Subject: Improved plotting of DOUBLE data
Posted by Liam Gumley on Tue, 15 Jun 1999 07:00:00 GMT
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There was a discussion here recently about the limitations of PLOT
because it converts it's arguments to single precision. I just stumbled
across the following interesting routines at the PV-WAVE website, which
seem to work fine under IDL5:

ftp://ftp.boulder.vni.com/pub/unsupported/wave_user/release/ plot_dbl.pro
ftp://ftp.boulder.vni.com/pub/unsupported/wave_user/release/ oplot_dbl.pro

For example, to show the limitations of PLOT in IDL5:

```
x = dindgen(10)
y = x*0.0001d + 1000d
plot, x, y, /ynozero, ytickformat='(f10.4)'
oplot, x, y + 0.0001d
```

Now try PLOT_DBL (which normalizes the data):

```
plot_dbl, x, y, /ynozero, ytickformat='(f10.4)'
oplot_dbl, x, y + 0.0001d
```

It seems to work reasonably well in the few examples I've tried.

Cheers,
Liam.

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Subject: Re: Improved plotting of DOUBLE data
Posted by luthi on Fri, 18 Jun 1999 07:00:00 GMT
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Liam

You are perfectly right that the plot_dbl works well together with the
oplot_dbl procedure. But this only solves the problem for oplot, but not for
contour, surface aso. Since there would be no difficulty implementig this in
the style of oplot_dbl, it would take me at least one day of tedious work and
I think that this is, why we pay licenses to VNI or RSI.

One thing I would like to point out again: These plotting behaviour has been

known since 1995 by the technical staff at VNI/RSI who provided the workarounds you mentioned (see the procedure header!). Since then three major versions of PV-Wave have been released but the bug remains unnoticed by most users (including me, who always trusted the plots produced by PV-Wave). How many scientific results were misinterpreted due to inaccuracies in the plotting routines?

By the way I don't think that the limitation of the plotting routines stems from the use of single precision floats alone, but also from some basic design flaws of these plotting routines. These errors manifest themselves in the sometimes weird behaviour of plotting on date/time axes.

I would really like to see some plot/oplot/contour procedures which always work, and be it the workarounds of plot_dbl, oplot_dbl, surface_dbl (yet inexistent) ...

Cheers

Martin

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