

```
load "$NCARG_ROOT/lib/ncarg/nclscripts/csm/gsn_code.ncl"
```

```
begin
```

```
ascii_filename = "hmk1-4-fig.prn" ; data file for plotting.
```

```
seismic = asciiread(ascii_filename,(/2172,3/),"float")
```

```
x = seismic(:,1) ; Column 1 of file contains X values.
```

```
y = seismic(:,0) ; Column 2 of file contains Y values.
```

```
z = seismic(:,2) ; Column 3 of file contains Z values.
```

```
numxout = 13 ; Define output grid for call to "natgrids".
```

```
numyout = 181
```

```
xmin = min(x)
```

```
ymin = min(y)
```

```
xmax = max(x)
```

```
ymax = max(y)
```

```
xc = (xmax-xmin)/(numxout-1)
```

```
yc = (ymax-ymin)/(numyout-1)
```

```
xo = xmin + ispan(0,numxout-1,1)*xc
```

```
yo = ymin + ispan(0,numyout-1,1)*yc
```

```
zo = natgrids(x, y, z, xo, yo) ; Interpolate.
```

```
xo@long_name = "Month" ; Define some attributes.
```

```
yo@long_name = "Latitude"
```

```
zo@long_name = "Daily average insolation at TOA"
```

```
xwks = gsn_open_wks("x11","fighmk1") ; Open an X11 workstation.
```

```
pdfwks = gsn_open_wks("pdf","fighmk1") ; Open a PDF workstation.
```

```
cmap = ((/1., 1., 1./), (/0., 0., 0./), (/1., 0., 0./), (/1., 0., .4/), \
        (/1., 0., .8/), (/1., .2, 1./), (/1., .6, 1./), (/ .6, .8, 1./), \
        (/ .2, .8, 1./), (/ .2, .8, .6/), (/ .2, .8, 0./), (/ .2, .4, .0/), \
        (/ .2, .4, .4/), (/ .2, .4, .8/), (/ .6, .4, .8/), (/ .6, .8, .8/), \
        (/ .6, .8, .4/), (/1., .6, .8/))
```

```
gsn_define_colormap(xwks,cmap) ; Define a color map for each of the
```

```
gsn_define_colormap(pdfwks,cmap) ; 2 workstations you just opened.
```

```
;----- Begin first plot -----
```

```
resources = True
resources@sfXArray = xo ; X axes data points
resources@sfYArray = yo ; Y axes data points
resources@tmXBMode = "Explicit" ; Define your own tick mark labels.
resources@tmXBLabelFont = 25 ; Change font of labels.
resources@tmXBLabelFontHeightF = 0.015 ; Change font height of labels.
resources@tmXBMinorOn = False ; No minor tick marks.
resources@tmXBValues = ispan(1,12,1) ; Location to put tick mark labels
; (13 points with January repeated).
resources@tmXBLabels = (/ "Jan", "Feb", "Mar", "Apr", "May", "Jun", \
                          "Jul", "Aug", "Sep", "Oct", "Nov", "Dec", "Jan"/)
```

```
resources@tiMainString = zo@long_name ; Main title
```

```
resources@tiMainFont = "Times-Bold"
```

```
resources@tiXAxisString = "Month" ; X axis label.
```

```
resources@tiYAxisString = "Latitude" ; Y axis label.
```

```
resources@cnFillOn = True ; Turn on contour fill.
```

```
resources@cnInfoLabelOn = False ; Turn off info label.
```

```
resources@cnLineLabelsOn = False ; Turn off line labels.
```

```

resources@lbOrientation      = "Horizontal" ; Draw it horizontally.
resources@lbPerimOn         = False          ; Turn off perimeter.
resources@pmLabelBarDisplayMode = "Always"    ; Turn on a label bar.
resources@pmLabelBarSide    = "Bottom"      ; Change location of
                                ; label bar.
resources@vpYF = 0.85      ; Change Y location of plot.

zo!0 = "i" ; Name the dimensions of "zo".
zo!1 = "j"

contour = gsn_contour(xwks,zo(j|:,i|:),resources) ; Draw a contour plot.

