



**Western Region Technical Attachment
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SATELLITE DATA ECLIPSE PERIODS

[Editor's Note: This week's Technical Attachment is from the October 1991 NSSFC Operational Notes by Terry Schoeni, Satellite Program Manager.]

Twice yearly we experience daily GOES data losses due to an eclipse of the satellite. The eclipse occurs when the satellite moves into the earth's shadow, i.e., the earth is between the sun and the satellite (see figure). The eclipse lasts for under 2 hours (3 images are lost) each night of a 46-day period straddling the Vernal and Autumnal equinoxes. Since the GOES satellite generates its electrical power from solar panels, there is no power for the transmission of the data during eclipse.

The transition into and out of eclipse results in a great deal of thermal stress on the GOES vehicle. The temperatures on the exterior of the satellite will vary by as much as 60 to 70°C while entering and leaving eclipse. The temperature of some internal instruments, to which some heat is provided, may vary as little as 5°C while most experience a change of 30 to 50°C. This puts a great deal of stress on all electronic and mechanical parts of the instruments, and explains the occasional problems incurred when exiting the eclipse period.

