Subject: Re: area enclosed by a polygon on a sphere
Posted by ronn on Wed, 04 Aug 1999 07:00:00 GMT

View Forum Message <> Reply to Message

In article <7o74n7$aa7$1@news.lth.se>,
  Struan Gray <struan.gray@sljus.lu.se> wrote:

>   No code, but an idea which essentially uses Green's Theorem.
>
>   1) convert lat/lon to cartesian coords
>   2) use them to make an IDLgrPolygon object
>   3) use the IDLgrTessellator object to turn that
>   into a set of triangles
>   4) for each triangle work out the solid angle it
>   subtends from the centre of the earth
>   5) add up the solid angles and convert to an
>   area.
>
>   Working out the solid angle subtended by an arbitrary
> triangle of points on the surface of a sphere is left as an
> exercise for the reader (watch out for triplets of points on
> the same great circle :-).
>
> Struan
>

I found out how to do this today. For a spherical triangle the solid
angle subtended is the sum (in radians) of the interior angles - Pi.
This can be generalized to any polygon as

Area = (sum of all interior angles) - (n-2)*Pi

Where n is the number of points.

-Ronn

--
Ronn Kling
Ronn Kling Consulting
www.rlkling.com