

# The Alpine Drought Observatory

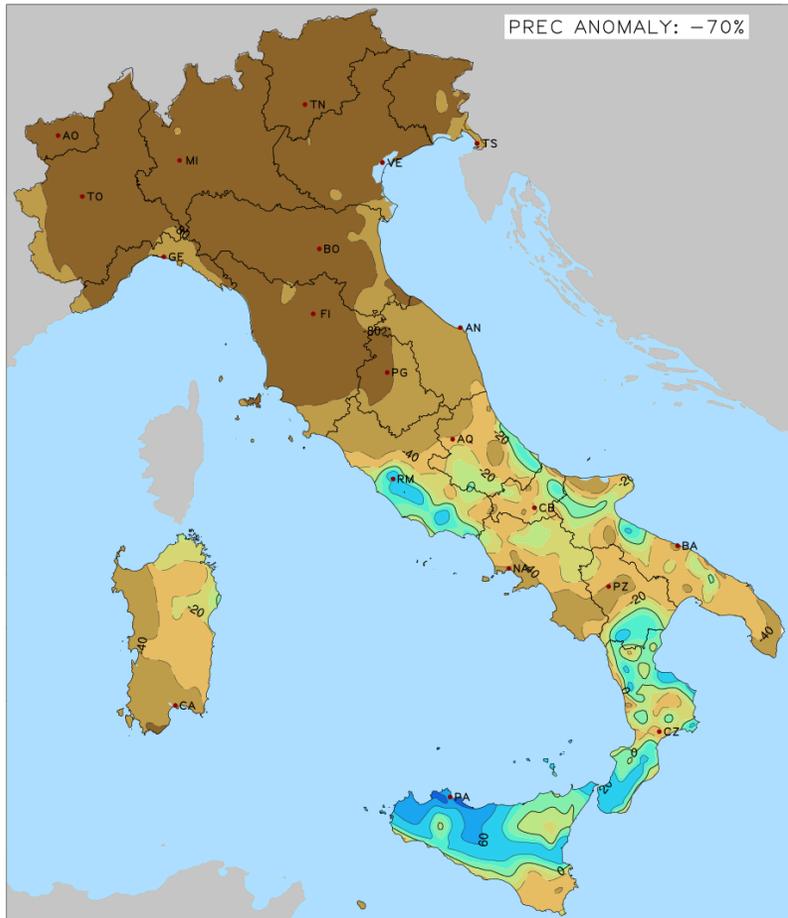
Felix Greifeneder  
Eurac Research

Impuls4Action - Final Conference, 20th of May  
2021



# Drought in the Alps

Anomalia di precipitazione (%) - mese di marzo 2021



meteonetwork

