

WMS for CAMS Global and European air quality products

Last modified on Oct 04, 2023 10:37

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WMS service interruptions due to ECMWF Web team sessions

The ECMWF Web team schedules sessions (service maintenance and update) on Wednesdays on a bi-weekly basis - this will affect access to the WMS service.

We recommend WMS users to check the [status of the ECMWF Computing Services](#) (upcoming planned sessions also listed).

Introduction

A Web Map Service (WMS) is available through a server at ECMWF (<http://eccharts.ecmwf.int>) to request dynamic maps over HTTP for a selection of CAMS Global and European air quality products.

GetCapabilities request

To get the selection of the available CAMS public layers please use the following syntax:

```
http://eccharts.ecmwf.int/wms/?token=public&request=GetCapabilities&version=1.3.0
```

Accessing available CAMS Global air quality layers

The table shows the list of all the public CAMS Global air quality layers (last reviewed on 19-05-2021):

Variables	Units	Layers	Notes
Black carbon aerosol optical depth at 550 nm	dimensionless	composition_bb_aod550	
Carbon Dioxide at 850 hPa	kg kg ⁻¹	composition_co2_850	
Carbon Dioxide at 500 hPa	kg kg ⁻¹	composition_co2_500	
Carbon Dioxide at 300 hPa	kg kg ⁻¹	composition_co2_300	
Carbon Dioxide at 50 hPa	kg kg ⁻¹	composition_co2_50	
Carbon Monoxide at upper level	kg kg ⁻¹	composition_co_upper level	
Carbon Monoxide at 850 hPa	kg kg ⁻¹	composition_co_850	
Carbon Monoxide at 700 hPa	kg kg ⁻¹	composition_co_850	Mole fractions of carbon monoxide at 700 hPa level illustrate long-range transport of pollutants.
Carbon Monoxide at 500 hPa	kg kg ⁻¹	composition_co_500	

Carbon Monoxide at 300 hPa	kg kg ⁻¹	composition_co_300	
Carbon Monoxide at 50 hPa	kg kg ⁻¹	composition_co_50	
Carbon Monoxide at surface	kg kg ⁻¹	composition_co_surface	
Fire radiative power	W m ⁻²	composition_fire	
Dust aerosol optical depth at 550 nm	dimensionless	composition_dust_aod550	Dust aerosol optical depth (AOD) at 550 nanometers is a measure of the amount of dust particles in the atmosphere which block sunlight by absorbing or by scattering light.
Formaldehyde at 850 hPa	kg kg ⁻¹	composition_hc_ho_850	
Formaldehyde at 500 hPa	kg kg ⁻¹	composition_hc_ho_500	
Formaldehyde at 300 hPa	kg kg ⁻¹	composition_hc_ho_300	
Formaldehyde at 50 hPa	kg kg ⁻¹	composition_hc_ho_50	
Formaldehyde at surface	kg kg ⁻¹	composition_hc_ho_surface	
Methane at 850 hPa	kg kg ⁻¹	composition_ch4_850	
Methane at 500 hPa	kg kg ⁻¹	composition_ch4_500	
Methane at 300 hPa	kg kg ⁻¹	composition_ch4_300	
Methane at 50 hPa	kg kg ⁻¹	composition_ch4_50	
Nitrogen dioxide at 850 hPa	kg kg ⁻¹	composition_no2_850	
Nitrogen dioxide at 500 hPa	kg kg ⁻¹	composition_no2_500	
Nitrogen dioxide at 300 hPa	kg kg ⁻¹	composition_no2_300	
Nitrogen dioxide at 50 hPa	kg kg ⁻¹	composition_no2_50	
Nitrogen dioxide at surface	kg kg ⁻¹	composition_no2_surface	
Particulate matter d < 10 µm	kg m ⁻³	composition_pm10	
Particulate matter d < 2.5 µm	kg m ⁻³	composition_pm2p2	
Ozone at 850 hPa	kg kg ⁻¹	composition_o3_850	
Ozone at 500 hPa	kg kg ⁻¹	composition_o3_500	
Ozone at 300 hPa	kg kg ⁻¹	composition_o3_300	
Ozone at 50 hPa	kg kg ⁻¹	composition_o3_50	
Ozone at surface	kg kg ⁻¹	composition_o3_surface	Mole fractions of ozone at the surface illustrate photochemical activity which drives much of tropospheric chemistry.
Sea salt aerosol optical depth at 550 nm	dimensionless	composition_ss_aod	
Sulphate aerosol optical depth at 550 nm	dimensionless	composition_sulfate_aod	
Sulphur dioxide at 850 hPa	kg kg ⁻¹	composition_so2_850	
Sulphur dioxide at 500 hPa	kg kg ⁻¹	composition_so2_500	
Sulphur dioxide at 300 hPa	kg kg ⁻¹	composition_so2_300	

