

# 1 FY-3C 紫外臭氧垂直探测仪 L1 数据

## 1.1 数据概况

表1. FY-3C 紫外臭氧垂直探测仪 L1 数据概况表

|           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 产品名称      | FY-3C 紫外臭氧垂直探测仪 L1 数据                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|           | FY-3C SBUS Level 1 Data                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| 物理意义（中英文） | 数据预处理生成的包含定标定位以及质量检验信息的传感器观测数据，其中传感器探测数据包括大气辐亮度，太阳辐照度以及在轨定标数据，定位数据包括对地观测点对应的太阳和卫星方向，地表信息，还包括对太阳观测期间太阳相对卫星坐标系的方向。                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|           | L1 data set contains all SBUS sensor data including atmospheric radiance and solar flux for 12 spectral bands and for 160nm-400nm with step length of 0.21nm,it also contains in-flight calibration data for solar flux and geo location data.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| 用途（中英文）   | FY-3 臭氧垂直探测仪（SBUS）通过测量 252nm—340nm 内 12 个波长的紫外后向散射反演大气臭氧垂直廓线和臭氧总量，其中 8 个短波通道用于反演臭氧廓线，4 特长波通道用于反演臭氧总量。SBUS 还测量 160nm—400nm 内太阳辐照度，光谱间隔为 0.21nm，以及 12 个波长的太阳辐照度。                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|           | The Solar Backscatter Ultraviolet Sounder (SBUS) instrument onboard the FY-3 polar orbiting satellite measures the ultraviolet sunlight scattered by the Earth’s atmosphere at 12 spectral bands ranging from 252 nm to 340 nm with 1.1nm average bandpass. Measurements at the shortest eight wavelengths are used to estimate ozone vertical profiles by using a maximum likelihood retrieval algorithm. Measurements at the longer four wavelengths, which penetrate into the lower atmosphere, are used to obtain estimates of total column ozone. Total ozone is calculated by using the ratio of two wavelengths of backscattered ultraviolet light, where one is strongly absorbed by ozone while the other is absorbed very little. The SBUS also measures the solar flux ranging from 160nm to 400nm with 0.21nm step length in sweep mode, and solar flux at 12 discrete bands. |
| 用户（中英文）   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

|         |  |
|---------|--|
|         |  |
| 备注（中英文） |  |
|         |  |

1.2数据基本信息

表2. FY-3C 紫外臭氧垂直探测仪 L1 数据基本信息表

|                                                         |       |    |
|---------------------------------------------------------|-------|----|
| 产品名称：FY-3C 紫外臭氧垂直探测仪 L1 数据                              |       |    |
| 文件名约定：<br>FY3C_SBUSX_GBAL_L1_YYYYMMDD_HHmm_200KM_MS.HDF |       |    |
| 栏目                                                      | 值     | 备注 |
| 卫星名                                                     | FY3C  |    |
| 仪器名称                                                    | SBUS  |    |
| 数据区域类型                                                  | GBAL  |    |
| 数据级别                                                    | L1    |    |
| 分辨率/数据子名                                                | 200KM |    |
| 数据格式名称                                                  | HDF   |    |
| 更新频率                                                    | 14    |    |
| 更新频率单位                                                  | Day   |    |
| 分块方式                                                    | 不分块   |    |
| 单个文件数据量                                                 | 2     |    |
| 数据量单位                                                   | MB    |    |

