Subject: plotting x-y error bars in IDL
Posted by atmospheric physics on Fri, 06 Dec 2013 10:24:35 GMT
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Hello,

Is it possible to make x-y error bars in the IDL plot? I have seen the example for including the y-errorbars but how to do this for including the x-errorbar. Any sample example will be helpful.

Thanks

Subject: Re: plotting x-y error bars in IDL
Posted by wlandsman on Fri, 06 Dec 2013 13:04:06 GMT
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You could try

http://idlastro.gsfc.nasa.gov/ftp/pro/plot/ploterror.pro

On Friday, December 6, 2013 5:24:35 AM UTC-5, Madhavan Bomidi wrote:
> Hello,
>
>
>
> Is it possible to make x-y error bars in the IDL plot? I have seen the example for including the y-errorbars but how to do this for including the x-errorbar. Any sample example will be helpful.
>
>
>
> Thanks

Subject: Re: plotting x-y error bars in IDL
Posted by David Fanning on Fri, 06 Dec 2013 13:10:39 GMT
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Madhavan Bomidi writes:

> Is it possible to make x-y error bars in the IDL plot? I have seen the example for including the y-errorbars but how to do this for including the x-errorbar. Any sample example will be helpful.

Yes.

http://www.idlcoyote.com/graphics_tips/yerrorbars.html

Cheers,

David

--
David Fanning, Ph.D.
Fanning Software Consulting, Inc.
Coyote's Guide to IDL Programming: http://www.idlcoyote.com/
Sepore ma de ni thue. ("Perhaps thou speakest truth.")

Subject: Re: plotting x-y error bars in IDL
Posted by David Fanning on Fri, 06 Dec 2013 14:16:39 GMT
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David Fanning writes:

>> Is it possible to make x-y error bars in the IDL plot? I have seen the example for including the y-errorbars but how to do this for including the x-errorbar. Any sample example will be helpful.
>
> Yes.
>
> http://www.idlcoyote.com/graphics_tips/yerrorbars.html

Oh, and, duh, cgErrPlot allows you to create both horizontal and
vertical error bars. :-)

http://www.idlcoyote.com/idldoc/cg/cgerrplot.html

Cheers,

David
--
David Fanning, Ph.D.
Fanning Software Consulting, Inc.
Coyote's Guide to IDL Programming: http://www.idlcoyote.com/
Sepore ma de ni thue. ("Perhaps thou speakest truth.")

Subject: Re: plotting x-y error bars in IDL
Posted by dg86 on Mon, 09 Dec 2013 02:30:09 GMT
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On Friday, December 6, 2013 9:16:39 AM UTC-5, David Fanning wrote:
> David Fanning writes:
>
>

>
>>> Is it possible to make x-y error bars in the IDL plot? I have seen the example for including the y-errorbars but how to do this for including the x-errorbar. Any sample example will be helpful.
>
>>
>
>> Yes.
>
>>
>
>> http://www.idlcoyote.com/graphics_tips/yerrorbars.html
>
>
>
> Oh, and, duh, cgErrPlot allows you to create both horizontal and
>
> vertical error bars. :-)
>
>
>
> http://www.idlcoyote.com/idldoc/cg/cgerrplot.html
>
>
>
> Cheers,
>
>
>
> David
>
> --
>
> David Fanning, Ph.D.
>
> Fanning Software Consulting, Inc.
>
> Coyote's Guide to IDL Programming: http://www.idlcoyote.com/
>
> Sepore ma de ni thue. ("Perhaps thou speakest truth.")

IDL's function graphics routine ERRORPLOT can plot both x and y error bars.
It even allows for asymmetric error bars.

All the best,

David

Subject: Re: plotting x-y error bars in IDL
Posted by David Fanning on Mon, 09 Dec 2013 02:45:31 GMT
View Forum Message <> Reply to Message

David Grier writes:

> IDL's function graphics routine ERRORPLOT can plot both x and y error bars.
> It even allows for asymmetric error bars.

