

**GLOBAL PRECIPITATION MEASUREMENT  
PRECIPITATION PROCESSING SYSTEM**

**File Specification  
3CMB**

**Preliminary Version**

September 21, 2015

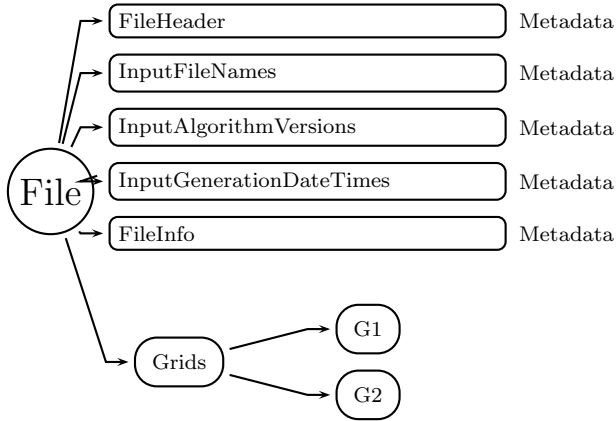


Figure 1: Data Format Structure for 3CMB, Combined precipitation

### 0.1 3CMB - Combined precipitation

3CMB, "Combined precipitation", computes statistics of the Combined measurements at both a low horizontal resolution (G1,  $5^\circ \times 5^\circ$  latitude/longitude) and a high horizontal resolution (G2,  $0.25^\circ \times 0.25^\circ$  latitude/longitude). There will be both a monthly product and a daily product.

Units and ranges not included in this version. When units and ranges are provided and no more changes are coming then they could be added. Use specific reference for each variable.

Dimension definitions:

ltL	28	Number of low resolution $5^\circ$ grid intervals of latitude from $70^\circ\text{S}$ to $70^\circ\text{N}$ .
lnL	72	Number of low resolution $5^\circ$ grid intervals of longitude from $180^\circ\text{W}$ to $180^\circ\text{E}$ .
ltH	536	Number of high resolution $0.25^\circ$ grid intervals of latitude from $67^\circ\text{S}$ to $67^\circ\text{N}$ .
lnH	1440	Number of high resolution $0.25^\circ$ grid intervals of longitude from $180^\circ\text{W}$ to $180^\circ\text{E}$ .
ns	2	Number of swaths:, MS (Ku+Ka+microwave), NS (Ku+microwave).
hgt	16	Number of level heights 0-15: 0: near surface, 1-10: height = $1.0\text{km} * \text{index}$ , 11-15: height = $10.0\text{km} + 2.0\text{km} * (\text{index}-10)$ ,
tim	24	Number of hourly local time bins.
rt	3	Number of rain types: stratiform, convective, all.
st	3	Number of surface types: ocean, land, all.
bin	30	Number of bins in histogram.

Figure 1 through Figure 17 show the structure of this product. The text below describes the contents of objects in the structure, the C Structure Header File and the Fortran Structure Header File.

