Subject: Re: circles on the sky
Posted by Christopher Thom on Tue, 31 Mar 2009 19:09:17 GMT
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Quoth wlandsman:

> On Mar 27, 1:53 pm, Christopher Thom <ct...@oddjob.uchicago.edu>
> wrote:
>> Hi all,
>>
>> I'm drawing some points on a sky map. The map is <0.5deg across, so I
>> thought a flat approximation would be ok...this may not be true. Around my
>> central point, I draw a circle using a flat geometry relation [x =
>> x0+r*cos(theta); y = y0 + r*sin(theta)], but i see a point outside the
>> circle that I expect to be inside.
>>
>> I expect this point to be inside the circle, because the radius of the
>> circle (in arcsec) is *greater* than the great-circle angular distance
>> from the centre of the circle to the point.
>>
>> So...I'm thinking that my flat-geometry assumption is false. My question:
>> can anyone point me towards forumlae/code that will calculate this circle
>> on the sky (i.e. all points which have a fixed great-circle distance from
>> the centre)? I'm using the astro library gcirc.pro to calculte my
>> great-circle angular distances...I kind of want the "inverse" of that
>> routine, I guess.
>>
>> Or...is there a better way to do it? [Or maybe my bug is elsewhere?]
>>
>> cheers
>> chris
>
> One thing that is unclear in this question is whether you are talking
> about the surface of a sphere (in which case spherical trig formulae
> like in gcirc.pro are appropriate) or a projection onto a flat map.
> You begin by saying that you are drawing points on a map. In that
> case you need to know what projection you are using to create the flat
> map (e.g. gnomomic? Mercator?). Once you specify the projection
> (e.g. with MAP_INIT) then you can use MAP_PROJ_FORWARD /
> MAP_PROJ_INVERSE to convert between X,Y and spherical coordinates.
> (In astronomy you would use the world coordinate system routines
> wcssph2xy / wcsxy2sph).

I think i was pretty unclear about what i was trying to accomplish, and included some confusing details. So, a condensed question, on what I'm actually trying to accomplish:

Given a co-ordinate position (ra/dec or lat/long), a direction (e.g an

angle east of north, for instance), and a great circle angular distance,
how do I compute the coordinate of the final position?

cheers
chris
