Subject: OPLOT fails intermittently, any ideas?
Posted by bleau on Mon, 16 Jul 2001 19:05:28 GMT
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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 colum 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 passsed 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