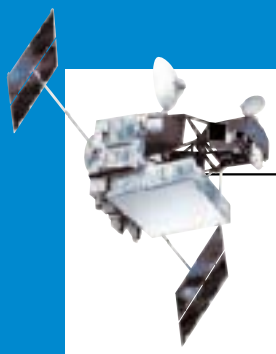


TRMM Precipitation Radar Products

NASDA NATIONAL SPACE DEVELOPMENT AGENCY OF JAPAN
CRL COMMUNICATIONS RESEARCH LABORATORY
NASA

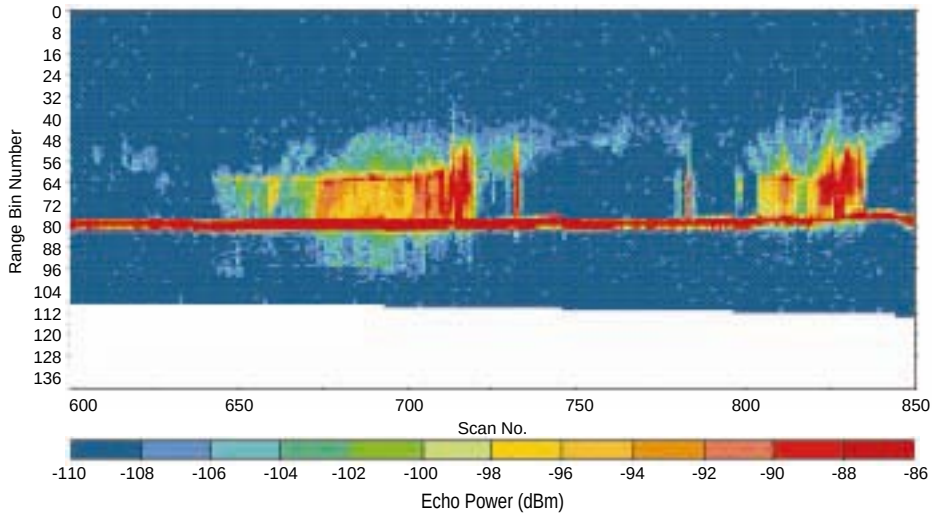


Fig.1 1B21: Power

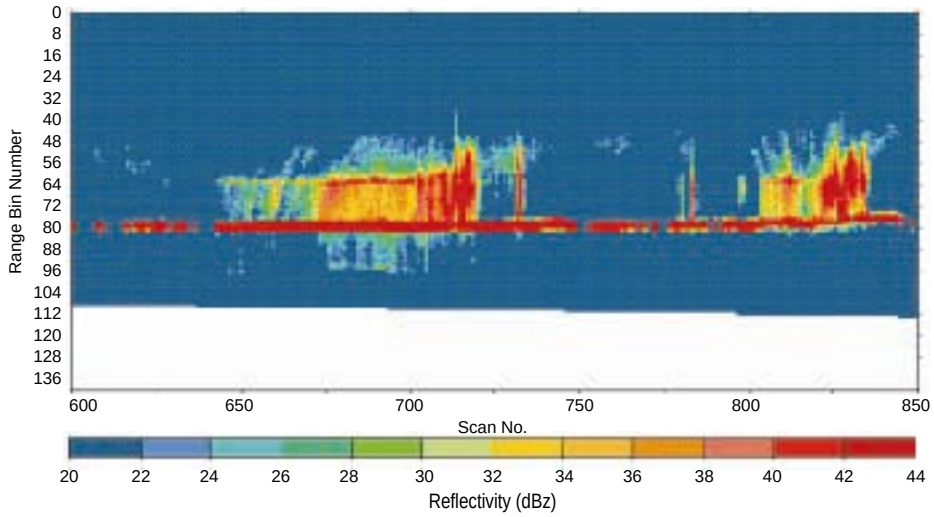


Fig.2 1C21: Z-factor

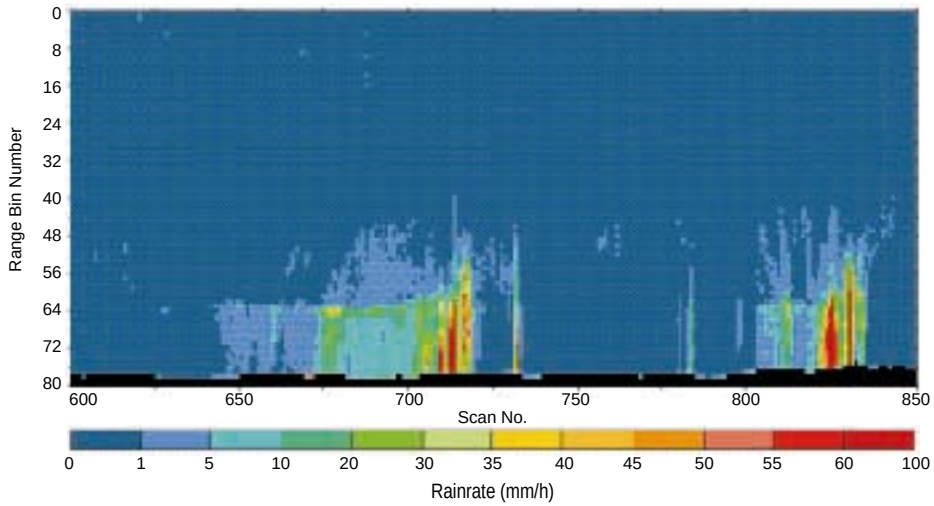
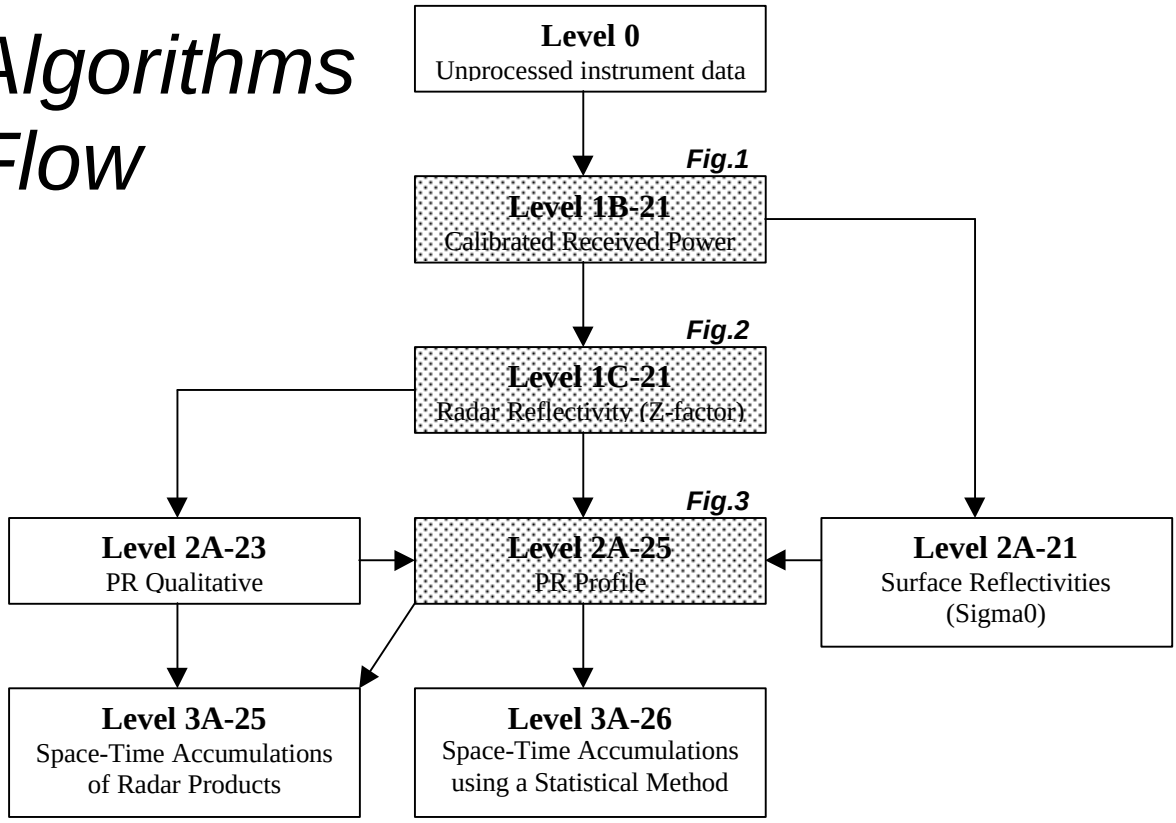


Fig.3 2A25: Rain

TRMM PR Algorithms Flow



(a) 1B-21 PR Calibration

This routine involves converting the count values of radar echoes and noise levels into engineering values (powers); it outputs the radar echo power and the noise power separately. This routine appends geometric information and the calibration constants for converting the received powers to reflectivity factors.

(b) 1C-21 PR Reflectivities

This routine will convert the power and noise estimates from 1B-21 to radar reflectivity factors (Z-factors).

(c) 2A-21 Sigma 0

This routine estimates the path attenuation and its reliability using the surface as a reference target. It also computes the spatial and temporal statistics of the surface scattering coefficients (sigma 0), and classifies the coefficients into land/water, rain/no-rain categories.

(d) 2A-23 PR Qualitative

This routine will output the rain/no-rain information. When rain is present, its height and type will be given. It also tests whether a bright band exists in rain echoes and determines the bright band height when it exists.

(e) 2A-25 PR Profile

This algorithm estimates rain rate profiles for each radar beam. The rain rate estimate is given for each resolution cell (4 km by 4 km by 250 m) of the PR radar. This routine will also output an average rain rate between two height levels (2 and 4 km) for each radar beam.

(f) 3A-25 Space-Time Accumulations of Radar Products

This routine will accumulate several important parameters derived in 1C-21, 2A-21, 2A-23 and 2A-25. It will calculate the statistics of the parameters over a space-time region. The most important output products are the monthly rainfall accumulations and monthly average rain rates over 5 deg. by 5 deg. boxes at fixed heights of 2 and 4 km.

(g) 3A-26 Space-Time Accumulations using a Statistical Method

This routine will compute rainfall accumulations and rain rate averages over 5 deg. by 5 deg. by 1 month boxes using a statistical method (multiple threshold method).