
Subject: Re: range of Z in surface ...

Posted by [Serdar Manizade](#) on Tue, 25 Jul 1995 07:00:00 GMT

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surinder@eng.umd.edu (Surinder P. Singh) wrote:

> I am having this problem again and again
> with idl that in the surface command if
> Z variable is below 10^{-60} it gives underflow and
> plots it as zeroes, eventhough the Z variable is
> a double array.

>
> I thought the double array should be comfortable
> with ranges of 10^{-200} to 10^{200} or so.

>
> Why am i getting these annoying errors ?
> Surinder

I suspect (but do not know for sure) that many IDL routines carry out intermediate calculations using floating point precision. I have run across this in a number of contexts, here are two examples:

1) Plotting long integer data in 2-D plot when the magnitude of the coordinates are much larger than the range of the axis-- the data acquires a granularity whose increment size is far larger than the precision of the long integer data.

2) Creating the interpolation grid in TRIGRID using double precision data-- for a given grid spacing (the GS keyword), the number of elements in the output (interpolated) array will change as the magnitudes of the pertinent inputs are scaled. A few calculations suggest that this is due to the precision and resultant rounding of intermediate calculations.

Both of the above cases point to a reduction of precision internal to each of the routines. I suspect that the effect you are seeing has a related cause. I do not have a fix, aside from writing my own routines to replace the ones supplied by RSI. I can reinvent TRIGRID, but I can't get around the graphic interface that IDL is using. Perhaps somebody does know a way, but then what would be the point of using IDL in the first place?

I empathize with your annoyance. I regret the only solution I can suggest is to scale your data to accommodate IDL's limitations. IDL ought to accommodate your data instead.

Anyone else have insight into the problem of getting the desired precision from IDL routines?

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