

Background, reasoning



Exposure of the Danube Region to CC impacts

- The region
- heavily exposed to CC
- integrates several vulnerable region types
- and sectors
- Either in the majority of countries or in cross border regions

Necessity to cooperate

- Geography
- Historical background / national borders
- Common challenges need cooperative responses
- Adaptation is weakly integrated into sectoral planning

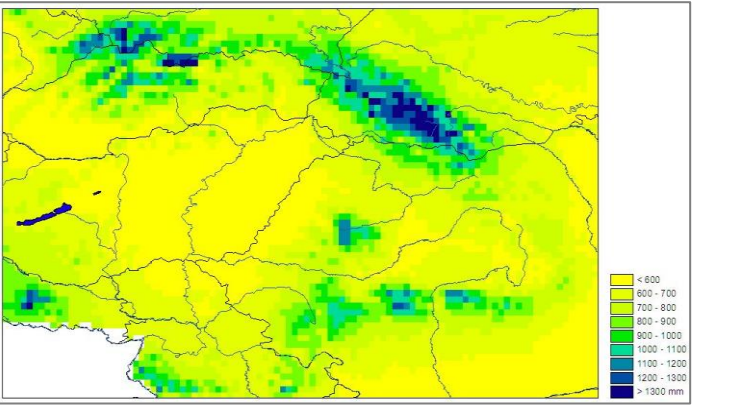
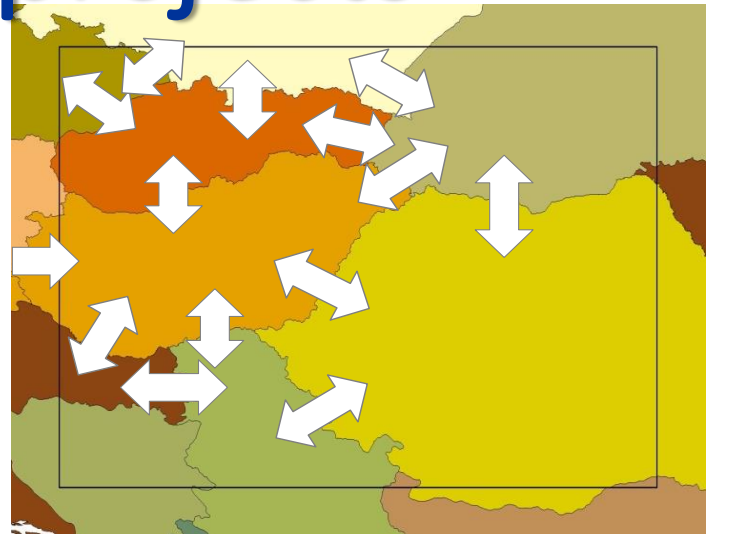
Overall aim: improving adaptive capacity of the region through evidence-based planning, CVA methodology development and facilitating policy integration

Experiences from earlier projects



MASHv3.03: bilateral data exchange before and after homogenization to guarantee the harmonization

MISHv1.03: the gridded daily time series



Szentimrey, T.: Software MASH (Multiple Analysis of Series for Homogenization), MASH v4.01, MASH v3.03

