



Urban SIS

D441.7.3 Distributing Urban SIS data during an operational phase

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Contributors

SMHI

Lena Strömbäck, WP7 leader (Editor)

Lars Gidhagen, project coordinator



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1. Introduction

The Urban SIS results consist of downscaled ECVs and impact indicators over three urbanized domains: Stockholm, Bologna and Amsterdam/Rotterdam. There are three data sets available; all based on 5 years of hourly gridded 1×1 km² data, representing:

- A historical period of specific years: 2006, 2007, 2012, 2013, 2014
- 5-years of data taken from a climate scenario, representing present conditions (1980-2010)
- 5-years of data taken from a climate scenario, representing future conditions (2030-2065)

The purpose of this report is to describe how data can be transferred to ECMWF during an operational phase. During the final parts of the project it was decided that hourly gridded data of air temperature and four air quality variables should be transferred to the CDS, and that the remainder of the data will be available for ECMWF for download and archiving during a period. Urban SIS as such will not continue into an operational phase.

In this report we concentrate on the download of data via direct access to our THREDDS server (<http://urban-sis.smhi.se/thredds/catalog.html>), a procedure which is convenient for download of larger parts of the dataset. For end-users Urban SIS data are accessed via the portal. Here data can be downloaded as CSV (see <http://urbansis.climate.copernicus.eu/access-data/>) or NetCDF (<http://urbansis.climate.copernicus.eu/access-grids/>). This access is further described in [D441.6.5](#).

Section 2 gives a general overview of data structure and naming conventions in the THREDDS server. Section 3 gives a more detailed description of access to the specific datasets that should be transferred to the CDS and a suggested structure for the search functionality in the CDS. The data will be available via this technical solution until the end of the project. SMHI and ECMWF will agree on a date when data should have been transferred to the center. After this date SMHI will not guarantee access to the service in its current form.



2. Access to Urban SIS data

This section describes the general structure of how data are stored on the THREDDS server. The data is open and available via <http://urban-sis.smhi.se/thredds/catalog.html>.

2.1 General file structure

To access the data for each city go to the subfolder '*Deliveries/*City**'

The datasets are organized into subfolders according to the table in Appendix A. This structure follows the organization of the general menu for each city on <http://urbansis.climate.copernicus.eu/access-data/> and the organization of the description of the indicators at <http://urbansis.climate.copernicus.eu/urban-sis-climate-indicators/>. This makes it easy to connect each folder with the descriptions of files on the Urban SIS pages.

2.2 Naming convention

At each folder the files are named following the convention below:

city*_110_*period*_*indicator*_*statistical processing

In this convention:

| | |
|---------------------------------|---|
| <i>*city*</i> | refers to the city, and should be replaced by <i>stockholm</i> , <i>bologna</i> or <i>amsterdam</i> |
| <i>*period*</i> | refers to the period of simulation and should be replaced by <i>historic</i> , <i>presclim</i> , or <i>futclim</i> |
| <i>*indicator*</i> | refers to the indicator. Possible values and their interpretation are listed in Appendix B for indicators and Appendix C for ECVs |
| <i>*statistical processing*</i> | describes statistical processing of the indicator, used only where relevant |

2.3 Data format

Data are stored as NetCDF using the convention CF-1.6. Further details about meta-data and projection information used in the files are given in [D7.2](#) Section 7. The data can be downloaded in any format and protocols provided by the THREDDS server. This includes OPENDAP, DAP4, NetCDF, WCS and WMS.

We have noted that when exporting subsets of data directly from the portal, THREDDS alters the projection information for the file. This causes a problem when viewing the files in some tools, especially GIS tools. To avoid this we recommend choosing the download alternative "3. *HTTPServer*", from the download page which returns the original file. (See, for instance http://urban-sis.smhi.se/thredds/catalog/deliveries/Bologna/ECVs/Temperature/Air_temperature/catalog.html?dataset=Deliveries/Bologna/ECVs/Temperature/Air_temperature/bologna_110_historic_T2M.nc for an example of a download page).



3. Data provision for the CDS

3.1 Selected data sets

For import to the CDS the following ECVs have been selected:

- Air temperature
- NO₂
- O₃
- PM₁₀
- PM_{2.5}

For each variable we provide the hourly gridded time series as a NetCDF file. Appendix D lists paths to the NetCDF files for each dataset. Appendix E lists paths to a download page for each of the selected datasets.

3.2 Suggested interface in the CDS

We suggest that data is selected via three menus:

| City | Variable | Period |
|---|--|--|
| <ul style="list-style-type: none">• Stockholm• Bologna• Amsterdam | <ul style="list-style-type: none">• Air temperature• NO₂• O₃• PM₁₀• PM₂₅ | <ul style="list-style-type: none">• Historical (reanalysis)• Present (Scenario)• Future (Scenario) |



4. Summary

This report describes how selected Urban SIS data can be transferred to ECMWF at the end of the project. All data generated during the Urban SIS POC will be available for ECMWF for download and archiving during a period after the end of the project. The present report describes the procedure for download of data via direct access to our THREDDS server (<http://urban-sis.smhi.se/thredds/catalog.html>). This method is convenient for download of larger parts of the dataset.



