

## Submitted Abstract

ID IMC22-FSAbstr- 163

<b>First Author</b> First Name Last Name	Lucrezia (1,2) Unterholzner
<b>Submitting Author</b> First Name Last Name	Lucrezia Unterholzner
<b>Correspondence</b>	lu.unter@gmail.com
<b>Co-Authors</b> >> E-Mails will be not listed	Prendin, Angela Luisa (3,2); Dibona, Raffaella (2); Roberto, Menardi (2); Casolo, Valentino (4); Gargiulo, Sara (5); Boscutti, Francesco (4); Marco, Carrer (2)
<b>Organisations</b>	1: Technische Universität Dresden, Germany 2: University of Padova, Italy 3: Aarhus University, Denmark 4: University of Udine, Italy 5: University of Trieste, Italy
<b>Country</b>	Germany
<b>Region</b>	Western Europe
<b>Title</b>	Transient Effects Of Snow Cover Duration On Primary Growth And Leaf Traits In A Tundra Shrub.
<b>Keywords</b>	Snow-Melt, Alpine-Tundra, Shrub-Phenology, Leaf-Traits, Non-Structural-Carbohydrates
<b>Type</b>	List Of Focus Session
<b>Focus Session ID</b>	65

## Abstract

In the nowadays context of climate change, tundra ecotones are facing an accelerating advance of the spring snowpack melting and, in turn, a lengthening of the growing season, with noticeable effects on vegetation. Besides summer temperature, also winter precipitation has been recently identified as a key factor in determining tundra shrub growth and shaping physiology responses. Yet, uncertainties still exist on the effects of different snowpack duration on long-living plants, specifically on intra-specific and long-term responses variability when considering multiple functional traits adjustments. To deepen the shrub-snow persistence associations, we set up a 3-years snow manipulation experiment at high elevation on *Juniperus communis* L., a typical tundra species and the conifer with the world largest distributional range. We tested primary shoot growth, leaf area, stomatal density, leaf dry weight and leaf non-structural carbohydrate content on plants subjected to advanced, natural, and postponed snow-free period. Shrubs under short-lying snowpack showed enhanced elongation of new shoots and increased stomatal density. On the contrary, shrubs under extended snow cover duration seemed to counterbalance the shorter growing season allocating more resources on growth. Accordingly, these plants showed larger leaves and low leaf starch content at the beginning of the vegetative season. Moreover, the divergence between treatments responses resulted evident the first year of experiment but slightly weakened over time, suggesting a gradual acclimation to new conditions. In view of future further warming, these results are in accordance with the prediction of shrub biomass increase within the tundra ecotone. However, the whole picture is not complete yet, and additional studies should concentrate on the long-term fading in the climate sensitivity and on community level responses.