Sulphur dioxide at 50 hPa	kg kg ⁻¹	composition_so2_50	
Sulphur dioxide at surface	kg kg ⁻¹	composition_so2_surface	
Total aerosol optical depth at 550 nm	dimensionless	composition_aod550	Aerosol optical depth (AOD) at 550 nanometers is a measure of the total amount of particles in the atmosphere (dust, smoke, pollution, sea salt) which block sunlight by absorbing or by scattering light
Total column Carbon Monoxide	kg m ⁻²	composition_co_totalcolumn	
Total column Formaldehyde	kg m ⁻²	composition_hcho_totalcolumn	
Total column Nitrogen dioxide	kg m ⁻²	composition_no2_totalcolumn	
Total column Ozone	kg m ⁻²	composition_o3_totalcolumn	
Total column Sulphur dioxide	kg m ⁻²	composition_so2_totalcolumn	
Total sky UV index forecast		composition_uvindex	
Clear-sky UV index		composition_uvindex_clearsky	

Examples of requests

A sample request, to select of CAMS Global air quality layers, uses the following syntax:

```
http://eccharts.ecmwf.int/wms/?token=public&request=GetMap&layers=${layers},grid,foreground&styles=${styles}&width=${width}&bbox=-90,-180,90,180
```

Please check the table above for the right *layers*

If *styles* is not defined, the default one is used.

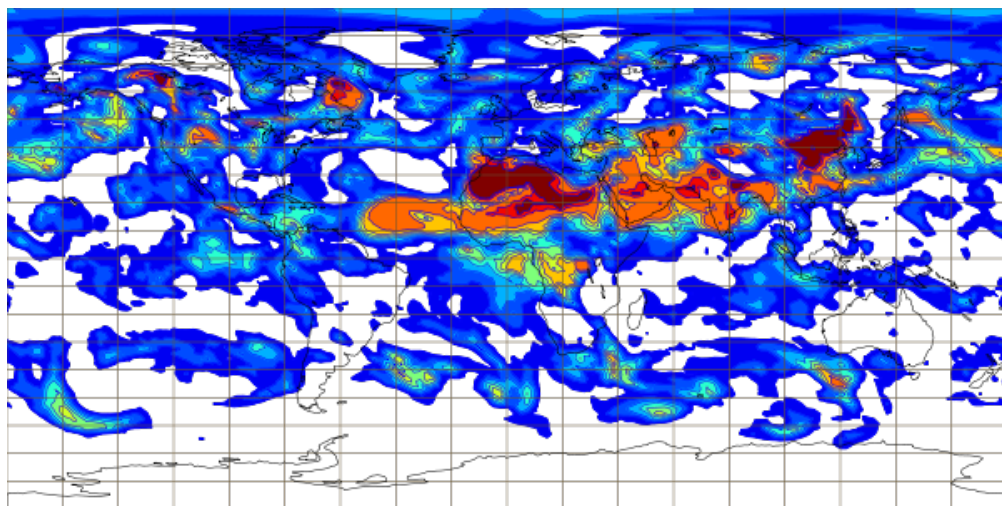
The *width* is defined as the number of pixel.

The convention for the geographical boundaries (*bbox*) is South, West, North, East.

