OBSERVED LONG-TERM TREND IN VARIOUS EXTREME PRECIPITATION-RELATED CLIMATE INDICES

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INTRODUCTION

Precipitation is one of the most important meteorological elements, and its absence can cause severe damage to the ecosystems, agriculture and forestry, on the other hand, intense rainfalls may also led to devastation.
Therefore, climate monitoring is very important, which allows us to detect the long-term changes of meteorological variables including precipitation. In addition, it can help us to prepare for the adaptation to the expected change in climate extremes.

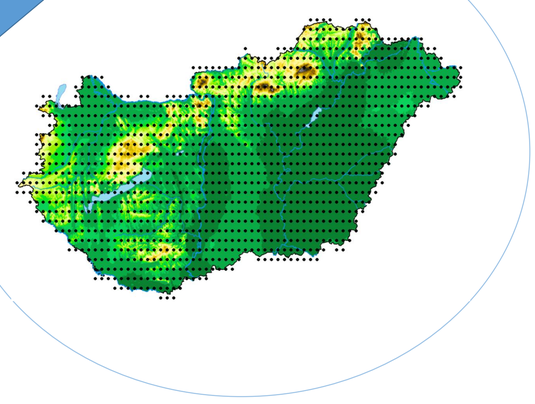
DATA AND METHOD

- **MASH[1]** (Multiple Analysis of Series for Homogenization) software is used for producing homogenised, quality controlled, completed (free from missing data) station data series
- **MISH[2]** (Meteorological Interpolation based on Surface Homogenized Data Basis) is used to interpolate the homogenised station data onto a 0.1° horizontal grid in order to obtain spatially representative data for Hungary
- Result: **Measurement-based, long data series of good quality**

