

# Increasing plant biodiversity on mountain tops at the upper limit of dwarf shrub heath

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## Introduction

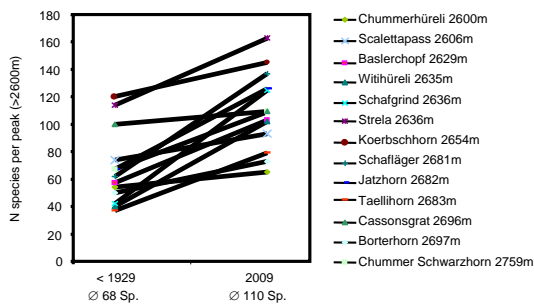
Based on **historical data** (<1929), we investigated changes in vascular plant composition on 13 **mountain summits** in the Davos area (SE Alps, Switzerland). With an altitude of 2600 to 2750 m asl, our peaks comprise the highest limits of alpine grasslands and dwarf shrub heaths, where dramatic **changes due to warming** are expected.

## Methods

On 13 summits with siliceous bedrock, we recorded **species lists** of all species found above 2600 m asl and compared them to the historical data of Dr. Wilhelm Schibler (1861-1931). We used **indicator values** and classifications of species traits from different data bases to describe dominant **patterns** and **species characteristics** of successful colonizers.

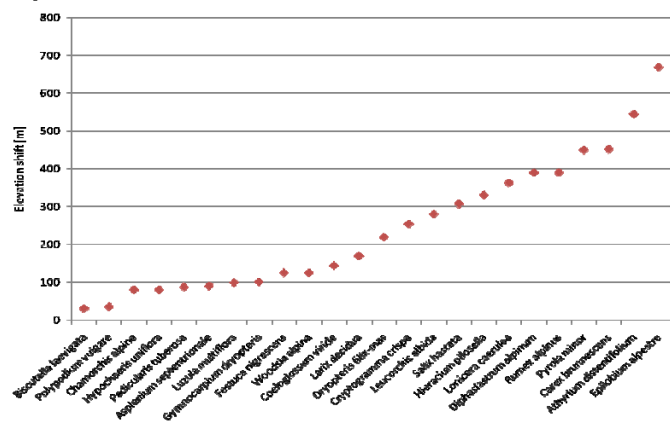
- ➔ Did **species numbers** increase since 1929?
- ➔ Which species or traits were **particularly successful**?
- ➔ Is there evidence for an **upward shift** of species ranges?

## Species numbers



- ➔ Species numbers increased by 62% in ~80 years
- ➔ 239 species on 13 summits were recorded
- ➔ 181 of these are more frequent now than < 1929

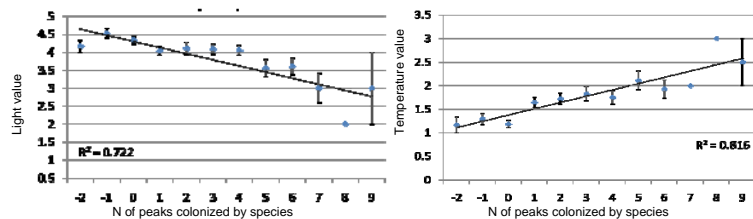
## Upwards shift



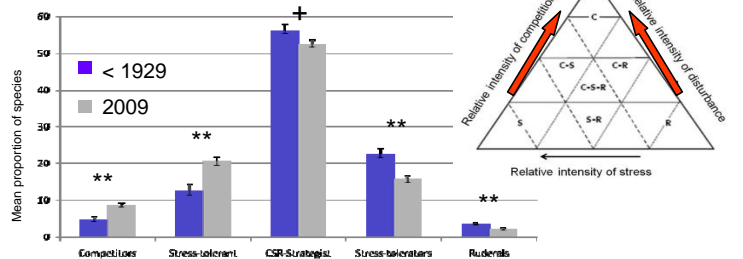
- ➔ 33 species were newly found above 2600 m
- ➔ For 24 of them, we also had data on the upper range limits in historical time
- ➔ They occurred 242 m higher than 80 years ago

## Traits of (un)successful colonizers

### Indicator values



### Plant strategies



- ➔ Successful colonizers are less light-demanding and have higher temperature indicator values.
- ➔ Strong competitors increased in proportion, stress and disturbance tolerant species decreased.



## Outlook

Investigations of another 150 mountains are planned!

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