Yes, asymmetric error bars are de rigueur:

http://www.idlcoyote.com/gallery/index.html#ERRORBAR_PLOT

Cheers,

David

--
David Fanning, Ph.D.
Fanning Software Consulting, Inc.
Coyote's Guide to IDL Programming: http://www.idlcoyote.com/
Sepore ma de ni thue. ("Perhaps thou speakest truth.")

Subject: Re: plotting x-y error bars in IDL
Posted by atmospheric physics on Mon, 09 Dec 2013 10:10:59 GMT
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Hello All,

Thanks for the suggestions. I have an array of latitude, longitude coordinates from GPS measurements from various stations with corresponding variability (i.e., standard deviation) over a period of operation. I am trying to plot the errorbars of latitude and longitude on a latitude-longitude axes. I am first obtaining the latitude-longitude axes and then projecting the lat-lon points. Next, I wanted to plot the errorbars corresponding to lat and lon values by using the commands as suggested in the example of Coyote graphics. While I see the figures and the points on the lat-lon axes nicely, I don't see the error bars and x-y labels. Can you suggest where I am going wrong? Below is my IDL code for your reference...

```
; ------------------------------------------
PRO test_errorPlot

  xlon = longitude
  ylat = latitude
  xstd = lon_err & ystd = lat_err

  x_higherr=(xlon + xstd) & x_lowerr=(xlon - xstd)
  y_higherr=(ylat + ystd) & y_lowerr=(ylat - ystd)
```

```
  ; Set up variables for the plot
   xtitle='Longitude'
   ytitle='Latitude'
   title='Errorbar Plot'
   position = [0.125, 0.125, 0.9, 0.925]
   thick = (!D.Name EQ 'PS') ? 3 : 1

 ; Data Projection to Map coordinates
   Lats=[50.84D,50.96D] ; deg.N
   Lons=[6.36D,6.50D]   ; deg E
   centerLat=(Max(Lats) + Min(Lats)) / 2.0
   centerLon=(Max(Lons) + Min(Lons)) / 2.0
   zoom=12
   scale = cgGoogle_MetersPerPixel(zoom)
   xsize = 600 < 640 ; Max size of Google image with this Google API
   ysize = 600 < 640 ; Max size of Google image with this Google API
   resolution = STRTRIM(xsize,2) + 'x' + STRTRIM(ysize,2)

   map = Obj_New('cgMap', 'Mercator', ELLIPSOID='WGS 84')
   uv = map -> Forward(centerLon, centerLat)
   uv_xcenter = uv[0,0]
   uv_ycenter = uv[1,0]
   xrange = [uv_xcenter - (xsize/2.0D*scale), uv_xcenter + (xsize/2.0D*scale)]
   yrange = [uv_ycenter - (ysize/2.0D*scale), uv_ycenter + (ysize/2.0D*scale)]
   map -> SetProperty, XRANGE=xrange, YRANGE=yrange

   cgDisplay, 600, 500, Title=title

   cgMap_Grid, MAP=map, /BOX_AXES, /cgGRID, FORMAT='(F0.2)'

   cgPlotS, xlon, ylat, PSYM=16, SYMSIZE=1.2, MAP=map, COLOR='red'

   ; Draw the error bars in the signal Y
   cgErrPlot, xlon, y_lowerr, y_higherr, COLOR='blu5',Thick=thick

   ; Draw the error bars in the signal X
   cgErrPlot, ylat, x_lowerr, x_higherr, COLOR='blu5',Thick=thick, /Horizontal

END

; Display the plot in a graphics window.
  cgDisplay, 600, 500
  test_errorPlot

  ; Create a PostScript file.
  cgPS_Open, Filename='test_errorPlot.ps'
  test_errorPlot
```

```
  cgPS_Close

  ; Create a PNG file with a width of 600 pixels.
  cgPS2Raster, 'test_errorPlot.ps', /PNG

END

;-----------------------------------
```

