Subject: Re: Spherical Contour Plotting
Posted by k-bowman on Thu, 10 Jan 2002 17:03:06 GMT
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Sorry, my newsreader wrapped my last posting.

Ken

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PRO SPHERICAL_PLOT

COMPILE_OPT IDL2

cr = ''

nx = 65                                                 ;Grid resolution in longitude
ny = 33                                                 ;Grid resolution in latitude

x  = (360.0/(nx-1))*FINDGEN(nx)                         ;Longitude grid
y  = -90 + (180.0/(ny-1))*FINDGEN(ny)                   ;Latitude grid

xx = x              # REPLICATE(1.0, ny)                ;2-D longitude grid
yy = REPLICATE(1.0, nx) # y                             ;2-D latitude grid
z  = SIN(!DTOR*xx) * COS(!DTOR*yy)                      ;Test function to contour

;Standard contour plot on satellite map projection
MAP_SET, /SATELLITE, /CONT, /ISOTROPIC
CONTOUR, z, x, y, LEVELS = -0.95 + 0.1*FINDGEN(20), /OVERPLOT           ;Contour z
PRINT, 'Enter <cr> to continue.'
READ, cr

;Get contour info
CONTOUR, z, x, y, PATH_INFO = path_info, PATH_XY = path_xy, $           ;Contour z, save
contour info
  /PATH_DATA_COORDS, CLOSED = 0, LEVELS =-0.95 + 0.1*FINDGEN(20)

;2-D plot using contour info
PLOT, [0, 0], [1, 1], /NODATA, $
  XTITLE = 'Longitude', $
  XSTYLE = 1, $
  XRANGE = [0.0, 360.0], $
  XTICKS = 4, $
  YTITLE = 'Latitude', $
  YSTYLE = 1, $
  YRANGE = [-90., 90.0], $
  YTICKS = 6

FOR k = 0, N_ELEMENTS(path_info)-1 DO BEGIN
  i0 = path_info[k].offset                              ;First element of the k'th contour
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   i1 = i0 + path_info[k].n - 1                    ;Last element of the k'th contour
;  PRINT, k, path_info[k].type, i0, i1
   xc = REFORM(path_xy[0,i0:i1])                   ;Extract x-coords of k'th contour
   yc = REFORM(path_xy[1,i0:i1])                   ;Extract y-coords of k'th contour
   IF (path_info[k].type EQ 1) THEN BEGIN          ;Close contours, if needed
      xc = [xc, path_xy[0,i0]]
      yc = [yc, path_xy[1,i0]]
   ENDIF

   PLOTS, xc, yc                                   ;Plot contours
ENDFOR
PRINT, 'Enter <cr> to continue.'
READ, cr


;3-D plot using contour info
PLOT_3DBOX, [0,0], [0,0], [0,0], /NODATA, $
   XTITLE = 'X', $
   XSTYLE = 1, $
   XRANGE = [-1.0, 1.0], $
   XTICKS = 4, $
   YTITLE = 'Y', $
   YSTYLE = 1, $
   YRANGE = [-1., 1.0], $
   YTICKS = 4, $
   ZTITLE = 'Z', $
   ZSTYLE = 1, $
   ZRANGE = [-1.0, 1.0], $
   ZTICKS = 4

r = 0.9
FOR k = 0, N_ELEMENTS(path_info)-1 DO BEGIN
   i0 = path_info[k].offset                        ;First element of the k'th contour
   i1 = i0 + path_info[k].n - 1                    ;Last element of the k'th contour
;  PRINT, k, path_info[k].type, i0, i1
   xc = REFORM(path_xy[0,i0:i1])                   ;Extract x-coords of k'th contour
   yc = REFORM(path_xy[1,i0:i1])                   ;Extract y-coords of k'th contour
   IF (path_info[k].type EQ 1) THEN BEGIN          ;Close contours, if needed
      xc = [xc, path_xy[0,i0]]
      yc = [yc, path_xy[1,i0]]
   ENDIF

   x3 = r * COS(!DTOR*yc) * COS(!DTOR*xc)
   y3 = r * COS(!DTOR*yc) * SIN(!DTOR*xc)
   z3 = r * SIN(!DTOR*yc)
   PLOTS, x3, y3, z3, /T3D
ENDFOR
```

END