2 L1 数据规格

2.1 HDF 数据格式结构

表3. FY-3C 紫外臭氧垂直探测仪 L1 数据 HDF 结构

|                    |       |                     |                   |              |
|--------------------|-------|---------------------|-------------------|--------------|
| 全局文件属性             |       |                     |                   |              |
| 私有文件属性             |       |                     |                   |              |
| 科学数据集              |       |                     |                   |              |
| 分组名称               | 科学数据集 |                     | 科学数据集名(英文)        | 科学数据集中文描述    |
| Geolocation Fields | SDS1  | Longitude           | Longitude         | 逐像元纬度数据      |
|                    | SDS2  | Latitude            | Latitude          | 逐像元经度数据      |
|                    | SDS3  | Solar_zenith_angle  | SolarZenithAngle  | 太阳方位角数据      |
|                    | SDS4  | Solar_azimuth_angle | SolarAzimuthAngle | 太阳天顶角数据      |
|                    | SDS7  | Surface_height      | DEM               | 海拔高度（逐像元）    |
|                    | SDS8  | Land_sea_mask       | LandSeaMask       | 海陆掩码数据（逐步像元） |
| Data Fields        | SDS9  | Atm_radiance        | AtmRadiance       | 12 通道地球观测数据  |

|          |       |                                     |                                                          |                        |
|----------|-------|-------------------------------------|----------------------------------------------------------|------------------------|
|          | SDS10 | Cloud_radiance                      | CloudRadiance                                            | 光度计地球观测数据              |
|          | SDS11 | Lamp_DC_reference_diffuser          | LampDCofReferenceDiffuser                                | 参考板汞灯计数值               |
|          | SDS12 | Lamp_DC_standard_diffuser           | LampDCofStandardDiffuser                                 | 标准板汞灯计数值               |
|          | SDS13 | Discrete_solar_irradiance_standard  | DiscreteSolarIrradianceStandard                          | 12 个通道辐照度观测数据(标准板)     |
|          | SDS14 | Discrete_solar_irradiance_reference | DiscreteSolarIrradianceReference                         | 12 个通道辐照度观测数据(参考板)     |
|          | SDS15 | Cloud_irradiance_standard           | CloudIrradianceUnderDiscreteSolarIrradianceMode Standard | 12 个通道对应的云光度计辐照度值(标准板) |
|          | SDS16 | Cloud_irradiance_reference          | CloudIrradianceUnderDiscreteSolarIrradianceModeReference | 12 个通道对应的云光度计辐照度值(参考板) |
|          | SDS17 | Solar_irradiance_standard_diffuser  | SolarIrradianceofStandardDiffuser                        | 标准版连续太阳辐照度观测和数据        |
|          | SDS18 | Solar_irradiance_reference_diffuser | SolarIrradianceofReferenceDiffuser                       | 参考板连续太阳辐照度观测数据         |
| QAFields | SDS19 | Quality_control_id                  | QualityControlID                                         | 质量控制标志                 |

## 2.2 全局文件属性

表4. FY-3C 紫外臭氧垂直探测仪 L1 数据全局文件属性定义

| 描述       | 属性名称                         | 数据类型              | 数量  | 值                                              |
|----------|------------------------------|-------------------|-----|------------------------------------------------|
| 卫星名称     | Satellite Name               | 8-bit signed char | 不定长 | FY-3C                                          |
| 仪器名称     | Sensor Name                  | 8-bit signed char | 不定长 | Solar Backscatter Ultraviolet Sounder          |
| 传感器代码    | Sensor Identification Code   | 8-bit signed char | 不定长 | SBUS                                           |
| 数据集名称    | Dataset Name                 | 8-bit signed char | 不定长 | Global SBUS Data                               |
| 文件名称     | File Name                    | 8-bit signed char | 不定长 | FY3C_SBUSX_GBAL_L1_YYYYMMDD_HH mm_200KM_MS.HDF |
| 文件别名     | File Alias Name              | 8-bit signed char | 不定长 | SBUS_L1                                        |
| 产品生成地    | Responser                    | 8-bit signed char | 不定长 | NSMC                                           |
| 处理软件版本号  | Version Of Software          | 8-bit signed char | 不定长 | V 1.0.0                                        |
| 处理软件更新日期 | Software Revision Date       | 8-bit signed char | 不定长 | YYYY-MM-DD                                     |
| 定标系数版本号  | Version Of Coefficient Index | 8-bit signed char | 不定长 |                                                |
| 定标系数更新日期 | Coefficient Index Revision   | 8-bit signed char | 不定长 | YYYY-MM-DD                                     |

