# Carbon monoxide (CO)

**Each file contains data for one month of observation. The file name and structure are the same as those of version V20151001.**

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

**SENSOR_PLATFORM_LEVEL_"CO"_TYPE_YYYYMM_INSTITUTION_VERSION".nc"**

where:

SENSOR = IASI, PLATFORM = METOPA, METOPB or METOPC, LEVEL = L3, TYPE = COLUMN, YYYY = year, MM = month, , INSTITUTION = ULB-LATMOS, 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 October 2020) is as follows:**
netcdf IASI_METOPB_L3_CO_COLUMN_202010_ULB-LATMOS_V6.5.0 {
dimensions:
    latitude = 180 ;
    longitude = 360 ;
variables:
    float latitude(latitude) ;
        latitude:long_name = "latitude of the gridcell center" ;
        latitude:units = "degrees_north" ;
        latitude:valid_range = -90., 90. ;
        latitude:standard_name = "latitude" ;
    float longitude(longitude) ;
        longitude:long_name = "longitude of the gridcell center" ;
        longitude:units = "degrees_east" ;
        longitude:valid_range = -180., 180. ;
        longitude:standard_name = "longitude" ;
    float COgridDAY(longitude, latitude) ;
        COgridDAY:long_name = "weighted average of the total carbon_monoxide columns for IASI daytime observations" ;
        COgridDAY:units = "mol m-2" ;
        COgridDAY:multiplication_factor_to_convert_to_molecules_per_cm2 = 6.02214179e+19 ;
        COgridDAY:vertical_range_bottom = "surface" ;
        COgridDAY:vertical_range_top = "60.0_km" ;
        COgridDAY:missing_value = -999. ;
        COgridDAY:comment = "daytime observations are observations associated with solar zenithal angle lower than 90 degrees" ;
    float COgridNIGHT(longitude, latitude) ;
        COgridNIGHT:long_name = "weighted average of the total carbon_monoxide columns for IASI nighttime observations" ;
        COgridNIGHT:units = "mol m-2" ;
        COgridNIGHT:multiplication_factor_to_convert_to_molecules_per_cm2 = 6.02214179e+19 ;
        COgridNIGHT:vertical_range_bottom = "surface" ;
        COgridNIGHT:vertical_range_top = "60.0_km" ;
        COgridNIGHT:missing_value = -999. ;
        COgridNIGHT:comment = "nighttime observations are observations associated with solar zenithal angle higher or equal to 90 degrees" ;
    float ErrorgridDAY(longitude, latitude) ;
        ErrorgridDAY:long_name = "error in the weighted average of the total carbon_monoxide columns for IASI daytime observations" ;
        ErrorgridDAY:units = "mol m-2" ;
        ErrorgridDAY:multiplication_factor_to_convert_to_molecules_per_cm2 = 6.02214179e+19 ;
        ErrorgridDAY:vertical_range_bottom = "surface" ;
        ErrorgridDAY:vertical_range_top = "60.0_km" ;
        ErrorgridDAY:missing_value = -999. ;

```
    float ErrorgridNIGHT(latitude, longitude) ;
        ErrorgridNIGHT:long_name = "error in the weighted average of the total ozone columns for IASI nighttime
observations" ;
        ErrorgridNIGHT:units = "mol m-2" ;
        ErrorgridNIGHT:multiplication_factor_to_convert_to_DU = 2241.147 ;
        ErrorgridNIGHT:multiplication_factor_to_convert_to_molecules_percm2 = 6.02214179e+19 ;
        ErrorgridNIGHT:missing_value = -999. ;
        ErrorgridNIGHT:vertical_range_bottom = "surface" ;
        ErrorgridNIGHT:vertical_range_top = "60.0_km" ;
        ErrorgridNIGHT:comment = "nighttime observations are observations associated with solar zenithal angle higher or
equal to 90 degrees" ;

// global attributes:
        :title = "Monthly IASI/Metop-B ULB-LATMOS carbon monoxide (CO) L3 products (total column gridded data)" ;
        :institution = "LATMOS" ;
        :product_version = "6.5.0" ;
        :history = "2020-11-18 18:45:52 - Product generated with EUMETSAT v6.5 Level 2 CO data (processed with FORLI
v20151001)." ;
        :summary = "This dataset contains Level 3 carbon monoxide gridded total columns from IASI observations. This
dataset was generated by LATMOS under the auspices of AC SAF. Quicklooks and data access are provided by AERIS." ;
        :source = "EUMETSAT IASI Level 2 carbon monoxide (CO) data version 6.5" ;
        :references = "Reference to the CO retrieval: FORLI radiative transfer and retrieval code for IASI, J. Quant.
Spectrosc. Ra., 113, 1391-1408, https://doi.org/10.1016/j.jqsrt.2012.02.036, 2012." ;
        :id = "IASI_METOPB_L3_CO_COLUMN_202010_ULB-LATMOS_V6.5.0.nc" ;
        :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" ;
        :geospatial_vertical_range_bottom_total = "surface" ;
        :geospatial_vertical_range_top_total = "60" ;
        :geospatial_vertical_range_units = "km" ;
        :time_coverage_start = "20201001" ;
        :time_coverage_end = "20201031" ;
        :time_coverage_duration = "P1M" ;
        :time_coverage_resolution = "P1M" ;
        :conventions = "CF-1.6" ;
        :standard_name_vocabulary = "NetCDF Climate and Forecast (CF) Metadata Convention version 73, 23 June 2020" ;
        :keywords = "satellite,observation,atmosphere,carbon monoxide,CO,level 3,total column,fire,pollution,IASI,Metop-
B" ;
        :keywords_vocabulary = "GCMD Science Keywords" ;
        :platform = "Metop-B" ;
        :sensor = "IASI" ;
        :spatial_resolution = "grid: 1 deg x 1 deg" ;
        :creator_type = "institution" ;
        :creator_name = "LATMOS" ;
        :contact_email = "contact form at http://iasi.aeris-data.fr/contact/" ;
        :data_policy = "see https://iasi.aeris-data.fr/data-use-policy/" ;
}
```