

Each file contains data for one month of observation.

File names include the year and the month of observation. Their structure is:

IASI_PLATFORM_L3_NH3_YYYYMM_ULB-LATMOS_VERSION.nc

where:

PLATFORM = METOPA, METOPB or METOPC, YYYY = year, MM = month, VERSION = VX.Y.Z where X.Y is the version number of the retrieval code and Z the version number of the NetCDF file production

The format of the files is NetCDF4.

The structure of the file header (eg for January 2020) is as follows:

```
netcdf IASI_METOPA_L3_NH3_202001_ULB-LATMOS_V4.0.0 {
```

```
dimensions:
```

```
    latitude = 1440 ;
```

```
    longitude = 2880 ;
```

```
variables:
```

```
    float latitude(latitude) ;
```

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

```
        latitude:units = "degrees_north" ;
```

```
        latitude:valid_range = -90.f, 90.f ;
```

```
    float longitude(longitude) ;
```

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

```
        longitude:units = "degrees_east" ;
```

```
        longitude:valid_range = -180.f, 180.f ;
```

```
    float nh3_total_column_ampm(latitude, longitude) ;
```

```
        nh3_total_column_ampm:long_name = "L3 (AM+PM) NH3 total column in mole per square
```

```
meter" ;
```

```
        nh3_total_column_ampm:units = "mol m-2" ;
```

```
        nh3_total_column_ampm:missing_value = NaNf ;
```

```
        nh3_total_column_ampm:multiplication_factor_to_convert_to_molecules_per_cm2 =
```

```
6.02214076e+19 ;
```

```
    float nh3_total_column_am(latitude, longitude) ;
```

```
        nh3_total_column_am:long_name = "L3 (AM) NH3 total column in mole per square meter" ;
```

```
        nh3_total_column_am:units = "mol m-2" ;
```

```
        nh3_total_column_am:missing_value = NaNf ;
```

```
        nh3_total_column_am:multiplication_factor_to_convert_to_molecules_per_cm2 =
```

```
6.02214076e+19 ;
```

```
    float nh3_total_column_pm(latitude, longitude) ;
```

```
        nh3_total_column_pm:long_name = "L3 (PM) NH3 total column in mole per square meter" ;
```

```
        nh3_total_column_pm:units = "mol m-2" ;
```

```
        nh3_total_column_pm:missing_value = NaNf ;
```

```
        nh3_total_column_pm:multiplication_factor_to_convert_to_molecules_per_cm2 =
```

```
6.02214076e+19 ;
```

```
    float number_of_observations_ampm(latitude, longitude) ;
```

```
        number_of_observations_ampm:long_name = "number of observations used for calculating the L3  
(AM+PM)" ;
```

```
        number_of_observations_ampm:units = "no unit" ;
```

```
        number_of_observations_ampm:standard_name = "number_of_observations" ;
```

```
    float number_of_observations_am(latitude, longitude) ;
```

```
        number_of_observations_am:long_name = "number of observations used for calculating the L3
```

```
(AM)" ;
```

```
        number_of_observations_am:units = "no unit" ;
```

```
        number_of_observations_am:standard_name = "number_of_observations" ;
```

```
    float number_of_observations_pm(latitude, longitude) ;
```

```

        number_of_observations_pm:long_name = "number of observations used for calculating the L3
(PM)" ;
        number_of_observations_pm:units = "no unit" ;
        number_of_observations_pm:standard_name = "number_of_observations" ;
        float nh3_total_column_random_uncertainty_ampm(latitude, longitude) ;
        nh3_total_column_random_uncertainty_ampm:long_name = "random total uncertainty on the
NH3 total column (AM+PM)" ;
        nh3_total_column_random_uncertainty_ampm:units = "mol m-2" ;
        nh3_total_column_random_uncertainty_ampm:missing_value = NaNf ;

        nh3_total_column_random_uncertainty_ampm:multiplication_factor_to_convert_to_molecules_per_cm2
= 6.02214076e+19 ;
        float nh3_total_column_random_uncertainty_am(latitude, longitude) ;
        nh3_total_column_random_uncertainty_am:long_name = "random total uncertainty on the NH3
total column (AM)" ;
        nh3_total_column_random_uncertainty_am:units = "mol m-2" ;
        nh3_total_column_random_uncertainty_am:missing_value = NaNf ;

        nh3_total_column_random_uncertainty_am:multiplication_factor_to_convert_to_molecules_per_cm2 =
6.02214076e+19 ;
        float nh3_total_column_random_uncertainty_pm(latitude, longitude) ;
        nh3_total_column_random_uncertainty_pm:long_name = "random total uncertainty on the NH3
total column (PM)" ;
        nh3_total_column_random_uncertainty_pm:units = "mol m-2" ;
        nh3_total_column_random_uncertainty_pm:missing_value = NaNf ;

        nh3_total_column_random_uncertainty_pm:multiplication_factor_to_convert_to_molecules_per_cm2 =
6.02214076e+19 ;
        float nh3_total_column_systematic_uncertainty_ampm(latitude, longitude) ;
        nh3_total_column_systematic_uncertainty_ampm:long_name = "systematic total uncertainty on
the total column (AM+PM)" ;
        nh3_total_column_systematic_uncertainty_ampm:units = "mol m-2" ;
        nh3_total_column_systematic_uncertainty_ampm:missing_value = NaNf ;

        nh3_total_column_systematic_uncertainty_ampm:multiplication_factor_to_convert_to_molecules_per_c
m2 = 6.02214076e+19 ;
        float nh3_total_column_systematic_uncertainty_am(latitude, longitude) ;
        nh3_total_column_systematic_uncertainty_am:long_name = "systematic total uncertainty on the
NH3 total column (AM)" ;
        nh3_total_column_systematic_uncertainty_am:units = "mol m-2" ;
        nh3_total_column_systematic_uncertainty_am:missing_value = NaNf ;

        nh3_total_column_systematic_uncertainty_am:multiplication_factor_to_convert_to_molecules_per_cm2
= 6.02214076e+19 ;
        float nh3_total_column_systematic_uncertainty_pm(latitude, longitude) ;
        nh3_total_column_systematic_uncertainty_pm:long_name = "systematic total uncertainty on the
NH3 total column (PM)" ;
        nh3_total_column_systematic_uncertainty_pm:units = "mol m-2" ;
        nh3_total_column_systematic_uncertainty_pm:missing_value = NaNf ;

        nh3_total_column_systematic_uncertainty_pm:multiplication_factor_to_convert_to_molecules_per_cm2
= 6.02214076e+19 ;

// global attributes:
        :title = "Monthly IASI/Metop-A ULB-LATMOS ammonia (NH3) L3 product (total column gridded
data) - version 4 Near real time" ;
        :institution = "ULB-LATMOS" ;