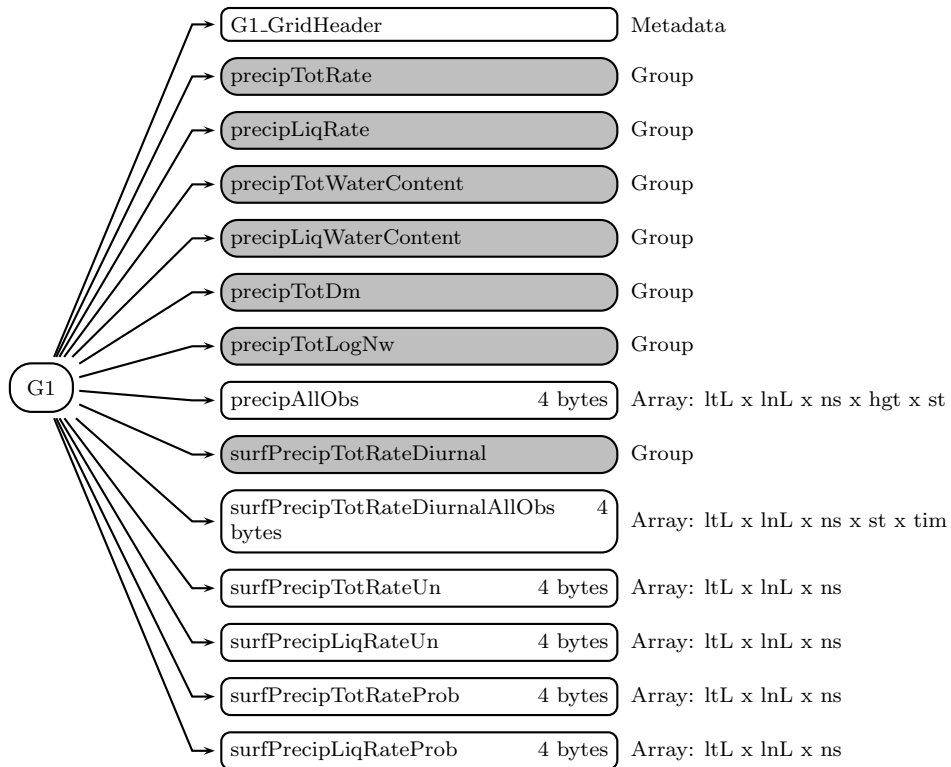


Figure 2: Data Format Structure for 3CMB, G1

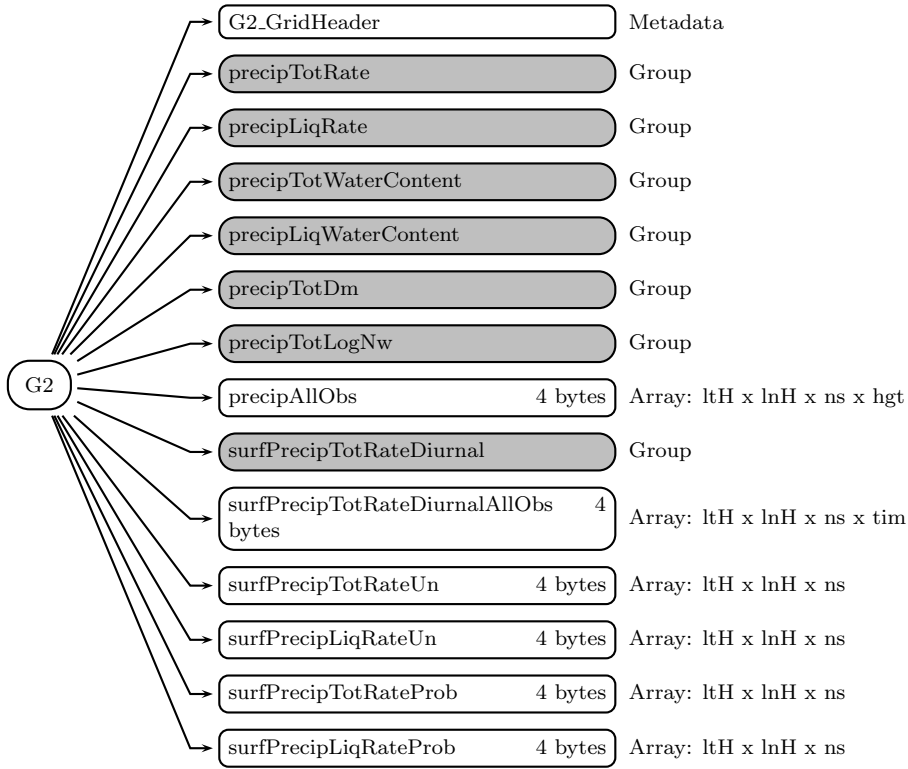


Figure 3: Data Format Structure for 3CMB, G2

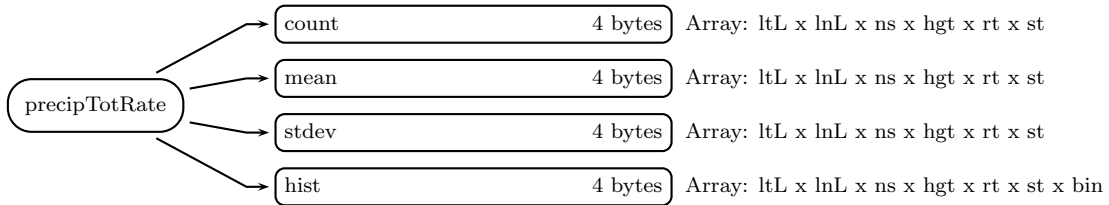


Figure 4: Data Format Structure for 3CMB, G1, precipTotRate

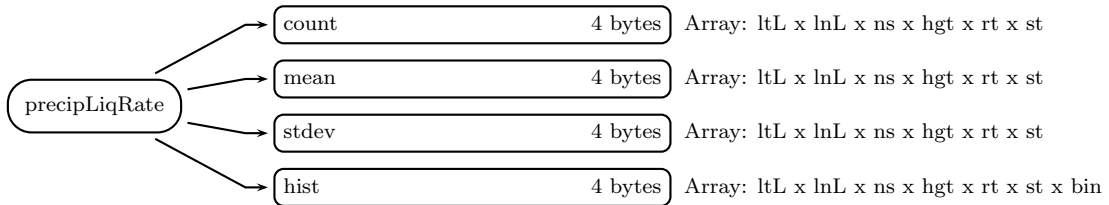


Figure 5: Data Format Structure for 3CMB, G1, precipLiqRate

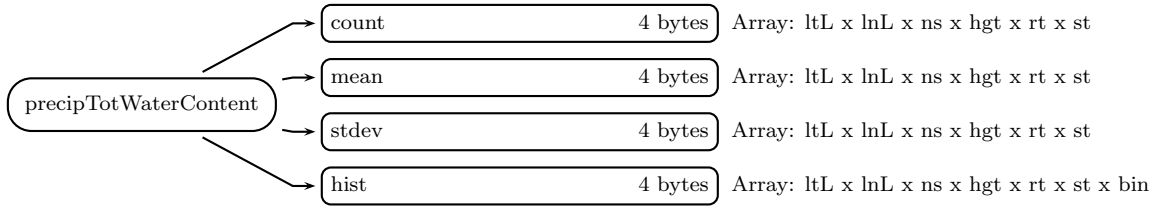


Figure 6: Data Format Structure for 3CMB, G1, precipTotWaterContent

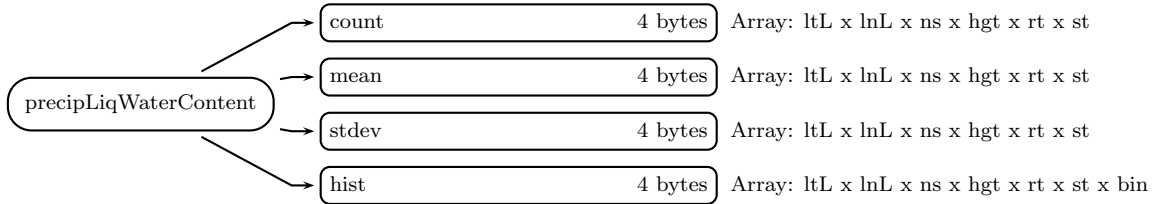


Figure 7: Data Format Structure for 3CMB, G1, precipLiqWaterContent

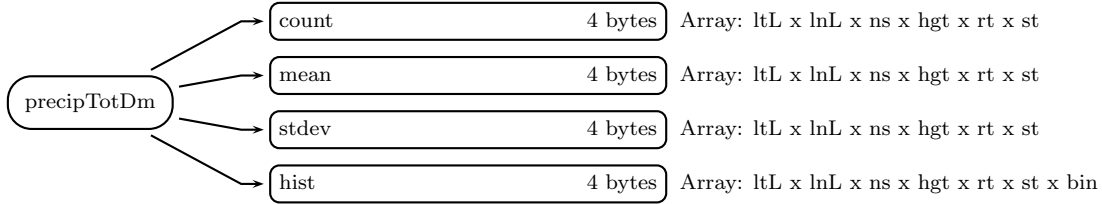


Figure 8: Data Format Structure for 3CMB, G1, precipTotDm

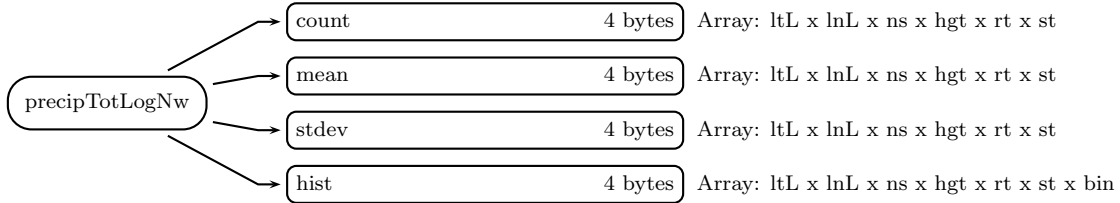


Figure 9: Data Format Structure for 3CMB, G1, precipTotLogNw

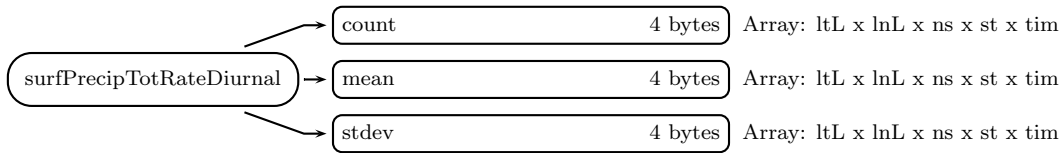


Figure 10: Data Format Structure for 3CMB, G1, surfPrecipTotRateDiurnal

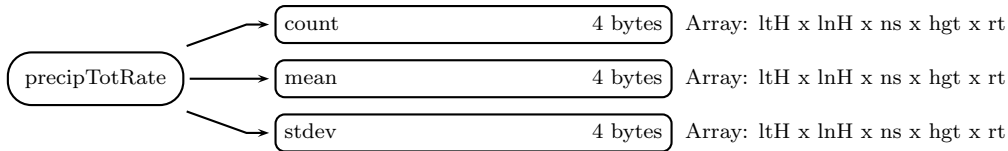


Figure 11: Data Format Structure for 3CMB, G2, precipTotRate

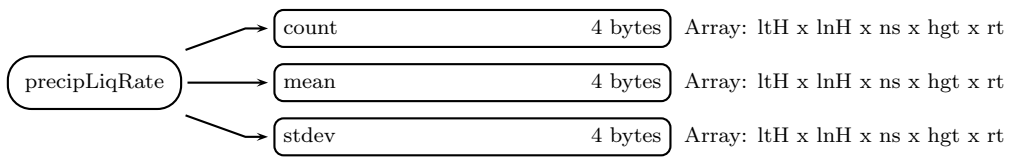


