Subject: More Kriging Problems
Posted by David Fanning on Thu, 17 Oct 2013 01:42:26 GMT
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Folks,

Sorry to keep bringing bad news about the new fast kriging algorithm Chris provided last week, but I don't think it is working correctly. Aside from problems with the model functions, I think there is something wrong with the way regular grids are processed with the function.

I have been trying to use the Krig2D function to "repair" small holes in larger arrays. I've been using an 11x11 array for this process, but I am getting very strange results.

I've made the programs I am using available here:

http://www.idlcoyote.com/misc/krig_problem.zip

There are three PNG files in the zip file. One of the original data. One using the current Krig2D method in IDL 8.2.3 (which is basically identical to the original data set, as I would expect), and one using my cgKrig2D routine (included in the zip file), which produces a surface not at all like the original data. I *try* to create a surface with the fast kriging routine Chris gave us last week, but I can't get this program to run without an error. I have renamed the functions in this program, which I call krig2d_fast and include in the zip file, so there is no confusion with the original Krig2D routine.

The fact that krig2d_fast doesn't run confuses me, because as far as I can determine my cgKrig2D program is a faithful copy of this routine. The only thing I *believe* to be different about it is that I have modified the model functions to produce what I think are the correct results.

In any case, I can't get it to run with my simple data set. Here is the main-level program I am using to investigate the problem. I recreate the values array each time, because I also suspect these programs are modifying the variable, but I haven't had time to chase that down and confirm it.

I produce the PNG files from the first three graphics commands.

```
; Original data.
values = Dist(11)
smdims = Size(values, /Dimension)
cgSurface, values, Title='Original Values'
```

```
; Surface from current Krig2D program.
values = Dist(11)
sampled1 = Krig2d(values, findgen(smdims[0]), $
   findgen(smdims[1]), /Regular, NX=11, NY=11, Spherical=[5.0, 0.0])
cgSurface, sampled1, Title='Original Krig2D Values'

; Surface from my cgKrig2D program.
values = Dist(11)
sampled2 = cgKrig2d(values, findgen(smdims[0]), $
   findgen(smdims[1]), /Regular, Spherical=[5.0, 0.0])
cgSurface, sampled2, Title='cgKrig2D Values'

; Surface from the fast krig2d program of Chris Torrence, offered
; last week on newsgroup. This fails with error.
values = Dist(11)
sampled3 = Krig2d_Fast(values, findgen(smdims[0]), $
   findgen(smdims[1]), /Regular, Spherical=[5.0, 0.0])
cgSurface, sampled3, Title='Fast Krig2D Values'
END
```

I spent the whole day on this, and I'm feeling frustrated. Any ideas gratefully accepted. :-)

Cheers,

David

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Coyote's Guide to IDL Programming: http://www.idlcoyote.com/
Sepore ma de ni thue. ("Perhaps thou speakest truth.")
