
Subject: Re: OPLOT fails intermittently, any ideas?

Posted by [Paul van Delst](#) on Mon, 16 Jul 2001 19:39:50 GMT

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I think IDL 5.2 plots everything in single precision - no matter what you actually arrays are typed as. So you may be getting no valid numbers, or distinct ones, if all the digits that matter (beyond the 6 or so available for single precision) are being truncated and tossed. This has been talked about previously on this ng with respect to the same thing: epoch, long digits times/dates etc.

A solution may be to test the single precision unique values of (epoch-base_epoch) before to see if this really is what is causing it. Or, you could subtract and scale the x-axis values so that single precision can handle any value (then just modify your axis label with "Time (x1.0e+08)" or something like that).

cheers,

paulv

Lawrence Bleau wrote:

```
>
> Hello, IDLers, I have a tricky problem here. First, my config: I'm on OpenVMS
> 7.1-2, running IDL 5.2. I'm using PLOT and OPLOT to generate a graph for
> display on a web page. Most of the time this works well. Once in a while,
> though, with no change in the IDL code, I get the error message
>
> % OPLOT: No valid points, must have at least 2 distinct points
> % Execution halted at: $MAIN$      253
> DISKM1:[SOHO.TEST]SEM4HRPLOT_MAIN.PRO;27
>
> Line 253 is the oplot command. Here it is:
>
> oplot, epoch-base_epoch, values(*,k), $
>   max_value = 9999998., $
>   psym = 8, $           ; plots a circle (user defined)
>   symsize = .4, $       ; scale factor for plot symbol
>   thick = plot_thickness(k), $
>   color = 13           ; change this for colored data line
>
> A word here about the odd construct. The X array is a double precision vector
> (epoch) containing times minus a scalar (base_epoch), which is slightly less
> than the first (lowest) value of epoch, which is monotonically increasing.
> Since plot and oplot convert from double to single internally, when labelling
> the time axis this causes incorret labels to be used. By passing the
> difference this puts the values to be plotted in a range in which roundoff is
> not a problem. The X range that was set on the previous plot command has been
> adjusted similarly.
```

>

> Here's a diagnostic output; the first column is the date in Gregorian format,
 > the second in Epoch format, and the third in Epoch format minus the base_epoch
 > value. The two lines are the low and high end used for the x-axis range; the
 > third column is what I passed to the previous call to plot for the x_range
 > keyword.

>

> range used on X-axis is:

```
> 2001/07/16 11:00:00 3.6412920e+08 0.00000000
> 2001/07/16 15:00:00 3.6414360e+08 14400.000
```

>

> I checked the arrays being passed to oplot; both are vectors of length 410.
 > I also dumped a couple points in the x-axis vector (epoch) to make sure they
 > are different; they are. The y-axis values look fine, too. Here's the output
 > of the following commands:

>

```
> help,epoch-base_epoch
> <Expression> DOUBLE = Array[409]
> help,values(*,k)
> <Expression> FLOAT = Array[409]
> print,values(0,k)
> 2186.24
> print,fmtepoch(epoch(0))
> 2001/07/16 11:00:46
> print,fmtepoch(epoch(408))
> 2001/07/16 15:03:01
> print,fmtepoch(base_epoch)
> 2001/07/16 11:00:00
> print,epoch(409)-base_epoch
> 14581.000
```

>

> I'm puzzled by the error message that oplot gave me (No valid points, must have
 > at least 2 distinct points). The obvious reason - one of the vectors has only
 > one point - is false, as seen above.

>

> The second reason I thought might be the case is that the range given to the
 > plot command, and therefore in use for the call to oplot, did not contain the
 > values passed to oplot for the x-axis. This, too, is shown to be false.

>

> I'm out of ideas. What's worse, this problem is not consistent. It appears
 > every few days, once that day, then goes away. This IDL code is called from a
 > procedure that runs hourly and works on slightly different data each time. So
 > it would appear to be data dependent. I managed to save a copy of the data set
 > that caused it to fail today, and can reproduce the failed behavior, so I have
 > a chance at diagnosing this. I just need some hints at where to look next.
 > Thanks.

>

> Lawrence Bleau

> University of Maryland
> Physics Dept., Space Physics Group
> 301-405-6223
> bleau@umtof.umd.edu

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Paul van Delst A little learning is a dangerous thing;
CIMSS @ NOAA/NCEP Drink deep, or taste not the Pierian spring;
Ph: (301)763-8000 x7274 There shallow draughts intoxicate the brain,
Fax:(301)763-8545 And drinking largely sobers us again.
 Alexander Pope.
