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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;-
 ;------------------------------------------------------------ --

 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=hlp

if keyword_set(hlp) 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
```