Thanks in advance

Subject: Re: plotting x-y error bars in IDL
Posted by David Fanning on Mon, 09 Dec 2013 13:33:16 GMT
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Madhavan Bomidi writes:

>
> Hello All,
>
> Thanks for the suggestions. I have an array of latitude, longitude coordinates from GPS measurements from various stations with corresponding variability (i.e., standard deviation) over a period of operation. I am trying to plot the errorbars of latitude and longitude on a latitude-longitude axes. I am first obtaining the latitude-longitude axes and then projecting the lat-lon points. Next, I wanted to plot the errorbars corresponding to lat and lon values by using the commands as suggested in the example of Coyote graphics. While I see the figures and the points on the lat-lon axes nicely, I don't see the error bars and x-y labels. Can you suggest where I am going wrong? Below is my IDL code for your reference...

You have:

```
  ; Draw the error bars in the signal Y
  cgErrPlot, xlon, y_lowerr, y_higherr, COLOR='blu5',Thick=thick

  ; Draw the error bars in the signal X
  cgErrPlot, ylat, x_lowerr, x_higherr, COLOR='blu5',Thick=thick, $
    /Horizontal
```

I think these should be:

```
  ; Draw the error bars in the signal Y
  cgErrPlot, xlon, xlat-y_lowerr, xlat+y_higherr, $
      COLOR='blu5',Thick=thick

  ; Draw the error bars in the signal X
  cgErrPlot, ylat, xlon-x_lowerr, xlon+x_higherr, $
      COLOR='blu5',Thick=thick, /Horizontal
```

Cheers,

David

--
David Fanning, Ph.D.
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Coyote's Guide to IDL Programming: http://www.idlcoyote.com/
Sepore ma de ni thue. ("Perhaps thou speakest truth.")

Subject: Re: plotting x-y error bars in IDL
Posted by atmospheric physics on Mon, 09 Dec 2013 17:58:07 GMT
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Hello David,

I have already defined in the beginning of my IDL code as:
x_lowerr = (xlon-xstd) & x_higherr = (xlon+xstd)
y_lowerr = (ylat-ystd) & y_higherr = (ylat+ystd)

So, I have used x_lowerr, x_higherr, y_lowerr, y_higherr directly. I don't understand what is going wrong and why I am not able to see both the errorbars?

Thanks...

On Monday, December 9, 2013 2:33:16 PM UTC+1, David Fanning wrote:
> Madhavan Bomidi writes:
>
>
>
>>
>
>> Hello All,
>
>>
>
> Thanks for the suggestions. I have an array of latitude, longitude coordinates from GPS measurements from various stations with corresponding variability (i.e., standard deviation) over a period of operation. I am trying to plot the errorbars of latitude and longitude on a latitude-longitude axes. I am first obtaining the latitude-longitude axes and then projecting the lat-lon points. Next, I wanted to plot the errorbars corresponding to lat and lon values by using the
>
> commands as suggested in the example of Coyote graphics. While I see the figures and the points on the lat-lon axes nicely, I don't see the error bars and x-y labels. Can you suggest where I

am going wrong? Below is my IDL code for your reference...
>
>
>
> You have:
>
>
>
> ; Draw the error bars in the signal Y
>
> cgErrPlot, xlon, y_lowerr, y_higherr, COLOR='blu5',Thick=thick
>
>
>
> ; Draw the error bars in the signal X
>
> cgErrPlot, ylat, x_lowerr, x_higherr, COLOR='blu5',Thick=thick, $
>
> /Horizontal
>
>
>
> I think these should be:
>
>
>
> ; Draw the error bars in the signal Y
>
> cgErrPlot, xlon, xlat-y_lowerr, xlat+y_higherr, $
>
> COLOR='blu5',Thick=thick
>
>
>
> ; Draw the error bars in the signal X
>
> cgErrPlot, ylat, xlon-x_lowerr, xlon+x_higherr, $
>
> COLOR='blu5',Thick=thick, /Horizontal
>
>
>
> Cheers,
>
>
>
> David
>

>
>
> --
>
> David Fanning, Ph.D.
>
> Fanning Software Consulting, Inc.
>
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>
> Sepore ma de ni thue. ("Perhaps thou speakest truth.")