Figure 12: Data Format Structure for 3CMB, G2, precipLiqRate

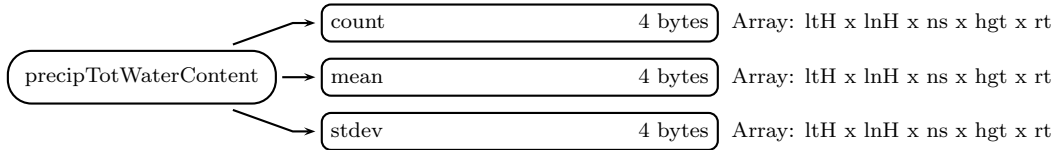


Figure 13: Data Format Structure for 3CMB, G2, precipTotWaterContent

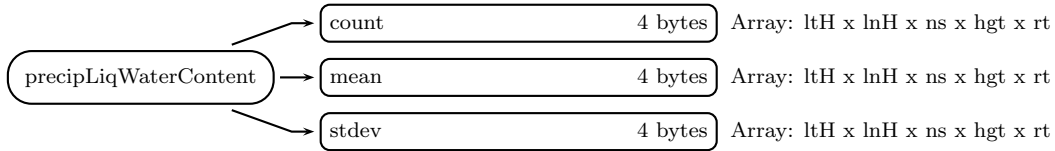


Figure 14: Data Format Structure for 3CMB, G2, precipLiqWaterContent

**FileHeader** (Metadata):

FileHeader contains general metadata. This group appears in all data products. See Metadata for GPM Products for details.

**InputFileNames** (Metadata):

InputFileNames contains a list of input file names for this granule. See Metadata for GPM Products for details.

**InputAlgorithmVersions** (Metadata):

InputAlgorithmVersions contains a list of input algorithm versions for this granule. See Metadata for GPM Products for details.

**InputGenerationDateTimes** (Metadata):

InputGenerationDateTimes contains a list of input generation datetimes. See Metadata for GPM Products for details.

**FileInfo** (Metadata):

FileInfo contains metadata used by the PPS I/O Toolkit (TKIO). This group appears in all data products. See Metadata for GPM Products for details.

