



**Welcome to the second newsletter of LIFE PASTORALP project!!**

This PASTORALP second newsletter wants to inform you about the progress, the results and the events carried out during the second year of the project LIFE PASTORALP. The aim is to keep up-to-date all relevant actors in the field of climate change impacts and adaptation strategies on Alpine pastures.

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**National and European policy framework targeted to pastoral adaptation strategies: a review**

In action A.2 (*Review and assessment of the national and European policy framework on pastures and evaluation of the available adaptation options*), the national and European policy frameworks regarding pastures and climate change have been assessed focusing on Common Agricultural Policy, mainly with the assessment of the Rural Development Programmes of the Regions involved in PASTORALP project. Furthermore, other European regulations and technical reports, which directly and indirectly refer to pastures management, were also reviewed and feasible adaptation strategies were collected. In total, more than forty documents were assembled within a database.

Moreover, a questionnaire on perception of climate change impacts and strategies for adaptation was developed, and distributed to Italian and French partners and tested by some shepherds and other relevant stakeholders.

Details on outcomes from this activity are available at this [link](#)



Figure 1. Grazing sheep at Colle del Nivolet test site (PNGP)

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### **What about the future climate in the PASTORALP target areas?**

In Action C.1 (*Data collection and harmonization, and downscaling of climate scenarios*), the newest IPCC climate scenarios produced by the regional circulation models ALADIN and CMCC were bias corrected and downscaled through a delta approach by calculating the monthly average differences between RCM baseline (1980-2010) and under future RCP (4.5 and 8.5) IPCC scenarios and two time slices (2011–2040 and 2041-2070) for all climatic variables (precipitation, minimum and maximum temperature, wind speed and solar radiation).

Results indicated that monthly rainfall is expected to increase in the future with respect to the baseline, with slight higher increases in Parc National des Écrins with respect to Parco Nazionale Gran Paradiso in both future time slices. Extreme events such as dry spells (number of consecutive days without rainfall up to 25%), heavy rains and floods are projected to increase in both areas in the next and far future.

Both PNGP and PNE areas will experience a general increase of temperatures (up to 2-3°C) with stronger warming in summer and slightly weaker in autumn-winter especially in the far future.

Details on outcomes from this activity are available at this [link](#)

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### **Mapping pastoral resources**

Action C.2 (*Pastures typologies survey and mapping*) has completed the first field campaign for pasture mapping and a new one has recently started. About 7000 hectares have been already mapped in Parco Nazionale Gran Paradiso, using an harmonized legend coherent with that used by Parc National des Écrins. A suite of remote-sensing-based methods are currently

tested with the objective of classifying pastoral types from satellite-derived vegetation indexes.