| 描述                 | 属性名称                         | 数据类型                    | 数量  | 值                             |
|--------------------|------------------------------|-------------------------|-----|-------------------------------|
|                    | Date                         |                         |     |                               |
| 数据观测开始日期(包括年月日)    | Observing Beginning Date     | 8-bit signed char       | 不定长 | YYYY-MM-DD                    |
| 数据观测开始时间（包括时分秒毫秒）  | Observing Beginning Time     | 8-bit signed char       | 不定长 | Hh:mm:ss.sss                  |
| 数据观测结束日期(包括年月日)    | Observing Ending Date        | 8-bit signed char       | 不定长 | YYYY-MM-DD                    |
| 数据观测结束时间（包括时分秒毫秒）  | Observing Ending Time        | 8-bit signed char       | 不定长 | Hh:mm:ss.sss                  |
| 数据创建日期(包括年月日)      | Data Creating Date           | 8-bit signed char       | 不定长 | YYYY-MM-DD                    |
| 数据创建时间（包括时分秒毫秒）    | Data Creating Time           | 8-bit signed char       | 不定长 | Hh:mm:ss.sss                  |
| 白天夜间标志             | Day Or Night Flag            | 8-bit signed char       | 不定长 | D:Day N:Night                 |
| 轨道号                | Orbit Number                 | 32-bit unsigned Integer | 1   |                               |
| 轨道周期(分钟)           | Orbit Period(min.)           | 16-bit unsigned Integer | 1   | 102                           |
| 轨道方向               | Orbit Direction              | 8-bit signed char       | 1   | A:Ascend D:Descend<br>M:Mixed |
| 数据质量标记(0-5级)       | Data Quality                 | 8-bit unsigned Integer  | 1   | 0为最好，5为最差                     |
| 总扫描线数              | Number Of Scans              | 32-bit signed Integer   | 1   |                               |
| 白天模式扫描线数           | Number Of Day mode scans     | 32-bit signed Integer   | 1   |                               |
| 晚上模式扫描线数           | Number of Night mode scans   | 32-bit signed Integer   | 1   |                               |
| 不完整的扫描线数           | Incomplete Scans             | 32-bit signed Integer   | 1   |                               |
| 扫描线质量检验码           | QA_Scan_Flag                 | 8-bit unsigned Integer  | 1   | 完成预处理扫描线百分数                   |
| 象元质量检验码            | QA_Pixel_Flag                | 16-bit unsigned Integer | 1   |                               |
| 起始行号               | Begin Line Number            | 16-bit unsigned Integer | 1   |                               |
| 结束行号               | End Line Number              | 16-bit unsigned Integer | 1   |                               |
| 起始象元号              | Begin Pixel Number           | 16-bit unsigned Integer | 1   | 1                             |
| 结束象元号              | End Pixel Number             | 16-bit unsigned Integer | 1   | 98                            |
| 地球椭球参考坐标系ID（WGS84） | Reference Ellipsoid Model ID | 8-bit signed char       | 不定长 |                               |
| 日地距离比              | EarthSun Distance Ratio      | 64-bit floating point   | 1   |                               |
| 平近地点角              | MeanAnomaly                  | 64-bit floating point   | 1   |                               |
| 平均运动               | MeanMotion                   | 64-bit floating point   | 1   |                               |

| 描述                       | 属性名称                   | 数据类型                  | 数量  | 值           |
|--------------------------|------------------------|-----------------------|-----|-------------|
| 偏心率                      | Eccentricity           | 64-bit floating point | 1   |             |
| 近地点俯角                    | PerigeeArgument        | 64-bit floating point | 1   |             |
| 升交点赤经                    | AscendingNodeLongitude | 64-bit floating point | 1   |             |
| 轨道倾角                     | OrbitalInclination     | 64-bit floating point | 1   |             |
| 历元时间                     | EpochTime              | 64-bit floating point | 1   |             |
| 轨道4个角点纬度                 | Orbit Point Latitude   | 32-bit floating point | 4   | NW,NE,SW,SE |
| 轨道4个角点经度                 | Orbit Point Longitude  | 32-bit floating point | 4   | NW,NE,SW,SE |
| 文件的附加说明(可以对文件的使用、创建人等说明) | AdditionalAnnotation   | 8-bit signed char     | 不定长 |             |

