DATA SET DESCRIPTION

Content of data set: forecasted concentration fields of several air pollutants. The files contain gridded concentration data for a given time, which is the result of a chemical transport model calculations. The forecasts are prepared for the Carpathian Basin and three Hungarian towns (Budapest, Miskolc, Pécs).

Name of data set files:

CHIMERE_<domain>-<parameter>-<YYYYMMDD>_<HHmm>+<TTTtt>.nc.zip, where

<domain>: identification of the domain,
<parameter>: name of the air pollutant,
<YYYYMMDD>: date of the forecast,
<HHmm>: initial time of the forecast in UTC,
<TTTtt>: forecast lead time in hour (TTT) and in minute (tt)

DATA SET CHARACTERISTICS

Spatial coverage:

45°N 14°E, 50°N 25°E for the Carpathian Basin (HUN),

47.3°N 18.85°E, 47.66°N 19.37°E for Budapest (BUD),

48.02°N 20.51°E, 48.185°N 20.89°E for Miskolc (MIS),

46.01°N 18,11°E, 46.19°N 18.39°E for Pécs (PEC)

Temporal coverage: 0 – 48 hours

Spatial resolution: 0,1° x 0,1° [HUN], 0,02° x 0,015° [BUD, MIS, PEC]

Temporal resolution: 1 hour

Projection: latlon

Format(s): netcdf compressed into zip file

Parameter(s):

Parameter	Description	Unit
CO	carbon monoxide concentration	ppb
NO2	nitrogen dioxide concentration	$\mu g/m^3$
O3	tropospheric ozone concentration	$\mu g/m^3$
SO2	sulphur dioxide concentration	$\mu g/m^3$
PM10	PM10 (particulate matter) concentration	$\mu g/m^3$
PM25	PM2.5 (particulate) concentration	$\mu g/m^3$

Uncertainties:

The uncertainty in model outputs arises from uncertainties in the input pollutant emissions and meteorological forecasts, furthermore the complex and non-linear descriptions of chemical and physical processes in the chemistry-transport model.

DATA ORIGIN, METHODOLOGY

CHIMERE is an Eulerian off-line chemistry-transport model (CTM). The multi-scale model is primarily designed to produce daily forecasts of ozone, aerosols and other pollutants and make long-term simulations for emission control scenarios. CHIMERE runs over a range of spatial scales from the hemispheric scale to the urban scale (100-200 km) with resolutions from 1-2 km to hundreds of km.

Input emission data: EMEP gridded emissions data (https://www.ceip.at/webdab-emission-database)
Input meteorological data: AROME weather forecast

VALIDATION AND UNCERTAINTY ESTIMATE

The Copernicus Atmosphere Monitoring Service (CAMS) website contains verification results for CHIMERE model calculations, which are updated regularly: https://atmosphere.copernicus.eu/

CONSIDERATIONS/SUGGESTIONS FOR APPLICATIONS

Air quality forecast, Air quality assessment

REFERENCES

A multi-scale chemistry-transport model for atmospheric composition analysis and forecast: https://www.lmd.polytechnique.fr/chimere/

Copernicus Atmosphere Monitoring Service (CAMS): https://atmosphere.copernicus.eu/

REVISION HISTORY

CHIMERE version: CHIMERE-2017

CONTACT POINT

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