

# Homogenization of moisture characteristics data in Slovakia

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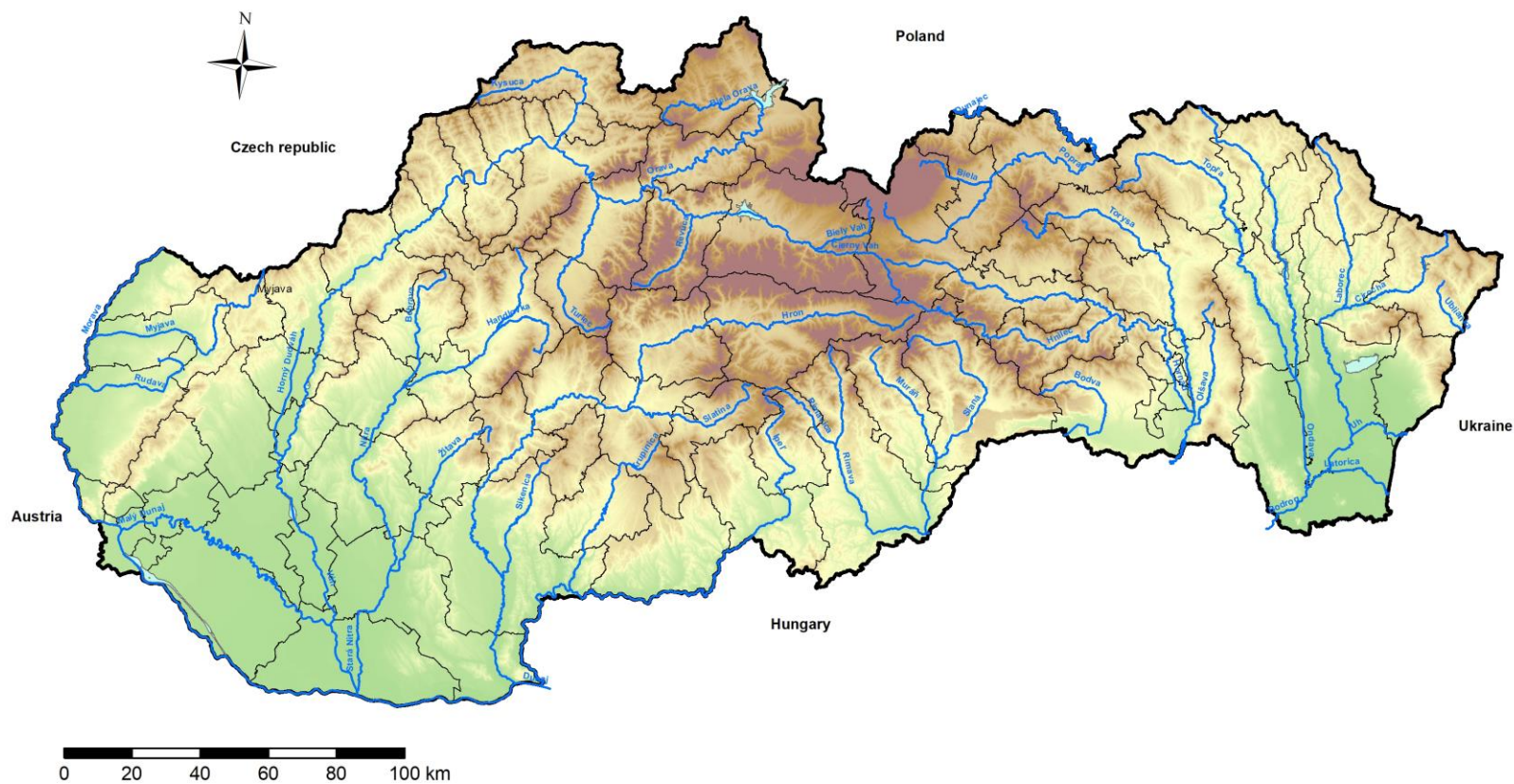
**SLOVENSKÝ HYDROMETEOROLOGICKÝ ÚSTAV**



## Goals

## Goals and materials

- investigating changes in humidity characteristics at the most homogeneously considered stations
- data → relative humidity; potential evapotranspiration; Tomlains irrigation indicator
- 23 station (reason?!)





# Methodology

# Homogenization

- MASH program (Multiple Analysis of Series for Homogenization - T. Szentimrey)
- monthly and daily data

## normal periods:

- 1961-1990
- 1981-2010
- 1991-2020



# Results



# Evapotranspiration

- Method of Budyk and Zubenokova → most used method in our country
- 1961 → Ján Tomlajn (1965) → 60 station in ČSR (energy and water balance equation of the surface)

