Subject: Plotting the terminator on a map
Posted by nicholas on Fri, 08 Nov 1996 08:00:00 GMT
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Does anyone have a routine to plot the day/night terminator on a map
projection given the date and time? Don't want to reinvent the wheel if
it is out there .....
-Andy

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Subject: Re: Plotting the terminator on a map
Posted by sterner on Tue, 12 Nov 1996 08:00:00 GMT
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nicholas@uap.nrl.navy.mil (Andy Nicholas) writes:

> Does anyone have a routine to plot the day/night terminator on a map
> projection given the date and time? Don't want to reinvent the wheel if
> it is out there .....

My IDL library has what you need. Details on getting the
library are available at ftp://fermi.jhuapl.edu/www/s1r/idl/idl.html
under the link The JHU/APL/S1R IDL Library.

The following routines from my IDL library are of interest:
sunpos: Compute sun position from date/time and long/lat.
rb2ll: From range, bearing compute latitude, longitude.
makex: Make an array with specified start, end and step values.
(The last is just a convenience, findgen can be used instead).

Here are the steps:

```
sunpos,systime(),zone=-5,sublng=x,sublat=y
rb2ll,x,y,90,/deg,makex(0,360,10),xx,yy
map_set,/cont
plots,xx,yy
plots,x,y,psym=2
```

The first line computes the sun's position, in this example for

the current time. Time may be in the form returned by the IDL function systime or in Julian Seconds (explained in the above web site). It is assumed to be UT unless a zone number is given, above Eastern Standard Time is used (zone=-5) and the subsolar lat and long are returned.

The second line takes a reference point and one or more ranges and bearings and returns the lat/longs of the resulting points. In the above example the points every 10 degrees in bearing and 90 degrees along the earth's surface away from the subsolar point are returned. This is the terminator (you could use range a bit more than 90 degrees to allow for atmospheric refraction, but 90 deg is pretty reasonable).

Then just do a map_set and plot.

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