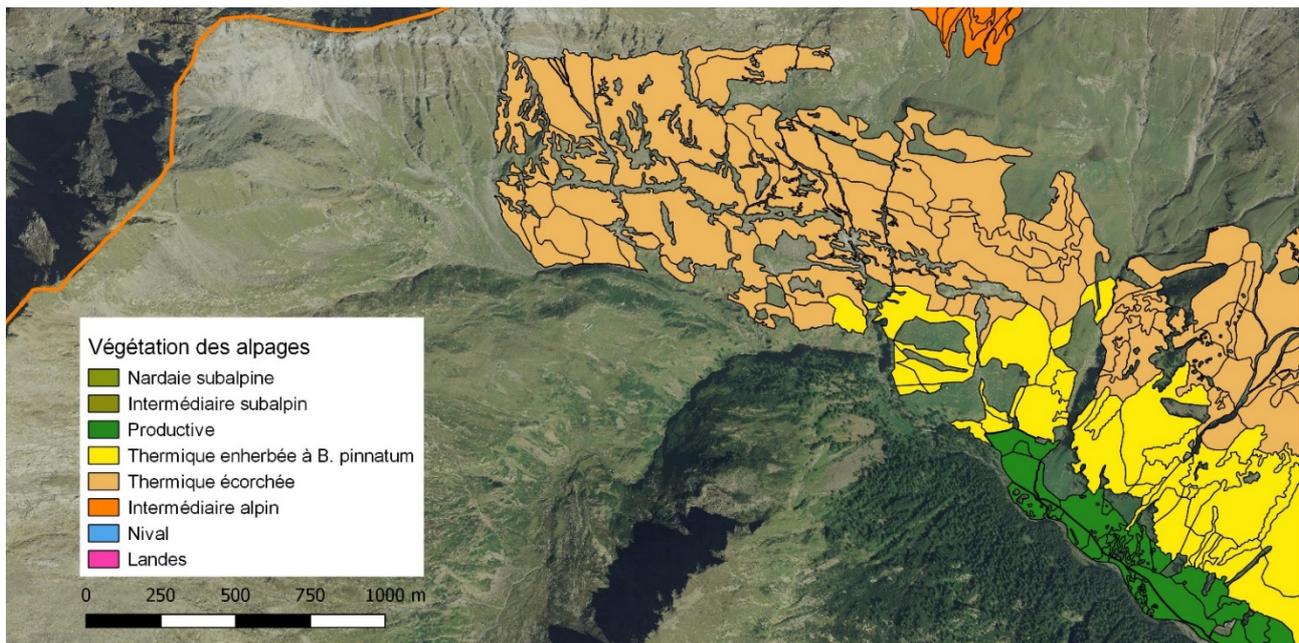


Figure 2. Digital mapping of pastoral resources at Parco Nazionale Gran Paradiso

### What will happen to pastures in the future?

In the frame of Action C.4 (*Modelling framework*), the DayCent Model (Parton et al., 1998), after calibration and validation on data collected in Action C.1, was used to reproduce growth and development of grasslands in the target areas in the next future. Preliminary results indicated a lengthening of growing season in the next future coupled with a reduction of snowpack in both target areas, while the pattern of grasslands production seems not significantly vary with respect to the present period (Fig. 3).

Indicators, as resulting from [Action C.3](#), will be also computed in the next months in order to evaluate pastoral vulnerability to climate change.

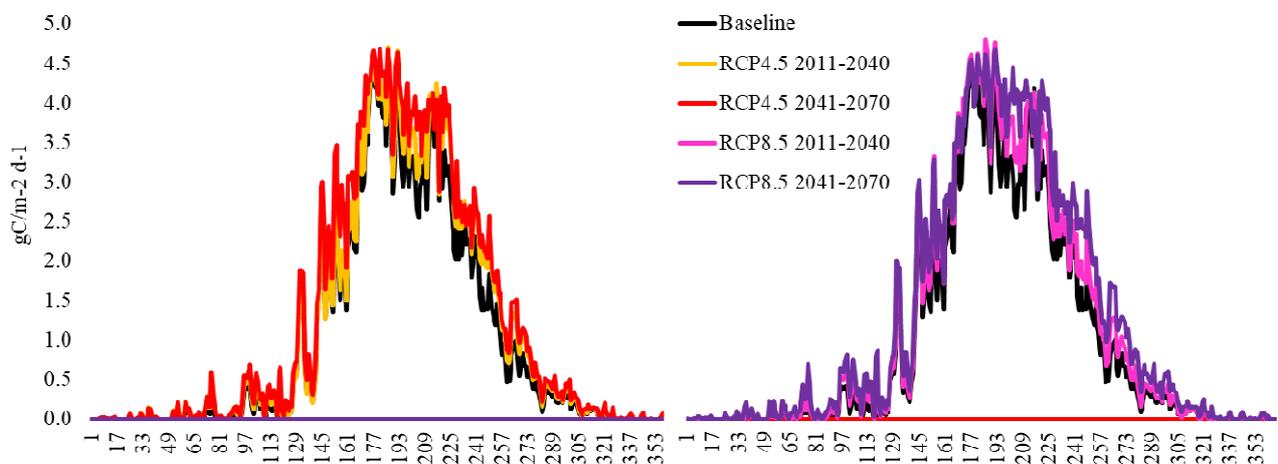


Figure 3. Pattern of production of grasslands, modelled by DayCent for the baseline (present period) and future climate RCP 4.5 (left) and 8.5 (right) scenarios for Torgnon test site.