$$E_0 = \rho D. (q_w - q_a) \quad [\text{mm}]$$

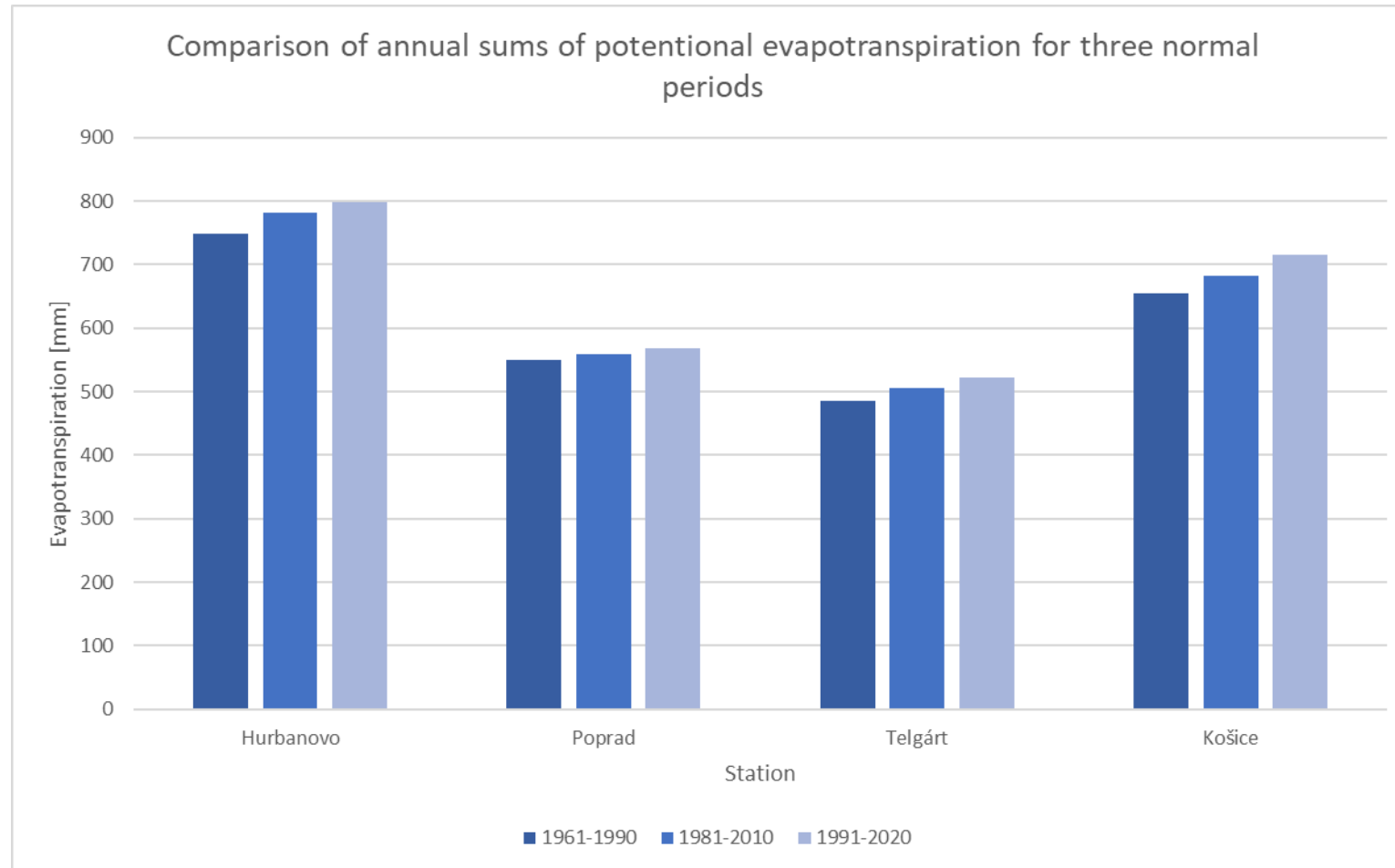


## Tomlain's irrigation index

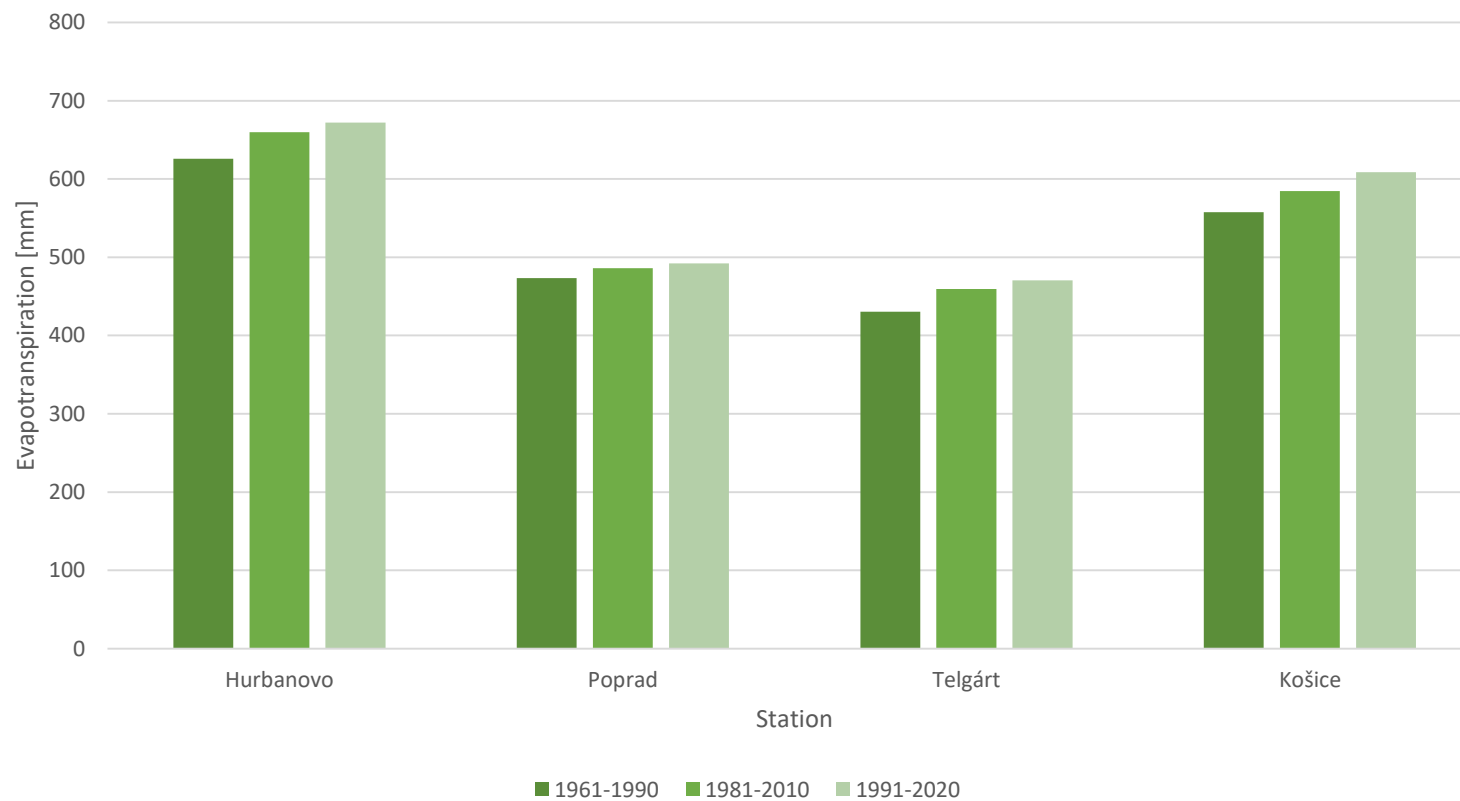
- Potential evapotranspiration ( $E_0$ ) and precipitation ( $R$ )