Precipitazioni totali (mm) - mese di marzo 2021



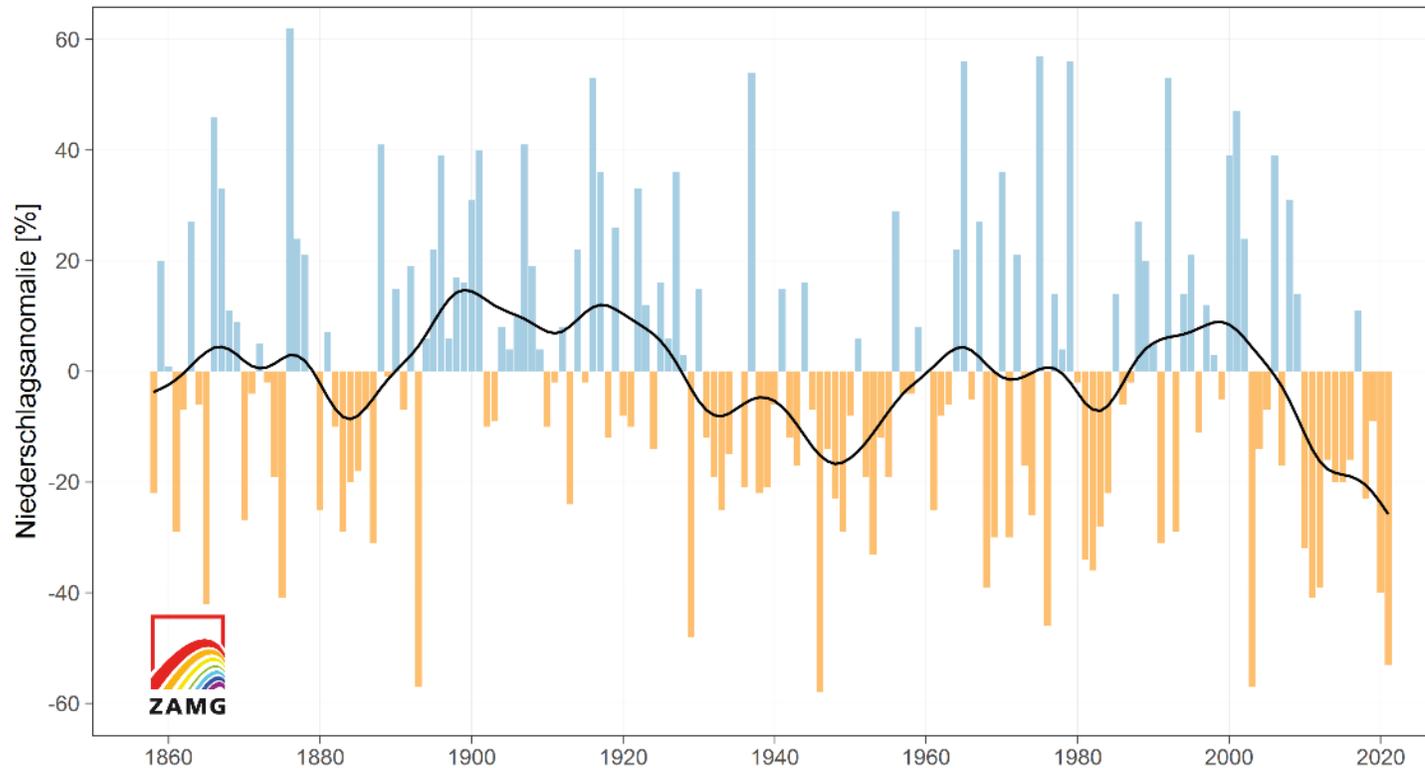
meteonetwork

- meteonetwork

# Drought in the Alps



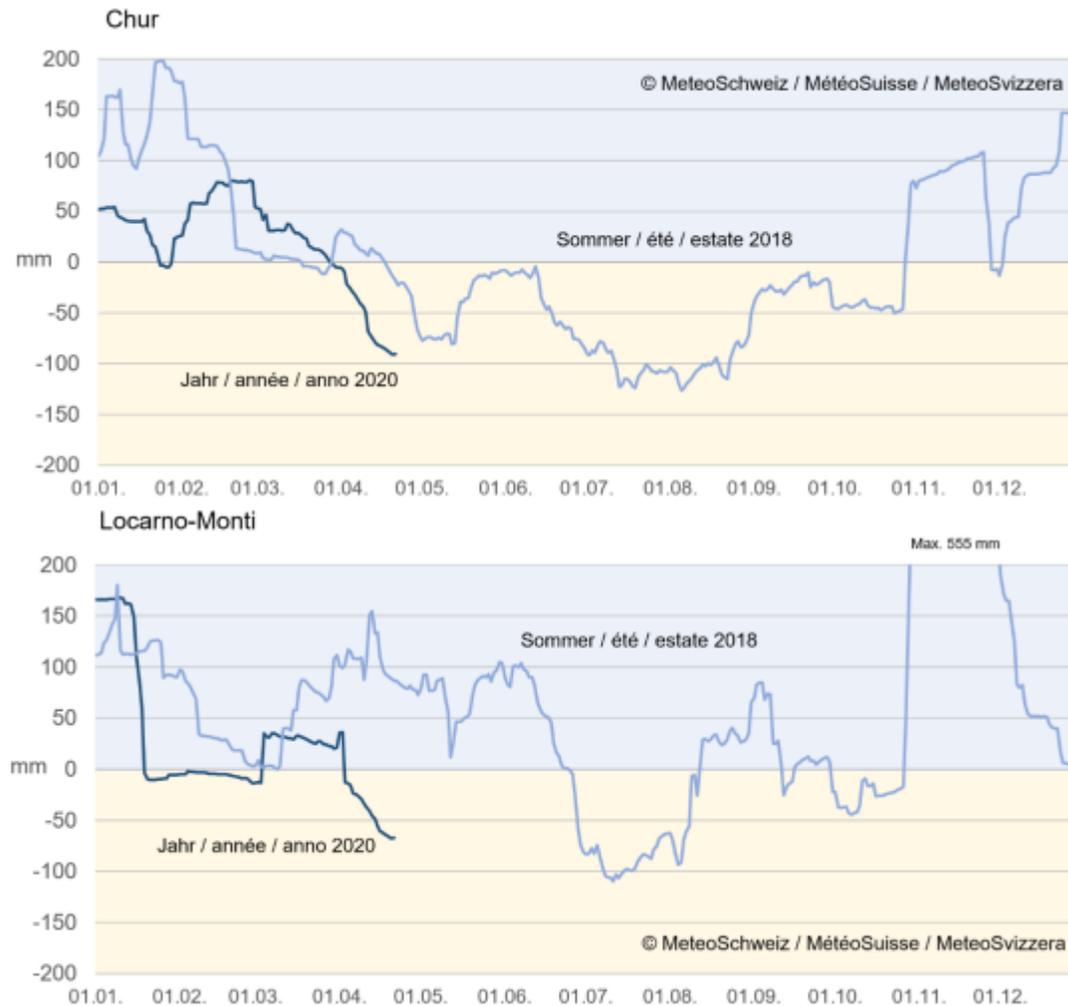
Niederschlag in den Monaten März und April in Österreich  
 Anomalie relativ zum Mittelwert 1961-1990