## 2.3 私有文件属性

表5. FY-3C 紫外臭氧垂直探测仪 L1 数据私有文件属性定义

| 描述                                                       | 属性名称                                     | 数据类型                    | 数量 | 值         |
|----------------------------------------------------------|------------------------------------------|-------------------------|----|-----------|
| 整圈数据帧数                                                   | Count of frames                          | 16-bit unsigned Integer | 1  |           |
| 整圈数据包数                                                   | Count of packets                         | 16-bit unsigned Integer | 1  |           |
| 整圈起始包序号                                                  | Beginning Packet_number                  | 16-bit unsigned Integer | 1  | C000-C0FF |
| 整圈结束包序号                                                  | Ending Packet_number                     | 16-bit unsigned Integer | 1  | C000-C0FF |
| 整圈开始时间                                                   | Beginning time in second                 | 32-bit unsigned Integer | 1  |           |
| 整圈结束时间                                                   | Ending time in second                    | 32-bit unsigned Integer | 1  |           |
| 太阳模式（包括连续太阳模式、标准灯模式下连续太阳模式或太阳分立模式）<br>观测开始时间（无太阳模式为-999） | Beginning time for Solar mode            | 32-bit unsigned Integer | 1  |           |
| 太阳模式（包括连续太阳模式、标准灯模式下连续太阳模式或太阳分立模式）<br>观测结束时间（无太阳模式为-999） | Ending time for Solar mode               | 32-bit signed Integer   | 1  |           |
| 丢失数据包数                                                   | Count for missing packets                | 16-bit unsigned Integer | 1  |           |
| 时序出错包数                                                   | Count for time sequence error            | 16-bit unsigned Integer | 1  |           |
| 太阳连续模式观测情况（0=无，1=有，-1=观测失败）                              | Status of sweep mode(reference diffuser) | 16-bit unsigned Integer | 1  |           |

|                                                      |                                                  |                         |   |  |
|------------------------------------------------------|--------------------------------------------------|-------------------------|---|--|
| 标准灯模式下太阳连续模式观测情况<br>(0=无, 1=有, -1=观测失败)              | Status of sweep<br>mode(standard diffuser)       | 16-bit unsigned Integer | 1 |  |
| 标准灯模式下汞灯观测情况 (参考板)<br>(0=无, 1=有, -1=观测失败)            | Status of lamp<br>mode(reference diffuser)       | 16-bit unsigned Integer | 1 |  |
| 标准灯模式下汞灯观测情况 (标准板)<br>观测情况 (0=无, 1=有, -1=观测<br>失败)   | Status of lamp mode(standard<br>diffuser)        | 16-bit unsigned Integer | 1 |  |
| 标准灯模式下暗电流观测情况 (标准<br>板) 观测情况 (0=无, 1=有, -1=<br>观测失败) | Status of lamp mode(dark<br>current)             | 16-bit unsigned Integer | 1 |  |
| 太阳分立模式观测情况 (0=无, 1=有,<br>-1=观测失败)                    | Status of discrete solar mode                    | 16-bit unsigned Integer | 1 |  |
| 大气模式失败次数                                             | Count for errors of<br>atmospheric measurements  | 16-bit unsigned Integer | 1 |  |
| 暗电流文件更新情况 (0=没更新, 1=<br>更新成功, -1=更新失败)               | Status of dark current file                      | 16-bit unsigned Integer | 1 |  |
| 太阳辐照度拟合系数更新情况 (0=没<br>更新, 1=更新成功, -1=更新失败)           | Status of Solar irradiance<br>fitting coeffients | 16-bit unsigned Integer | 1 |  |

