CERES Software Bulletin 97-07

August 18, 1997

Change in Cloud Optical Depth Parameters

Erika Geier (e.b.geier@larc.nasa.gov)
Maria Mitchum (m.v.mitchum@larc.nasa.gov)
Dave Young (d.f.young@larc.nasa.gov)

Purpose:

The purpose of this bulletin is to record a change on all CERES data products which contain the logarithm of cloud visible optical depth.

Introduction:

Two different cloud layer mean visible optical depth values are being recorded on CERES data products. The first is a mean cloud visible optical depth for cloud layer and the second is a mean logarithm of cloud visible optical depth for cloud layer. The mean logarithm of cloud visible optical depth for cloud layer value will be redefined. The anti-log of the mean logarithm of cloud visible optical depth for cloud layer will be recorded in place of the mean logarithm of cloud visible optical depth for cloud layer. It is hoped that any confusion caused by recording two separate optical depth values will be reduced by stressing that the mean cloud visible optical depths are computed in different manners.

Discussion:

Currently, Subsystem 4.4 computes both a mean cloud visible optical depth for cloud layer and a mean logarithm of cloud visible optical depth for cloud layer. These parameters, along with their associated standard deviations are written on the SSF data product. When the next release of the SSF is made, before the TRMM launch this fall, a change will be made at the request of the Scientists.

The mean and stddev of cloud visible optical depth for cloud layer will be renamed to the mean and stddev of linearly averaged cloud visible optical depth for cloud layer, and the algorithm for computing these parameters will remain the same. The name change is intended to clarify how this visible optical depth was computed and differentiate it from the other visible optical depth.

The mean and stddev of logarithm of cloud visible optical depth for cloud layer will be replaced with the mean and stddev of logarithmically averaged cloud visible optical depth for cloud layer. For each pixel that maps into the CERES Field of View (FOV), Subsystem 4.4 will compute the natural logarithm of the cloud visible optical depth for a cloud layer and Point Spread Function (PSF) weight the pixels to obtain a mean and standard deviation of logarithm of cloud visible optical depth for that cloud layer. Rather than write this value on the SSF data product, Subsystem 4.4 will take the anti-log of both the mean and standard deviation by using the

FORTRAN90 EXP(x) function and write them on the SSF.

All subsystems which follow the SSF and use these parameters will adjust their processing and, if necessary, output products to this change. Once the new SSF type definition module becomes available, its introduction into the CERES processing system will be coordinated with the other subsystem teams.