

## Each file contains data for one day of observation.

File names include date of observation. Their structure is:

**SENSOR\_PLATFORM\_LEVEL\_"CLOUD"\_YYYYMMDD\_INSTITUTION\_VERSION".tar"**

where:

SENSOR = IASI,

PLATFORM = METOPA or METOPB,

LEVEL = L2,

YYYY = year, MM = month, DD = day,

INSTITUTION = LMD,

VERSION = version number of the retrieval code

Each tar file contains two files: day and night observations with this structure,

**PLATFORM\_LEVEL\_"CIRS-IASI"\_YYYYMMDD"TT"HH-MM-OO\_ INSTITUTION\_VERSION".nc"**

where:

PLATFORM = METOPA or METOPB,

LEVEL = L2,

YYYY = year, MM = month, DD = day,

HH-MM = local observation time, for IASI-A: 09-30, for IASI-B: 10:20

OO = AM for day observation and PM for night observation

INSTITUTION = LMD,

VERSION = version number of the retrieval code

## The format of the files is NetCFD4.

The structure of the file header (eg for 1 January 2018) is as follows:

```
netcdf METOPA_L2_CIRS-IASI_20180101T09-30-AM_LMD_V1.2 {
```

dimensions:

```
    ngroupoffootprints = 133523 ;
```

```
    nfootprints = 4 ;
```

```
    maps_LAT = 450 ;
```

```
    maps_LON = 900 ;
```

variables:

```
    float maps_LAT(maps_LAT) ;
```

```
        maps_LAT:long_name = "Map latitudes in degrees" ;
```

```
        maps_LAT:units = "degrees_north" ;
```

```
        maps_LAT:valid_range = -90., 90. ;
```

```
        maps_LAT:standard_name = "latitude" ;
```

```
    float maps_LON(maps_LON) ;
```

```
        maps_LON:long_name = "Map longitudes in degrees" ;
```

```
        maps_LON:units = "degrees_east" ;
```

```
        maps_LON:valid_range = -180., 180. ;
```

```
        maps_LON:standard_name = "longitude" ;
```

```
    float map_E_CP(maps_LAT, maps_LON) ;
```

```
        map_E_CP:long_name = "2D global map of cloud pressure uncertainty" ;
```

```
        map_E_CP:units = "hPa" ;
```

```
        map_E_CP:missing_value = -999.f ;
```

```
        map_E_CP:fill_value = 0. ;
```

```

float map_CTYP( maps_LAT, maps_LON ) ;
    map_CTYP:long_name = "2D global map of cloud type" ;
    map_CTYP:valid_range = 1L, 8L ;
    map_CTYP:fill_value = 0. ;
float map_CT( maps_LAT, maps_LON ) ;
    map_CT:long_name = "2D global map of cloud temperature" ;
    map_CT:units = "K" ;
    map_CT:missing_value = -999.f ;
    map_CT:fill_value = 0. ;
float map_CP( maps_LAT, maps_LON ) ;
    map_CP:long_name = "2D global map of cloud pressure" ;
    map_CP:units = "hPa" ;
    map_CP:missing_value = -999.f ;
    map_CP:fill_value = 0. ;
float map_CEM( maps_LAT, maps_LON ) ;
    map_CEM:long_name = "2D global map of cloud emissivity" ;
    map_CEM:missing_value = 0.f ;
    map_CEM:fill_value = 0. ;
float time( ngrouppoffootprints ) ;
    time:long_name = "Granule start time since beginning of the day per group of footprint
(2x2 IASI footprint)" ;
    time:units = "second" ;
    time:standard_name = "time" ;
float tb12( ngrouppoffootprints ) ;
    tb12:long_name = "Average 12um brightness temperature per group of footprint (2x2
IASI footprint)" ;
    tb12:units = "K" ;
float std_tb12( ngrouppoffootprints ) ;
    std_tb12:long_name = "Spatial variability of tb12 per group of footprint (2x2 IASI
footprint)" ;
    std_tb12:units = "K" ;
float solzen( ngrouppoffootprints ) ;
    solzen:long_name = "Solar zenith angle per group of footprint (2x2 IASI footprint)" ;
    solzen:units = "degrees" ;
    solzen:valid_range = 0., 180. ;
float satzen( ngrouppoffootprints ) ;
    satzen:long_name = "Viewing zenith angle per group of footprint (2x2 IASI footprint)" ;
    satzen:units = "degrees" ;
    satzen:valid_range = 0., 180. ;
byte airtigr( ngrouppoffootprints ) ;
    airtigr:long_name = "TIGR air mass per group of footprint (2x2 IASI footprint)" ;
    airtigr:description = "1: tropical, 2: midlatitude summer, 3: midlatitude winter, 2: polar
summer, 3: polar winter" ;
    airtigr:valid_range = 1L, 5L ;
int surface_type( ngrouppoffootprints ) ;
    surface_type:long_name = "Surface class determined from ERA-Interim sea ice and snow
per group of footprint (2x2 IASI footprint)" ;
    surface_type:description = "1: unfrozen land, 2: unfrozen ocean, 3: sea ice, 5: snow" ;
    surface_type:valid_range = 1L, 5L ;
float landfrac( ngrouppoffootprints ) ;
    landfrac:long_name = "Land fraction per group of footprint (2x2 IASI footprint)" ;
    landfrac:valid_range = 0., 1. ;
float latitude( nfootprints, ngrouppoffootprints ) ;
    latitude:long_name = "latitude per footprint" ;