**Grids** (Group)

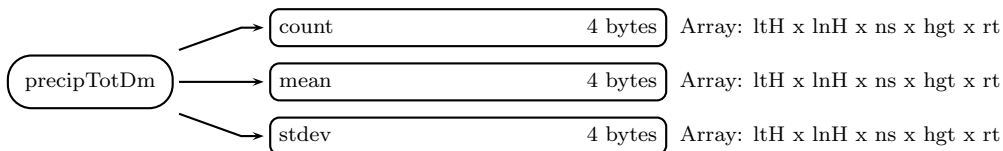


Figure 15: Data Format Structure for 3CMB, G2, precipTotDm

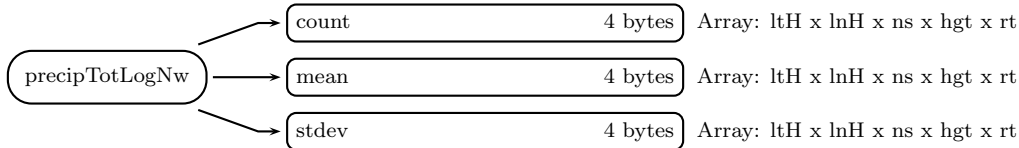


Figure 16: Data Format Structure for 3CMB, G2, precipTotLogNw

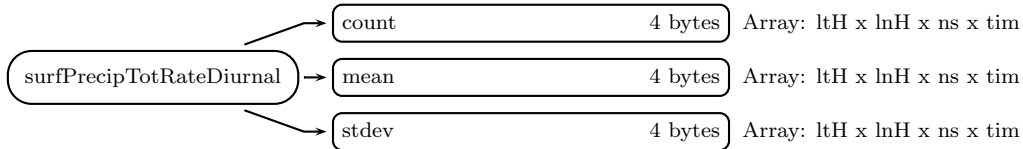


Figure 17: Data Format Structure for 3CMB, G2, surfPrecipTotRateDiurnal

## G1 (Grid)

### G1\_GridHeader (Metadata):

GridHeader contains metadata defining the grids in the grid structure. See Metadata for GPM Products for details.

### precipTotRate (Group in G1)

Equivalent precipitation rate of both liquid-phase and ice-phase precipitation water (mm/hr). (Note: liquid can be in the form of rain or liquid water in mixed-phase particles; ice can be in the form of ice particles or ice in mixed-phase particles.)

**count** (4-byte integer, array size: ltL x lnL x ns x hgt x rt x st):

Count. Special values are defined as:

-9999 Missing value

**mean** (4-byte float, array size: ltL x lnL x ns x hgt x rt x st):

mean. Special values are defined as:

-9999.9 Missing value

**stdev** (4-byte float, array size: ltL x lnL x ns x hgt x rt x st):

Standard deviation for the monthly product. Mean of squares for the daily product.

Special values are defined as:

-9999.9 Missing value

**hist** (4-byte integer, array size: ltL x lnL x ns x hgt x rt x st x bin):

Histogram. Special values are defined as:

-9999 Missing value

### precipLiqRate (Group in G1)

Equivalent precipitation rate of liquid-phase precipitating water (mm/hr). (Note: liquid



can be in the form of rain or liquid water in mixed-phase particles.)

**count** (4-byte integer, array size: ltL x lnL x ns x hgt x rt x st):

Count. Special values are defined as:

-9999 Missing value

**mean** (4-byte float, array size: ltL x lnL x ns x hgt x rt x st):

mean. Special values are defined as:

-9999.9 Missing value

**stdev** (4-byte float, array size: ltL x lnL x ns x hgt x rt x st):

Standard deviation for the monthly product. Mean of squares for the daily product.

Special values are defined as:

-9999.9 Missing value

**hist** (4-byte integer, array size: ltL x lnL x ns x hgt x rt x st x bin):

Histogram. Special values are defined as:

-9999 Missing value

### **precipTotWaterContent** (Group in G1)

Equivalent water content of both liquid-phase and ice-phase precipitating water ( $g/m^3$ ). (Note: liquid can be in the form of rain or melt water in mixed-phase particles; ice can be in the form of ice particles or ice in mixed-phase particles.)

**count** (4-byte integer, array size: ltL x lnL x ns x hgt x rt x st):

Count. Special values are defined as:

-9999 Missing value

**mean** (4-byte float, array size: ltL x lnL x ns x hgt x rt x st):

mean. Special values are defined as:

-9999.9 Missing value

**stdev** (4-byte float, array size: ltL x lnL x ns x hgt x rt x st):

Standard deviation for the monthly product. Mean of squares for the daily product.

Special values are defined as:

-9999.9 Missing value

**hist** (4-byte integer, array size: ltL x lnL x ns x hgt x rt x st x bin):

Histogram. Special values are defined as:

-9999 Missing value

### **precipLiqWaterContent** (Group in G1)

Equivalent water content of liquid-phase precipitating water ( $g/m^3$ ). (Note: liquid can be in the form of rain or liquid water in mixed-phase particles.)

**count** (4-byte integer, array size: ltL x lnL x ns x hgt x rt x st):

Count. Special values are defined as:

-9999 Missing value

**mean** (4-byte float, array size: ltL x lnL x ns x hgt x rt x st):

mean. Special values are defined as:

-9999.9 Missing value

**stdev** (4-byte float, array size: ltL x lnL x ns x hgt x rt x st):

Standard deviation for the monthly product. Mean of squares for the daily product.

Special values are defined as:

-9999.9 Missing value

**hist** (4-byte integer, array size: ltL x lnL x ns x hgt x rt x st x bin):

Histogram. Special values are defined as:

-9999 Missing value

### **precipTotDm** (Group in G1)

Volume-weighted mean of the liquid-equivalent precipitation particle diameter (mm).

**count** (4-byte integer, array size: ltL x lnL x ns x hgt x rt x st):

Count. Special values are defined as:

-9999 Missing value

**mean** (4-byte float, array size: ltL x lnL x ns x hgt x rt x st):

mean. Special values are defined as:

-9999.9 Missing value

**stdev** (4-byte float, array size: ltL x lnL x ns x hgt x rt x st):

Standard deviation for the monthly product. Mean of squares for the daily product.

Special values are defined as:

-9999.9 Missing value

**hist** (4-byte integer, array size: ltL x lnL x ns x hgt x rt x st x bin):

Histogram. Special values are defined as:

-9999 Missing value

### **precipTotLogNw** (Group in G1)

Common logarithm of the intercept of the normalized gamma distribution representing the liquid-equivalent precipitation particle size distribution ( $\log_{10}(m^{-4})$ ).

**count** (4-byte integer, array size: ltL x lnL x ns x hgt x rt x st):

Count. Special values are defined as:

-9999 Missing value

**mean** (4-byte float, array size: ltL x lnL x ns x hgt x rt x st):

mean. Special values are defined as:

-9999.9 Missing value

**stdev** (4-byte float, array size: ltL x lnL x ns x hgt x rt x st):

Standard deviation for the monthly product. Mean of squares for the daily product.