## 2.4 科学数据集

表6. FY-3C 紫外臭氧垂直探测仪 L1 数据科学数据集 (SDS) 定义

| SDS1. | SDS 名称               | 数据类型        | 维数          | 数据量(字节)           |
|-------|----------------------|-------------|-------------|-------------------|
|       | Longitude<br>逐像元纬度数据 | float32     | [nscans,12] | nscans*4*12 Bytes |
|       | <b>SDS 属性名</b>       | <b>数据类型</b> | <b>数量</b>   | <b>值</b>          |
|       | valid_range          | float64     | 2           | -180., 180.       |
|       | long_name            | String      | 1           | " Longitude"      |
|       | Intercept            | float64     | 1           | 0.0               |
|       | band_name            | String      | 1           |                   |
|       | units                | string      | 1           | "degree"          |
|       | FillValue            | float64     | 1           | -999.0            |
|       | Slope                | float64     | 1           | 1.0               |
| SDS2. | SDS 名称               | 数据类型        | 维数          | 数据量(字节)           |
|       | Latitude<br>逐像元经度数据  | float32     | [nscans,12] | nscans*12*4 Bytes |
|       | <b>SDS 属性名</b>       | <b>数据类型</b> | <b>数量</b>   | <b>值</b>          |
|       | Intercept            | float64     | 1           | 0.0               |
|       | FillValue            | float64     | 1           | -999.0            |
|       | long_name            | String      | 1           | " Latitude "      |
|       | units                | string      | 1           | "degree"          |
|       | Slope                | float64     | 1           | 1.0               |
|       | band_name            | String      | 1           |                   |
|       | valid_range          | float64     | 2           | -90., 90.         |

| SDS3. | SDS 名称                         | 数据类型    | 维数            | 数据量(字节)                                         |
|-------|--------------------------------|---------|---------------|-------------------------------------------------|
|       | Solar_zenith_angle<br>太阳方位角数据  | int16   | [nscans,12]   | nscans*12*2 Bytes                               |
|       | SDS 属性名                        | 数据类型    | 数量            | 值                                               |
|       | FillValue                      | int32   | 1             | 32767                                           |
|       | Slope                          | float32 | 1             | 0.01                                            |
|       | long_name                      | String  | 1             | " Solar Zenith Angle "                          |
|       | units                          | string  | 1             | "degree"                                        |
|       | valid_range                    | int32   | 2             | 0,18000                                         |
|       | band_name                      | String  | 1             |                                                 |
|       | Intercept                      | float32 | 1             | 0.0                                             |
| SDS4. | SDS 名称                         | 数据类型    | 维数            | 数据量(字节)                                         |
|       | Solar_azimuth_angle<br>太阳天顶角数据 | int16   | [nscans,12]   | nscans*12*2 Bytes                               |
|       | SDS 属性名                        | 数据类型    | 数量            | 值                                               |
|       | Slope                          | float32 | 1             | 0.01                                            |
|       | Intercept                      | float32 | 1             | 0.0                                             |
|       | FillValue                      | int32   | 1             | 32767                                           |
|       | band_name                      | String  | 1             |                                                 |
|       | valid_range                    | int32   | 2             | -18000,18000                                    |
|       | units                          | string  | 1             | "degree"                                        |
|       | long_name                      | String  | 1             | " Solar Azimuth Angle "                         |
| SDS7. | SDS 名称                         | 数据类型    | 维数            | 数据量(字节)                                         |
|       | Surface_height<br>海拔高度（逐像元）    | int16   | [nscans,12]   | nscans*12*2 Bytes                               |
|       | SDS 属性名                        | 数据类型    | 数量            | 值                                               |
|       | band_name                      | String  | 1             |                                                 |
|       | FillValue                      | int32   | 1             | 32767                                           |
|       | units                          | string  | 1             | "meters"                                        |
|       | Intercept                      | float32 | 1             | 0.0                                             |
|       | Slope                          | float32 | 1             | 1.0                                             |
|       | long_name                      | String  | 1             | " Surface Height "                              |
|       | valid_range                    | int32   | 2             | -400,10000                                      |
| SDS8. | SDS 名称                         | 数据类型    | 维数            | 数据量(字节)                                         |
|       | Land_sea_mask<br>海陆掩码数据（逐步像元）  | uchar8  | [nscans,12]   | nscans*12*1 Bytes                               |
|       | SDS 属性名                        | 数据类型    | 数量            | 值                                               |
|       | band_name                      | String  | 1             |                                                 |
|       | Slope                          | float32 | 1             | 1.0                                             |
|       | FillValue                      | int32   | 1             | 255                                             |
|       | units                          | string  | 1             | "none"                                          |
|       | valid_range                    | int32   | 2             | 1,5                                             |
|       | Intercept                      | float32 | 1             | 0.0                                             |
|       | long_name                      | String  | 1             | " Land Sea Mask "                               |
| SDS9. | SDS 名称                         | 数据类型    | 维数            | 数据量(字节)                                         |
|       | Atm_radiance<br>12 通道地球观测数据    | Float32 | [nscans,12,2] | [nscans,12,2]                                   |
|       | SDS 属性名                        | 数据类型    | 数量            | 值                                               |
|       | FillValue                      | float64 | 1             | -999.0                                          |
|       | Slope                          | float64 | 1             | 1.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0 |
|       | long_name                      | String  | 1             | "solar backscattered radiance"                  |
|       | Intercept                      | float64 | 1             | 0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0 |

