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CLIMATE CHANGE: MONITORING, DATA, METHODS AND SERVICES

Ildiko Dobi

Hungarian Meteorological Service, Budapest, Hungary

Scientific evidence for warming of the climate system is unequivocal. Experts agree that the greenhouse gases emitted by human activities are the primary driver of these changes. As a consequence the number of weather related extreme events significantly increases all over the World which has enormous socio-economic effect. This lecture outline the network of national meteorological institutes how to tackle climate change issue. Monitoring is the basic tool in environmental sciences to detect any changes. The state and the composition of the atmosphere are watched continuously by thousand kind of instrument on the earth surface and in the air. Huge amount of data are collected, quality checked and archived day by day to serve the increasing demand on weather and climate related information. Not only archived surface data, but satellite and reanalysed gridded values are available for researches. Numerical models and statistical methods are equally used to realize the changes. In Hungary the systematic regular meteorological observations started in 1870. Domestic trend data of long term temperature is 1.2 degree Celsius, which exceed the global value. This tendency will continue in the future. The number of heat waves increased by 6 days since 1901. The yearly precipitation amount decreased with 5 %, spring and autumn became dryer. Drought and flash flood can occur at the same time. Drought is known as a major climatic hazard, which can occur every second year damaging the country's agriculture. Climate models project even more intense and frequent drought. Time series of GHG concentration and PM measurements will also demonstrated. Climate-conscious aspects in business, in cities and everyday life became essential. In order to assist smart decision international communities (GFCS, Copernicus) has been developing climate services for main economy sectors. At last but not least it is important to emphasise that engineering sciences have major role in climate adaptation and mitigation.

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Corresponding address:
Dr Ildikó Dobi
Unit of International and Scientific Relations
Hungarian Meteorological Service
H-1025 POBox 38.
Budapest, Hungary
Telephone/mobile: (36-1)-346-4710 Fax: (36-1)346-4669
E-mail: dobi.i@met.hu