Special values are defined as:

-9999.9 Missing value

**hist** (4-byte integer, array size: ltL x lnL x ns x hgt x rt x st x bin):

Histogram. Special values are defined as:

-9999 Missing value

**precipAllObs** (4-byte integer, array size: ltL x lnL x ns x hgt x st):

Number of total observations, whether precipitating or not. Special values are defined as:

-9999 Missing value

### **surfPrecipTotRateDiurnal** (Group in G1)

Equivalent precipitation rate of both liquid-phase and ice-phase precipitating water in the lowest uncontaminated range-bin (mm/hr), indexed by the local time. (Note: liquid can be in the form of rain or liquid water in mixed-phase particles; ice can be in the form of ice particles or ice in mixed-phase particles.)

**count** (4-byte integer, array size: ltL x lnL x ns x st x tim):

Count. Special values are defined as:

-9999 Missing value

**mean** (4-byte float, array size: ltL x lnL x ns x st x tim):

mean. Special values are defined as:

-9999.9 Missing value

**stdev** (4-byte float, array size: ltL x lnL x ns x st x tim):

Standard deviation for the monthly product. Mean of squares for the daily product.

Special values are defined as:

-9999.9 Missing value

**surfPrecipTotRateDiurnalAllObs** (4-byte integer, array size: ltL x lnL x ns x st x tim):

Number of total diurnal observations, whether precipitating or not. Special values are defined as:

-9999 Missing value

**surfPrecipTotRateUn** (4-byte float, array size: ltL x lnL x ns):

Surface total precipitation rate unconditioned. To obtain rate conditioned on precipitation, divide by the probability. Special values are defined as:

-9999.9 Missing value

**surfPrecipLiqRateUn** (4-byte float, array size: ltL x lnL x ns):

Surface liquid precipitation rate unconditioned. To obtain rate conditioned on precipitation, divide by the probability. Special values are defined as:

-9999.9 Missing value

**surfPrecipTotRateProb** (4-byte float, array size: ltL x lnL x ns):

Probability of total surface precipitation. Special values are defined as:

-9999.9 Missing value

**surfPrecipLiqRateProb** (4-byte float, array size: ltL x lnL x ns):

Probability of liquid surface precipitation. Special values are defined as:

-9999.9 Missing value

## G2 (Grid)

**G2\_GridHeader** (Metadata):

GridHeader contains metadata defining the grids in the grid structure. See Metadata for GPM Products for details.

### **precipTotRate** (Group in G2)

Equivalent precipitation rate of both liquid-phase and ice-phase precipitation water (mm/hr). (Note: liquid can be in the form of rain or liquid water in mixed-phase particles; ice can be in the form of ice particles or ice in mixed-phase particles.)

**count** (4-byte integer, array size: ltH x lnH x ns x hgt x rt):

Count. Special values are defined as:

-9999 Missing value

**mean** (4-byte float, array size: ltH x lnH x ns x hgt x rt):

mean. Special values are defined as:

-9999.9 Missing value

**stdev** (4-byte float, array size: ltH x lnH x ns x hgt x rt):

Standard deviation for the monthly product. Mean of squares for the daily product. Special values are defined as:

-9999.9 Missing value

### **precipLiqRate** (Group in G2)

Equivalent precipitation rate of liquid-phase precipitating water (mm/hr). (Note: liquid can be in the form of rain or liquid water in mixed-phase particles.)

**count** (4-byte integer, array size: ltH x lnH x ns x hgt x rt):

Count. Special values are defined as:

-9999 Missing value

**mean** (4-byte float, array size: ltH x lnH x ns x hgt x rt):

mean. Special values are defined as:

-9999.9 Missing value

**stdev** (4-byte float, array size: ltH x lnH x ns x hgt x rt):

Standard deviation for the monthly product. Mean of squares for the daily product.

Special values are defined as:

-9999.9 Missing value

### **precipTotWaterContent** (Group in G2)

Equivalent water content of both liquid-phase and ice-phase precipitating water ( $g/m^3$ ). (Note: liquid can be in the form of rain or melt water in mixed-phase particles; ice can be in the form of ice particles or ice in mixed-phase particles.)

**count** (4-byte integer, array size: ltH x lnH x ns x hgt x rt):

Count. Special values are defined as:

-9999 Missing value

**mean** (4-byte float, array size: ltH x lnH x ns x hgt x rt):

mean. Special values are defined as:

-9999.9 Missing value

**stdev** (4-byte float, array size: ltH x lnH x ns x hgt x rt):

Standard deviation for the monthly product. Mean of squares for the daily product.

Special values are defined as:

-9999.9 Missing value

### **precipLiqWaterContent** (Group in G2)

Equivalent water content of liquid-phase precipitating water ( $g/m^3$ ). (Note: liquid can be in the form of rain or liquid water in mixed-phase particles.)

**count** (4-byte integer, array size: ltH x lnH x ns x hgt x rt):

Count. Special values are defined as:

-9999 Missing value

**mean** (4-byte float, array size: ltH x lnH x ns x hgt x rt):

mean. Special values are defined as:

-9999.9 Missing value

**stdev** (4-byte float, array size: ltH x lnH x ns x hgt x rt):

Standard deviation for the monthly product. Mean of squares for the daily product.

Special values are defined as:

-9999.9 Missing value

### **precipTotDm** (Group in G2)

Volume-weighted mean of the liquid-equivalent precipitation particle diameter (mm).

**count** (4-byte integer, array size: ltH x lnH x ns x hgt x rt):

Count. Special values are defined as:

-9999 Missing value

**mean** (4-byte float, array size: ltH x lnH x ns x hgt x rt):

mean. Special values are defined as:

-9999.9 Missing value

**stdev** (4-byte float, array size: ltH x lnH x ns x hgt x rt):

Standard deviation for the monthly product. Mean of squares for the daily product.