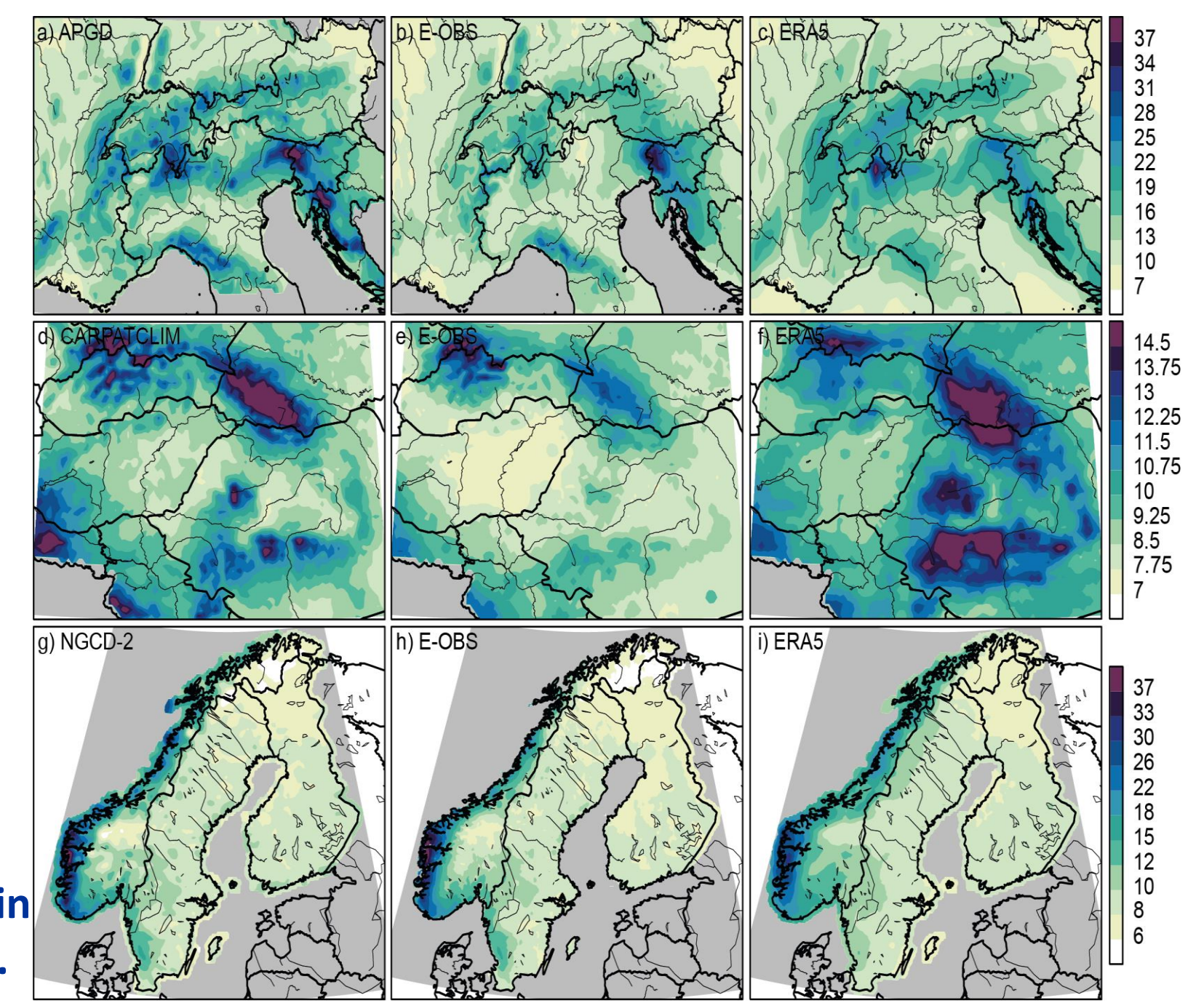
Szentimrey, T.: Software MISH (Meteorological Interpolation based on Surface Homogenized Data Basis), MISH v1.03

Comparison of gidded datasets

Upper row: for the period 1979-2008 in the Alpine region a) APGD, b) E-OBS and c) ERA5.

Middle row: for the period 1979-2010 in the Carpathian region d) CARPATCLIM, e) E-OBS and f) ERA5.

Lower row: for the period 1979-2018 in Fennoscandia g) NGCD-2, h) E-OBS and i) ERA5.



95% quantile of daily precipitation in (mm per day).

