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The collocated station Košetice – Křešín u Pacova, Czech Republic: an important research infrastructure in central Europe

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The collocated station Košetice – Křešín u Pacova, central Czech Republic, is a major research and monitoring infrastructure in the Czech Republic and central Europe. It consists of two basic components: the observatory Košetice run since 1988 by the Czech Hydrometeorological Institute and the atmospheric station (AS) Křešín u Pacova starting operation in 2013. The AS is built and run by CzechGlobe – Global Change Research Centre, Academy of Sciences of the Czech Republic and is situated 100 m far from the observatory.

There are three research and monitoring activities at the collocated station providing data necessary for the research on climate and related changes. The AS Křešín u Pacova consists of a 250 m tall tower serving for ground-based and vertical gradient measurements of (i) concentrations of CO_2, CO, CH4, total gaseous mercury and tropospheric ozone (continuously), (ii) elemental and organic carbon (semicontinuously), (iii) carbon and oxygen isotopes, radon, N2O, SF6 and other species (episodically), (iv) optical properties of atmospheric aerosols and (v) meteorological parameters and the boundary layer height. Further, eddy covariance measurements in the nearby agroecosystem provide data on CO_2 and H_2O fluxes between the atmosphere and the ecosystem. Finally, monitoring activities at the nearby small hydrological catchment Anenské povodí run under the GEOMON network enables studying local hydrological and biogeochemical cycles. These measurements are supported by the long-term monitoring of meteorological and air quality parameters at the observatory Košetice, that are representative for the central European background.

The collocated station provides a big research opportunity and challenge due to (i) a broad spectra of monitored chemical species, meteorological, hydrological and other parameters, (ii) measurements in various environmental compartments and especially the atmosphere, (iii) provision of data suitable for conducting multidisciplinar research activities and (iv) participation in a number of international programmes and projects, i.e. ICOS (AS Křešín u Pacova), ACTRIS, ACCENT, CLRTAP/EMEP, GAW and ICP-IM (Košetice) and others. Finally, the collocated station has potential for a successful participation in the planned network of European superstations covering both climate and air quality issues, one of the key areas in the European Strategy Forum on Research Infrastructures (ESFRI) process.

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