



Multi-scale **t**ransport and **e**xchange processes in the **a**tmosphere  
over **m**ountains – programme and **e**xperiment

The TEAMx Observational Campaign – a dataset  
for model evaluation and development

IWCR Meeting, 19 February 2026

Manuela Lehner



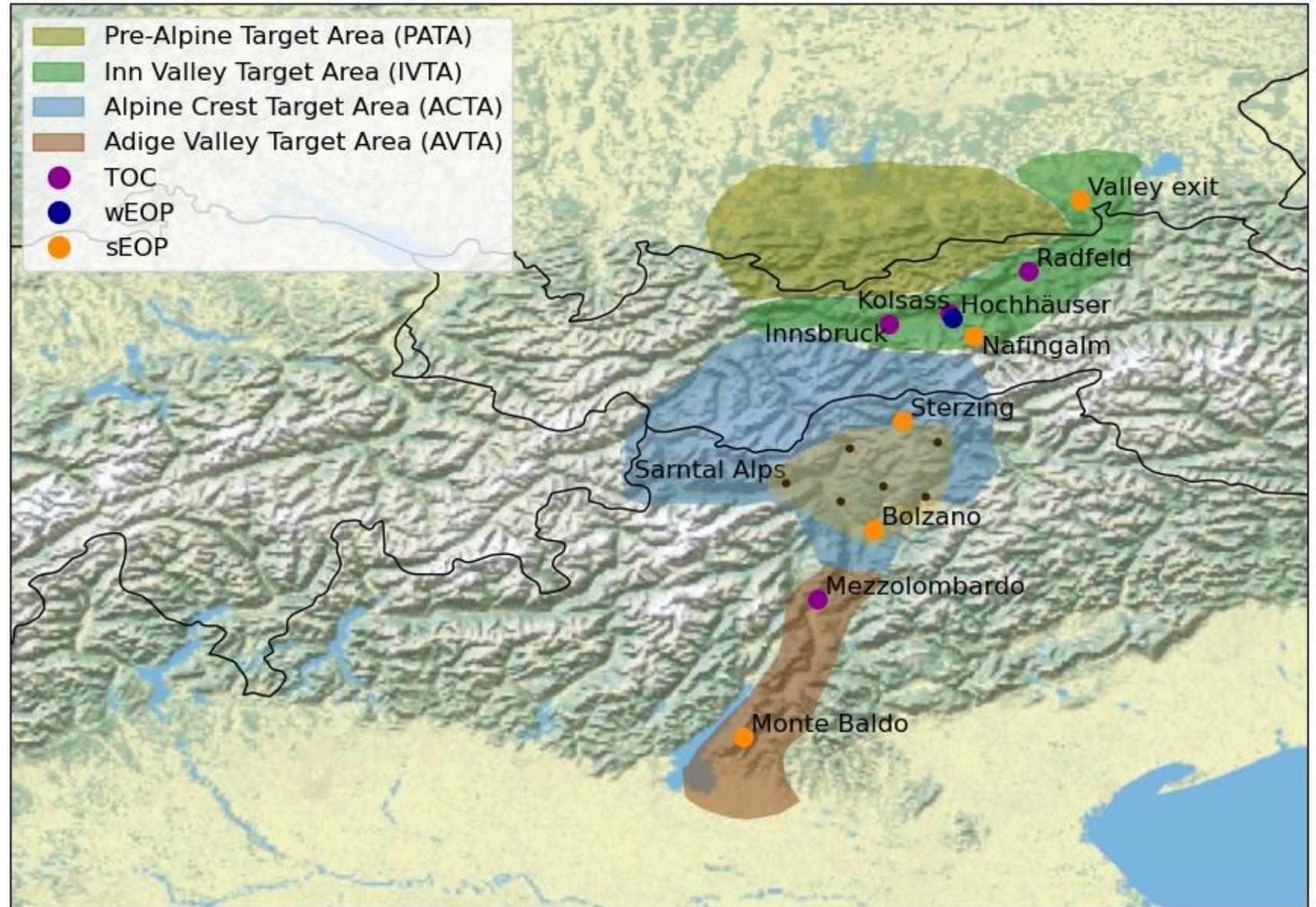
# TOC sites

## TOC:

15 Sep 2024 – 15 Sep 2025

Extended Observational  
Periods:

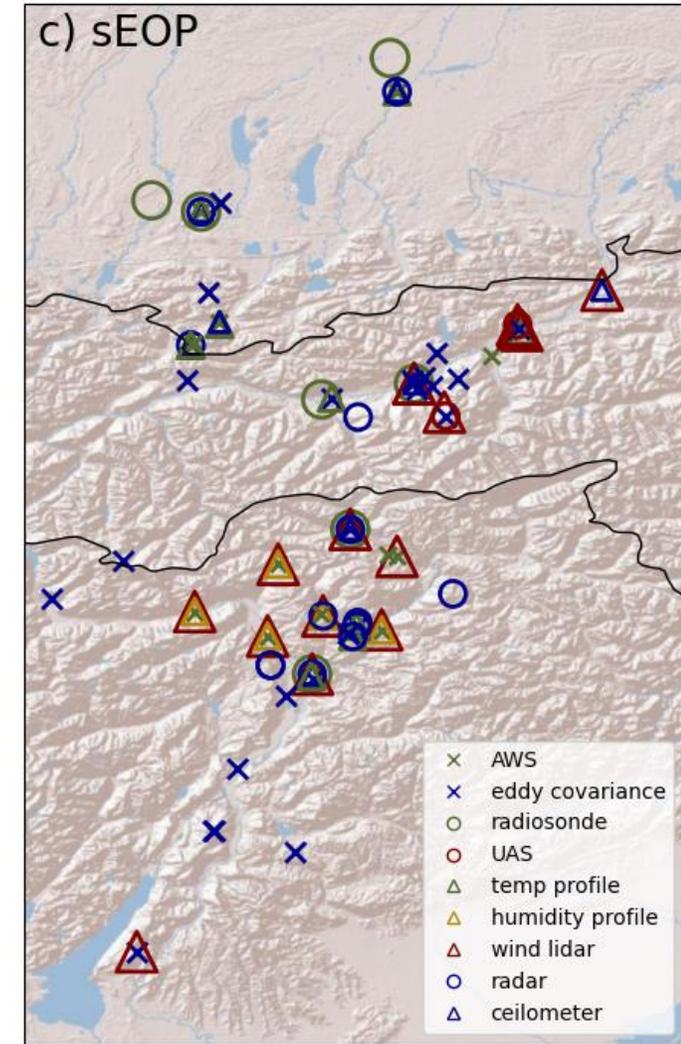
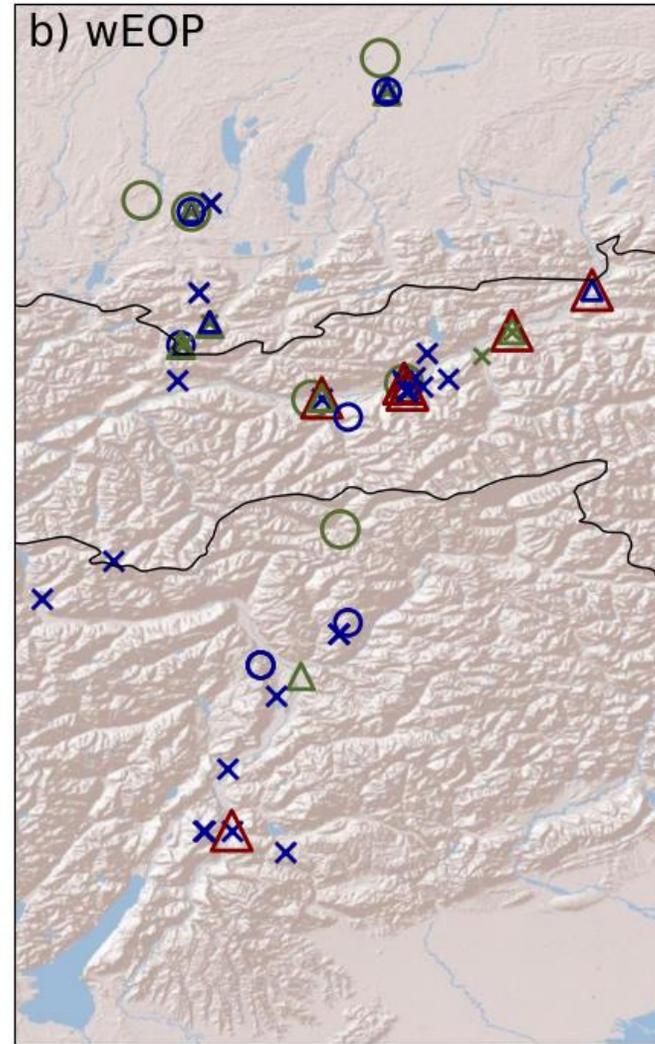
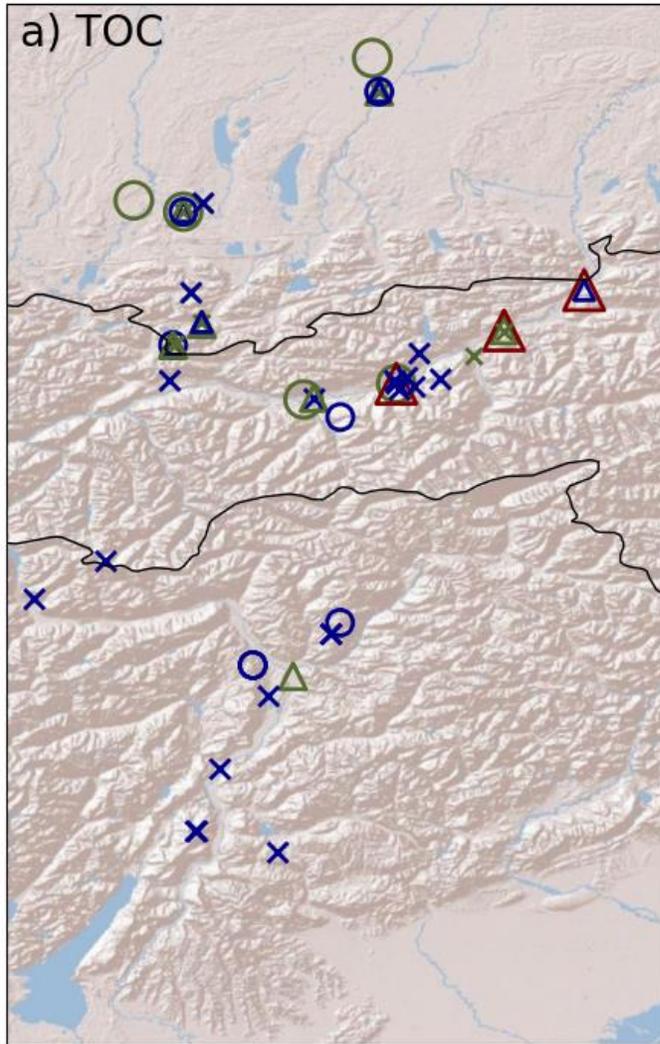
- **winter EOP (wEOP):**  
20 Jan – 28 Feb 2025
- **summer EOP (sEOP):**  
16 Jun – 25 Jul 2025