Special values are defined as:

-9999.9 Missing value

### **precipTotLogNw** (Group in G2)

Common logarithm of the intercept of the normalized gamma distribution representing the liquid-equivalent precipitation particle size distribution ( $\log_{10}(m^{-4})$ ).

**count** (4-byte integer, array size: ltH x lnH x ns x hgt x rt):

Count. Special values are defined as:

-9999 Missing value

**mean** (4-byte float, array size: ltH x lnH x ns x hgt x rt):

mean. Special values are defined as:

-9999.9 Missing value

**stdev** (4-byte float, array size: ltH x lnH x ns x hgt x rt):

Standard deviation for the monthly product. Mean of squares for the daily product.

Special values are defined as:

-9999.9 Missing value

**precipAllObs** (4-byte integer, array size: ltH x lnH x ns x hgt):

Number of total observations, whether precipitating or not. Special values are defined as:

-9999 Missing value

### **surfPrecipTotRateDiurnal** (Group in G2)

Equivalent precipitation rate of both liquid-phase and ice-phase precipitating water in the lowest uncontaminated range-bin (mm/hr), indexed by the local time. (Note: liquid can

be in the form of rain or liquid water in mixed-phase particles; ice can be in the form of ice particles or ice in mixed-phase particles.)

**count** (4-byte integer, array size: ltH x lnH x ns x tim):

Count. Special values are defined as:

-9999 Missing value

**mean** (4-byte float, array size: ltH x lnH x ns x tim):

mean. Special values are defined as:

-9999.9 Missing value

**stdev** (4-byte float, array size: ltH x lnH x ns x tim):

Standard deviation for the monthly product. Mean of squares for the daily product.

Special values are defined as:

-9999.9 Missing value

**surfPrecipTotRateDiurnalAllObs** (4-byte integer, array size: ltH x lnH x ns x tim):

Number of total diurnal observations, whether precipitating or not. Special values are defined as:

-9999 Missing value

**surfPrecipTotRateUn** (4-byte float, array size: ltH x lnH x ns):

Surface total precipitation rate unconditioned. To obtain rate conditioned on precipitation, divide by the probability. Special values are defined as:

-9999.9 Missing value

**surfPrecipLiqRateUn** (4-byte float, array size: ltH x lnH x ns):

Surface liquid precipitation rate unconditioned. To obtain rate conditioned on precipitation, divide by the probability. Special values are defined as:

-9999.9 Missing value

**surfPrecipTotRateProb** (4-byte float, array size: ltH x lnH x ns):

Probability of total surface precipitation. Special values are defined as:

-9999.9 Missing value

**surfPrecipLiqRateProb** (4-byte float, array size: ltH x lnH x ns):

Probability of liquid surface precipitation. Special values are defined as:

-9999.9 Missing value

## C Structure Header file:

```
#ifndef _TK_3CMB_H_
#define _TK_3CMB_H_

#ifndef _L3CMB_G2_SURFPRECIPTOTRATEDIURNAL_
#define _L3CMB_G2_SURFPRECIPTOTRATEDIURNAL_

typedef struct {
    int count[24][2][1440][536];
```

```

        float mean[24][2][1440][536];
        float stdev[24][2][1440][536];
    } L3CMB_G2_SURFPRECIPTOTRATEDIURNAL;

#endif

#ifndef _L3CMB_G2_PRECIPTOTLOGNW_
#define _L3CMB_G2_PRECIPTOTLOGNW_

typedef struct {
    int count[3][16][2][1440][536];
    float mean[3][16][2][1440][536];
    float stdev[3][16][2][1440][536];
} L3CMB_G2_PRECIPTOTLOGNW;

#endif

#ifndef _L3CMB_G2_PRECIPTOTDM_
#define _L3CMB_G2_PRECIPTOTDM_

typedef struct {
    int count[3][16][2][1440][536];
    float mean[3][16][2][1440][536];
    float stdev[3][16][2][1440][536];
} L3CMB_G2_PRECIPTOTDM;

#endif

#ifndef _L3CMB_G2_PRECIPLIQWATERCONTENT_
#define _L3CMB_G2_PRECIPLIQWATERCONTENT_

typedef struct {
    int count[3][16][2][1440][536];
    float mean[3][16][2][1440][536];
    float stdev[3][16][2][1440][536];
} L3CMB_G2_PRECIPLIQWATERCONTENT;

#endif

#ifndef _L3CMB_G2_PRECIPTOTWATERCONTENT_
#define _L3CMB_G2_PRECIPTOTWATERCONTENT_

typedef struct {

```



```

        int count[3][16][2][1440][536];
        float mean[3][16][2][1440][536];
        float stdev[3][16][2][1440][536];
    } L3CMB_G2_PRECIPTOTWATERCONTENT;

#endif

#ifndef _L3CMB_G2_PRECIPLIQRATE_
#define _L3CMB_G2_PRECIPLIQRATE_

typedef struct {
    int count[3][16][2][1440][536];
    float mean[3][16][2][1440][536];
    float stdev[3][16][2][1440][536];
} L3CMB_G2_PRECIPLIQRATE;

#endif

#ifndef _L3CMB_G2_PRECIPTOTRATE_
#define _L3CMB_G2_PRECIPTOTRATE_

typedef struct {
    int count[3][16][2][1440][536];
    float mean[3][16][2][1440][536];
    float stdev[3][16][2][1440][536];
} L3CMB_G2_PRECIPTOTRATE;

#endif

#ifndef _L3CMB_G2_
#define _L3CMB_G2_

typedef struct {
    L3CMB_G2_PRECIPTOTRATE precipTotRate;
    L3CMB_G2_PRECIPLIQRATE precipLiqRate;
    L3CMB_G2_PRECIPTOTWATERCONTENT precipTotWaterContent;
    L3CMB_G2_PRECIPLIQWATERCONTENT precipLiqWaterContent;
    L3CMB_G2_PRECIPTOTDM precipTotDm;
    L3CMB_G2_PRECIPTOTLOGNW precipTotLogNw;
    int precipAllObs[16][2][1440][536];
    L3CMB_G2_SURFPRECIPTOTRATEDIURNAL surfPrecipTotRateDiurnal;
    int surfPrecipTotRateDiurnalAllObs[24][2][1440][536];
    float surfPrecipTotRateUn[2][1440][536];