Appendix A: File structure on the THREDDS server

| | | |
|--------------------------------|--------------------------------|--|
| Health_indicators | Air_quality | EU_limit_values_concentrations EU_limit_values_exposure Mortality_long_term_exposure Mortality_short_term_exposure |
| | Heat_stress | Number_of_hot_days Heat_wave_duration Heat_induced_mortality |
| | Discomfort | Thom_discomfort_index Universal_Thermal_Climate_Index Frequency_of_tropical_nights |
| Energy_indicators | Energy_consumption | Heating_degree_days Cooling_degree_days |
| | Solar_energy | Shortwave_solar_insolation |
| Infrastructure_indicators | Flooding | Short_duration_extreme_precipitation Intensity_duration |
| | Green_infrastructure | Growing_season_length |
| | Transport_infrastructure | Frost_days Ice_days Zero_crossings |
| Non_sector_specific_indicators | Air_temperature | Daily_air_temperature |
| ECVs | Temperature | Air_temperature Urban_air_temperature Nature_air_temperature Higher_layer_air_temperature |
| | Precipitation | Precipitation Snowfall |
| | Other meteorological variables | Wind Boundary_layer_height Total_cloud_cover Relative_humidity Global_radiation Direct_shortwave_radiation Diffuse_shortwave_radiation |



| | |
|-------------|--|
| Air quality | NO2 O3 PM10 PM2.5 |
| Hydrology | Discharge Runoff Surface_runoff Soil_moisture Evapotranspiration Snow_cover |



Appendix B: Indicator cross-referencing

| Link to description | Id | Menu item | Id in filename |
|---|--------------------------|---|-----------------------------------|
| http://urbansis.climate.copernicus.eu/air-pollutant-concentration-indicators/ | <i>cEUNO2hourly</i> | NO2 hourly | cEUNO2hourly |
| | <i>cEUNO2yearly</i> | NO2 yearly | cEUNO2yearly |
| | <i>cEUPM2.5yearly</i> | PM2.5 yearly | cEUPM25yearly |
| | <i>cEUPM10yearly</i> | PM10 yearly | cEUPM10yearly |
| | <i>cEUPM10daily</i> | PM100 daily | cEUPM10daily |
| | <i>cEUO3daily</i> | O3 daily | cEUO3daily |
| | <i>cO3SOMO35</i> | O3 SOMO35 | CO3SOMO35 |
| http://urbansis.climate.copernicus.eu/air-pollution-exposure-indicators/ | <i>expEUNO2hourly</i> | NO2 hourly pers expos over EU limit value | cEUNO2hourly_200.0_expEUNO2hourly |
| | <i>expEUNO2yearly</i> | NO2 yearly pers expos over EU limit value | NO2_40.0_expEUNO2yearly |
| | <i>expEUPM2.5yearly</i> | PM2.5 yearly pers expos over EU limit value | PM25_25.0_expEUPM25yearly |
| | <i>expEUPM10yearly</i> | PM10 yearly pers expos over EU limit value | PM10_40.0_expEUPM10yearly.nc |
| | <i>expEUPM10daily</i> | PM10 daily pers expos over EU limit value | cEUPM10daily_50.0_expEUPM10daily |
| | <i>expEUO3daily</i> | O3 daily pers expos over EU target value | cEUO3daily_120.0_expEUO3daily |
| | <i>expWHOO3daily</i> | O3 daily pers expos over WHO guidelines | NO2_40.0_expWHONO2yearly |
| | <i>expWHOPM2.5yearly</i> | PM2.5 yearly pers expos over WHO guidelines | PM25_10.0_expWHOPM25yearly |
| | <i>expWHOPM10yearly</i> | PM10 yearly pers expos over WHO guidelines | PM10_20.0_expWHOPM10yearly |
| | <i>expWHONO2yearly</i> | NO2 yearly pers expos over WHO guidelines | cWHOO3Max8h_100.0_expWHOO3daily |
| http://urbansis.climate.copernicus.eu/annual-deaths-due-to-no2-and-pm2-5-long-term-exposure/ | <i>mortNO2y</i> | NO2 Mortality | mortNO2_yearly |
| | <i>mortNO2ynorm</i> | NO2 Mortality per 100 000 inhabitants | mortNO2_per100k_yearly |
| | <i>mortPM25y</i> | PM2.5 Mortality | mortPM25_yearly |
| | <i>mortPM25ynorm</i> | PM2.5 Mortality per 100 000 inhabitants | mortPM25_per100k_yearly |
| | <i>mortNO2PM25yearly</i> | Comb NO2 and PM2.5 mortality | mortNO2PM25_yearly |
| | <i>mortNO2PM25ynorm</i> | Comb NO2 and PM2.5 mort per 100 000 inh | mortNO2PM25_per100k_yearly |
| http://urbansis.climate.copernicus.eu/annual-deaths-due-to-ozone-short-term-exposure/ | <i>mortO3y</i> | O3 Mortality | mortO3_yearly |
| | <i>mortO3ynorm</i> | O3 Mortality_per 100 000 inhabitants | mortO3_per100k_yearly |
| http://urbansis.climate.copernicus.eu/hot-days-per-year/ | <i>hotdays</i> | No of hot days | hotdays |
| http://urbansis.climate.copernicus.eu/heat-wave-duration/ | <i>heatwaveduration</i> | Max days of duration | maxHeatWaveDuration_yearly |
| http://urbansis.climate.copernicus.eu/annual-heat-deaths/ | <i>heatdeaths</i> | Extra yearly deaths | annualHeatDeaths_yearly |