# TOC sites

≈10 profiling sites  
≈250 radiosoundings

≈20 profiling sites  
≈550 radiosoundings



# Aircraft flights

**wEOP** – DLR Cessna

▲ 6 flights (24 flight hours)

**sEOP** – DLR Cessna, TUBS Cessna, FAAM BAe146

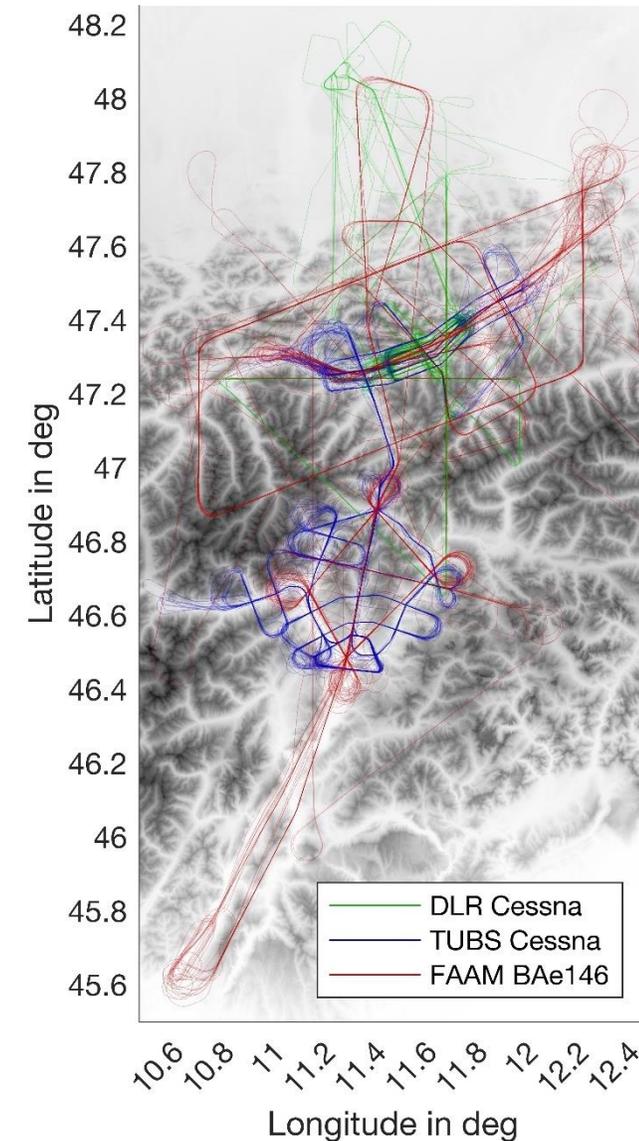
▲ 3 weeks with all aircraft

▲ DLR: 18 flights (74 flight hours)

▲ TUBS: 35 flights (98 flight hours)

▲ FAAM: 27 flights (94 flight hours)

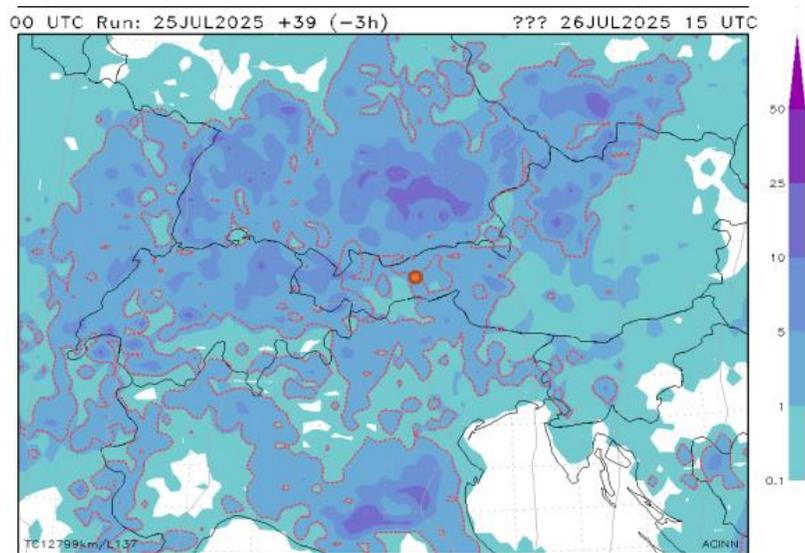
Flight tracks during the sEOP (figure: P. Gasch)