Bandhauer, M., Isotta, F., Lakatos, M., Lussana, C., Bäserud, L., Izsák, B., Szentes, O., Tveito, O. E., & Frei, C. (2022). Evaluation of daily precipitation analyses in E-OBS (v19.0e) and ERA5 by comparison to regional high-resolution datasets in European regions. *International Journal of Climatology*, 42(2), 727-747. <https://doi.org/10.1002/joc.7269>

3 SPECIFIC OBJECTIVES with several activities and sub-activities

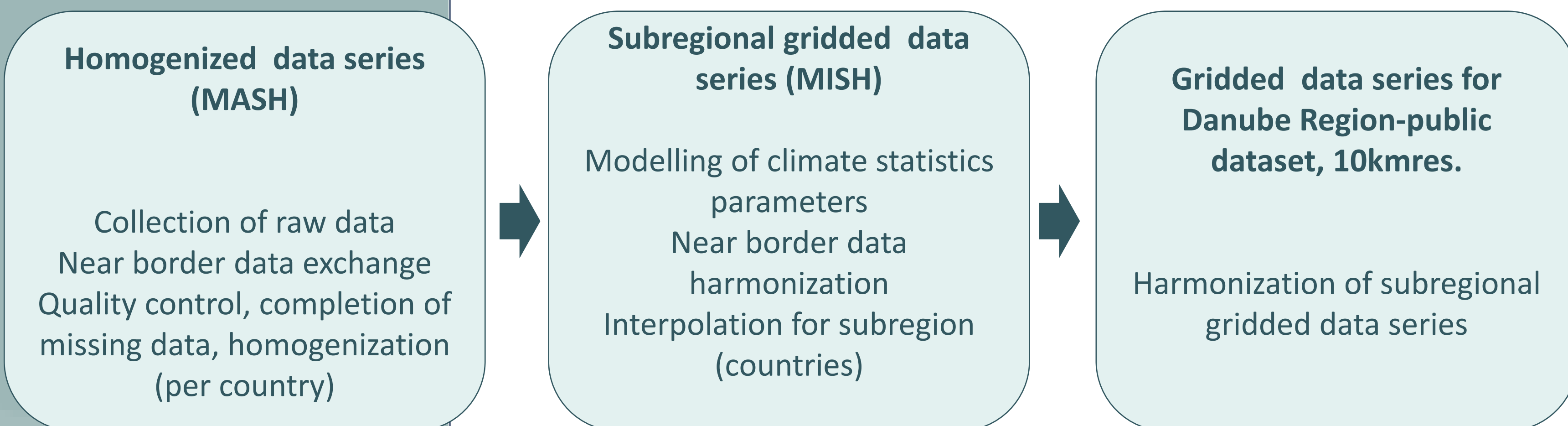
SPECIFIC OBJECTIVE 1: Development of a Danube Region Baseline Climatological database to facilitate evidence-based policy making

SPECIFIC OBJECTIVE 3: Strategic and policy integration facilitation, awareness raising

SPECIFIC OBJECTIVE 2: Development and testing of an integrated climate vulnerability framework for the Danube region