|                                                          |             |             |                                                     |
|----------------------------------------------------------|-------------|-------------|-----------------------------------------------------|
|                                                          |             |             | 0,0,0,0.0                                           |
| units                                                    | string      | 1           | "muW? cm-2? nm-1? sr-1"                             |
| band_name                                                | String      | 1           | "1,2,3,4,5,6,7,8,9,10,11,12"                        |
| valid_range                                              | float64     | 2           | 0.0, 3.4E38                                         |
| <b>SDS10. SDS 名称</b>                                     | <b>数据类型</b> | <b>维数</b>   | <b>数据量(字节)</b>                                      |
| Cloud_radiance<br>光度计地球观测数据                              | Float32     | [nscans,12] | nscans *12 *8 Bytes                                 |
| <b>SDS 属性名</b>                                           | <b>数据类型</b> | <b>数量</b>   | <b>值</b>                                            |
| Intercept                                                | float64     | 1           | 0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0     |
| units                                                    | string      | 1           | " muW? cm-2? nm-1? sr-1"                            |
| long_name                                                | String      | 1           | "cloud reflected radiance"                          |
| valid_range                                              | float64     | 2           | 0.0, 3.4E38                                         |
| Slope                                                    | float64     | 1           | 1.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0     |
| band_name                                                | String      | 1           | "1,2,3,4,5,6,7,8,9,10,11,12"                        |
| FillValue                                                | float64     | 1           | -999.0                                              |
| <b>SDS11. SDS 名称</b>                                     | <b>数据类型</b> | <b>维数</b>   | <b>数据量(字节)</b>                                      |
| Lamp_DC_reference_diffuser<br>参考板汞灯计数值                   | uint16      | [1194,2]    | 1194*2*2                                            |
| <b>SDS 属性名</b>                                           | <b>数据类型</b> | <b>数量</b>   | <b>值</b>                                            |
| FillValue                                                | int32       | 1           | 65535                                               |
| Intercept                                                | float32     | 1           | 0.0                                                 |
| Slope                                                    | float32     | 1           | 1.0                                                 |
| band_name                                                | String      | 1           |                                                     |
| long_name                                                | String      | 1           | "Digital counts of Hg Lamp from reference diffuser" |
| units                                                    | string      | 1           | "none"                                              |
| valid_range                                              | int32       | 2           | 0, 32767                                            |
| <b>SDS12. SDS 名称</b>                                     | <b>数据类型</b> | <b>维数</b>   | <b>数据量(字节)</b>                                      |
| Lamp_DC_standard_diffuser<br>标准板汞灯计数值                    | uint16      | [1194,2]    | 1194*2*2 Bytes                                      |
| <b>SDS 属性名</b>                                           | <b>数据类型</b> | <b>数量</b>   | <b>值</b>                                            |
| valid_range                                              | int32       | 2           | 0, 32767                                            |
| long_name                                                | String      | 1           | "Digital counts of Hg Lamp from standard diffuser"  |
| Intercept                                                | float32     | 1           | 0.0                                                 |
| band_name                                                | String      | 1           |                                                     |
| units                                                    | string      | 1           | "none"                                              |
| FillValue                                                | int32       | 1           | 65535                                               |
| Slope                                                    | float32     | 1           | 1.0                                                 |
| <b>SDS13. SDS 名称</b>                                     | <b>数据类型</b> | <b>维数</b>   | <b>数据量(字节)</b>                                      |
| Discrete_solar_irradiance_standard<br>12 个通道辐照度观测数据(标准板) | float32     | [12,2]      | 12*2*4 Bytes                                        |
| <b>SDS 属性名</b>                                           | <b>数据类型</b> | <b>数量</b>   | <b>值</b>                                            |
| Intercept                                                | float64     | 1           | 0.0                                                 |
| FillValue                                                | float64     | 1           | -999.0                                              |
| long_name                                                | String      | 1           | "Solar irradiance for 12 channels"                  |
| units                                                    | string      | 1           | "muW? cm-2? nm-1"                                   |
| Slope                                                    | float64     | 1           | 1.0                                                 |
| band_name                                                | String      | 1           |                                                     |

