Subject: Re: spherical harmonics
Posted by Kenneth P. Bowman on Thu, 16 Jun 2011 13:42:45 GMT
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In article
<e6e92b27-4152-413e-945a-7f57232e3b55@p13g2000yqh.googlegroups.com>,
 parama mukherjee <parama2all@gmail.com> wrote:

> Hi,
> Does anybody know how to compute spherical harmonic transforms in IDL.
> Other than doing FFT followed by legendre transform?
> I have tried looking for it without much success so any help would be
> appreciated.
> Thanks,
> -Parama

Have you looked at SPHER_HARM? I haven't used it and don't know
anything about its efficiency. It looks like it only
computes the values of the spherical harmonics, but that
is an essential step in computing the transform.

There are a number of technical issues with spherical harmonic
transforms that you might need to be aware of. For example,
global atmospheric models generally use a non-regular Gaussian
grid in the meridional direction to improve the efficiency and
accuracy of the Legendre transforms.

NCAR provides a very mature and complete SH transform
library called SPHEREPACK.

  http://www.cisl.ucar.edu/css/software/spherepack/

It is a collection of Fortran programs, but could probably
be compiled and called from IDL. It will handle both
Gaussian and regular grids.

Ken Bowman