| | | | |
|---|--------------------------|---|--|
| al-heat-related-deaths/ | <i>hatdeathsnorm</i> | Extra yearly deaths per 100 000 inh | annualHeatDeaths_per100k_yearly |
| http://urbansis.climate.copernicus.eu/thom-discomfort-index/ | <i>thomindex</i> | thomindex_24 thomindex_28 | Days over Thom 24 yearly Days over Thom 28 yearly |
| http://urbansis.climate.copernicus.eu/universal-thermal-climate-index/ | <i>UTCI sun</i> | UTC index sun | UTCI_OUTSUN |
| | <i>UTCI shadow</i> | UTC index shadow | UTCI_OUTSHAD |
| http://urbansis.climate.copernicus.eu/tropical-nights/ | <i>tropicalnights</i> | Frequency of tropical nights | tropicalnights |
| http://urbansis.climate.copernicus.eu/heating-cooling-degree-days/ | <i>heatingdegreedays</i> | Heating degree days under 17 deg C | heatingdegreedays |
| | <i>coolingdegreedays</i> | Cooling degree days over 20 deg C | coolingdegreedays |
| http://urbansis.climate.copernicus.eu/solar-insolation/ | <i>shortwave</i> | Monthly shortwave solar insolation | shortwave |
| http://urbansis.climate.copernicus.eu/short-duration-extreme-precipitation/ | <i>maxprec</i> | accumulative max ^{1*} | maxprec* |
| http://urbansis.climate.copernicus.eu/short-duration-extreme-precipitation-intensityduration/ | <i>intdurfreq</i> | Return_period_1x1km 2 | Diagrams only available for viewing |
| | <i>arearedfac</i> | Areal reduction factor, 5 year Areal reduction factor, 10 year Areal reduction factor, 20 year | Diagrams only available for viewing |
| http://urbansis.climate.copernicus.eu/growing-season-length/ | <i>leafon</i> | Leaf on date | leafon |
| | <i>leafoff</i> | Leaf off date | leafoff |
| | <i>GSL</i> | Growing season length | gsl |
| http://urbansis.climate.copernicus.eu/frost-days/ | <i>frostdays</i> | Frost days | frostdays |
| http://urbansis.climate.copernicus.eu/ice-days/ | <i>icedays</i> | Ice days | icedays |
| http://urbansis.climate.copernicus.eu/zero-crossings/ | <i>zerocrossings</i> | Zero crossings | zerocrossings |
| http://urbansis.climate.copernicus.eu/air-temperature-indicators/ | <i>airtempmaxdaily</i> | Daily max | <i>airtempmaxdaily</i> |
| | <i>airtempmindaily</i> | Daily min | <i>airtempmindaily</i> |
| | <i>airtempavgdaily</i> | Daily mean | <i>airtempavgdaily</i> |
| | <i>airtemprangedaily</i> | Yearly max of daily range | <i>airtemprangedaily</i> |

¹ This indicator consist of a set of files for different timespans. Names does not follow the general convention. Instead the format is: **city*_110_*duration*_5yr_*period*_maxprec_avg*