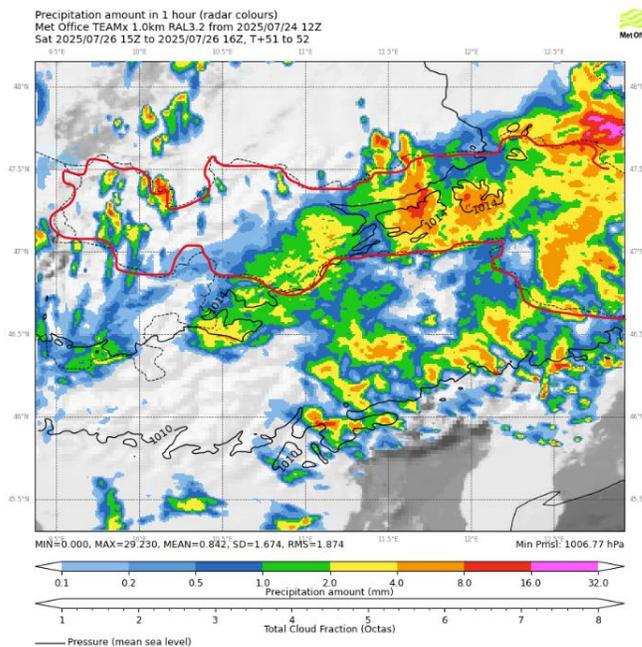
# High-resolution NWP forecasts

Daily weather forecasts supported by

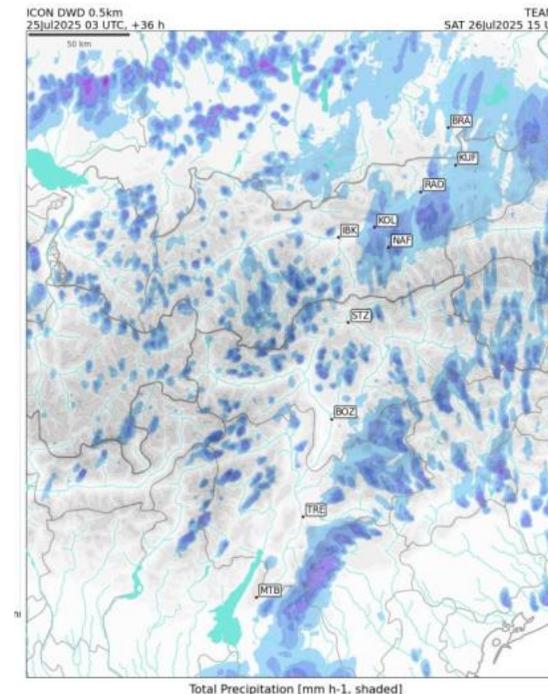
- ▲ 500-m ICON runs from DWD
- ▲ 1-km ICON runs from Meteo Swiss
- ▲ 1-km UM runs from the Met Office