## How is currently perceived climate change by local actors?

Two stakeholder consultation workshops were organized in February 2019 in the target areas (Fig. 4), gathering together some twenty participants in [Parc National des Écrins](#) and thirty in [Parco Nazionale Gran Paradiso](#) among local elected representatives, staff from protected areas and from conservation and farming organizations, farmers, researchers, policy makers, etc. Participants were invited to identify the main drivers influencing local pastoral systems and to share their vision of the future and their local knowledge of the territory, in order to generate new, innovative and creative ideas.

The participants addressed and discussed the likely impacts of climate change on alpine pastures (rainfall, quality of grass, water scarcity, grazing season), according to various climate change scenarios (global warming limited to +2°C above pre-industrial levels, or over+2°C), and raised economic and social issues, regarding in particular the evolution of mountain farming: what could be the future of mountain grazing systems, in an European and globalized context?

Discussions notably focused on the necessity of a legal framework in order to face the advent of a new European Common Agricultural Policy (CAP), the alpine economy's increasing reliance on tourism, and wolf predation and on the changes to pastoralism practices considering the need for more sustainability, and the conflict between land management of pastures and pastoralism were very active.

The discussion was fruitful: all participants shared their local knowledge and vision, with respect to adaptation strategies to climate change.



Figure 4. First consultation workshops held in Parco Nazionale Gran Paradiso (above) and Parc National des Écrins (bottom) organized in February 2019.

## Presentation of LIFE PASTORALP project at conferences and media

During 2018 and 2019 the project was presented in posters at three scientific conferences ([European Grassland Federation General Meeting \(EGF\), Ireland on 17th - 21st June 2018](#); [European Geoscience Union \(EGU\) conference 2018, Vienna 8-13 April 2018](#); [XLVII Conference of the Italian Society of Agronomy \(SIA\), 12th-14th September 2018](#)) and as oral presentation at the final Conference of [LIFE XEROGRAZING project](#) (with which PASTORALP is networked) in May 2019. Moreover, one article has been released by the [IL COLTIVATORE](#) (March 2019) presenting LIFE PASTORALP consultation workshop held in Parco Nazionale Gran Paradiso in February 2019.



Figure 5. Participation at conferences presenting LIFE PASTORALP project

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## NETWORKING

In the last year PASTORALP team has activated new [networking](#) activities with other projects, namely LIFE XEROGRAZING, and associations, e.g. EUROMONTANA and RETE APPIA. Moreover, in June 2019, the coordinating beneficiary attended the technical meeting of [LIFE ADAPT2CLIMA](#) so as to establish synergies for the development of the platform tool.

Finally, a group of students and professors from the University of Arizona's course "Sustaining local food, biodiversity and livestock grazing in the Alps" came in Aosta Valley for two days of excursions and visits. On June 26th and 27th IAR and PNGP presented the LIFE PASTORALP project and accompanied the group to the Fos alpine pastures (Rhêmes Notre-Dame) where field surveys for pastoral types mapping are underway. A stimulating meeting to share similar projects carried out in the West of U.S.A.



Figure 6. Visit of students and professors from the University of Arizona's course “Sustaining local food, biodiversity and livestock grazing in the Alps” in Aosta Valley (PNGP) for two days of field lectures.

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LIFE Ref. No: LIFE16 CCA/IT/000060  
Implementation area: Parc National des Écrins - FR e Parco Nazionale Gran Paradiso - IT  
Duration: 54 months (01/10/2017 - 30/03/2022)  
Budget: 2,314,400 €





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