Default style

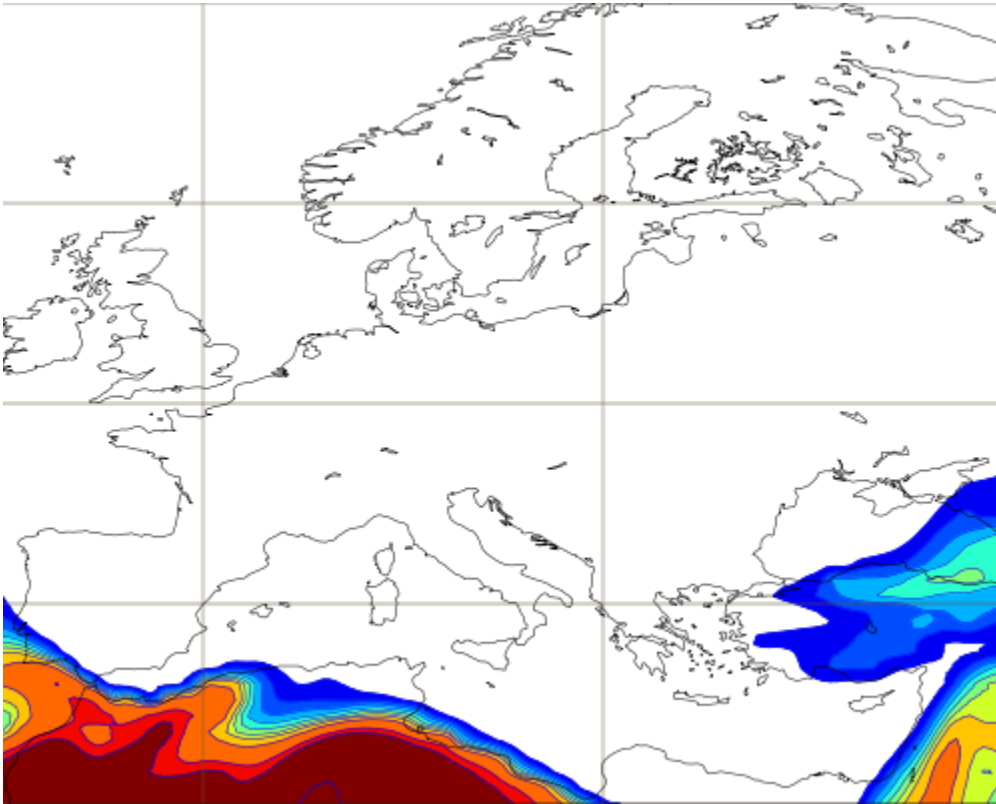
Please find an example for a request of Total optical depth at 550 nm (composition_aod550) on the entire globe (-90,-180,90,180) with a default style:

http://eccharts.ecmwf.int/wms/?token=public&request=GetMap&layers=composition_aod550,grid,foreground&width=600&bbox=-90,-180,90,180



Please find an example for a request of Dust aerosol optical depth at 550 nm (composition_duaod550) over Europe (30,-10,70,40) with a default style:

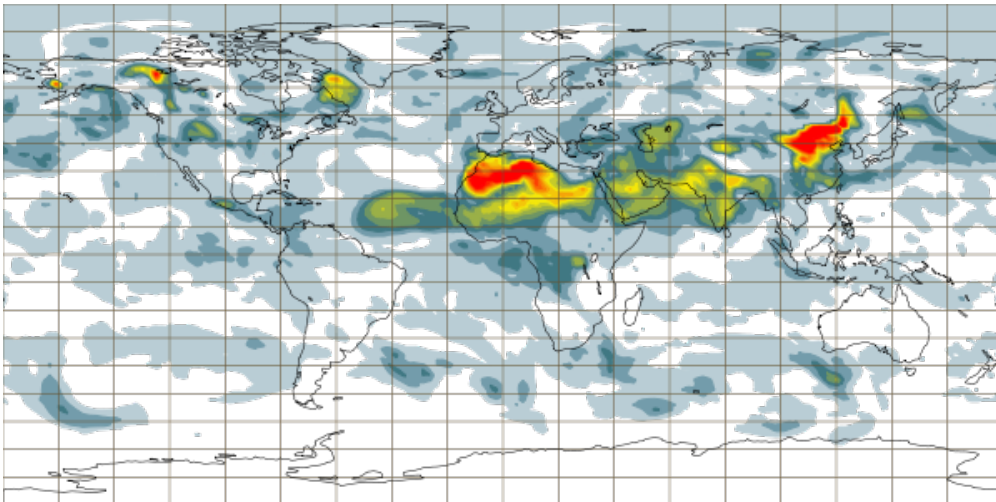
http://eccharts.ecmwf.int/wms/?token=public&request=GetMap&layers=composition_duaod550,grid,foreground&width=600&bbox=30,-10,70,40