ICON-MCH



UM

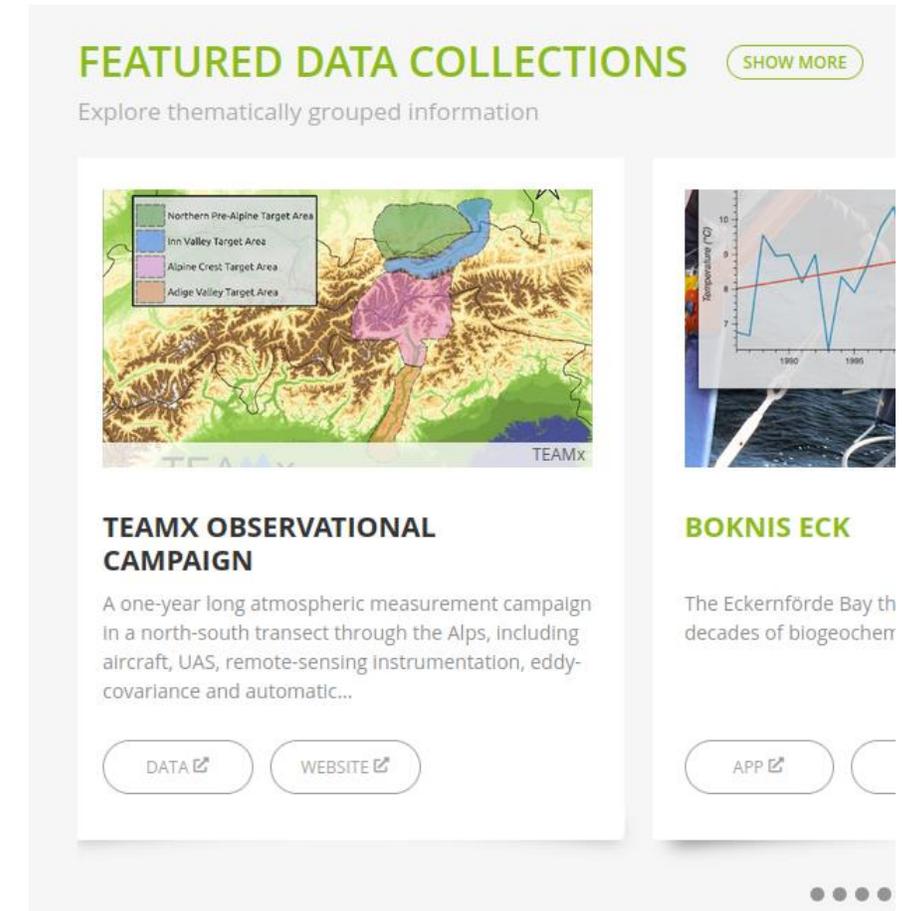


ICON-DWD

# Data availability

- ▲ Data are currently being quality-controlled and post-processed.
- ▲ All data to be published no later than one year after the end of the campaign.
- ▲ Data publication in public repositories (e.g., zenodo) and harvested by the Earth Data Portal.
- ▲ Eventually all data accessible through the Earth Data Portal.

Earth Data Portal  
(<https://earth-data.de>)



The screenshot displays the 'Earth Data Portal' website. At the top right, the text 'Earth Data Portal' is followed by the URL '(https://earth-data.de)'. Below this, a section titled 'FEATURED DATA COLLECTIONS' is visible, with a 'SHOW MORE' button. Underneath, there is a sub-header 'Explore thematically grouped information'. Two data collection cards are shown. The first card is for 'TEAMX OBSERVATIONAL CAMPAIGN', featuring a topographic map of the Alps with four target areas highlighted: Northern Pre-Alpine Target Area (green), Inn Valley Target Area (blue), Alpine Crest Target Area (purple), and Adige Valley Target Area (orange). Below the map, the text describes it as a one-year long atmospheric measurement campaign in a north-south transect through the Alps, including aircraft, UAS, remote-sensing instrumentation, eddy-covariance and automatic... At the bottom of this card are two buttons: 'DATA' and 'WEBSITE'. The second card is for 'BOKNIS ECK', featuring a line graph showing temperature (°C) over time (1980-1995) with a red trend line. Below the graph, the text describes it as 'The Eckernförde Bay th decades of biogeochemer'. At the bottom of this card is an 'APP' button. At the very bottom of the screenshot, there are four grey dots indicating a carousel.