*“The meteorological spring of 2021 has been very dry so far. In the Austria-wide evaluation, around 40 percent less precipitation fell in the period from the beginning of March to the end of April than the multi-year average. The driest regions are mainly in the south and east of Austria. Here, 50 to 80 percent of precipitation has been missing in the spring so far.”*

- [ZAMG](#)

# Drought in the Alps



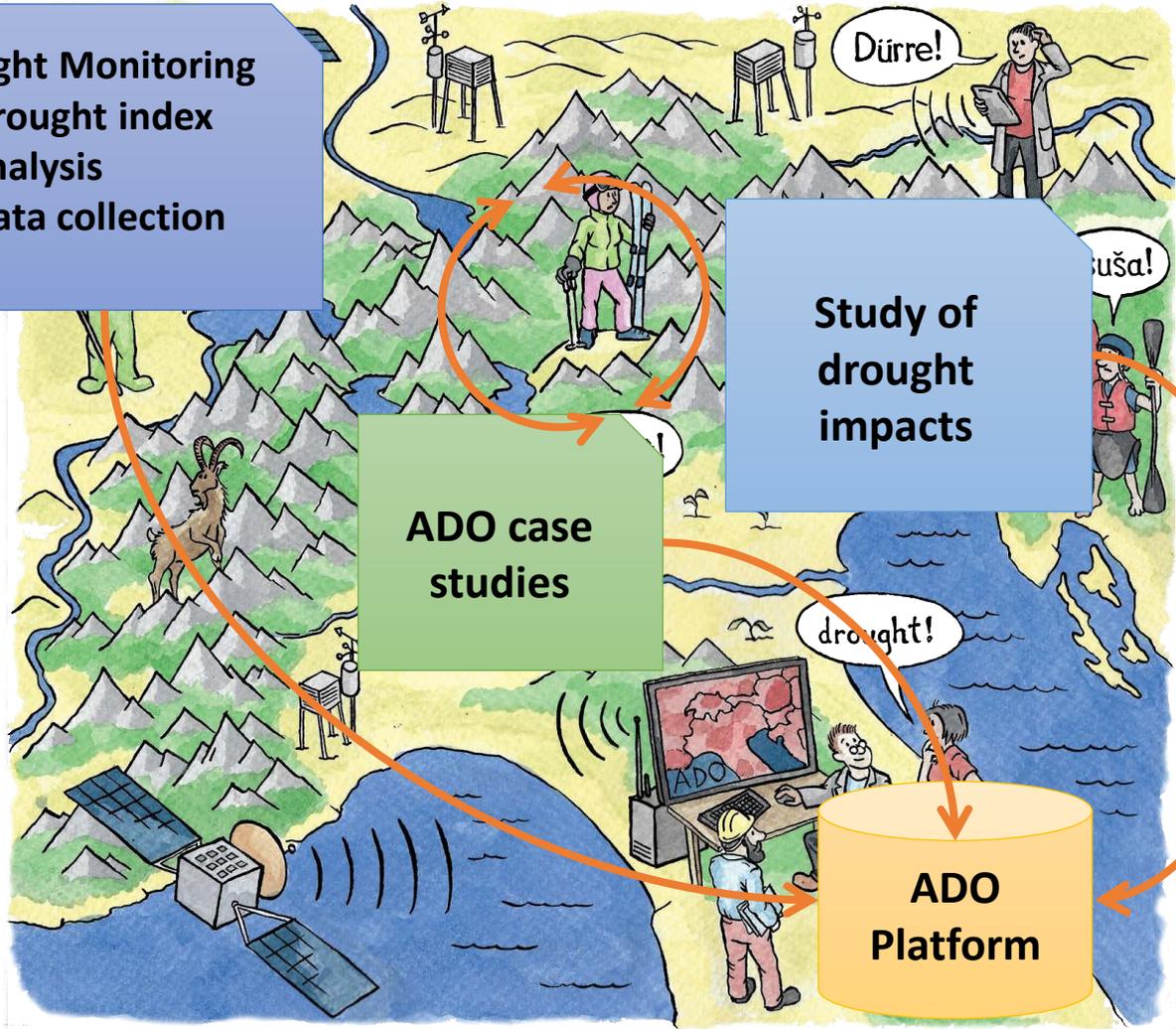
*“The persistently sunny and warmer-than-average weather in recent weeks has boosted evapotranspiration (evaporation by plants and from the soil). At the Chur measurement site, the calculations for evapotranspiration in April so far show around 70 mm of water. The replenishment through precipitation amounted to a meagre 3.4 mm. The water balance from water gain (precipitation) and water loss (evapotranspiration) is therefore massively negative. The current values in some places in Switzerland are moving towards a dry summer in 2018 (Fig. 2). The Chur region and the northern Grisons were among the areas with the lowest precipitation in Switzerland in the summer of 2018.”*

