
Subject: Colorbar for temperature scale

Posted by [Kelly Dean](#) on Fri, 14 Mar 1997 08:00:00 GMT

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I am attempting to make a color bar for some satellite images. I am using CBAR.PRO from JHU and it is not working out. The labels used by PLOT are not lining up. Below is some IDL code to make a color bar and plot. The color bar has two marks to show the location of 0C and -50C.

Is there a way to get PLOT to line up the X-axis labels with the color bar?

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===== SUG.PRO =====

```
FUNCTION ModeAtbl, K=K, C=C, F=F
;
; Standard Mode-A infrared calibration table
;
; Keyword:
;   K : Kelvin (default)
;   C : Centigrade
;   F : Fahrenheit
;
ModeA = FLTarr(256)
;
; Create array with Kelvin numbers.
;
ModeA = 330 - ( FINDGEN(256) * .5 )
result = WHERE( ModeA LE 242, count )
ModeA(result) = 242 - FINDGEN(count)
;
; Convert numbers to Fahrenheit.
;
IF ( KEYWORD_SET(F) ) THEN BEGIN
    ModeA = ModeA - 273.16
    ModeA = 1.8 * ModeA + 32.
ENDIF
;
; Convert numers to Centigrade.
;
IF ( KEYWORD_SET(C) ) THEN BEGIN
    ModeA = ModeA - 273.16
ENDIF

RETURN, ModeA
```

END

```
;----- --
;+
; NAME:
;   CBAR
; PURPOSE:
;   Make a color bar.
; CATEGORY:
; CALLING SEQUENCE:
;   cbar
; INPUTS:
; KEYWORD PARAMETERS:
;   Keywords:
;   VMIN=vmn Minimum value of color bar parameter (def=0).
;   VMAX=vmx Maximum value of color bar parameter (def=top).
;   CMIN=cmn Color that represents vmn (def=0).
;   CMAX=cmx Color that represents vmx (def=top).
;   where top = !d.table_size-1.
;   /HORIZONTAL Colors vary horizontally (def).
;   /VERTICAL   Colors vary vertical.
;   /BOTTOM    Horizontal axis on bottom (def).
;   /TOP       Horizontal axis on top.
;   /RIGHT     Vertical axis on right (def).
;   /LEFT      Vertical axis on left.
;   Plus all keywords accepted by PLOT.
; OUTPUTS:
; COMMON BLOCKS:
; NOTES:
;   Notes: Bar is positioned using the POSITION keyword.
;   To display a title use TITLE and so on.
; MODIFICATION HISTORY:
;   R. Sterner, 13 Dec, 1993
;   R. Sterner, 1994 Jul 5 --- Added axis positioning.
;
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disclaimer.txt.
;-
;----- --
```

```
pro cbar, z, vmin=vmn, vmax=vmx, cmin=cmn, cmax=cmx, horizontal=hor, $
  vertical=ver, top=top, bottom=bottom, left=left, right=right, $
```

```

position=pos, color=col, title=ttl, _extra=extra, $
charsize=csz, help=help

if keyword_set(help) then begin
  print, ' Make a color bar.'
  print, ' cbar'
  print, ' All arguments are keywords.'
  print, ' Keywords:'
  print, ' VMIN=vmn Minimum value of color bar parameter (def=0).'
  print, ' VMAX=vmx Maximum value of color bar parameter (def=top).'
  print, ' CMIN=cmn Color that represents vmn (def=0).'
  print, ' CMAX=cmx Color that represents vmx (def=top).'
  print, ' where top = !d.table_size-1.'
  print, ' /HORIZONTAL Colors vary horizontally (def).'
  print, ' /VERTICAL Colors vary vertical.'
  print, ' /BOTTOM Horizontal axis on bottom (def).'
  print, ' /TOP Horizontal axis on top.'
  print, ' /RIGHT Vertical axis on right (def).'
  print, ' /LEFT Vertical axis on left.'
  print, ' Plus all keywords accepted by PLOT.'
  print, ' Notes: Bar is positioned using the POSITION keyword.'
  print, ' To display a title use TITLE and so on.'
  return
endif