Subject: Re: plotting x-y error bars in IDL
Posted by atmospheric physics on Tue, 10 Dec 2013 10:05:42 GMT
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Hello,

As suggested, I replaced the following lines in my code, I don't see even lat-lon points that I was able to see earlier. Now, I see only a black grid map with lat-lon axes. I still don't understand why to invert the data and why no display of points or error bars???

```
xy = map -> Inverse(xlon,ylat)
lon = REFORM(xy[0,*]) & lat = REFORM(xy[1,*])
cgPlotS, xlon, ylat, PSYM=16, SYMSIZE=1.2, MAP=map, COLOR='red'

; Draw the error bars in the signal Y
yhigh = map -> Inverse(y_higherr, ylat)
ylow = map -> Inverse(y_lowerr, ylat)

lon_high = REFORM(yhigh[0,*])
lon_low = REFORM(ylow[0,*])
cgErrPlot, lon, lon_high, lon_low, COLOR='blu5',Thick=thick

; Draw the error bars in the signal X
xhigh = map -> Inverse(xlon, x_higherr)
xlow = map -> Inverse(xlon, x_lowerr)
lat_high = REFORM(xhigh[0,*])
lat_low = REFORM(xlow[0,*])
cgErrPlot, lat, lat_high, lat_low, COLOR='blu5',Thick=thick, /Horizontal
```

Thanks in advance.

Subject: Re: plotting x-y error bars in IDL

Madhavan Bomidi writes:

> As suggested, I replaced the following lines in my code, I don't see
even lat-lon points that I was able to see earlier. Now, I see only a
black grid map with lat-lon axes. I still don't understand why to invert
the data and why no display of points or error bars???
>
> xy = map -> Inverse(xlon,ylat)
> lon = REFORM(xy[0,*]) & lat = REFORM(xy[1,*])
> cgPlotS, xlon, ylat, PSYM=16, SYMSIZE=1.2, MAP=map, COLOR='red'
>
> ; Draw the error bars in the signal Y
> yhigh = map -> Inverse(y_higherr, ylat)
> ylow = map -> Inverse(y_lowerr, ylat)
>
> lon_high = REFORM(yhigh[0,*])
> lon_low = REFORM(ylow[0,*])
> cgErrPlot, lon, lon_high, lon_low, COLOR='blu5',Thick=thick
>
> ; Draw the error bars in the signal X
> xhigh = map -> Inverse(xlon, x_higherr)
> xlow = map -> Inverse(xlon, x_lowerr)
> lat_high = REFORM(xhigh[0,*])
> lat_low = REFORM(xlow[0,*])
> cgErrPlot, lat, lat_high, lat_low, COLOR='blu5',Thick=thick, /Horizontal
>
>
> Thanks in advance.

Not sure what I was smoking yesterday (or maybe it is just the cloud
from OTHER people smoking here in Colordao), but all of those "Inverse"
calls should be changed to "Forward" calls. Sheesh. I guess I've never
seen map projections before. :-(

It is hard to write code without having data to run with it. I'm just
like everyone else, I make all KINDS of errors.

```
xy = map -> Forward(xlon,ylat)
lon = REFORM(xy[0,*]) & lat = REFORM(xy[1,*])
cgPlotS, xlon, ylat, PSYM=16, SYMSIZE=1.2, MAP=map, COLOR='red'

; Draw the error bars in the signal Y
yhigh = map -> Forward(y_higherr, ylat)
ylow = map -> Forward(y_lowerr, ylat)

lon_high = REFORM(yhigh[0,*])
```

```
lon_low = REFORM(ylow[0,*])
cgErrPlot, lon, lon_high, lon_low, COLOR='blu5',Thick=thick

; Draw the error bars in the signal X
xhigh = map -> Forward(xlon, x_higherr)
xlow = map -> Forward(xlon, x_lowerr)
lat_high = REFORM(xhigh[0,*])
lat_low = REFORM(xlow[0,*])
cgErrPlot, lat, lat_high, lat_low, COLOR='blu5',Thick=thick, /Horiz
```