Appendix C: ECV cross referencing

| Link to description | Menu group | Menu item | Id in filename |
|---|------------------------------|-----------------------|----------------|
| http://urbansis.climate.copernicus.eu/air-temperature/ | Air temperature | | T2M |
| http://urbansis.climate.copernicus.eu/urban-air-temperature/ | Urban air temperature | | T2M_URBAN |
| http://urbansis.climate.copernicus.eu/nature-air-temperature/ | Nature air temperature | | T2M_NATURE |
| http://urbansis.climate.copernicus.eu/higher-layer-air-temperature/ | Higher layer air temperature | Layer 1 hourly | TL1 |
| | | Layer 2 hourly | TL2 |
| | | Layer 3 hourly | TL3 |
| http://urbansis.climate.copernicus.eu/precipitation/ | Precipitation | 15 min | PRECIP |
| | | Hourly | PREC1H |
| http://urbansis.climate.copernicus.eu/snowfall/ | Snowfall | | SNOW_ACCUM |
| http://urbansis.climate.copernicus.eu/wind/ | Wind | Hourly wind speed | WSPD |
| | | Hourly wind direction | WDIR |
| | | Hourly gustiness | GUST |
| http://urbansis.climate.copernicus.eu/boundary-layer-height/ | Boundary layer height | | ZI |
| http://urbansis.climate.copernicus.eu/total-cloud-cover/ | Total cloud cover | | TCC |
| http://urbansis.climate.copernicus.eu/relative-humidity/ | Relative Humidity | | RH2M |
| http://urbansis.climate.copernicus.eu/global-radiation/ | Global radiation | | GLOB |
| http://urbansis.climate.copernicus.eu/direct-shortwave-radiation/ | Direct shortwave radiation | | SW_DIRECT |
| http://urbansis.climate.copernicus.eu/diffuse-shortwave-radiation/ | Diffuse shortwave radiation | | SW_DIFFUSE |
| http://urbansis.climate.copernicus.eu/no2-concentration/ | NO2 | | NO2 |
| http://urbansis.climate.copernicus.eu/o3-concentration/ | O3 | | O3 |
| http://urbansis.climate.copernicus.eu/pm10-concentration/ | PM10 | | PM10 |
| http://urbansis.climate.copernicus.eu/pm2-5-concentration/ | PM2.5 | | PM2.5 |
| http://urbansis.climate.copernicus.eu/river-discharge/ | Discharge | | cout |
| http://urbansis.climate.copernicus.eu/runoff/ | Runoff | | crun |
| http://urbansis.climate.copernicus.eu/surface-runoff/ | Surface runoff | | cros |
| http://urbansis.climate.copernicus.eu/soil-moisture/ | Soil moisture | | smfp |
| http://urbansis.climate.copernicus.eu/evapotranspiration/ | Evapotranspiration | | evap |
| http://urbansis.climate.copernicus.eu/uncategorized/snow-cover/ | Snow cover | | snow |



Appendix D: Paths for access to data selected for download to CDS via the THREDDS server as NetCDF

Stockholm: Direct Access to NetCDF files

| | | |
|-------------|----------|---|
| Temperature | Historic | http://urban-sis.smhi.se/thredds/fileServer/deliveries/Stockholm/ECVs/Temperature/Air_temperature/stockholm_110_historic_T2M.nc |
| | Present | http://urban-sis.smhi.se/thredds/fileServer/deliveries/Stockholm/ECVs/Temperature/Air_temperature/stockholm_110_presclim_T2M.nc |
| | Future | http://urban-sis.smhi.se/thredds/fileServer/deliveries/Stockholm/ECVs/Temperature/Air_temperature/stockholm_110_futclim_T2M.nc |
| NO2 | Historic | http://urban-sis.smhi.se/thredds/fileServer/deliveries/Stockholm/ECVs/Air_quality/NO2/stockholm_110_historic_NO2.nc |
| | Present | http://urban-sis.smhi.se/thredds/fileServer/deliveries/Stockholm/ECVs/Air_quality/NO2/stockholm_110_presclim_NO2.nc |
| | Future | http://urban-sis.smhi.se/thredds/fileServer/deliveries/Stockholm/ECVs/Air_quality/NO2/stockholm_110_futclim_NO2.nc |
| O3 | Historic | http://urban-sis.smhi.se/thredds/fileServer/deliveries/Stockholm/ECVs/Air_quality/O3/stockholm_110_historic_O3.nc |
| | Present | http://urban-sis.smhi.se/thredds/fileServer/deliveries/Stockholm/ECVs/Air_quality/O3/stockholm_110_presclim_O3.nc |
| | Future | http://urban-sis.smhi.se/thredds/fileServer/deliveries/Stockholm/ECVs/Air_quality/O3/stockholm_110_futclim_O3.nc |
| PM10 | Historic | http://urban-sis.smhi.se/thredds/fileServer/deliveries/Stockholm/ECVs/Air_quality/PM10/stockholm_110_historic_PM10.nc |
| | Present | http://urban-sis.smhi.se/thredds/fileServer/deliveries/Stockholm/ECVs/Air_quality/PM10/stockholm_110_presclim_PM10.nc |
| | Future | http://urban-sis.smhi.se/thredds/fileServer/deliveries/Stockholm/ECVs/Air_quality/PM10/stockholm_110_futclim_PM10.nc |
| PM25 | Historic | http://urban-sis.smhi.se/thredds/fileServer/deliveries/Stockholm/ECVs/Air_quality/PM2.5/stockholm_110_historic_PM25.nc |
| | Present | http://urban-sis.smhi.se/thredds/fileServer/deliveries/Stockholm/ECVs/Air_quality/PM2.5/stockholm_110_presclim_PM25.nc |
| | Future | http://urban-sis.smhi.se/thredds/fileServer/deliveries/Stockholm/ECVs/Air_quality/PM2.5/stockholm_110_futclim_PM25.nc |



