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

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