$$K_z = E_0 - R$$

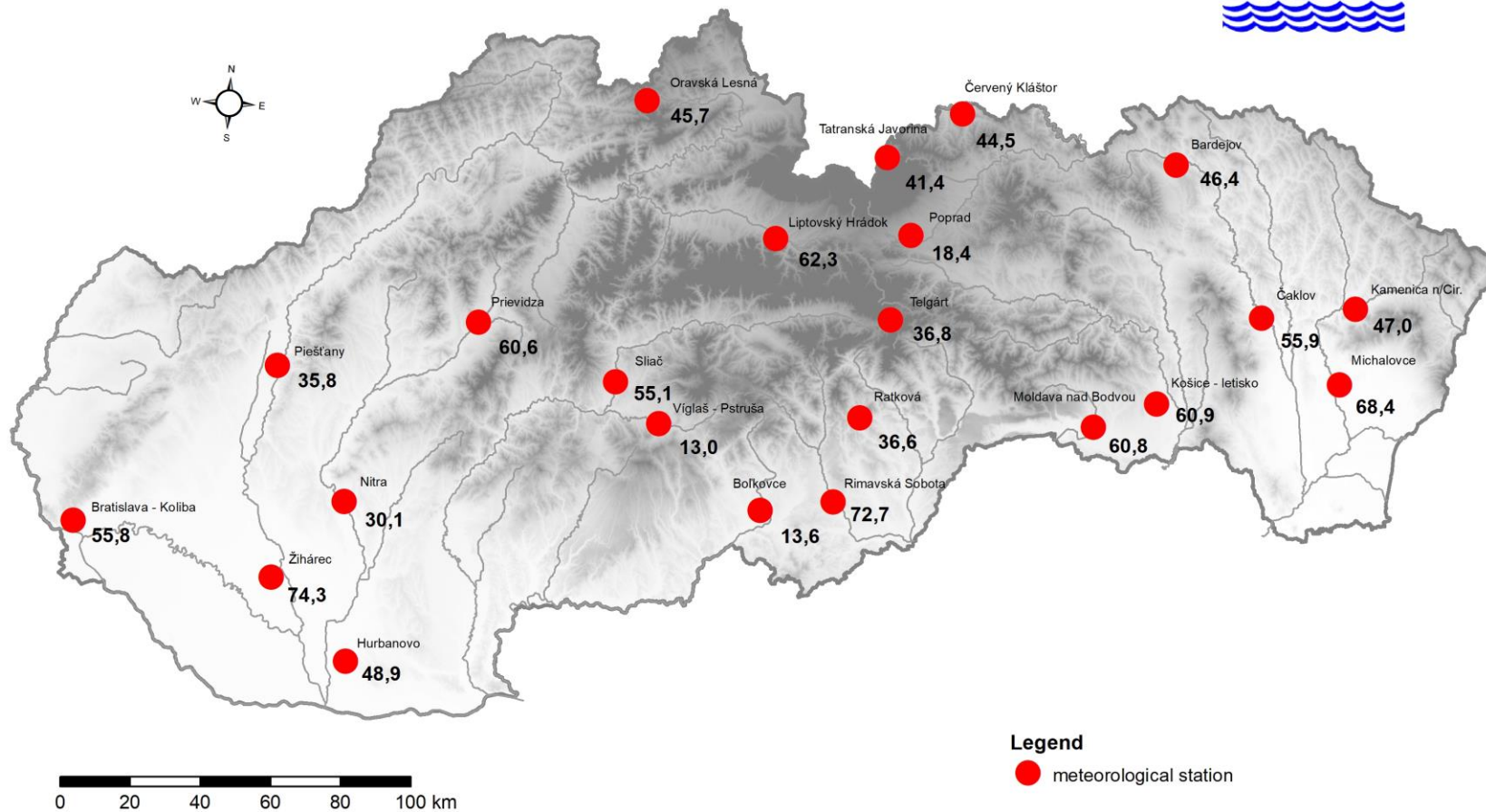
- Annual sum or sum per growing seanson



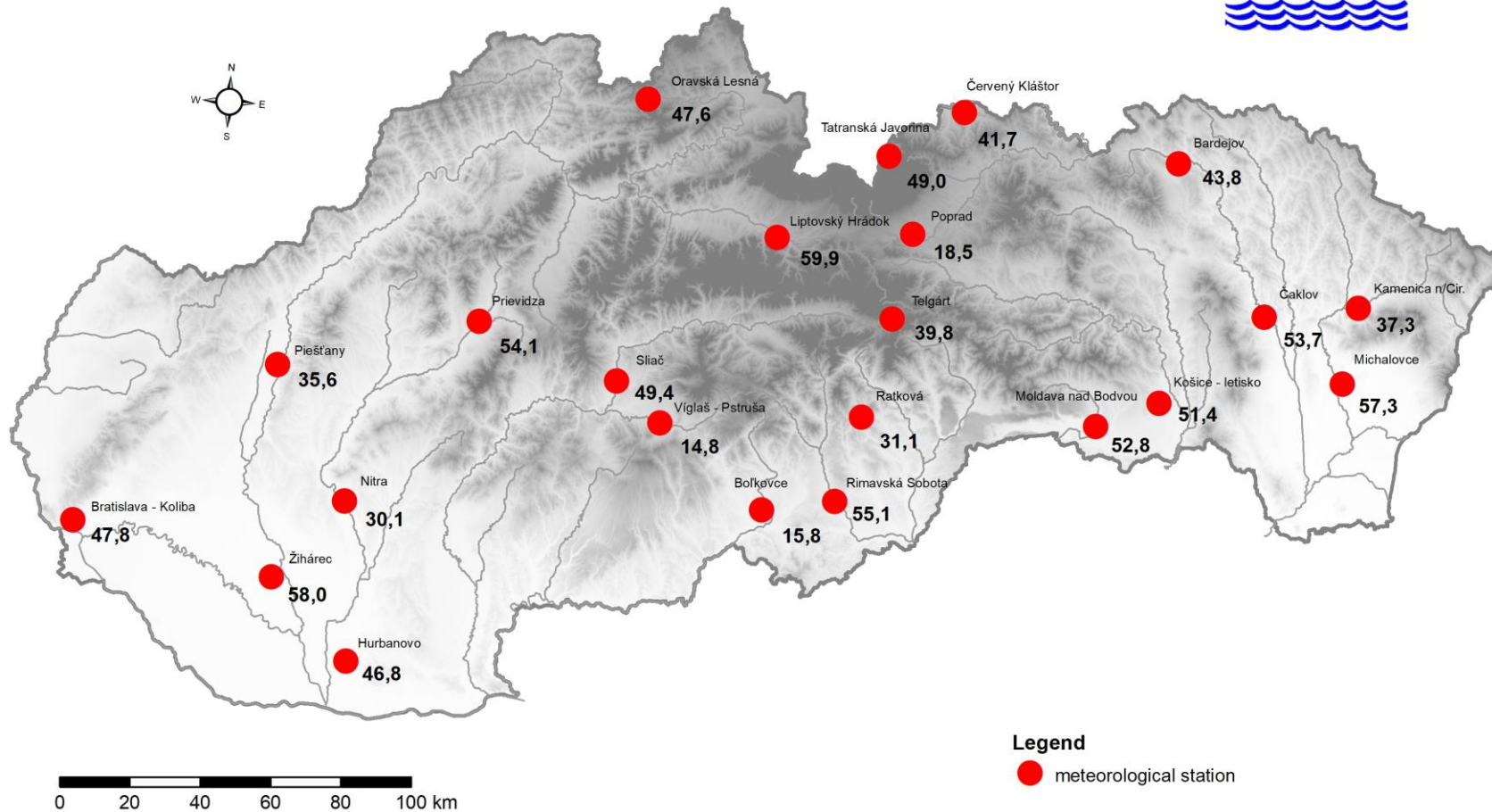
Comparison of potential evapotranspiration sums in the vegetation season  
for three normal periods