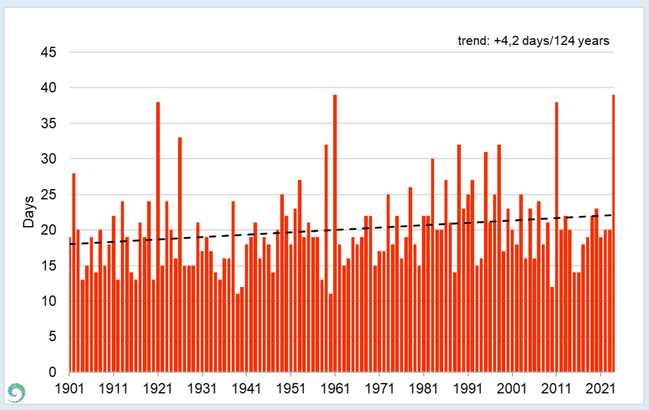
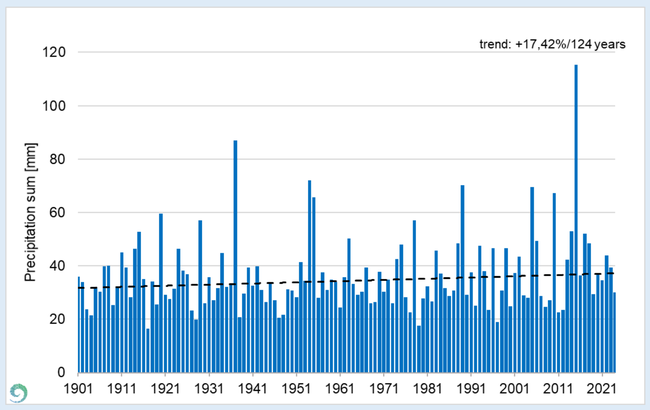
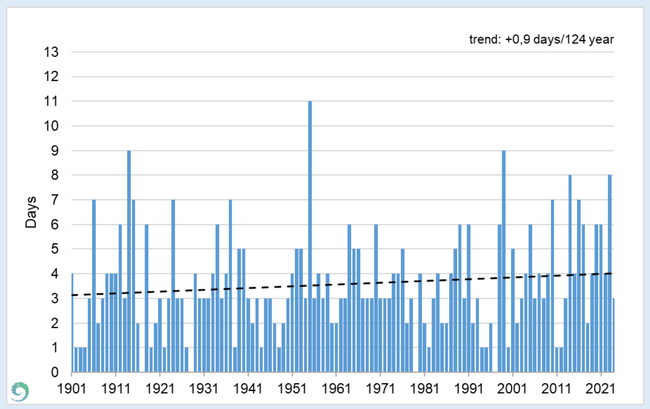
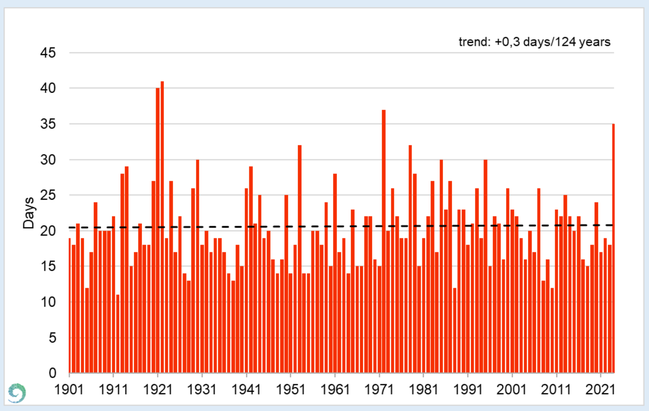
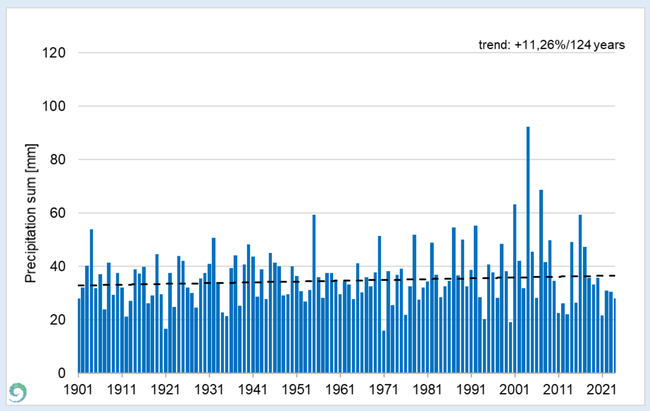
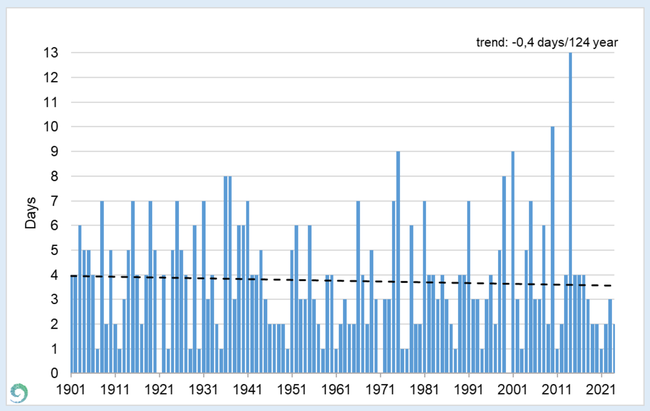
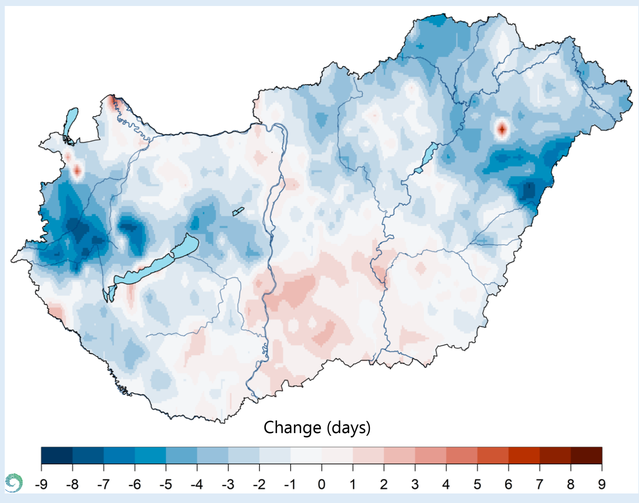
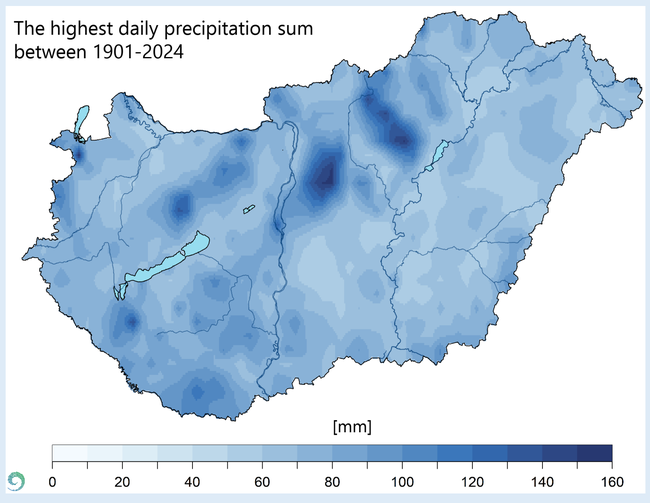
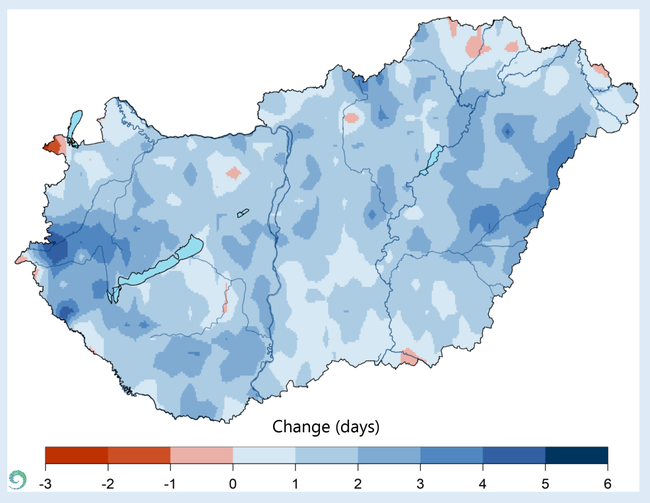
Extreme temperature climate indices are already available:

