

ATMOSPHERIC STATION

Křešín u Pacova

The Atmospheric Station Křešín u Pacova is focused on the investigation of the background temporal trends, vertical concentration gradient and long-range transport of greenhouse gases and selected atmospheric pollutants. This is complemented by the monitoring of basic meteorological characteristics. The Atmospheric Station consists of a 250 m tall atmospheric tower and ground based containers equipped with meteorological sensors, gas and aerosol analyzers and a flask sampling system. The station aims to become part of the atmospheric station network under the Integrated Carbon Observation System (ICOS). Together with the adjacent Košetice Observatory specialized in background air quality monitoring, it forms the Collocated Station Košetice - Křešín u Pacova. Further monitoring infrastructure of the Collocated Station comprises a small hydrological catchment and an Ecosystem Station.



MAIN MONITORING AND RESEARCH AREAS

- Long-term measurement of greenhouse gases concentrations and their exchange dynamics
- Investigating the impact of atmospheric aerosols on global climate change processes
- Investigating the impacts of global climate change on air quality and long-range transport of atmospheric pollutants

Multidisciplinary research is supported by further adjacent monitoring and research infrastructures:

- Košetice Observatory including the small hydrological catchment Anenský brook
- Future ICOS Ecosystem Station in nearby agroecosystem

The AS Křešín u Pacova is an open access research infrastructure. Proposals about further monitoring and research activities in the above mentioned and other fields are welcome (see contacts).

PARTICIPATION IN INTERNATIONAL MONITORING PROGRAMMES

Core Partnership in ICOS www.icos-infrastructure.eu
Integrated Carbon Observation System

Associated Partnership in InGOS www.ingos-infrastructure.eu
Integrated Non-CO₂ Greenhouse gas Observing System

Associated Partnership in GMOS www.gmos.eu
Global Mercury Observation System

Associated Partnership in ACTRIS www.actris.net
Aerosols, Clouds and Trace gases Research Infrastructure Network

Sending data to the EMEP (European Monitoring and Evaluation Programme), GAW (Global Atmosphere Watch) and ISKO (Czech air quality monitoring system) databases.

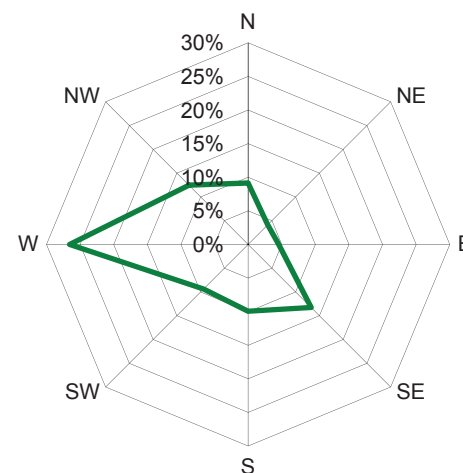
GENERAL INFORMATION

Co-ordinates: N 49°35', E 15°05'
Elevation: 534 m above mean sea level
Type of site: rural background

BASIC CLIMATE CHARACTERISTICS (1961 – 1990)

- mean air temperature: 7.1 °C
- days with max. temperature > 30°C: 4 per year
- days with max. temperature > 25°C: 27 per year
- days with min. temperature < 0°C: 118 per year
- days with max. temperature < 0°C: 34 per year
- prevailing wind direction: western
- average wind speed: 3 m s⁻¹
- annual precipitation: 621 mm
- days with snowfall: 58 per year
- days with snow cover: 66 per year
- mean hours of sunshine: 1800 per year

WIND ROSE 1988 – 2012



CONTACT

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MONITORING PROGRAMME

GREENHOUSE GASES AND RELATED PARAMETERS

- Carbon dioxide (CO₂, continuous and episodic measurements)
- Carbon monoxide (CO, continuous and episodic measurements)
- Methane (CH₄, continuous and episodic measurements)
- Nitrous oxide (N₂O, continuous and episodic measurements)
- Sulfur hexafluoride (SF₆, episodic measurements)
- Carbon and oxygen isotopes (¹³C, ¹⁸O and ¹⁴C in CO₂, episodic measurements)
- Hydrogen (H₂, episodic measurements)
- Radon (²²²Rn, episodic measurements)
- Oxygen and nitrogen ratio (O₂ / N₂, episodic measurements)



