Subject: Re: Calculating satellite zenith angle from pre-KLM AVHRR 1B data
Posted by Jerry Gorline on Wed, 25 Apr 2001 12:44:59 GMT
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"Kate A. Edwards" wrote:
>
> I have NOAA-14 AVHRR Level 1B LAC files that I obtained from the Satellite
> Active Archive. I would like to learn how to calculate the satellite
> zenith angle for this pre-KLM satellite data, since it is not included in
> the data record. (For the KLM satellites, it is included). Can the
> satellite zenith angle be derived from other variables in the data record?
> If so, could you please give me a reference for how this is done? It is
> required in algorithms for deriving sea surface temperature.

Here is a site that may be of interest to you and mentions software in the Land Analysis System (LAS)[1]. I have limited experience with the NOAA Polar orbiters, but the orbits are sun-synchronous. Each orbit takes about 103 minutes, so that the Earth rotates just enough for the next pass. And you already knew that, but I still thinks it's neat. The effective swath width is about 25 degrees, but the AVHRR is sensitive to off-nadir angles of up to 55 degrees. NOAA maintains two satellites in complementary orbits, with one crossing the equator at local solar times of approximately 0730 and 1930, and the other at 0230 and 1430. The even-numbered satellites cover the "morning orbit" (0730) and the odd-numbered satellites the "afternoon orbit" (1430), except for NOAA 14. I believe that the LAS software takes advantage of this sun-synchronous configuration to compute the solar/satellite geometry and hence the relative azimuth angle for each image pixel. I hope this helps.

Regards,

Jerry

1. http://edc.usgs.gov/glis/hyper/guide/usavhrr#satellite