sh_BuYIRd_aod style

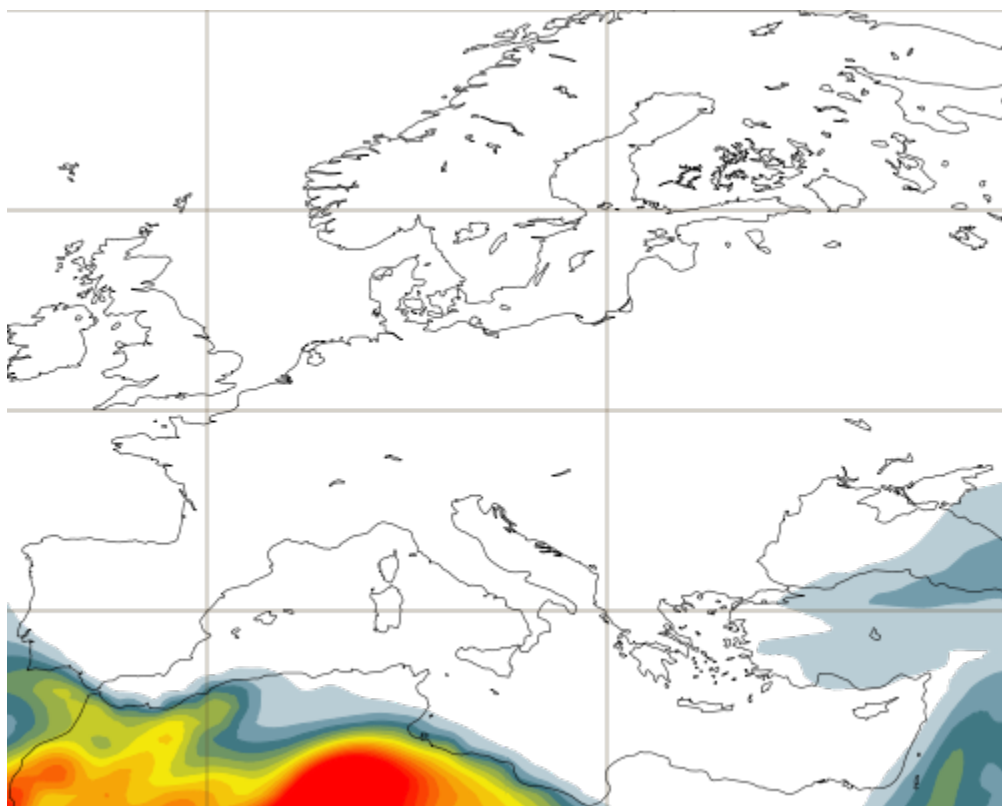
Please find an example for a request of Total optical depth at 550 nm (composition_aod550) on the entire globe (-90,-180,90,180) with sh_BuYIRd_aod style

http://eccharts.ecmwf.int/wms/?token=public&request=GetMap&layers=composition_aod550,grid,foreground&styles=sh_BuYIRd_aod&width=600&bbox=-90,-180,90,180



Please find an example for a request of Dust aerosol optical depth at 550 nm (composition_duaod550) over Europe (30,-10,70,40) with sh_BuYIRd_aod style:

http://eccharts.ecmwf.int/wms/?token=public&request=GetMap&layers=composition_duaod550,grid,foreground&styles=sh_BuYIRd_aod&width=600&bbox=30,-10,70,40



Accessing CAMS European air quality WMS products

From 1st July 2020, the access method to the European air quality WMS is through the server at ECMWF which hosts CAMS Service. Please be aware that:

- based on usage statistics initially only hourly ensemble surface forecast fields are available
- to ease the migration, legacy layer names are encoded in a layer metadata of the GetCapabilities response as "legacy name: OLD_NAME" keyword.
- the default styles and the style names are the same as before the migration

The following table lists the available CAMS European air quality layers and the corresponding legacy layer names (last reviewed on 21-01-2021):

Variables	Units	legacy layer name	new layer name
Ammonia	$\mu\text{g m}^{-3}$	NH3__SPECIFIC_HEIGHT_LEVEL_ABOVE_GROUND	composition_europe_nh3_forecast_surface
Birch pollen	grains m^{-3}	BIRCHPOLLEN__GROUND_OR_WATER_SURFACE	composition_europe_pol_birch_forecast_surface
Carbon monoxide	$\mu\text{g m}^{-3}$	CO__SPECIFIC_HEIGHT_LEVEL_ABOVE_GROUND	composition_europe_co_forecast_surface
Dust	$\mu\text{g m}^{-3}$	DUST__SPECIFIC_HEIGHT_LEVEL_ABOVE_GROUND	composition_europe_dust_forecast_surface
Grass pollen	grains m^{-3}	GRASSPOLLEN__GROUND_OR_WATER_SURFACE	composition_europe_pol_grass_forecast_surface
Non-methane VOCs	$\mu\text{g m}^{-3}$	NMVOC__SPECIFIC_HEIGHT_LEVEL_ABOVE_GROUND	composition_europe_nmvoc_forecast_surface
Nitrogen dioxide	$\mu\text{g m}^{-3}$	NO2__SPECIFIC_HEIGHT_LEVEL_ABOVE_GROUND	composition_europe_no2_forecast_surface
Nitrogen monoxide	$\mu\text{g m}^{-3}$	NO__SPECIFIC_HEIGHT_LEVEL_ABOVE_GROUND	composition_europe_no_forecast_surface
Olive pollen	grains m^{-3}	OLIVEPOLLEN__GROUND_OR_WATER_SURFACE	composition_europe_pol_olive_forecast_surface
Ozone	$\mu\text{g m}^{-3}$	O3__SPECIFIC_HEIGHT_LEVEL_ABOVE_GROUND	composition_europe_o3_forecast_surface
Particulate matter d < 2.5 μm (PM2.5)	$\mu\text{g m}^{-3}$	PM25__SPECIFIC_HEIGHT_LEVEL_ABOVE_GROUND	composition_europe_pm2p5_forecast_surface
Particulate matter d < 10 μm (PM10)	$\mu\text{g m}^{-3}$	PM10__SPECIFIC_HEIGHT_LEVEL_ABOVE_GROUND	composition_europe_pm10_forecast_surface