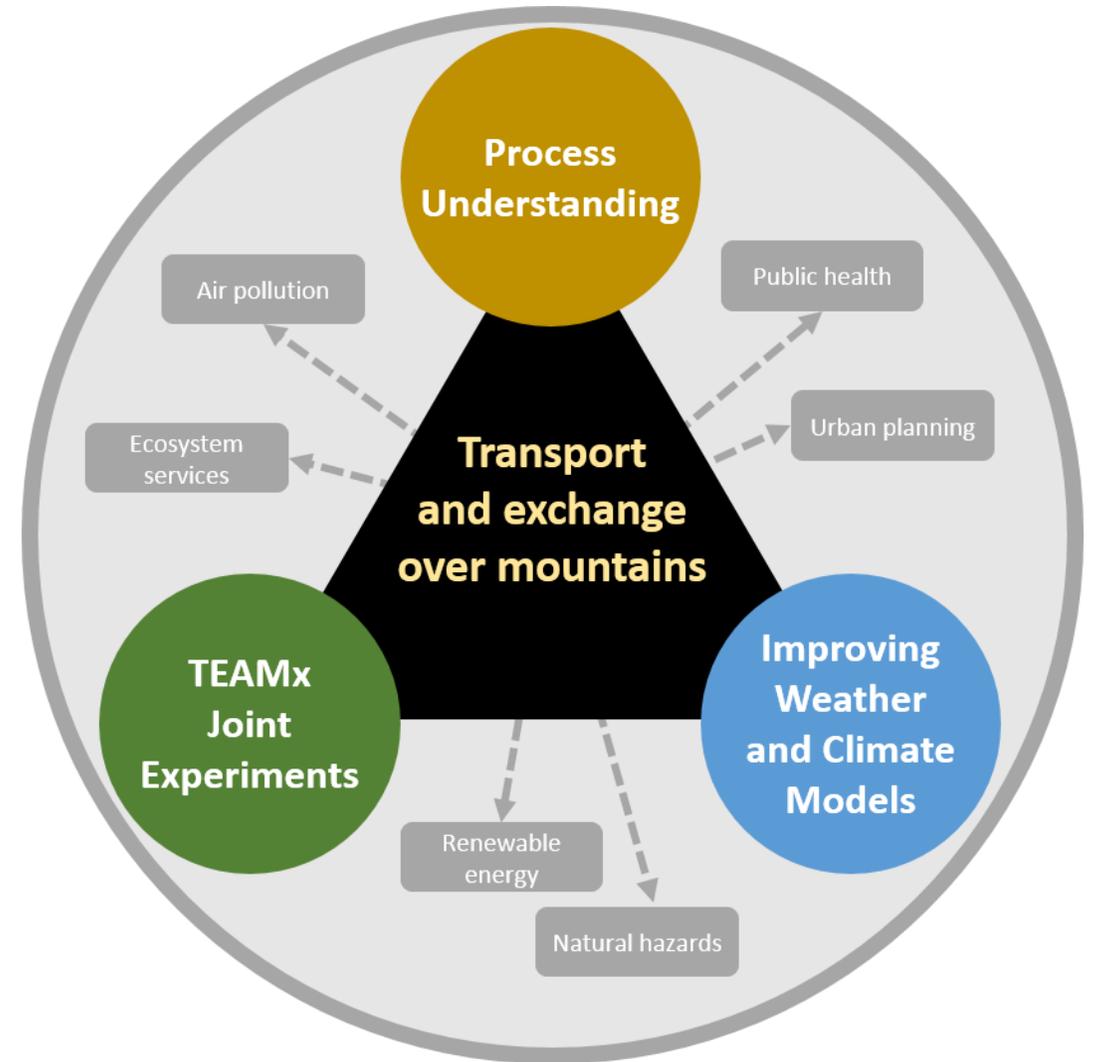
# TEAMx Goals

TOC dataset = unique dataset to support

▲ improving our process understanding

▲ model evaluation and development

▲ Improving Weather and Climate Models one of the four main TEAMx goals.



# Model evaluation, ...

Intercomparison of operational high-resolution forecast runs.

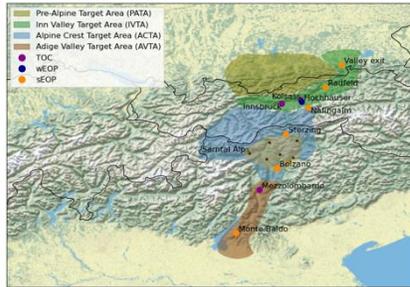
- ▲ Interest from multiple weather services.
- ▲ Compare deficiencies across models

Model evaluation (+ process studies)

- ▲ valley winds
- ▲ MoBL structure
- ▲ surface-atmosphere exchange
- ▲ cold-air pools
- ▲ foehn events
- ▲ low stratus
- ▲ (convection)

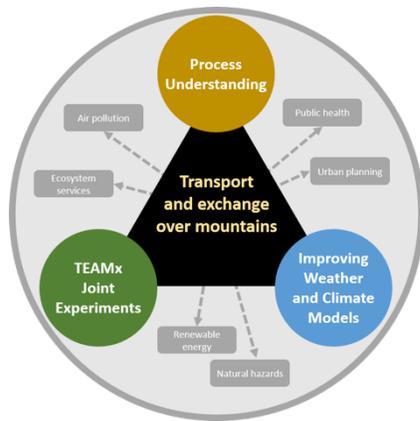
- ▲ Conditions that result in the largest forecast errors in the MoBL structure
- ▲ LES for the development of model parameterizations evaluated with observational data
- ▲ Profiles for idealized dispersion modeling

# TOC data for model evaluation and development



▲ TEAMx Observational Campaign: a wealth of data collected over a one-year period with a suite of instruments

▲ Unique dataset for model evaluation and development.



Happy to discuss further ideas for collaboration and using the TOC dataset.