AIM OF THIS STUDY

- Precipitation indices are analyzed for the period **1901–2024** using homogenised daily station data series to support local climate adaptation efforts
- The results are presented **for Szeged, Budapest and Hungary**
- Extreme precipitation-related climate indices: **consecutive dry days (CDD), the highest daily precipitation sum (RX1day) and very heavy precipitation days (R20)**
- The indices are illustrated on a **yearly basis** using graphs
- A **linear trend model** is fitted to the values of CDD, R20 and RX1day indices to assess the impact of climate change in observations



RESULTS

	Consecutive dry days (CDD)	The highest daily precipitation sum (RX1day)	Very heavy precipitation days (R20)
Budapest belterület			
Szeged			
Hungary			

[1]*Szentimrey, T.*, 2008: Development of MASH homogenization procedure for daily data, Proceedings of the Fifth Seminar for Homogenization and Quality Control in Climatological Databases, Budapest, 2006; WCDMP-No. 71, WMO/TD-NO. 1493, 123–130.

[2]*Szentimrey, T., Bihari, Z.*, 2007: Mathematical background of the spatial interpolation methods and the software MISH (Meteorological Interpolation based on Surface Homogenized Data Basis). In: Proceedings from the Conference on Spatial Interpolation in Climatology and Meteorology, Budapest, Hungary, 2004, COST Action 719, COST Office, 17–27.

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