- [MeteoSwiss](https://www.meteoswiss.ch)

# The Alpine Drought Observatory

**Drought Monitoring**

- Drought index analysis
- Data collection



**Study of drought impacts**

**ADO case studies**

**ADO Platform**

## Project outputs

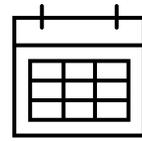
- Alpine-wide mapping of meteorological, hydrological and agricultural drought
- Knowledge about the impact of drought
- Methods for assessing drought risk and economic impacts
- ADO web-site
- Recommendations and guidelines for improved drought management



# ADO – the project



The project consortium



Duration



Funding



Start: October 2019  
 End: June 2022

Interreg Alpine Space



# Selection of drought indices

Regional Report on existing monitoring platforms



Commonly used drought indices

Collection of existing and proposed drought-related indicators and indices for potential integration into ADOS database

Indicator	Source	Scale	Frequency	Availability	Integration	Comments
Precipitation	...	...	...	...	...	...
Std. Precipitation I. (SPI)	...	...	...	...	...	...
Std. Precipitation-Evapotranspiration I. (SPEI)	...	...	...	...	...	...
Soil moisture (in general)	...	...	...	...	...	...
Normalised Difference Vegetation I. (NDVI)	...	...	...	...	...	...
Vegetation Health I. (VHI)	...	...	...	...	...	...
Std. Snowpack I.	...	...	...	...	...	...



## First selected indices

Name of the index	What the index focuses on
<b>Precipitation</b>	
<b>Std. Precipitation I. (SPI)</b>	Precipitation
<b>Std. Precipitation-Evapotranspiration I. (SPEI)</b>	Precipitation, evapotranspiration components (temp., wind, solar radiation, relative humidity)
<b>Soil moisture (in general)</b>	
<b>Normalised Difference Vegetation I. (NDVI)</b>	Greenness of vegetation cover
<b>Vegetation Health I. (VHI)</b>	Greenness of vegetation cover, air temperature
<b>Std. Snowpack I.</b>	Snow-water equivalent

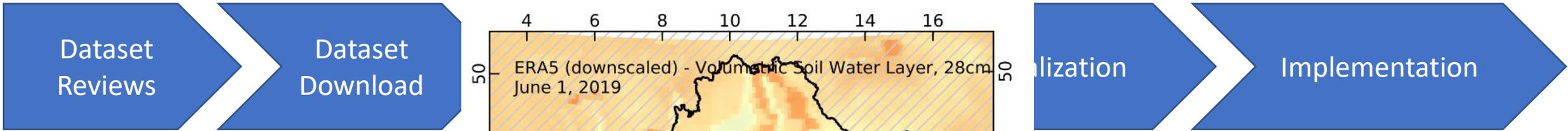


Validation of indices with local data (available over CS areas)