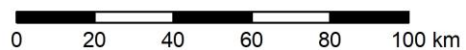
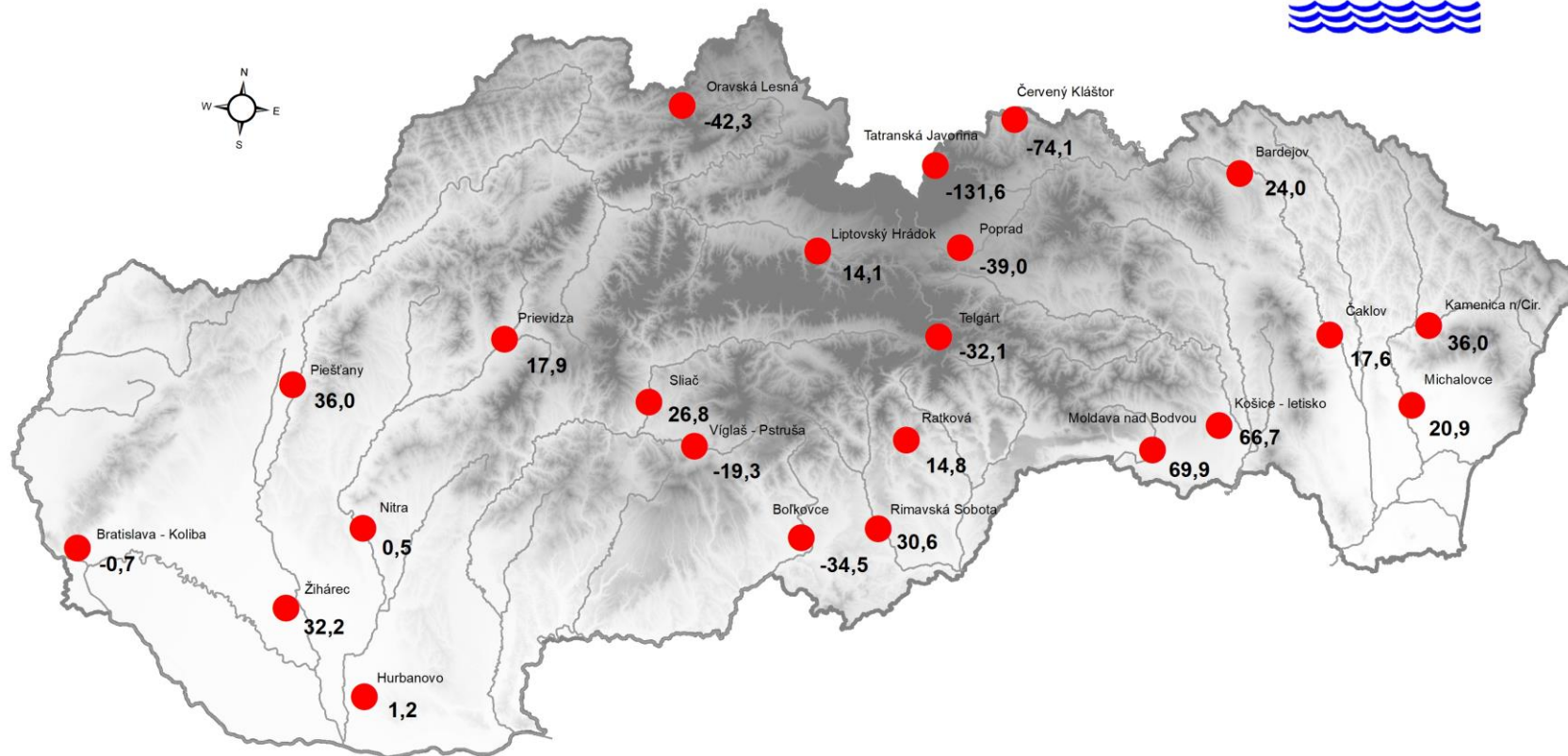
### Evaluation of potential evapotranspiration changes from normal period 1961-1990 to 1990-2020 [mm]



**Evaluation of potential evapotranspiration changes  
from normal period 1961-1990 to 1990-2020 in the vegetation season [mm]**



Evaluation of Tomlain's irrigation index changes from normal period 1961-1990 to 1990-2020 [mm]