```

```

        latitude:units = "degrees_north" ;
        latitude:valid_range = -90., 90. ;
        latitude:standard_name = "latitude" ;
        latitude:missing_value = -999.f ;
float longitude(nfootprints, ngrouppoffootprints) ;
        longitude:long_name = "longitude per footprint" ;
        longitude:units = "degrees_east" ;
        longitude:valid_range = -180., 180. ;
        longitude:standard_name = "longitude" ;
        longitude:missing_value = -999.f ;
float sz(nfootprints, ngrouppoffootprints) ;
        sz:long_name = "Surface altitude per IASI footprint" ;
        sz:units = "m" ;
        sz:missing_value = -999.f ;
float cz(nfootprints, ngrouppoffootprints) ;
        cz:long_name = "Cloud altitude per IASI footprint" ;
        cz:units = "m" ;
        cz:missing_value = -999.f ;
float e_cz(nfootprints, ngrouppoffootprints) ;
        e_cz:long_name = "Cloud altitude uncertainty per IASI footprint" ;
        e_cz:units = "m" ;
        e_cz:missing_value = -999.f ;
float ct(nfootprints, ngrouppoffootprints) ;
        ct:long_name = "Cloud temperature per IASI footprint" ;
        ct:units = "K" ;
        ct:missing_value = -999.f ;
float e_ct(nfootprints, ngrouppoffootprints) ;
        e_ct:long_name = "Cloud temperature uncertainty per IASI footprint" ;
        e_ct:units = "K" ;
        e_ct:missing_value = -999.f ;
float cp(nfootprints, ngrouppoffootprints) ;
        cp:long_name = "Cloud pressure per IASI footprint" ;
        cp:units = "hPa" ;
        cp:missing_value = -999.f ;
float e_cp(nfootprints, ngrouppoffootprints) ;
        e_cp:long_name = "Cloud pressure uncertainty per IASI footprint" ;
        e_cp:units = "hPa" ;
        e_cp:missing_value = -999.f ;
byte ctyp(nfootprints, ngrouppoffootprints) ;
        ctyp:long_name = "Cloud type per IASI footprint" ;
        ctyp:description = "1: high opaque (CP<440 hPa, CEM>0.95), 2: cirrus (CP<440 hPa,
0.5>CEM>0.95), 3: thin cirrus (CP<440 hPa, CEM<0.5), 4: midlevel opaque (680 hPa >CP>440 hPa,
CEM>0.5), 5: midlevel partly cloudy (680 hPa>CP>440 hPa, CEM<0.5), 6: lowlevel opaque (CP>680 hPa,
CEM>0.5), 7: lowlevel partly cloudy (CP>680 hPa, CEM<0.5), 8: clear sky" ;
        ctyp:valid_range = 1L, 8L ;
float cem(nfootprints, ngrouppoffootprints) ;
        cem:long_name = "Cloud emissivity per IASI footprint" ;
        cem:missing_value = 0.f ;
float e_cem(nfootprints, ngrouppoffootprints) ;
        e_cem:long_name = "Cloud emissivity uncertainty per IASI footprint" ;
        e_cem:missing_value = 0.f ;

```

```
// global attributes:
```

```
    :title = "CIRS/IASI cloud products (emissivity, pressure, cloud type, temperature, height
and uncertainties)";
    :institution = "LMD";
    :product_version = "1.2";
    :history = "2020-01-28 18:19:26 - Product generated with retrieval code version 2.0";
    :summary = "IASI-METOPA cloud climatology with 2D global maps";
    :source = "Eumetsat IASI Level-1C data (version 4 up to 20100518, version 5 from
20100518 to 20110929, version 6 from 20110929 to 20130808, version 7 from 20130808)";
    :input_Files = "IASI-A_010118.AM_V1.2";
    :web_site = "https://cirs.aeris-data.fr, https://iasi.aeris-data.fr";
    :climatology = "CIRS-IASI";
    :product_name = "L2-CIRS-IASI";
    :file_name = "METOPA_L2_CIRS-IASI_20180101T09-30-AM_LMD_V1.2.nc";
    :references = "Stubenrauch et al., ACP (2017) doi :10.5194/acp-17-13625-2017";
    :creator_name = "AERIS";
    :contact_email = "stubenrauch@lmd.polytechnique.fr";
    :data_policy = "cite reference and AERIS website";
    :netcdf_conventions = "CF-1.6";
    :standard_name_vocabulary = "NetCDF Climate and Forecast (CF) Metadata Convention
version 30, 3 December 2015";
    :keywords = "cloud,satellite,observation,atmosphere,level-2,Metop-A";
    :keywords_vocabulary = "GCMD Science Keywords";
    :platform = "Metop-A";
}
```