|                                                           |             |           |                                                       |
|-----------------------------------------------------------|-------------|-----------|-------------------------------------------------------|
| valid_range                                               | float64     | 2         | 0.0, 3.4E38                                           |
| <b>SDS14. SDS 名称</b>                                      | <b>数据类型</b> | <b>维数</b> | <b>数据量(字节)</b>                                        |
| Discrete_solar_irradiance_reference<br>12 个通道辐照度观测数据(参考板) | float32     | [12,2]    | 12*2*4 Bytes                                          |
| <b>SDS 属性名</b>                                            | <b>数据类型</b> | <b>数量</b> | <b>值</b>                                              |
| FillValue                                                 | float64     | 1         | -999.0                                                |
| Slope                                                     | float64     | 1         | 1.0                                                   |
| long_name                                                 | String      | 1         | “Solar irradiance for 12 channels “                   |
| units                                                     | string      | 1         | "muW? cm-2? nm-1"                                     |
| valid_range                                               | float64     | 2         | 0.0, 3.4E38                                           |
| band_name                                                 | String      | 1         |                                                       |
| Intercept                                                 | float64     | 1         | 0.0                                                   |
| <b>SDS15. SDS 名称</b>                                      | <b>数据类型</b> | <b>维数</b> | <b>数据量(字节)</b>                                        |
| Cloud_irradiance_standard<br>12 个通道对应的云光度计辐照度值(标准板)       | float32     | [12,1]    | 12*1*4                                                |
| <b>SDS 属性名</b>                                            | <b>数据类型</b> | <b>数量</b> | <b>值</b>                                              |
| Slope                                                     | float64     | 1         | 1.0                                                   |
| Intercept                                                 | float64     | 1         | 0.0                                                   |
| FillValue                                                 | float64     | 1         | -999.0                                                |
| band_name                                                 | String      | 1         |                                                       |
| valid_range                                               | float64     | 2         | 0.0, 3.4E38                                           |
| units                                                     | string      | 1         | " muW.cm-2.nm-1"                                      |
| long_name                                                 | String      | 1         | Cloud irradiance under discrete solar irradiance mode |
| <b>SDS16. SDS 名称</b>                                      | <b>数据类型</b> | <b>维数</b> | <b>数据量(字节)</b>                                        |
| Cloud_irradiance_reference<br>12 个通道对应的云光度计辐照度值(参考板)      | float32     | [12,1]    |                                                       |
| <b>SDS 属性名</b>                                            | <b>数据类型</b> | <b>数量</b> | <b>值</b>                                              |
| band_name                                                 | String      | 1         |                                                       |
| FillValue                                                 | float64     | 1         | -999.0                                                |
| units                                                     | string      | 1         | " muW.cm-2.nm-1"                                      |
| Intercept                                                 | float64     | 1         | 0.0                                                   |
| Slope                                                     | float64     | 1         | 1.0                                                   |
| long_name                                                 | String      | 1         | Cloud irradiance under discrete solar irradiance mode |
| valid_range                                               | float64     | 2         | 0.0, 3.4E38                                           |
| <b>SDS17. SDS 名称</b>                                      | <b>数据类型</b> | <b>维数</b> | <b>数据量(字节)</b>                                        |
| Solar_irradiance_standard_diffuser<br>标准版连续太阳辐照度观测和数据     | float32     | [1145,2]  | 1145*2*4                                              |
| <b>SDS 属性名</b>                                            | <b>数据类型</b> | <b>数量</b> | <b>值</b>                                              |
| band_name                                                 | String      | 1         |                                                       |
| Slope                                                     | float64     | 1         | 1.0                                                   |
| FillValue                                                 | float64     | 1         | -999.0                                                |
| units                                                     | string      | 1         | " muW.cm-2.nm-1"                                      |
| valid_range                                               | float64     | 2         | 0.0, 3.4E38                                           |
| Intercept                                                 | float64     | 1         | 0.0                                                   |
| long_name                                                 | String      | 1         | "Solar irradiance from standard                       |