Final selection of indices

- Operationalization
- Selecting further indices

# Collection of base data



Dataset Reviews

Dataset Download

Validation

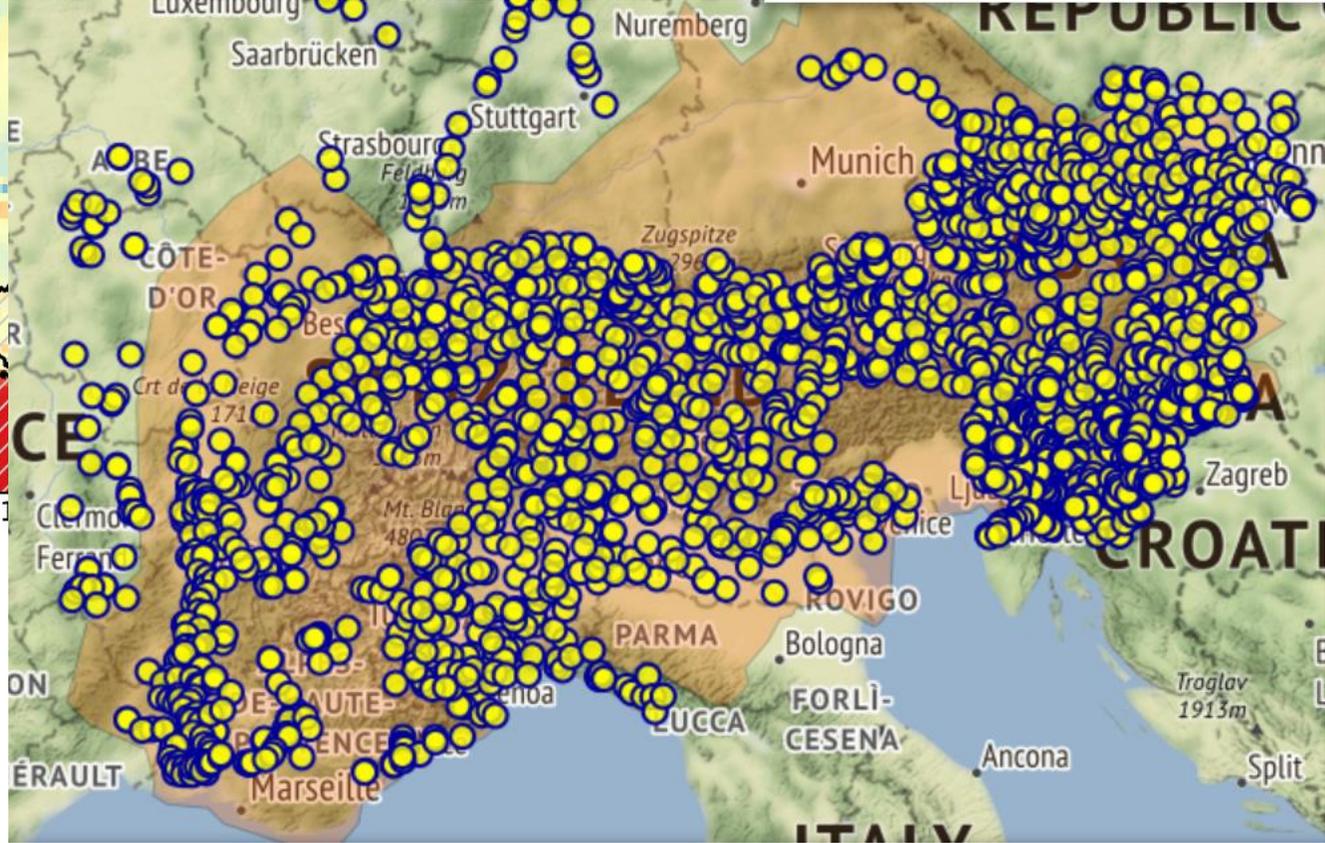
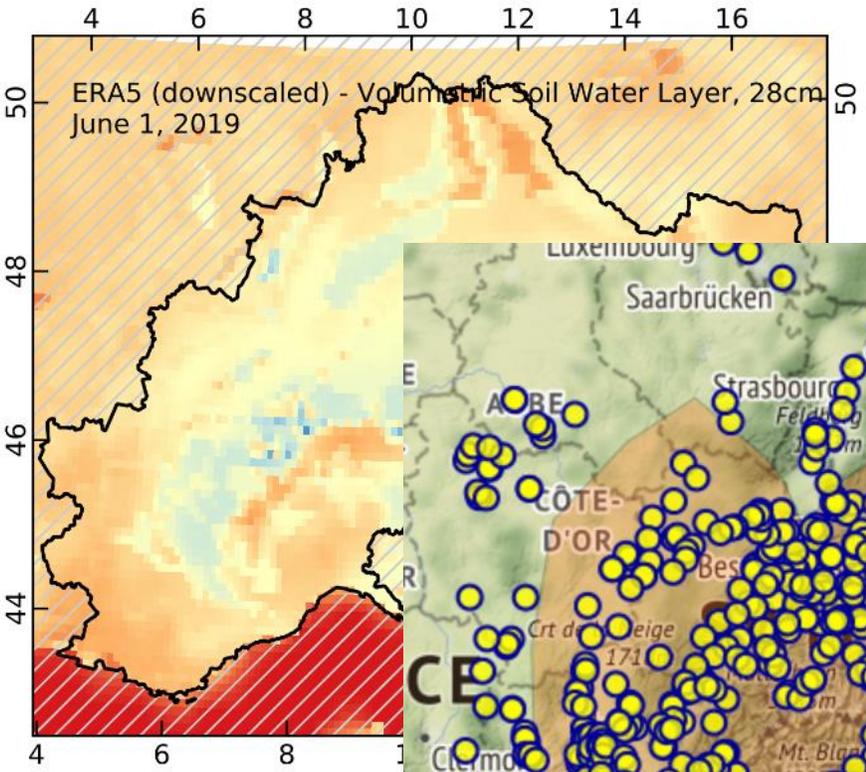
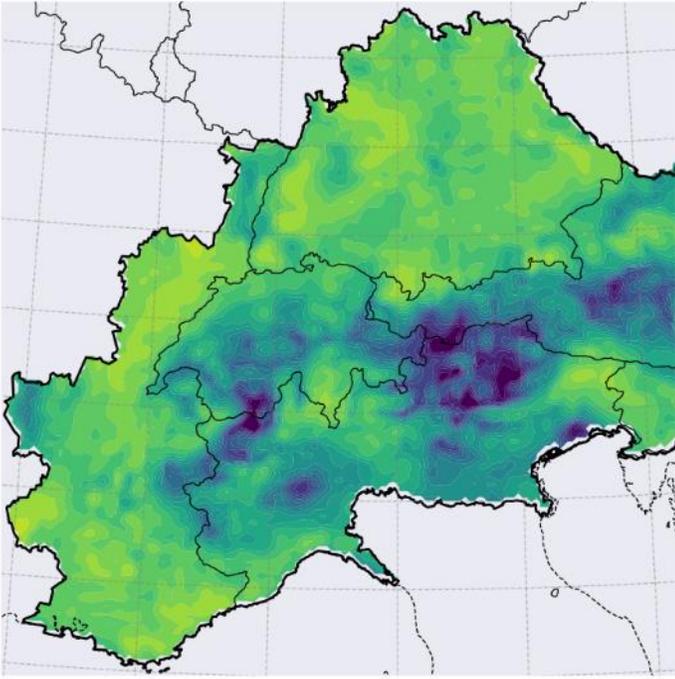
Implementation

