
Subject: IDL and 3D scattered data
Posted by [T Bowers](#) on Fri, 28 May 1999 07:00:00 GMT
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Uh oh...

I thought that IDL could help me out with 3D oceanographic data visualization. Turns out it just ain't so. There doesn't seem to be a way to interpolate scattered 3D data in IDL. Anybody know of a routine(s) that'll do what triangulate/trigrd or sph_scatt will do but in 3 spacial dimensions? BTW, when I say 3D scattered data, I mean *real* 3D scattered data. That means 3 independant variables and 1 dependant variable, as in $x,y,z,f(xyz)$. E.g., I have data in the form:

Longitude	Latitude	Depth	Temperature
-84.3333	22.6105	0.0	24.2
-84.3333	22.6105	2.7	24.0
-84.3333	22.6105	5.0	23.2
-84.3104	22.6384	0.2	24.2
-84.3104	22.6384	2.2	23.2
-84.3104	22.6384	4.8	23.1
-84.2999	22.6480	0.1	25.1

etc,
etc.

For some reason alot of scientists and scientific packages refer to 2D plots that are rotated into 3D space as 3D stuff (surface, shade_surf, and David Fanning's example of using PlotS,.../T3D in his book are good examples. Great book, BTW!). It may be a nit pick, but certainly no one would view a graph of $f(x)=x$ as a 2 dimensional graph.

Sooo... any thoughts on my rantings? Any pointers to some 3D interpolation stuff?

Thanks,
Todd

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Subject: Re: IDL and 3D scattered data

Posted by [landsman](#) on Tue, 01 Jun 1999 07:00:00 GMT

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In article <7iui0a\$c9s\$1@ra.nrl.navy.mil>, "Todd Bowers" <tbowers@nrlssc.navy.mil> writes...

> So , does anybody know of a 3D Delaunay tetrahedralization
> function?
> Anybody also know how to implement natural neighbor interp.
> based on the tetrahedralization?
>
> Thanks,
> Todd

Todd,

You might try one of the three routines written by Joop Schaye,
based on the 3-d interpolation schemes discussed in R.W. Hockney
and J.W. Eastwood, Computer Simulations Using Particles (New York:
McGraw-Hill, 1981).

NGP - Nearest Grid Point interpolation (lowest order)
CIC - Cloud in Cell interpolation (higher order)
TSC - Triangular Shaped Cloud interpolation (highest order)

These three procedures are available in the IDL Astronomy Library

<ftp://idlastro.gsfc.nasa.gov/pub/pro/math>

--Wayne Landsman landsman@mpb.gsfc.nasa.gov