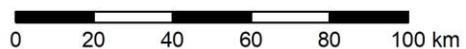
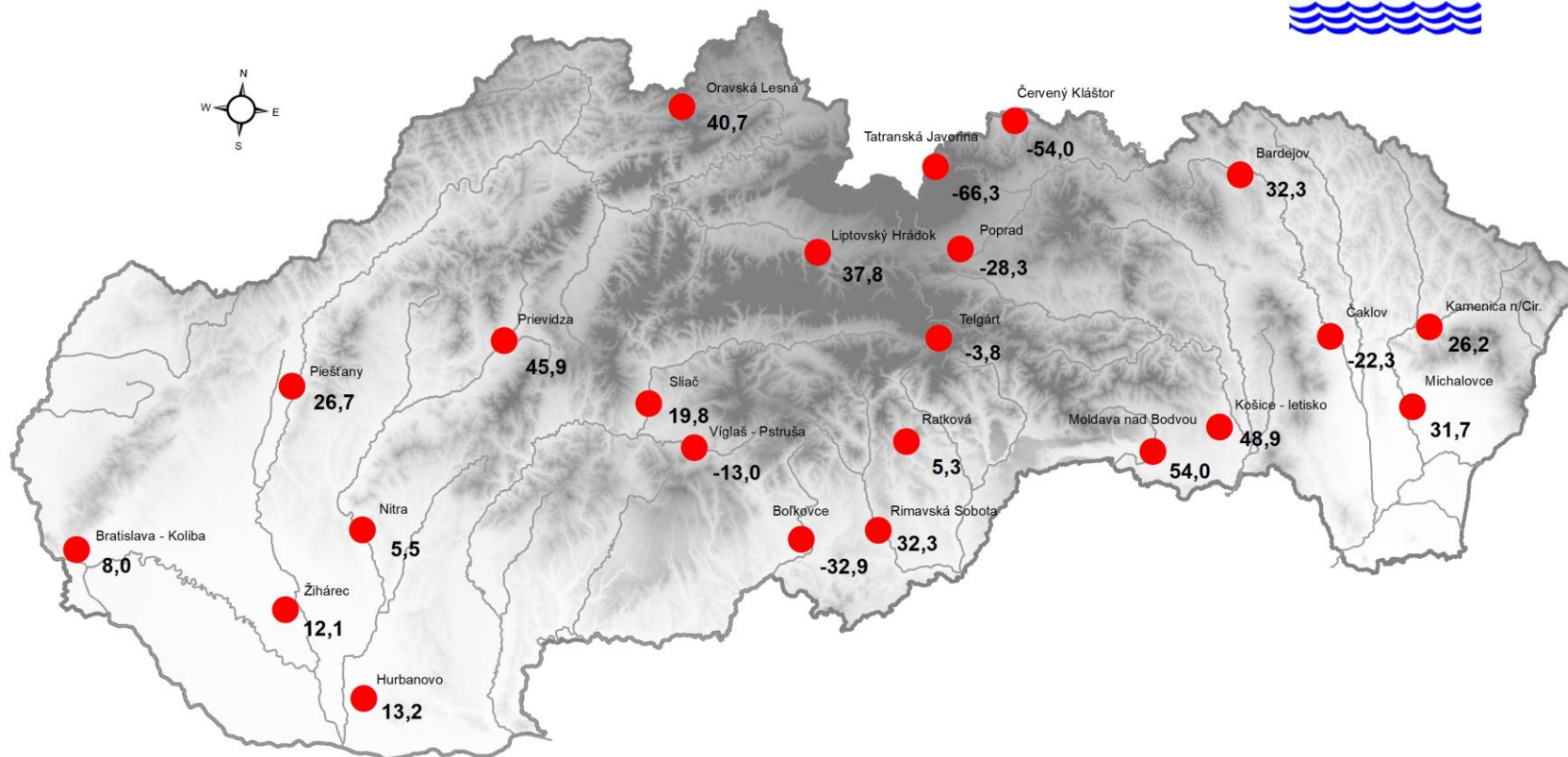


Legend

● meteorological station

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