Done

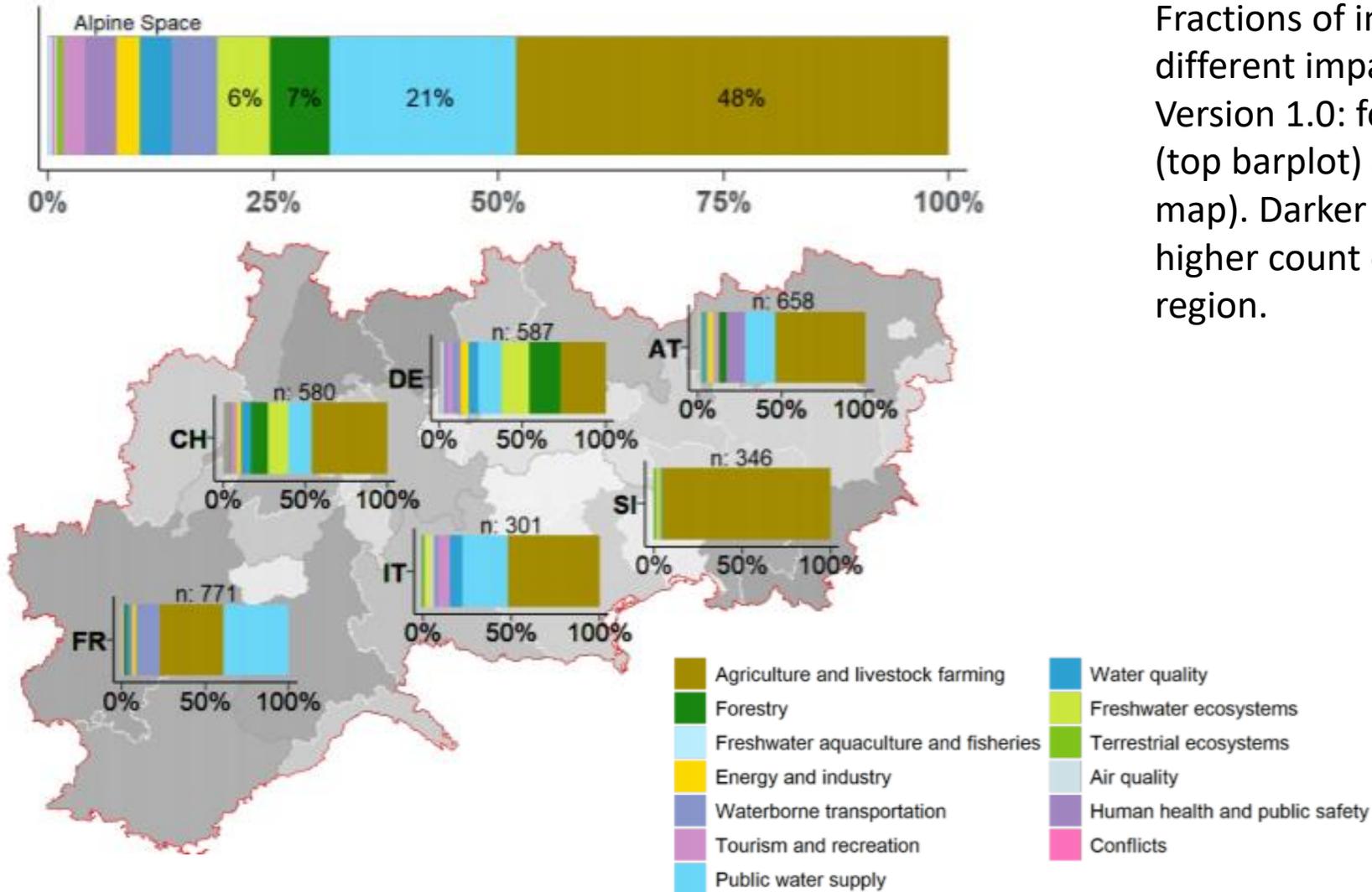
Done

Pending

**Spearman Correlation Monthly Precipitation [1]**  
 Source(s): Quantile Mapped ERA5, UERRA Mescan-Surfex

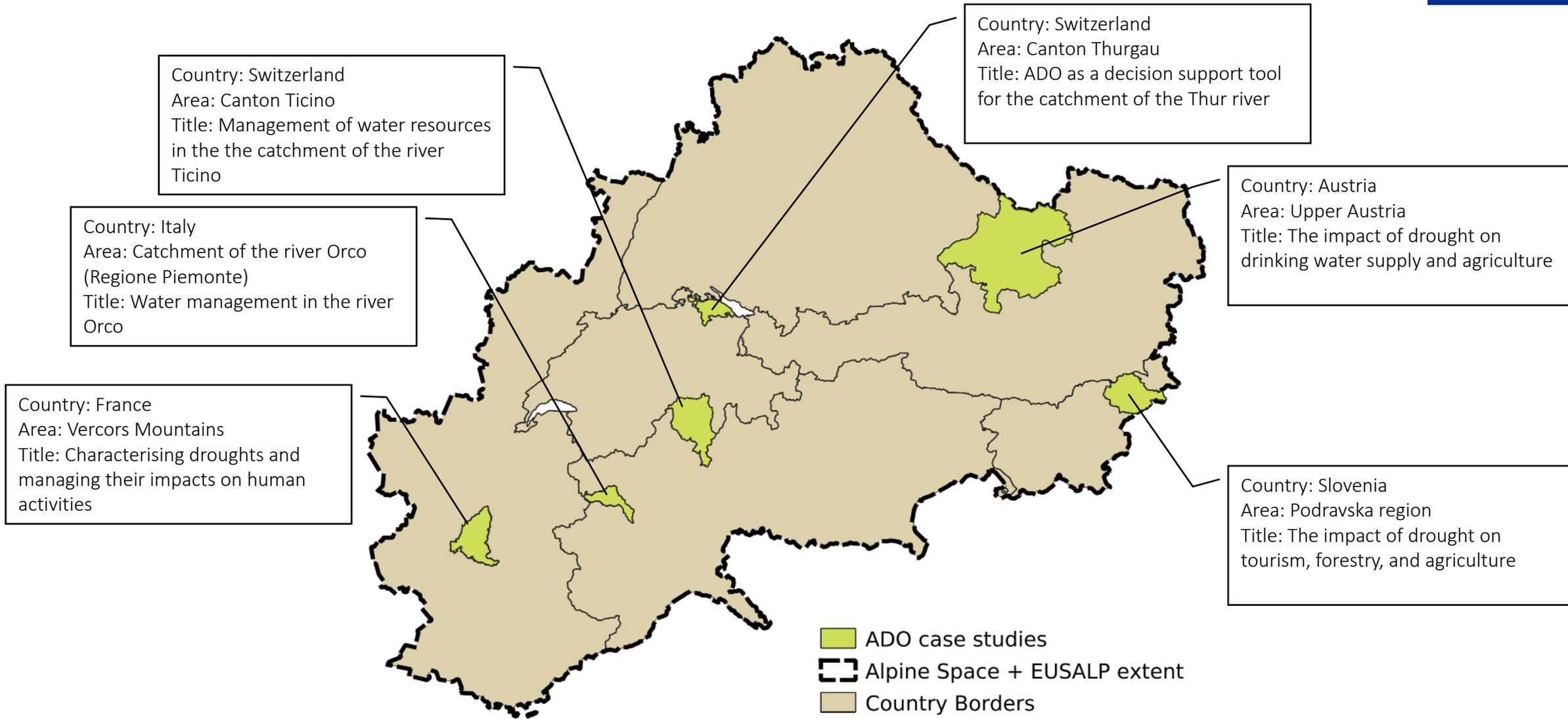


# European Drought Impact Inventory - Alps



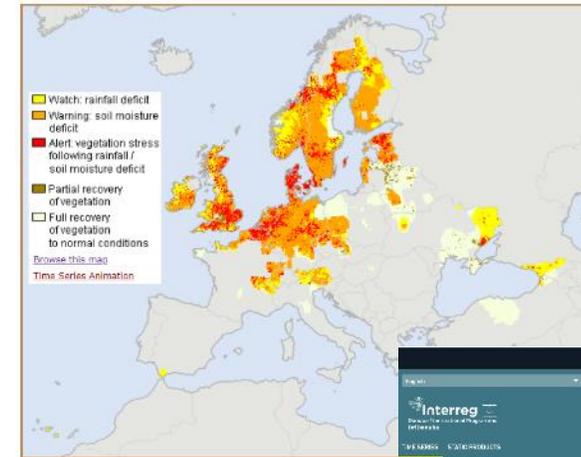
Fractions of impact records in the different impact categories in EDII-Alps Version 1.0: for the whole Alpine Space (top barplot) and by country (lower map). Darker grey shading relates to a higher count of reports per NUTS 2 region.

# ADO case studies

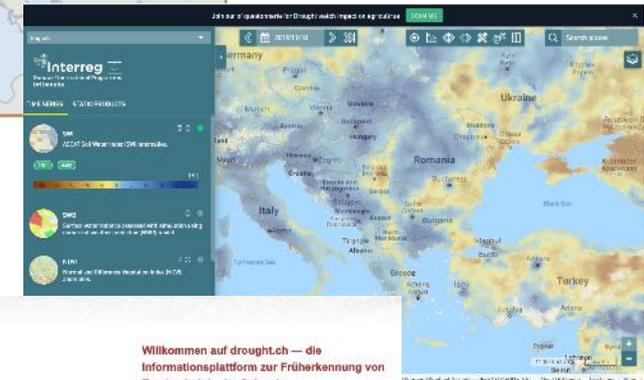


# Setting up a drought monitoring platform for the Alps

- Following the example of other existing drought platforms like the [EDO](#), [droughtwatch.eu](#), or [drought.ch](#), one of the outputs of ADO will be an online platform, which act as an interface for all the drought monitoring tools and data, which will be developed in the project
- The development of the platform will be carried out in close collaboration with users and stakeholders
- The project case studies will play an important role for the design and testing of the platform



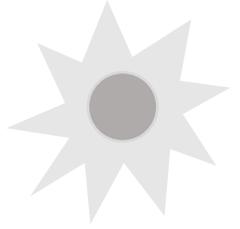
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Thank you for your kind attention

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Project website: <https://www.alpine-space.eu/projects/ado/en/home>