Subject: Re: How to speed up KRIG2D by 30x
Posted by chris_torrence@NOSPAM on Wed, 09 Oct 2013 17:32:53 GMT
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Hi Mike,

This is fantastic. I'm working on adding in your change. However, I just found a different problem. If you look at the "Krig_Sphere" function within krig2d.pro, the code doesn't match the docs. The documentation states that for spherical covariance:

C(d) = C1 - 1.5 C1 (d/A) + 0.5 C1 (d/A)^3 if d < A
    = C0 + C1   if d = 0
    = 0   if d > A

Note that I threw in a factor of C1 on the first line (the docs are wrong).

Here is the code:

```
FUNCTION Krig_sphere, d, t
  r = d/t[0]
  v = t[1] + t[2] * (r * (1.5 - 0.5 * r *r) > 0)
  z = where(d eq 0, count)
  if count ne 0 then v[z] = 0
  return, (t[1] + t[2]) - v
end
```

We are not clipping to 0 for d > A. In fact, for d > A, the function actually starts to go back up and levels off at the constant C1. You can see this with the following plot:

```
p = plot(krig_sphere(findgen(40), [10, 0.5, 1]))
```

I think the code should be something more like:

```
FUNCTION Krig_sphere, d, t
  r = d/t[0]
  v = t[2] * (1 - r * (1.5 - 0.5*r*r))
  v[WHERE(d eq 0, /NULL)] = t[1] + t[2]
  v[WHERE(d gt t[0], /NULL)] = 0
  return, v
end
```

Thoughts?

-Chris
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