```

```

: id = "IASI_METOPA_L3_NH3_202001_ULB-LATMOS_V4.0.0.nc" ;
: product_version = "4.0.0" ;
: history = "2023-04-20 15:29:15 - Product generated with retrieval code version 4" ;
: summary = "This dataset contains Level-3 ammonia total columns, derived from the Level-2
product as retrieved with the ANNI-NH3-v4 retrieval algorithm from IASI Level-1C observations and IASI Level-2
meteorological data" ;
: source = "ULB-LATMOS ammonia (NH3) Level-2 product (ANNI-NH3-v4 Near real time)" ;
: references = "Reference to the ANNI retrieval: Clarisse et al. (2023, AMT, submitted), The IASI NH3
version 4 product: averaging kernels and improved consistency; Franco et al. (2018), A General Framework for
Global Retrievals of Trace Gases From IASI: Application to Methanol, Formic Acid, and PAN, J. Geophys. Res.-
Atmos., 123, 13,963–13,984, doi:10.1029/2018JD029633. Other specific references to the ANNI-NH3 retrieval: Van
Damme et al. (2017), Version 2 of the IASI NH3 neural network retrieval algorithm: near-real-time and reanalysed
datasets, Atm. Meas. Tech., 10, 4905–4914, doi:10.5194/amt-10-4905-2017; Whitburn et al. (2016), A Flexible and
robust neural network IASI-NH3 retrieval algorithm, J. Geophys. Res.-Atmos., 121, 6581–6599,
doi:10.1002/2016JD024828." ;
: geospatial_lat_min = "-90.0" ;
: geospatial_lat_max = "+90.0" ;
: geospatial_latitude_units = "degrees_north" ;
: geospatial_lon_min = "-180.0" ;
: geospatial_lon_max = "+180.0" ;
: geospatial_longitude_units = "degrees_east" ;
: time_coverage_start = "20200101T000000Z" ;
: time_coverage_end = "20200131T235959Z" ;
: Conventions = "CF-1.8" ;
: standard_name_vocabulary = "NetCDF Climate and Forecast (CF) Metadata Convention version 80,
7 February 2022" ;
: keywords = "satellite, observation, atmosphere, ammonia, NH3, level 3, column, agriculture,
fertilizers, livestock, biomass burning, industrial emission, air quality, IASI, Metop-A" ;
: keywords_vocabulary = "GCMD Science Keywords" ;
: platform = "Metop-A" ;
: sensor = "IASI" ;
: spatial_resolution = "0.125° x 0.125°" ;
: creator_name = "L. Clarisse (Lieven.Clarisse@ulb.be), M. Van Damme
(Martin.Van.Damme@ulb.be) and P. Coheur (Pierre.Coheur@ulb.be)" ;
: contact_email = "contact form at http://iasi.aeris-data.fr/contact/" ;
: data_policy = "see https://iasi.aeris-data.fr/data-use-policy/" ;
: geospatial_lat_resolution = "0.125°" ;
: geospatial_lon_resolution = "0.125°" ;
: time_coverage_duration = "P1M" ;
: time_coverage_resolution = "P1M" ;
}

```