```

```

        float surfPrecipLiqRateUn[2][1440][536];
        float surfPrecipTotRateProb[2][1440][536];
        float surfPrecipLiqRateProb[2][1440][536];
    } L3CMB_G2;

#endif

#ifndef _L3CMB_G1_SURFPRECIPTOTRATEDIURNAL_
#define _L3CMB_G1_SURFPRECIPTOTRATEDIURNAL_

typedef struct {
    int count[24][3][2][72][28];
    float mean[24][3][2][72][28];
    float stdev[24][3][2][72][28];
} L3CMB_G1_SURFPRECIPTOTRATEDIURNAL;

#endif

#ifndef _L3CMB_G1_PRECIPTOTLOGNW_
#define _L3CMB_G1_PRECIPTOTLOGNW_

typedef struct {
    int count[3][3][16][2][72][28];
    float mean[3][3][16][2][72][28];
    float stdev[3][3][16][2][72][28];
    int hist[30][3][3][16][2][72][28];
} L3CMB_G1_PRECIPTOTLOGNW;

#endif

#ifndef _L3CMB_G1_PRECIPTOTDM_
#define _L3CMB_G1_PRECIPTOTDM_

typedef struct {
    int count[3][3][16][2][72][28];
    float mean[3][3][16][2][72][28];
    float stdev[3][3][16][2][72][28];
    int hist[30][3][3][16][2][72][28];
} L3CMB_G1_PRECIPTOTDM;

#endif

#ifndef _L3CMB_G1_PRECIPLIQWATERCONTENT_

```

```

#define _L3CMB_G1_PRECIPLIQWATERCONTENT_

typedef struct {
    int count[3][3][16][2][72][28];
    float mean[3][3][16][2][72][28];
    float stdev[3][3][16][2][72][28];
    int hist[30][3][3][16][2][72][28];
} L3CMB_G1_PRECIPLIQWATERCONTENT;

#endif

#ifndef _L3CMB_G1_PRECIPTOTWATERCONTENT_
#define _L3CMB_G1_PRECIPTOTWATERCONTENT_

typedef struct {
    int count[3][3][16][2][72][28];
    float mean[3][3][16][2][72][28];
    float stdev[3][3][16][2][72][28];
    int hist[30][3][3][16][2][72][28];
} L3CMB_G1_PRECIPTOTWATERCONTENT;

#endif

#ifndef _L3CMB_G1_PRECIPLIQRATE_
#define _L3CMB_G1_PRECIPLIQRATE_

typedef struct {
    int count[3][3][16][2][72][28];
    float mean[3][3][16][2][72][28];
    float stdev[3][3][16][2][72][28];
    int hist[30][3][3][16][2][72][28];
} L3CMB_G1_PRECIPLIQRATE;

#endif

#ifndef _L3CMB_G1_PRECIPTOTRATE_
#define _L3CMB_G1_PRECIPTOTRATE_

typedef struct {
    int count[3][3][16][2][72][28];
    float mean[3][3][16][2][72][28];
    float stdev[3][3][16][2][72][28];
    int hist[30][3][3][16][2][72][28];
}

```

```

} L3CMB_G1_PRECIPTOTRATE;

#endif

#ifndef _L3CMB_G1_
#define _L3CMB_G1_

typedef struct {
    L3CMB_G1_PRECIPTOTRATE precipTotRate;
    L3CMB_G1_PRECIPLIQRATE precipLiqRate;
    L3CMB_G1_PRECIPTOTWATERCONTENT precipTotWaterContent;
    L3CMB_G1_PRECIPLIQWATERCONTENT precipLiqWaterContent;
    L3CMB_G1_PRECIPTOTDM precipTotDm;
    L3CMB_G1_PRECIPTOTLOGNW precipTotLogNw;
    int precipAllObs[3][16][2][72][28];
    L3CMB_G1_SURFPRECIPTOTRATEDIURNAL surfPrecipTotRateDiurnal;
    int surfPrecipTotRateDiurnalAllObs[24][3][2][72][28];
    float surfPrecipTotRateUn[2][72][28];
    float surfPrecipLiqRateUn[2][72][28];
    float surfPrecipTotRateProb[2][72][28];
    float surfPrecipLiqRateProb[2][72][28];
} L3CMB_G1;

#endif

#ifndef _L3CMB_GRIDS_
#define _L3CMB_GRIDS_

typedef struct {
    L3CMB_G1 G1;
    L3CMB_G2 G2;
} L3CMB_GRIDS;

#endif

#endif

```

## Fortran Structure Header file:

```

STRUCTURE /L3CMB_G2_SURFPRECIPTOTRATEDIURNAL/
    INTEGER*4 count(536,1440,2,24)
    REAL*4 mean(536,1440,2,24)
    REAL*4 stdev(536,1440,2,24)

