Subject: Re: area enclosed by a poylgon on a sphere
Posted by Struan Gray on Tue, 03 Aug 1999 07:00:00 GMT
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Ronn Kling, ronn@rlkling.com writes:

> I need to be able to find the area enclosed by an
> arbitrarily shaped series of lat/lon points on the surface
> of the Earth. I have been told that I can solve this using
> Green's Theorem, but before I gut through the math I was
> hoping that someone would have solved this and be willing to
> share the code. If it is already in IDL that would be
> great, but any language will do.

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