Bologna: Direct Access to NetCDF files

| | | |
|-------------|----------|---|
| Temperature | Historic | http://urban-sis.smhi.se/thredds/fileServer/deliveries/Bologna/ECVs/Temperature/Air_temperature/bologna_110_historic_T2M.nc |
| | Present | http://urban-sis.smhi.se/thredds/fileServer/deliveries/Bologna/ECVs/Temperature/Air_temperature/bologna_110_presclim_T2M.nc |
| | Future | http://urban-sis.smhi.se/thredds/fileServer/deliveries/Bologna/ECVs/Temperature/Air_temperature/bologna_110_futclim_T2M.nc |
| NO2 | Historic | http://urban-sis.smhi.se/thredds/fileServer/deliveries/Bologna/ECVs/Air_quality/NO2/bologna_110_historic_NO2.nc |
| | Present | http://urban-sis.smhi.se/thredds/fileServer/deliveries/Bologna/ECVs/Air_quality/NO2/bologna_110_presclim_NO2.nc |
| | Future | http://urban-sis.smhi.se/thredds/fileServer/deliveries/Bologna/ECVs/Air_quality/NO2/bologna_110_futclim_NO2.nc |
| O3 | Historic | http://urban-sis.smhi.se/thredds/fileServer/deliveries/Bologna/ECVs/Air_quality/O3/bologna_110_historic_O3.nc |
| | Present | http://urban-sis.smhi.se/thredds/fileServer/deliveries/Bologna/ECVs/Air_quality/O3/bologna_110_presclim_O3.nc |
| | Future | http://urban-sis.smhi.se/thredds/fileServer/deliveries/Bologna/ECVs/Air_quality/O3/bologna_110_futclim_O3.nc |
| PM10 | Historic | http://urban-sis.smhi.se/thredds/fileServer/deliveries/Bologna/ECVs/Air_quality/PM10/bologna_110_historic_PM10.nc |
| | Present | http://urban-sis.smhi.se/thredds/fileServer/deliveries/Bologna/ECVs/Air_quality/PM10/bologna_110_presclim_PM10.nc |
| | Future | http://urban-sis.smhi.se/thredds/fileServer/deliveries/Bologna/ECVs/Air_quality/PM10/bologna_110_futclim_PM10.nc |
| PM25 | Historic | http://urban-sis.smhi.se/thredds/fileServer/deliveries/Bologna/ECVs/Air_quality/PM2.5/bologna_110_historic_PM25.nc |
| | Present | http://urban-sis.smhi.se/thredds/fileServer/deliveries/Bologna/ECVs/Air_quality/PM2.5/bologna_110_presclim_PM25.nc |
| | Future | http://urban-sis.smhi.se/thredds/fileServer/deliveries/Bologna/ECVs/Air_quality/PM2.5/bologna_110_futclim_PM25.nc |



