...

Serdar
EG&G/ NASA Wallops Flight Facility, Virginia, USA
