Subject: Re: Setting ranges on surfaces
Posted by Martin Schultz on Fri, 18 Sep 1998 07:00:00 GMT
View Forum Message <> Reply to Message

David Fanning wrote:
>

> [...]
> It is
> not really the Z data we want to clip, it is the X and Y
> *locations* of the Z data. This implies (and, frankly, this
> is probably why the [XY]Range keywords don't work) that
> the Z data is tied to the X and Y range vectors. I'm guessing
> that in fact the Z data has nothing to do with those vectors,
> but exist independently of them. That is why changing the
> XRange definitely affects the X axis, but not the surface
> plot itself. In fact, IDL doesn't care what *values* you
> put in the X axis vector, only that it has as many elements
> as the X dimension of the Z data. The scaling of the axes
> and the Z data must exist totally independently of one
> another.
>
> Cheers,
>
> David
>

Sounds like the solution is some kind of clip function like the quick
hack attached below. Example

```
x=findgen(100)
y=findgen(50)
z=dist(100,50)
zc = sclip(z,x,y,xrange=[20,80],yrange=[20,40],xclip=xc,yclip=yc
surface,zc,xc,yc
```

Regards,
Martin.

---------- -------
Dr. Martin Schultz
Department for Earth&Planetary Sciences, Harvard University
109 Pierce Hall, 29 Oxford St., Cambridge, MA-02138, USA

phone: (617)-496-8318
fax : (617)-495-4551

e-mail: mgs@io.harvard.edu

Internet-homepage: http://www-as.harvard.edu/people/staff/mgs/
 ---------- -------

```
;+
; SCLIP: clip a 2D Z array, and two matching 1D arrays for x
;       and y.
;
; The function returns a 2D array that is truncated in x and y.
;
; XRANGE, YRANGE -> the range for x and y in data coordinates
; XCLIP, YCLIP -> return the truncated x and y arrays
;
; author: Martin Schultz, Harvard University (1998)
;
; EXAMPLE:   x=findgen(100)
;            y=findgen(50)
;            z=dist(100,50)
;            zc=sclip(z,x,y,xrange=[20,80],yrange=[20,40], $ ;
;                   xclip=xc,yclip=yc)
;            surface,zc,xc,yc
;-
function sclip,z,x,y,xrange=xrange,yrange=yrange, $
             xclip=xclip,yclip=yclip

    ; clip z,x, and y arrays for surface plot
    ; x and y must be monotone

    if (n_elements(xrange) eq 0) then xrange=[min(x,max=xm),xm]
    if (n_elements(yrange) eq 0) then yrange=[min(y,max=ym),ym]

    ; find minimum an dmaximum index in x and y
    ix0 = min(where(x ge xrange[0]))  ; <<
    ix1 = max(where(x le xrange[1]))
    iy0 = min(where(y ge yrange[0]))
    iy1 = max(where(y le yrange[1]))  ; <<
    ; NOTE: you can restrain these indices to valid values
    ; as :
    ; ix0 = min(...) > 0    ; ix0 always at least 0
    ; ix1 = max(...) < (n_elements(x)-1)  ; prevent subscript range err

    if (ix0<ix1<iy0<iy1 ge 0) then begin
        xclip = x[ix0:ix1]   ; clipped x array
        yclip = y[iy0:iy1]   ; clipped y array
        return,z[ix0:ix1,iy0:iy1]   ; clipped z array
    endif else $
        message,'Invalid range'

    return,-1
```

end