Amsterdam: Direct access to NetCDF files

| | | |
|-------------|----------|---|
| Temperature | Historic | http://urban-sis.smhi.se/thredds/fileServer/deliveries/Rotterdam/ECVs/Temperature/Air_temperature/amsterdam_110_historic_T2M.nc |
| | Present | http://urban-sis.smhi.se/thredds/fileServer/deliveries/Rotterdam/ECVs/Temperature/Air_temperature/amsterdam_110_presclim_T2M.nc |
| | Future | http://urban-sis.smhi.se/thredds/fileServer/deliveries/Rotterdam/ECVs/Temperature/Air_temperature/amsterdam_110_futclim_T2M.nc |
| NO2 | Historic | http://urban-sis.smhi.se/thredds/fileServer/deliveries/Rotterdam/ECVs/Air_quality/NO2/amsterdam_110_historic_NO2.nc |
| | Present | http://urban-sis.smhi.se/thredds/fileServer/deliveries/Rotterdam/ECVs/Air_quality/NO2/amsterdam_110_presclim_NO2.nc |
| | Future | http://urban-sis.smhi.se/thredds/fileServer/deliveries/Rotterdam/ECVs/Air_quality/NO2/amsterdam_110_futclim_NO2.nc |
| O3 | Historic | http://urban-sis.smhi.se/thredds/fileServer/deliveries/Rotterdam/ECVs/Air_quality/O3/amsterdam_110_historic_O3.nc |
| | Present | http://urban-sis.smhi.se/thredds/fileServer/deliveries/Rotterdam/ECVs/Air_quality/O3/amsterdam_110_presclim_O3.nc |
| | Future | http://urban-sis.smhi.se/thredds/fileServer/deliveries/Rotterdam/ECVs/Air_quality/O3/amsterdam_110_futclim_O3.nc |
| PM10 | Historic | http://urban-sis.smhi.se/thredds/fileServer/deliveries/Rotterdam/ECVs/Air_quality/PM10/amsterdam_110_historic_PM10.nc |
| | Present | http://urban-sis.smhi.se/thredds/fileServer/deliveries/Rotterdam/ECVs/Air_quality/PM10/amsterdam_110_presclim_PM10.nc |
| | Future | http://urban-sis.smhi.se/thredds/fileServer/deliveries/Rotterdam/ECVs/Air_quality/PM10/amsterdam_110_futclim_PM10.nc |
| PM25 | Historic | http://urban-sis.smhi.se/thredds/fileServer/deliveries/Rotterdam/ECVs/Air_quality/PM2.5/amsterdam_110_historic_PM25.nc |
| | Present | http://urban-sis.smhi.se/thredds/fileServer/deliveries/Rotterdam/ECVs/Air_quality/PM2.5/amsterdam_110_presclim_PM25.nc |
| | Future | http://urban-sis.smhi.se/thredds/fileServer/deliveries/Rotterdam/ECVs/Air_quality/PM2.5/amsterdam_110_futclim_PM25.nc |



Appendix E: Paths for access to data selected for download to CDS via the THREDDS server via the download page (alternative formats)

Stockholm: Access to download page

| | | |
|-------------|----------|---|
| Temperature | Historic | http://urban-sis.smhi.se/thredds/catalog/deliveries/Stockholm/ECVs/Temperature/Air_temperature/catalog.html?dataset=Deliveries/Stockholm/ECVs/Temperature/Air_temperature/stockholm_110_historic_T2M.nc |
| | Present | http://urban-sis.smhi.se/thredds/catalog/deliveries/Stockholm/ECVs/Temperature/Air_temperature/catalog.html?dataset=Deliveries/Stockholm/ECVs/Temperature/Air_temperature/stockholm_110_presclim_T2M.nc |
| | Future | http://urban-sis.smhi.se/thredds/catalog/deliveries/Stockholm/ECVs/Temperature/Air_temperature/catalog.html?dataset=Deliveries/Stockholm/ECVs/Temperature/Air_temperature/stockholm_110_futclim_T2M.nc |
| NO2 | Historic | http://urban-sis.smhi.se/thredds/catalog/deliveries/Stockholm/ECVs/Air_quality/NO2/catalog.html?dataset=Deliveries/Stockholm/ECVs/Air_quality/NO2/stockholm_110_historic_NO2.nc |
| | Present | http://urban-sis.smhi.se/thredds/catalog/deliveries/Stockholm/ECVs/Air_quality/NO2/catalog.html?dataset=Deliveries/Stockholm/ECVs/Air_quality/NO2/stockholm_110_presclim_NO2.nc |
| | Future | http://urban-sis.smhi.se/thredds/catalog/deliveries/Stockholm/ECVs/Air_quality/NO2/catalog.html?dataset=Deliveries/Stockholm/ECVs/Air_quality/NO2/stockholm_110_futclim_NO2.nc |
| O3 | Historic | http://urban-sis.smhi.se/thredds/catalog/deliveries/Stockholm/ECVs/Air_quality/O3/catalog.html?dataset=Deliveries/Stockholm/ECVs/Air_quality/O3/stockholm_110_historic_O3.nc |
| | Present | http://urban-sis.smhi.se/thredds/catalog/deliveries/Stockholm/ECVs/Air_quality/O3/catalog.html?dataset=Deliveries/Stockholm/ECVs/Air_quality/O3/stockholm_110_presclim_O3.nc |
| | Future | http://urban-sis.smhi.se/thredds/catalog/deliveries/Stockholm/ECVs/Air_quality/O3/catalog.html?dataset=Deliveries/Stockholm/ECVs/Air_quality/O3/stockholm_110_futclim_O3.nc |
| PM10 | Historic | http://urban-sis.smhi.se/thredds/catalog/deliveries/Stockholm/ECVs/Air_quality/PM10/catalog.html?dataset=Deliveries/Stockholm/ECVs/Air_quality/PM10/stockholm_110_historic_PM10.nc |
| | Present | http://urban-sis.smhi.se/thredds/catalog/deliveries/Stockholm/ECVs/Air_quality/PM10/catalog.html?dataset=Deliveries/Stockholm/ECVs/Air_quality/PM10/stockholm_110_presclim_PM10.nc |
| | Future | http://urban-sis.smhi.se/thredds/catalog/deliveries/Stockholm/ECVs/Air_quality/PM10/catalog.html?dataset=Deliveries/Stockholm/ECVs/Air_quality/PM10/stockholm_110_futclim_PM10.nc |
| PM25 | Historic | http://urban-sis.smhi.se/thredds/catalog/deliveries/Stockholm/ECVs/Air_quality/PM2.5/catalog.html?dataset=Deliveries/Stockholm/ECVs/Air_quality/PM2.5/stockholm_110_historic_PM25.nc |
| | Present | http://urban-sis.smhi.se/thredds/catalog/deliveries/Stockholm/ECVs/Air_quality/PM2.5/catalog.html?dataset=Deliveries/Stockholm/ECVs/Air_quality/PM2.5/stockholm_110_presclim_PM25.nc |
| | Future | http://urban-sis.smhi.se/thredds/catalog/deliveries/Stockholm/ECVs/Air_quality/PM2.5/catalog.html?dataset=Deliveries/Stockholm/ECVs/Air_quality/PM2.5/stockholm_110_futclim_PM25.nc |