Particulate matter d < 2.5 µm (PM2.5), fossil fuel carbon only	µg m ⁻³	EC_FF__SPECIFIC_HEIGHT_LEVEL_ABOVE_GROUND	composition_europe_ec_ff_forecast_surface
Particulate matter d < 2.5 µm (PM2.5), wood burning carbon only	µg m ⁻³	EC_WB__SPECIFIC_HEIGHT_LEVEL_ABOVE_GROUND	composition_europe_ec_wb_forecast_surface
Particulate matter d < 10 µm (PM10), wildfires only	µg m ⁻³	PM_WF_USI__SPECIFIC_HEIGHT_LEVEL_ABOVE_GROUND	composition_europe_pm_wf_forecast_surface
Peroxyacyl nitrates	µg m ⁻³	PANS__SPECIFIC_HEIGHT_LEVEL_ABOVE_GROUND	composition_europe_pans_forecast_surface
Ragweed pollen	grains m ⁻³	RAGWEED__GROUND_OR_WATER_SURFACE	composition_europe_pol_ragw_forecast_surface
Secondary inorganic aerosol	µg m ⁻³	SIA__SPECIFIC_HEIGHT_LEVEL_ABOVE_GROUND	composition_europe_sia_forecast_surface
Sulphur dioxide	µg m ⁻³	SO2__SPECIFIC_HEIGHT_LEVEL_ABOVE_GROUND	composition_europe_so2_forecast_surface
Nitrogen dioxide (analysis, daily mean)	µg m ⁻³		composition_europe_no2_analysis_surface
Ozone (analysis, daily mean)	µg m ⁻³		composition_europe_o3_analysis_surface
Particulate matter d < 2.5 µm (PM2.5) (analysis, daily mean)	µg m ⁻³		composition_europe_pm2p5_analysis_surface
Particulate matter d < 10 µm (PM10) (analysis, daily mean)	µg m ⁻³		composition_europe_pm10_analysis_surface

Examples of request

A sample request, to select of CAMS Global air quality layers, uses the following syntax:

```
http://eccharts.ecmwf.int/wms/?service=wms&VERSION=1.3.0&token=public&LAYERS=${LAYERS}&FORMAT=image/png&REQUEST=GetMap&CRS=EPSG:4326&BBOX=${BBOX}&WIDTH=${WIDTH}&HEIGHT=${HEIGHT}
```

Please check the table above for the right *layers*.

The *width* and *height* are defined as the number of pixel.

The convention for the geographical boundaries (*bbox*) is South, West, North, East.

Please find an example for a request of Ammonia (composition_europe_nh3_forecast_surface) over Europe (30.05, -24.95, 71.95, 44.95) with a default style:

http://eccharts.ecmwf.int/wms/?service=wms&VERSION=1.3.0&token=public&LAYERS=composition_europe_nh3_forecast_surface&FORMAT=image/png&REQUEST=GetMap&CRS=EPSG:4326&BBOX=30.05,-24.95,71.95,44.95&WIDTH=810&HEIGHT=495

Galleries

Please find the all CAMS Global and European air quality products galleries:

- [CAMS Global air quality forecast WMS gallery](#)
- [CAMS European air quality forecast WMS gallery](#)

This document has been produced in the context of the Copernicus Atmosphere Monitoring Service (CAMS).

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Related articles

- [WMS for CAMS Global and European air quality products](#)
- [What data and charts are available through CAMS \(Copernicus Atmosphere Monitoring Service\)?](#)
- [What are the changes from the MACC Reanalysis to the CAMS interim Reanalysis, to the CAMS Reanalysis?](#)
- [What are NetCDF files and how can I read them](#)
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