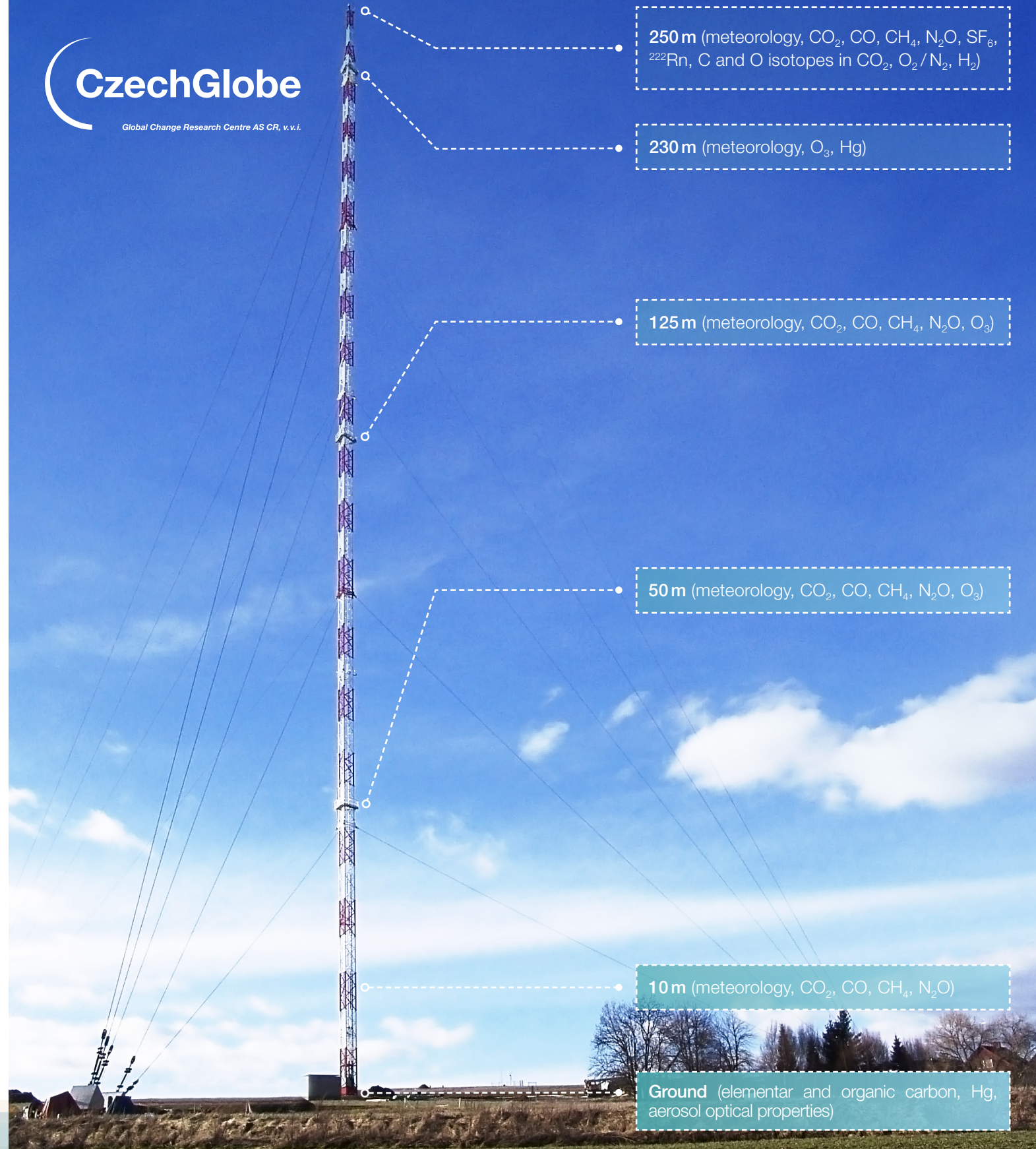
AIR QUALITY

- Elementary and organic carbon (EC/OC, semi-continuous measurements)
- Tropospheric ozone (O₃, continuous measurements)
- Gaseous elemental mercury (Hg, continuous measurements)
- Atmospheric aerosols (light absorption and light-scattering coefficient)

METEOROLOGICAL PARAMETERS

- Wind speed
- Wind direction
- Air pressure
- Air temperature
- Relative humidity
- UVA and UVB radiation
- Planetary boundary layer height

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ADJACENT RESEARCH INFRASTRUCTURES

The Košetice Observatory run by the Czech Hydrometeorological Institute was established in 1988 as a background station specialized in air quality monitoring and research. It represents the Czech Republic in activities under the Convention on Long-Range Transboundary Air Pollution and World Meteorological Organization and in several international monitoring and research projects (EUSAAR, ACTRIS).



The Anenský brook catchment is a part of the International Cooperative Programme on Integrated Monitoring of Air Pollution Effects on Ecosystems. Monthly data on precipitation and stream water chemistry are available since 1994.



This Ecosystem Station uses a standard methodology (eddy covariance) to monitor matter and energy fluxes between the local agroecosystem and the atmosphere. Micrometeorological and biomass parameters and nutrient contents are measured, too.