Let me know if that works better. If not, I'll probably just rewrite
cgErrPlot. In fact, I may do that anyway. It is a total mess. I should
never have based it on the IDL routine of the same name. :-(

Cheers,

David
--
David Fanning, Ph.D.
Fanning Software Consulting, Inc.
Coyote's Guide to IDL Programming: http://www.idlcoyote.com/
Sepore ma de ni thue. ("Perhaps thou speakest truth.")

Subject: Re: plotting x-y error bars in IDL
Posted by atmospheric physics on Tue, 10 Dec 2013 11:00:06 GMT
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Sorry for all the troubles.

I don't see my (lon,lat) points on the plot. While I see x-errorbars, I don't see the y-errorbars at all. I don't have any clue what is happening ...

Thanks in advance ...

On Tuesday, December 10, 2013 11:37:12 AM UTC+1, David Fanning wrote:
> Madhavan Bomidi writes:
>
>
>
>> As suggested, I replaced the following lines in my code, I don't see
>
> even lat-lon points that I was able to see earlier. Now, I see only a
>
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>
> the data and why no display of points or error bars???
>

```
>>
>
>>    xy = map -> Inverse(xlon,ylat)
>
>>    lon = REFORM(xy[0,*]) & lat = REFORM(xy[1,*])
>
>>    cgPlotS, xlon, ylat, PSYM=16, SYMSIZE=1.2, MAP=map, COLOR='red'
>
>>
>
>>    ; Draw the error bars in the signal Y
>
>>    yhigh = map -> Inverse(y_higherr, ylat)
>
>>    ylow = map -> Inverse(y_lowerr, ylat)
>
>>
>
>>    lon_high = REFORM(yhigh[0,*])
>
>>    lon_low = REFORM(ylow[0,*])
>
>>    cgErrPlot, lon, lon_high, lon_low, COLOR='blu5',Thick=thick
>
>>
>
>>    ; Draw the error bars in the signal X
>
>>    xhigh = map -> Inverse(xlon, x_higherr)
>
>>    xlow = map -> Inverse(xlon, x_lowerr)
>
>>    lat_high = REFORM(xhigh[0,*])
>
>>    lat_low = REFORM(xlow[0,*])
>
>>    cgErrPlot, lat, lat_high, lat_low, COLOR='blu5',Thick=thick, /Horizontal
>
>>
>
>>
>
>> Thanks in advance.
>
>
>
> Not sure what I was smoking yesterday (or maybe it is just the cloud
>
```

> from OTHER people smoking here in Colordao), but all of those "Inverse"
>
> calls should be changed to "Forward" calls. Sheesh. I guess I've never
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> xy = map -> Forward(xlon,ylat)
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>
> cgPlotS, xlon, ylat, PSYM=16, SYMSIZE=1.2, MAP=map, COLOR='red'
>
>
>
> ; Draw the error bars in the signal Y
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> yhigh = map -> Forward(y_higherr, ylat)
>
> ylow = map -> Forward(y_lowerr, ylat)
>
>
>
> lon_high = REFORM(yhigh[0,*])
>
> lon_low = REFORM(ylow[0,*])
>
> cgErrPlot, lon, lon_high, lon_low, COLOR='blu5',Thick=thick
>
>
>
> ; Draw the error bars in the signal X
>
> xhigh = map -> Forward(xlon, x_higherr)
>
> xlow = map -> Forward(xlon, x_lowerr)
>
> lat_high = REFORM(xhigh[0,*])
>
> lat_low = REFORM(xlow[0,*])
>