|                                                       |             |           |                                                           |
|-------------------------------------------------------|-------------|-----------|-----------------------------------------------------------|
|                                                       |             |           | diffuser and photometer"                                  |
| <b>SDS18. SDS 名称</b>                                  | <b>数据类型</b> | <b>维数</b> | <b>数据量(字节)</b>                                            |
| Solar_irradiance_reference_diffuser<br>参考板连续太阳辐照度观测数据 | float32     | [1145,2]  | 1145*2*4 Bytes                                            |
| <b>SDS 属性名</b>                                        | <b>数据类型</b> | <b>数量</b> | <b>值</b>                                                  |
| FillValue                                             | float64     | 1         | -999.0                                                    |
| Slope                                                 | float64     | 1         | 1.0                                                       |
| long_name                                             | String      | 1         | "Solar irradiance from reference diffuser and photometer" |
| Intercept                                             | float64     | 1         | 0.0                                                       |
| units                                                 | string      | 1         | " muW.cm-2.nm-1 "                                         |
| band_name                                             | String      | 1         |                                                           |
| valid_range                                           | float64     | 2         | 0.0, 3.4E38                                               |
| <b>SDS19. SDS 名称</b>                                  | <b>数据类型</b> | <b>维数</b> | <b>数据量(字节)</b>                                            |
| Quality_control_id<br>质量控制标志                          | uint32      | [nscans]  | ncans*4 Bytes                                             |
| <b>SDS 属性名</b>                                        | <b>数据类型</b> | <b>数量</b> | <b>值</b>                                                  |
| Intercept                                             | float32     | 1         | 0.0                                                       |
| units                                                 | string      | 1         | "none"                                                    |
| long_name                                             | String      | 1         | "Quality control indicator "                              |
| valid_range                                           | int32       | 2         | 0,2147483647                                              |
| Slope                                                 | float32     | 1         | 1.0                                                       |
| band_name                                             | String      | 1         |                                                           |
| FillValue                                             | int32       | 1         | 2147483647                                                |

2.5 表格数据

表7. FY-3C 紫外臭氧垂直探测仪 L1 数据表格数据（Vdata）定义

|  |  |
|--|--|
|  |  |
|--|--|

3 备忘录

表8. 更新备忘录

| 版本号 | 日期         | 修改者 | 修 改 描 述                                                                                                                                                                                                                |
|-----|------------|-----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1   | 2013-04-15 | 王维和 | 太阳分立模式两个漫反射板均进行观测，因此原来的分立太阳模式辐照度 Discrete_solar_irradiance 分解成两个：Discrete_solar_irradiance_standard 和 Discrete_solar_irradiance_reference，云光度计辐照度也分解成两个：Cloud_irradiance_standard 和 Cloud_irradiance_reference 其他没有改变。 |