```

END STRUCTURE

```
STRUCTURE /L3CMB_G2_PRECIPTOTLOGNW/  
  INTEGER*4 count(536,1440,2,16,3)  
  REAL*4 mean(536,1440,2,16,3)  
  REAL*4 stdev(536,1440,2,16,3)  
END STRUCTURE
```

```
STRUCTURE /L3CMB_G2_PRECIPTOTDM/  
  INTEGER*4 count(536,1440,2,16,3)  
  REAL*4 mean(536,1440,2,16,3)  
  REAL*4 stdev(536,1440,2,16,3)  
END STRUCTURE
```

```
STRUCTURE /L3CMB_G2_PRECIPLIQWATERCONTENT/  
  INTEGER*4 count(536,1440,2,16,3)  
  REAL*4 mean(536,1440,2,16,3)  
  REAL*4 stdev(536,1440,2,16,3)  
END STRUCTURE
```

```
STRUCTURE /L3CMB_G2_PRECIPTOTWATERCONTENT/  
  INTEGER*4 count(536,1440,2,16,3)  
  REAL*4 mean(536,1440,2,16,3)  
  REAL*4 stdev(536,1440,2,16,3)  
END STRUCTURE
```

```
STRUCTURE /L3CMB_G2_PRECIPLIQRATE/  
  INTEGER*4 count(536,1440,2,16,3)  
  REAL*4 mean(536,1440,2,16,3)  
  REAL*4 stdev(536,1440,2,16,3)  
END STRUCTURE
```

```
STRUCTURE /L3CMB_G2_PRECIPTOTRATE/  
  INTEGER*4 count(536,1440,2,16,3)  
  REAL*4 mean(536,1440,2,16,3)  
  REAL*4 stdev(536,1440,2,16,3)  
END STRUCTURE
```

```
STRUCTURE /L3CMB_G2/  
  RECORD /L3CMB_G2_PRECIPTOTRATE/ precipTotRate  
  RECORD /L3CMB_G2_PRECIPLIQRATE/ precipLiqRate  
  RECORD /L3CMB_G2_PRECIPTOTWATERCONTENT/ precipTotWaterContent  
  RECORD /L3CMB_G2_PRECIPLIQWATERCONTENT/ precipLiqWaterContent
```

```

RECORD /L3CMB_G2_PRECIPTOTDM/ precipTotDm
RECORD /L3CMB_G2_PRECIPTOTLOGNW/ precipTotLogNw
INTEGER*4 precipAllObs(536,1440,2,16)
RECORD /L3CMB_G2_SURFPRECIPTOTRATEDIURNAL/ surfPrecipTotRateDiurnal
INTEGER*4 surfPrecipTotRateDiurnalAllObs(536,1440,2,24)
REAL*4 surfPrecipTotRateUn(536,1440,2)
REAL*4 surfPrecipLiqRateUn(536,1440,2)
REAL*4 surfPrecipTotRateProb(536,1440,2)
REAL*4 surfPrecipLiqRateProb(536,1440,2)
END STRUCTURE

```

```

STRUCTURE /L3CMB_G1_SURFPRECIPTOTRATEDIURNAL/
  INTEGER*4 count(28,72,2,3,24)
  REAL*4 mean(28,72,2,3,24)
  REAL*4 stdev(28,72,2,3,24)
END STRUCTURE

```

```

STRUCTURE /L3CMB_G1_PRECIPTOTLOGNW/
  INTEGER*4 count(28,72,2,16,3,3)
  REAL*4 mean(28,72,2,16,3,3)
  REAL*4 stdev(28,72,2,16,3,3)
  INTEGER*4 hist(28,72,2,16,3,3,30)
END STRUCTURE

```

```

STRUCTURE /L3CMB_G1_PRECIPTOTDM/
  INTEGER*4 count(28,72,2,16,3,3)
  REAL*4 mean(28,72,2,16,3,3)
  REAL*4 stdev(28,72,2,16,3,3)
  INTEGER*4 hist(28,72,2,16,3,3,30)
END STRUCTURE

```

```

STRUCTURE /L3CMB_G1_PRECIPLIQWATERCONTENT/
  INTEGER*4 count(28,72,2,16,3,3)
  REAL*4 mean(28,72,2,16,3,3)
  REAL*4 stdev(28,72,2,16,3,3)
  INTEGER*4 hist(28,72,2,16,3,3,30)
END STRUCTURE

```

```

STRUCTURE /L3CMB_G1_PRECIPTOTWATERCONTENT/
  INTEGER*4 count(28,72,2,16,3,3)
  REAL*4 mean(28,72,2,16,3,3)
  REAL*4 stdev(28,72,2,16,3,3)
  INTEGER*4 hist(28,72,2,16,3,3,30)

```

END STRUCTURE

```
STRUCTURE /L3CMB_G1_PRECIPLIQRATE/  
  INTEGER*4 count(28,72,2,16,3,3)  
  REAL*4 mean(28,72,2,16,3,3)  
  REAL*4 stdev(28,72,2,16,3,3)  
  INTEGER*4 hist(28,72,2,16,3,3,30)  
END STRUCTURE
```

```
STRUCTURE /L3CMB_G1_PRECIPTOTRATE/  
  INTEGER*4 count(28,72,2,16,3,3)  
  REAL*4 mean(28,72,2,16,3,3)  
  REAL*4 stdev(28,72,2,16,3,3)  
  INTEGER*4 hist(28,72,2,16,3,3,30)  
END STRUCTURE
```

```
STRUCTURE /L3CMB_G1/  
  RECORD /L3CMB_G1_PRECIPTOTRATE/ precipTotRate  
  RECORD /L3CMB_G1_PRECIPLIQRATE/ precipLiqRate  
  RECORD /L3CMB_G1_PRECIPTOTWATERCONTENT/ precipTotWaterContent  
  RECORD /L3CMB_G1_PRECIPLIQWATERCONTENT/ precipLiqWaterContent  
  RECORD /L3CMB_G1_PRECIPTOTDM/ precipTotDm  
  RECORD /L3CMB_G1_PRECIPTOTLOGNW/ precipTotLogNw  
  INTEGER*4 precipAllObs(28,72,2,16,3)  
  RECORD /L3CMB_G1_SURFPRECIPTOTRATEDIURNAL/ surfPrecipTotRateDiurnal  
  INTEGER*4 surfPrecipTotRateDiurnalAllObs(28,72,2,3,24)  
  REAL*4 surfPrecipTotRateUn(28,72,2)  
  REAL*4 surfPrecipLiqRateUn(28,72,2)  
  REAL*4 surfPrecipTotRateProb(28,72,2)  
  REAL*4 surfPrecipLiqRateProb(28,72,2)  
END STRUCTURE
```

```
STRUCTURE /L3CMB_GRIDS/  
  RECORD /L3CMB_G1/ G1  
  RECORD /L3CMB_G2/ G2  
END STRUCTURE
```