Danube-Adapt

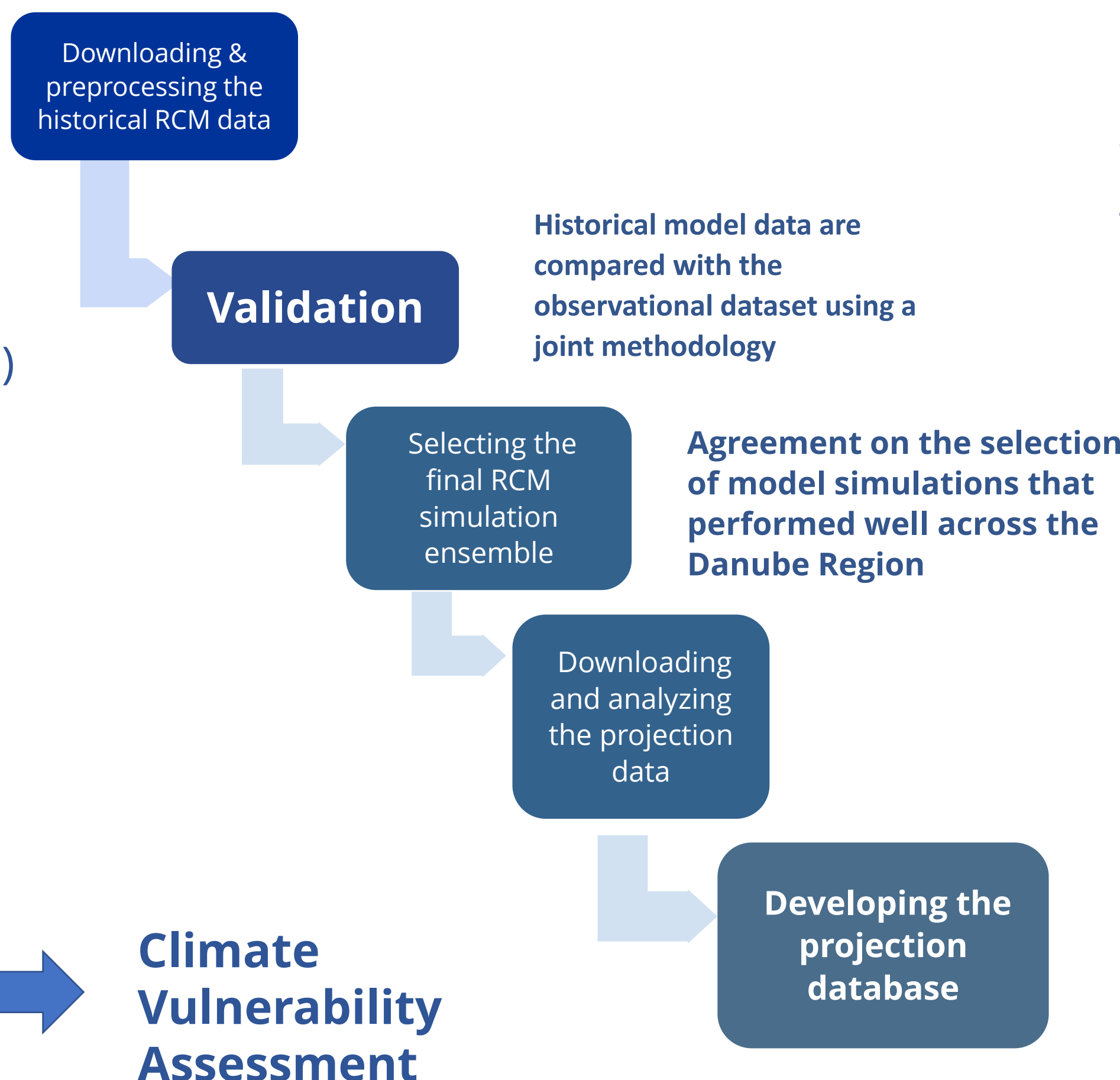
Activity 1.1
Building a climate observation database for the Danube Region



Activity 1.2 Creation of a database of future climate projections for the Danube Region

- **Regional Climate Model data covering the Danube Region:**
 - EURO-CORDEX ensemble (CMIP6, EUR-12)
 - Validation for a reference period in the past
 - Target time windows: 2041-2070, 2071-2100
 - Emission scenarios: SSP1-2.6 (green pathway), SSP3-7.0 (rocky road)

- **Variables:**
 - daily mean, maximum & minimum temperature
 - daily precipitation
 - mean sea level pressure
 - daily mean wind speed & maximum wind gust
 - global radiation
 - relative humidity



Set of variables in Danube-Adapt

Daily data 1970-2024:

- temperature (min, max, mean)
- precipitation
- daily mean relative humidity
- daily mean surface air pressure

Daily data 2000-2024:

- daily mean wind speed, maximum wind gust
- global radiation (sunshine duration)

Status

Metadata collection

Station density follows:

~50 km representativity for climate variables

~25 km representativity for precipitation

Both ensuring approximately uniform spatial coverage

Bulgaria joined as ASP with providing data, Serbian data is

expecting, the homogenization of daily temperatures has started