> cgErrPlot, lat, lat_high, lat_low, COLOR='blu5',Thick=thick, /Horiz
>
>
>
> Let me know if that works better. If not, I'll probably just rewrite
>
> cgErrPlot. In fact, I may do that anyway. It is a total mess. I should
>
> never have based it on the IDL routine of the same name. :-(
>
>
>
> Cheers,
>
>
>
> David
>
> --
>
> David Fanning, Ph.D.
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> Fanning Software Consulting, Inc.
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>
> Sepore ma de ni thue. ("Perhaps thou speakest truth.")

Subject: Re: plotting x-y error bars in IDL
Posted by David Fanning on Tue, 10 Dec 2013 11:07:33 GMT
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Madhavan Bomidi writes:

> Sorry for all the troubles.
>
> I don't see my (lon,lat) points on the plot. While I see x-errorbars, I don't see the y-errorbars at all. I don't have any clue what is happening ...

You're the one with troubles. Send me some data to work with, I'll see
if I can figure it out. An IDL save file will work.

Cheers,

David

--

David Fanning, Ph.D.
Fanning Software Consulting, Inc.
Coyote's Guide to IDL Programming: http://www.idlcoyote.com/
Sepore ma de ni thue. ("Perhaps thou speakest truth.")

Subject: Re: plotting x-y error bars in IDL
Posted by atmospheric physics on Tue, 10 Dec 2013 11:20:26 GMT
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I sent a sample data file to your email. Please check that ...

On Tuesday, December 10, 2013 12:07:33 PM UTC+1, David Fanning wrote:
> Madhavan Bomidi writes:
>
>
>
>> Sorry for all the troubles.
>
>>
>
>> I don't see my (lon,lat) points on the plot. While I see x-errorbars, I don't see the y-errorbars at all. I don't have any clue what is happening ...
>
>
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> Cheers,
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>
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> David
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>
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> David Fanning, Ph.D.
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>
> Coyote's Guide to IDL Programming: http://www.idlcoyote.com/

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> Sepore ma de ni thue. ("Perhaps thou speakest truth.")

Subject: Re: plotting x-y error bars in IDL
Posted by David Fanning on Tue, 10 Dec 2013 19:14:01 GMT
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Madhavan Bomidi writes:

> I don't see my (lon,lat) points on the plot. While I see x-errorbars, I don't see the y-errorbars at all. I don't have any clue what is happening ...

In your case the errors are so small that even if we can draw the error bars correctly, they would be completely overwhelmed by the size of the symbol you are using to represent the point itself. Even if you plot a line of data with the error lines above and below, it all appears as a single line on the plot. Essentially, there is no difference between the data and the data plus or minus the extremely small error.

Cheers,

David

P.S. See the announcement in this group for new error bar handling in Coyote Graphics routines.

--
David Fanning, Ph.D.
Fanning Software Consulting, Inc.
Coyote's Guide to IDL Programming: http://www.idlcoyote.com/
Sepore ma de ni thue. ("Perhaps thou speakest truth.")

Subject: Re: plotting x-y error bars in IDL
Posted by atmospheric physics on Wed, 11 Dec 2013 09:48:14 GMT
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Hello David,

I do agree with your suggestion and thanks for updating the cgplot.pro with more keywords including the errorbar options.

Regards ...

On Tuesday, December 10, 2013 8:14:01 PM UTC+1, David Fanning wrote:
> Madhavan Bomidi writes:

>
>
>
>> I don't see my (lon,lat) points on the plot. While I see x-errorbars, I don't see the y-errorbars at all. I don't have any clue what is happening ...
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> Cheers,
>
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> David
>
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>
> P.S. See the announcement in this group for new error bar handling in
>
> Coyote Graphics routines.
>
>
>
> --
>
> David Fanning, Ph.D.
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