Alpine plant communities in Aravo, France

Source of data

Choler (2005), Dray et al. (2014)

Description of the dataset

From Dray et al. (2014): Community composition of vascular plants was determined in 75 5 × 5 m plots. Each site was described by six environmental variables: mean snowmelt date over the period 1997–1999, slope inclination, aspect, index of microscale landform, index of physical disturbance due to cryoturbation and solifluction, and an index of zoogenic disturbance due to trampling and burrowing activities of the Alpine marmot. All variables are quantitative except the landform and zoogenic disturbance indices that are categorical variables with five and three categories, respectively. Eight quantitative functional traits (i.e., vegetative height, lateral spread, leaf elevation angle, leaf area, leaf thickness, specific leaf area, mass-based leaf nitrogen content, and seed mass) were measured on the 82 most abundant plant species (out of a total of 132 recorded species).



Autumn view on the studied alpine meadows; flat areas in foreground (reddish color) are late snowmelting sites, while early snowmelting sites are in the upper slopes and ridges. Photo from Dray et al. (2014), photo credit P. Choler.

Locality

South Western Alps (Lieu-dit Aravo, Commune de Valloire), France (45.067° N, 6.394° E). The surveyed area covers two hectares between 2700 m and 2750 m elevation.

Environmental variables

Code	Variable
Aspect	Relative south aspect (opposite of the sine of aspect with flat coded 0)
Slope	Slope inclination (°)
Form	Microtopographic landform index [1 (convexity); 2 (convex slope); 3 (right slope); 4 (concave slope); 5 (concavity)]
Snow	Mean snowmelt date (Julian day) averaged over 1997–1999
PhysD	Physical disturbance, i.e., percentage of unvegetated soil due to physical processes
ZoogD	Zoogenic disturbance, i.e., quantity of unvegetated soil due to marmot activity [no; some; high]

Species attributes (traits)

Code	Trait
Height	Vegetative height (cm)
Spread	Maximum lateral spread of clonal plants (cm)
Angle	Leaf elevation angle estimated at the middle of the lamina
Area	Area of a single leaf
Thick	Maximum thickness of a leaf cross section (avoiding the midrib)
SLA	Specific leaf area
Nmass	Mass-based leaf nitrogen content
Seed	Seed mass

Data for download

File name	File type	Description
aravo.xlsx	Excel file	Contains species × sample matrix, environmental variables, trait data, explanation of species abbreviations and metadata

Script for direct import of data to R

```
# install.packages ('ade4')  # if not installed yet
library (ade4)
data (aravo)
```

References

- Choler, P. 2005. Consistent shifts in Alpine plant traits along a mesotopographical gradient. *Arctic, Antarctic, and Alpine Research* 37: 444–453.
- Dray, S., Choler, P., Dolédec, S., Peres-Neto, P.R., Thuiler, W., Pavoine, S. & ter Braak, C.J.F. 2014. Combining the fourth-corner and the RLQ methods for assessing trait responses to environmental variation. *Ecology* 95: 14-21 (www)

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