Bologna: Access to download page

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| Temperature | Historic | http://urban-sis.smhi.se/thredds/catalog/deliveries/Bologna/ECVs/Temperature/Air_temperature/catalog.html?dataset=Deliveries/Bologna/ECVs/Temperature/Air_temperature/bologna_110_historic_T2M.nc |
| | Present | http://urban-sis.smhi.se/thredds/catalog/deliveries/Bologna/ECVs/Temperature/Air_temperature/catalog.html?dataset=Deliveries/Bologna/ECVs/Temperature/Air_temperature/bologna_110_presclim_T2M.nc |
| | Future | http://urban-sis.smhi.se/thredds/catalog/deliveries/Bologna/ECVs/Temperature/Air_temperature/catalog.html?dataset=Deliveries/Bologna/ECVs/Temperature/Air_temperature/bologna_110_futclim_T2M.nc |
| NO2 | Historic | http://urban-sis.smhi.se/thredds/catalog/deliveries/Bologna/ECVs/Air_quality/NO2/catalog.html?dataset=Deliveries/Bologna/ECVs/Air_quality/NO2/bologna_110_historic_NO2.nc |
| | Present | http://urban-sis.smhi.se/thredds/catalog/deliveries/Bologna/ECVs/Air_quality/NO2/catalog.html?dataset=Deliveries/Bologna/ECVs/Air_quality/NO2/bologna_110_presclim_NO2.nc |
| | Future | http://urban-sis.smhi.se/thredds/catalog/deliveries/Bologna/ECVs/Air_quality/NO2/catalog.html?dataset=Deliveries/Bologna/ECVs/Air_quality/NO2/bologna_110_futclim_NO2.nc |
| O3 | Historic | http://urban-sis.smhi.se/thredds/catalog/deliveries/Bologna/ECVs/Air_quality/O3/catalog.html?dataset=Deliveries/Bologna/ECVs/Air_quality/O3/bologna_110_historic_O3.nc |
| | Present | http://urban-sis.smhi.se/thredds/catalog/deliveries/Bologna/ECVs/Air_quality/O3/catalog.html?dataset=Deliveries/Bologna/ECVs/Air_quality/O3/bologna_110_presclim_O3.nc |
| | Future | http://urban-sis.smhi.se/thredds/catalog/deliveries/Bologna/ECVs/Air_quality/O3/catalog.html?dataset=Deliveries/Bologna/ECVs/Air_quality/O3/bologna_110_futclim_O3.nc |
| PM10 | Historic | http://urban-sis.smhi.se/thredds/catalog/deliveries/Bologna/ECVs/Air_quality/PM10/catalog.html?dataset=Deliveries/Bologna/ECVs/Air_quality/PM10/bologna_110_historic_PM10.nc |
| | Present | http://urban-sis.smhi.se/thredds/catalog/deliveries/Bologna/ECVs/Air_quality/PM10/catalog.html?dataset=Deliveries/Bologna/ECVs/Air_quality/PM10/bologna_110_presclim_PM10.nc |
| | Future | http://urban-sis.smhi.se/thredds/catalog/deliveries/Bologna/ECVs/Air_quality/PM10/catalog.html?dataset=Deliveries/Bologna/ECVs/Air_quality/PM10/bologna_110_futclim_PM10.nc |
| PM25 | Historic | http://urban-sis.smhi.se/thredds/catalog/deliveries/Bologna/ECVs/Air_quality/PM2.5/catalog.html?dataset=Deliveries/Bologna/ECVs/Air_quality/PM2.5/bologna_110_historic_PM25.nc |
| | Present | http://urban-sis.smhi.se/thredds/catalog/deliveries/Bologna/ECVs/Air_quality/PM2.5/catalog.html?dataset=Deliveries/Bologna/ECVs/Air_quality/PM2.5/bologna_110_presclim_PM25.nc |
| | Future | http://urban-sis.smhi.se/thredds/catalog/deliveries/Bologna/ECVs/Air_quality/PM2.5/catalog.html?dataset=Deliveries/Bologna/ECVs/Air_quality/PM2.5/bologna_110_futclim_PM25.nc |