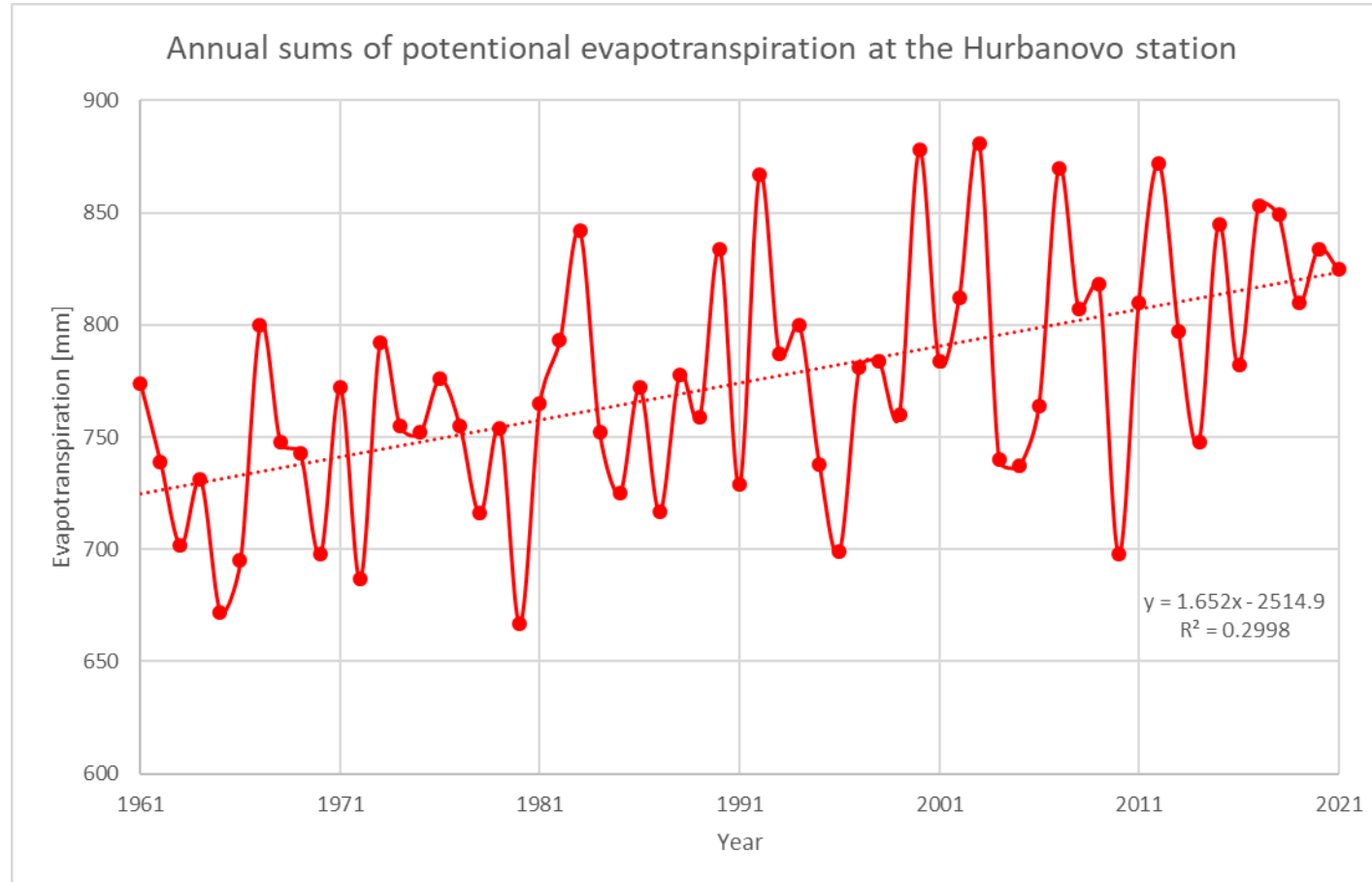
Evaluation of Tomlain irrigatin index changes  
from normal period 1961-1990 to 1990-2020 in the vegetation season [mm]