```

```

;----- Set defaults -----
if n_elements(vmn) eq 0 then vmn = 0.
if n_elements(vmx) eq 0 then vmx = !d.table_size-1
if n_elements(cmn) eq 0 then cmn = 0

if n_elements(cmx) eq 0 then cmx = !d.table_size-1
if n_elements(col) eq 0 then col = !p.color
if n_elements(ttl) eq 0 then ttl = ''
if n_elements(csz) eq 0 then csz = !p.charsize

```

```

;---- Set orientation dependent parameters -----
if keyword_set(ver) then begin ; Vertical.
  dim = [1,256]
  x = [0,1]
  y = [vmn,vmx]
  ax = 2 ; Right.
  if keyword_set(left) then ax = 4 ; Left.
  if n_elements(pos) eq 0 then pos = [.4,.2,.6,.8]
endif else begin ; Horizontal.
  dim = [256,1]
  x = [vmn,vmx]
  y = [0,1]
  ax = 1 ; Bottom.

```

```

    if keyword_set(top) then ax = 3 ; Top.
    if n_elements(pos) eq 0 then pos = [.2,.4,.8,.6]
endelse

;----- Make bar -----
;z = reform(scalearray(maken(vmn,vmx,256),vmn,vmx,cmn,cmx),dim)

;----- Plot bar -----
tn = [' ',' ']
plot, x,y,/xstyl,/ystyl,/nodata,/noerase,xticks=1,xtickn=tn,$
    yticks=1,ytickn=tn,xminor=1,yminor=1, pos=pos, col=col, titl=ttl, $
    chars=csz, xran=x, yran=y
imgunder, z
plot, x,y,/xstyl,/ystyl,/nodata,/noerase, $
    yticks=1, ytickn=tn, xminor=10, yminor=1, xticklen = 0.6, pos=pos,
col=col, titl=ttl, $
    chars=csz, xran=x, yran=y

;----- Axis -----
case ax of
1: axis,xaxis=0,/xstyl,chars=csz,col=col,_extra=extra
2: axis,yaxis=1,/ystyl,chars=csz,col=col,_extra=extra
3: axis,xaxis=1,/xstyl,chars=csz,col=col,_extra=extra
4: axis,yaxis=0,/ystyl,chars=csz,col=col,_extra=extra
endcase

return

end

PRO SUG, do_modea=do_modea
;
; Do:
;   sug, /do_modea
;
IF ( KEYWORD_SET(DO_MODEA) ) THEN BEGIN
    TempC = ModeAtbl(/C)
    ;
    ; Create scale and add marks for 0 and -50 C
    ;
    ModeAbar = BYTSCL(INDGEN(256) # REPLICATE(1, 25))
    result00 = WHERE( (TempC GT -0.2 AND TempC LT 0.2) )
    result50 = WHERE( (TempC GT -50.3 AND TempC LT -50.0) )
    ModeAbar(result00,*) = 255b
    ModeAbar(result50,*) = 255b
    ;
    ; Display ModeA scale
    ;

```

```

WINDOW, 2, XSIZE = 256, YSIZE = 55, TITLE='modeA'
TV, modeAbar
XYOUTS, result00, 30, ['0.0'], ALIGN=0.5, CHARSIZE = .75, /DEVICE
XYOUTS, result50, 30, ['-50.0'], ALIGN=0.5, CHARSIZE = .75, /DEVICE
minC = MIN(TempC)
maxC = MAX(TempC)
;
; Create scale and plot.
;
WINDOW, 0, XSIZE=400, YSIZE=400, TITLE='Test ModeA Color Bar'
pos = [.1,.1,.9,.15]
Cbar, modeabar, position=pos, vmin=maxC, vmax=minC
;
; Plot pixel range 0 thru 255
;
pos = [.1,.25,0.9,0.9]
PLOT, TempC, INDGEN(256), /xstyl,/ystyl, Xrange=[maxC,minC],
POSITION=pos, /NoErase
ENDIF

END

```