Amsterdam: Access to download page

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| Temperature | Historic | http://urban-sis.smhi.se/thredds/catalog/deliveries/Rotterdam/ECVs/Temperature/Air_temperature/catalog.html?dataset=Deliveries/Rotterdam/ECVs/Temperature/Air_temperature/amsterdam_110_historic_T2M.nc |
| | Present | http://urban-sis.smhi.se/thredds/catalog/deliveries/Rotterdam/ECVs/Temperature/Air_temperature/catalog.html?dataset=Deliveries/Rotterdam/ECVs/Temperature/Air_temperature/amsterdam_110_presclim_T2M.nc |
| | Future | http://urban-sis.smhi.se/thredds/catalog/deliveries/Rotterdam/ECVs/Temperature/Air_temperature/catalog.html?dataset=Deliveries/Rotterdam/ECVs/Temperature/Air_temperature/amsterdam_110_futclim_T2M.nc |
| NO2 | Historic | http://urban-sis.smhi.se/thredds/catalog/deliveries/Rotterdam/ECVs/Air_quality/NO2/catalog.html?dataset=Deliveries/Rotterdam/ECVs/Air_quality/NO2/amsterdam_110_historic_NO2.nc |
| | Present | http://urban-sis.smhi.se/thredds/catalog/deliveries/Rotterdam/ECVs/Air_quality/NO2/catalog.html?dataset=Deliveries/Rotterdam/ECVs/Air_quality/NO2/amsterdam_110_presclim_NO2.nc |
| | Future | http://urban-sis.smhi.se/thredds/catalog/deliveries/Rotterdam/ECVs/Air_quality/NO2/catalog.html?dataset=Deliveries/Rotterdam/ECVs/Air_quality/NO2/amsterdam_110_futclim_NO2.nc |
| O3 | Historic | http://urban-sis.smhi.se/thredds/catalog/deliveries/Rotterdam/ECVs/Air_quality/O3/catalog.html?dataset=Deliveries/Rotterdam/ECVs/Air_quality/O3/amsterdam_110_historic_O3.nc |
| | Present | http://urban-sis.smhi.se/thredds/catalog/deliveries/Rotterdam/ECVs/Air_quality/O3/catalog.html?dataset=Deliveries/Rotterdam/ECVs/Air_quality/O3/amsterdam_110_presclim_O3.nc |
| | Future | http://urban-sis.smhi.se/thredds/catalog/deliveries/Rotterdam/ECVs/Air_quality/O3/catalog.html?dataset=Deliveries/Rotterdam/ECVs/Air_quality/O3/amsterdam_110_futclim_O3.nc |
| PM10 | Historic | http://urban-sis.smhi.se/thredds/catalog/deliveries/Rotterdam/ECVs/Air_quality/PM10/catalog.html?dataset=Deliveries/Rotterdam/ECVs/Air_quality/PM10/amsterdam_110_historic_PM10.nc |
| | Present | http://urban-sis.smhi.se/thredds/catalog/deliveries/Rotterdam/ECVs/Air_quality/PM10/catalog.html?dataset=Deliveries/Rotterdam/ECVs/Air_quality/PM10/amsterdam_110_presclim_PM10.nc |
| | Future | http://urban-sis.smhi.se/thredds/catalog/deliveries/Rotterdam/ECVs/Air_quality/PM10/catalog.html?dataset=Deliveries/Rotterdam/ECVs/Air_quality/PM10/amsterdam_110_futclim_PM10.nc |
| PM25 | Historic | http://urban-sis.smhi.se/thredds/catalog/deliveries/Rotterdam/ECVs/Air_quality/PM2.5/catalog.html?dataset=Deliveries/Rotterdam/ECVs/Air_quality/PM2.5/amsterdam_110_presclim_PM25.nc |
| | Present | http://urban-sis.smhi.se/thredds/catalog/deliveries/Rotterdam/ECVs/Air_quality/PM2.5/catalog.html?dataset=Deliveries/Rotterdam/ECVs/Air_quality/PM2.5/amsterdam_110_presclim_PM25.nc |
| | Future | http://urban-sis.smhi.se/thredds/catalog/deliveries/Rotterdam/ECVs/Air_quality/PM2.5/catalog.html?dataset=Deliveries/Rotterdam/ECVs/Air_quality/PM2.5/amsterdam_110_futclim_PM25.nc |



ECMWF - Shinfield Park, Reading RG2 9AX, UK

Contact: info@copernicus-climate.eu