```

```
;------ Begin second plot -----
```

```

delete(resources) ; Start with a new list of resources.

resources = True
resources@tiMainString = ":F26:Slices by Latitude" ; Define a title.

resources@xyLineColors = (/2,8,10,14/) ; Define line colors.
resources@xyLineThicknessF = 3.0 ; Define line thickness.
resources@tmXBMode = "Explicit" ; Define your own tick mark labels.
resources@tmXBLabelFont = 25 ; Change font of labels.
resources@tmXBLabelFontHeightF = 0.015 ; Change font height of labels.
resources@tmXBMinorOn = False ; No minor tick marks.
resources@tmXBValues = ispan(1,12,1) ; Location to put tick mark labels
                                ; (13 points with January repeated).
resources@tmXBLabels = ("/Jan", "Feb", "Mar", "Apr", "May", "Jun", \
                        "Jul", "Aug", "Sep", "Oct", "Nov", "Dec", "Jan"/)

resources@pmLegendDisplayMode = "Always" ; Turn on the drawing
                                ; of a legend.
resources@pmLegendZone = 0 ; Change the location
resources@pmLegendOrthogonalPosF = 0.31 ; of the legend
resources@lgJustification = "BottomRight"

resources@pmLegendWidthF = 0.4 ; Change width and
resources@pmLegendHeightF = 0.12 ; height of legend.

resources@pmLegendSide = "Top" ; Change location of
resources@lgPerimOn = False ; legend and turn off
                                ; the perimeter.

resources@xyExplicitLegendLabels = ("/Lat=-90", "Lat=-60", "Lat=-30", "Lat=0", \
                                    "Lat=30", "Lat=60", "Lat=90"/)

resources@vpYF = 0.90 ; Change size and location of plot.
resources@vpXF = 0.18
resources@vpWidthF = 0.74
resources@vpHeightF = 0.74

resources@trYMaxF = 800 ; Set the maximum value for the Y axes.
resources@trXMinF = 0 ; Set the maximum value for the Y axes.

xyl = gsn_xy(xwks,xo,zo(j|0:180:30,i|:),resources) ; Draw an XY plot.

```

```
;------ Begin third plot -----
```

```

delete(resources) ; Start with a new list of resources.

```

```

resources = True
resources@tiMainString = ":F26:Month = June" ; Define a title.

resources@xyLineColors = (/2,8,10,14/) ; Define line colors.
resources@xyLineThicknessF = 3.0 ; Define line thickness.

resources@pmLegendZone = 0 ; Change the location
resources@pmLegendOrthogonalPosF = 0.31 ; of the legend
resources@lgJustification = "BottomRight"

resources@pmLegendWidthF = 0.4 ; Change width and
resources@pmLegendHeightF = 0.12 ; height of legend.

resources@pmLegendSide = "Top" ; Change location of
resources@lgPerimOn = False ; legend and turn off
; the perimeter.

resources@vpYF = 0.90 ; Change size and location of plot.
resources@vpXF = 0.18
resources@vpWidthF = 0.74
resources@vpHeightF = 0.74

xy2 = gsn_xy(xwks,yo,zo(j|:,i|5),resources) ; Draw an XY plot.

;----- Begin 4th plot -----

delete(resources) ; Start with a new list of resources.

resources = True
resources@tiMainString = ":F26:Month = September" ; Define a title.

resources@xyLineColors = (/2,8,10,14/) ; Define line colors.
resources@xyLineThicknessF = 3.0 ; Define line thickness.

resources@pmLegendZone = 0 ; Change the location
resources@pmLegendOrthogonalPosF = 0.31 ; of the legend
resources@lgJustification = "BottomRight"

resources@pmLegendWidthF = 0.4 ; Change width and
resources@pmLegendHeightF = 0.12 ; height of legend.

resources@pmLegendSide = "Top" ; Change location of
resources@lgPerimOn = False ; legend and turn off
; the perimeter.

resources@trXMinF = -90 ; Set the maximum value for the Y axes.

xy3 = gsn_xy(xwks,yo,zo(j|:,i|8),resources) ; Draw an XY plot.

;----- Draw to other workstations -----

NhlChangeWorkstation(xy1,pdfwks) ; Change the workstation that the
NhlChangeWorkstation(contour,pdfwks) ; contour and XY plot is drawn to.
NhlChangeWorkstation(xy2,pdfwks)
NhlChangeWorkstation(xy3,pdfwks)
draw(contour) ; Draw the contour plot to the new
frame(pdfwks) ; workstation and advance the frame.
draw(xy1)
frame(pdfwks)
draw(xy2)
frame(pdfwks)
draw(xy3)
frame(pdfwks)

```

```
delete(xy3)
delete(xy2)      ; Clean up.
delete(xy1)
delete(contour)
end
```