Legend

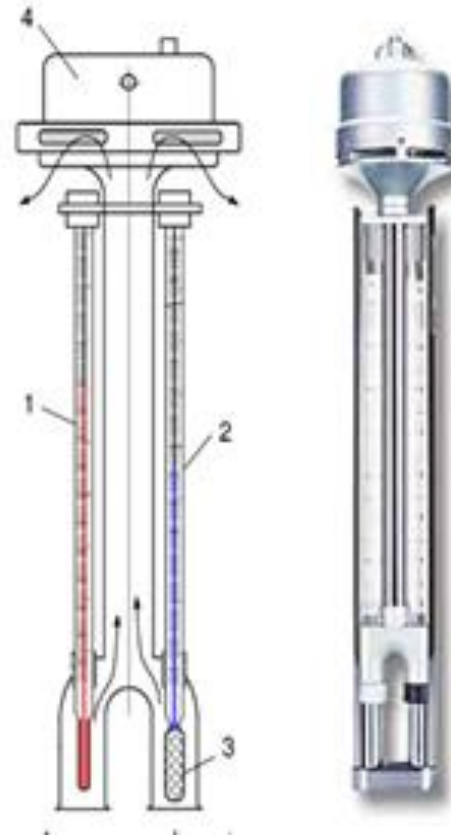
● meteorological station





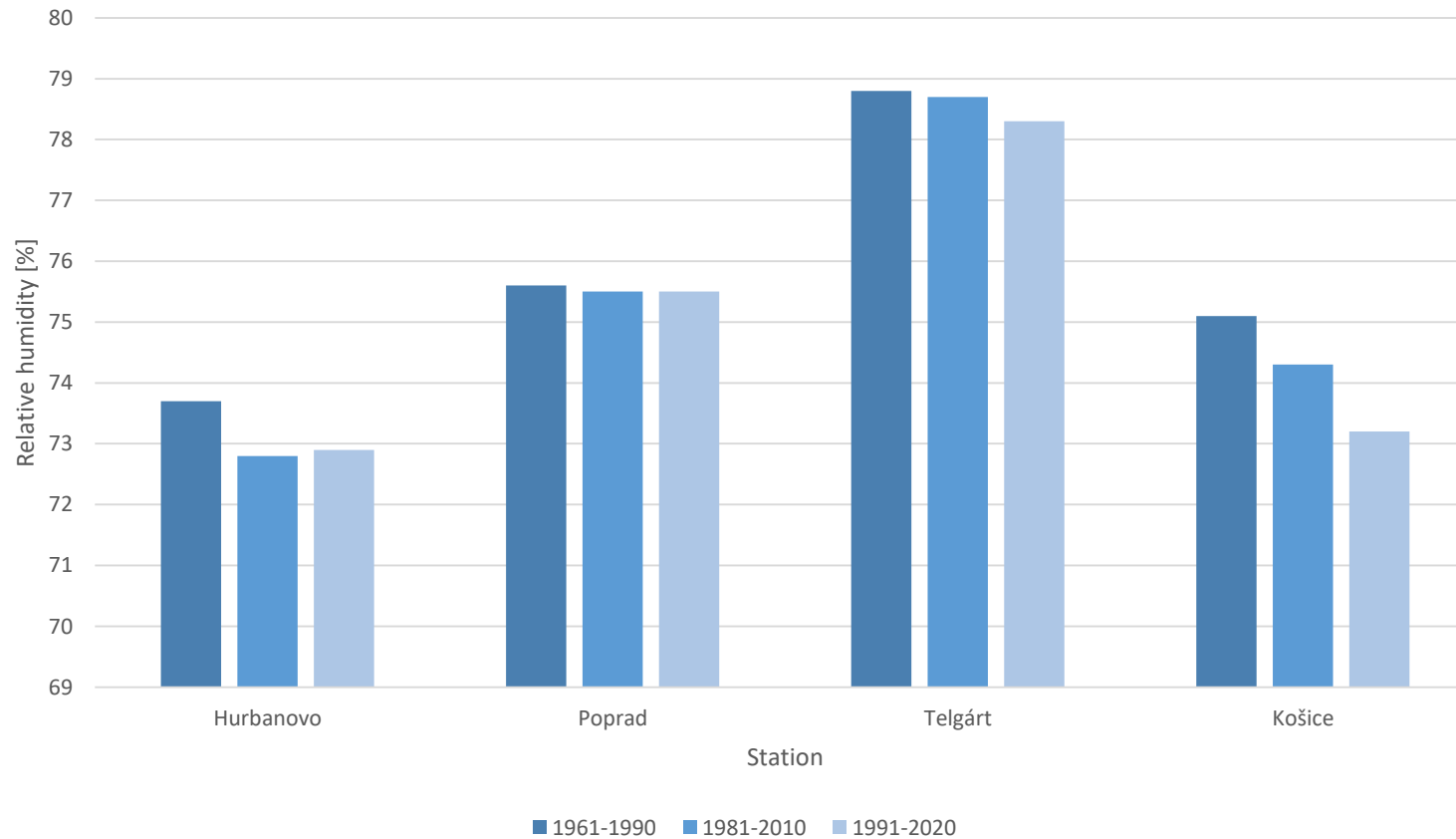
# Relative humidity

- dry and wet  $\rightarrow$  psychrometer

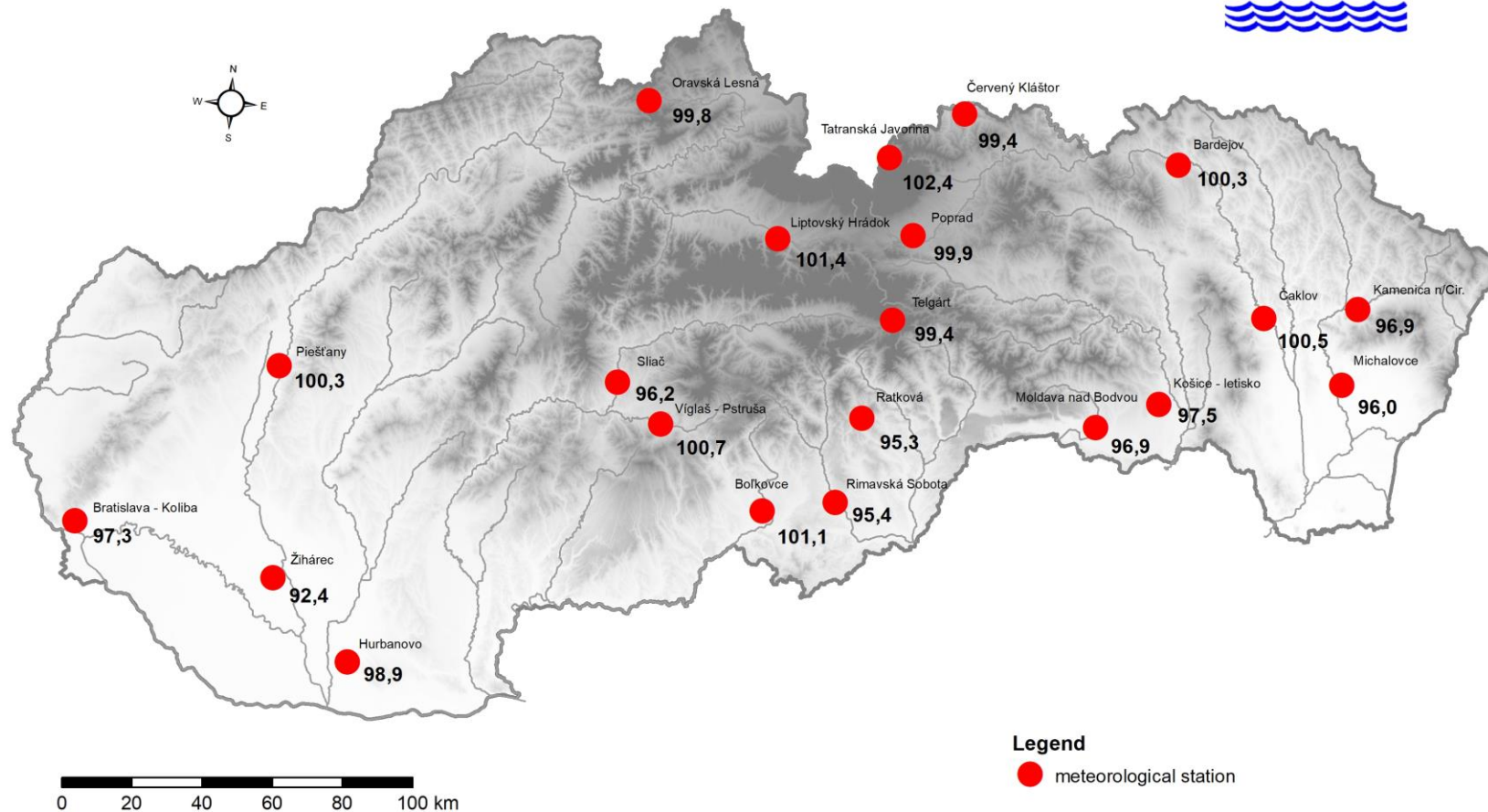


# Relative humidity

Comparison of annual value of relative humidity for three normal periods



### Evaluation of relative humidity changes from normal period 1961-1990 to 1990-2020 [%]



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Future

# Future

- adaptation measurements
- monitoring of drought

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Thank you for your attention and have  
a nice day! 😊

