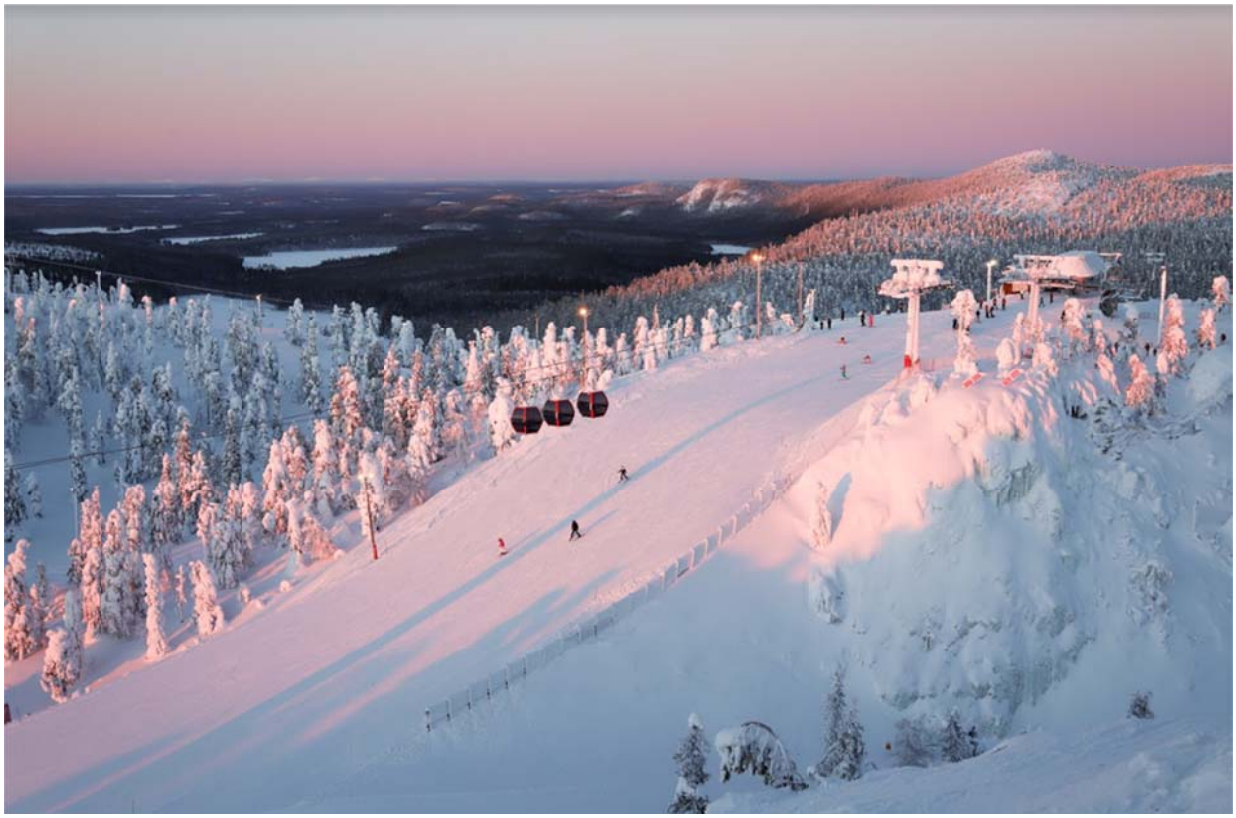
Regional dissemination seminar
Case Study 1 Winter Tourism in Finland



Mid-winter views from Ruka Ski Resort. Credits: Veera Vihervaara (Rukakeskus Ltd.)

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Summary for publication

As a result of the research and work done during the project, the team involved in this case study has developed a prototype of a service which may be replicated in other ski resorts in Northern Finland, but also in Southern Finland where conditions are close to the critical or minimum ones throughout the year. As a wrap up of the activities implemented in the past years, the team of this case study of Blue-Action organized an online regional dissemination workshop on 2 October 2020, "SnowApp-ilmastopalvelu lumetuksen ennakoinnin tukena hiihtokeskuksille ja muille talvimatkailutoimijoille", targeting regional operators in the winter tourism industry in Finland.

The main goal of the webinar was to present the main results of the case study and in particular the work done on the implementation of the SnowApp, the climate service application for snowmaking, its interface, and the advantages for regional operators in using the SnowApp.

The audience consisted of several participants representing the winter tourism industry, particularly ski resorts, and decision-makers, but also regional developers and tourism researchers from Northern Finland.

- The recording of the online event is available on the Arctic Centre's Youtube channel: https://www.youtube.com/watch?v=nZTcZaa3YaA
- The presentations held at the event can be retrieved on Zenodo: https://www.zenodo.org/record/4159571

Work carried out

As the planned in the original proposal, the regional dissemination seminar was organised to foster uptake of the project results and facilitate transfer knowledge to operators of the winter tourism industry. Due to the pandemic and to guarantee the safety of the participants, the organisers decided to organise the workhop online. The "SnowApp-ilmastopalvelu lumetuksen ennakoinnin tukena hiihtokeskuksille ja muille talvimatkailutoimijoille" was held on 2 October 2020. The online event was conceived to target mostly a regional audience of interested users and potential customers.

Promotion of the event: The webinar was marketed through various channels of the University of Lapland, Arctic Centre, and our partner, the Ruka ski resort, and direct mailing to targeted winter tourism operators in Finland. The promotion of the event reached out to ski resorts, winter tourism companies, tourism associations in Lapland and Northern Ostrobothnia, but also municipalities with winter tourism centres, Oulu and Lapland Chambers of Commerce, officials from the Regional Councils of Northern Ostrobothnia and Lapland, as well as to researchers at the University of Lapland and its Arctic Centre and the Multidimensional Tourism Institute, the Arctic Sport network, coordinated by the Regional Council of Lapland, and also regional projects focussing on this topic.

Audience: Most of the participants were operators of the winter tourism industry located in Northern Finland, Central and Southern. About three quarters of the registered participants represented the winter tourism industry, particularly ski resorts. The remaining participants were regional development and environmental authorities, and researchers working in the field.

Programme of the online workshop

Introduction to climate services and the Blue-Action project. Speaker: Ilona Mettiäinen

Topics: Definitions of climate services, their importance as interface between practical matters in decision making and climate data. Multiple ways of implementing them and the importance of multidisciplinary work. Introduction to the Blue-Action project.

Presentation on Finland's changing winters. Speaker: Anna Luomaranta (Finnish Meteorological Institute)

Warming is strongest during winters in Finland. This affects snowfall, water content, winter onset and number of winter days with temperatures above zero, among others. Southern Finland has experienced the biggest effects, especially regarding snowfall decrease (in Northern Finland has increased), and there are large variations from season to season but the general trend and the different scenarios also show an overall warming.

Main results of the climate service co-designed by the Blue-Action case study

Description of the work done with partner Ruka in the context of Blue Action WP5 CS1. The importance of snow conditions for tourism. Report on main outputs of the Snow App. Potential future use as a commercial tool since the same concepts can be implemented elsewhere to promote sustainability and adaptation to climate change. Optimizing the time for snowmaking minimizes emissions and costs.

Lessons learned by Rukakeskus Ltd. Speaker: Jusu Toivonen (Rukakeskus Ltd.)

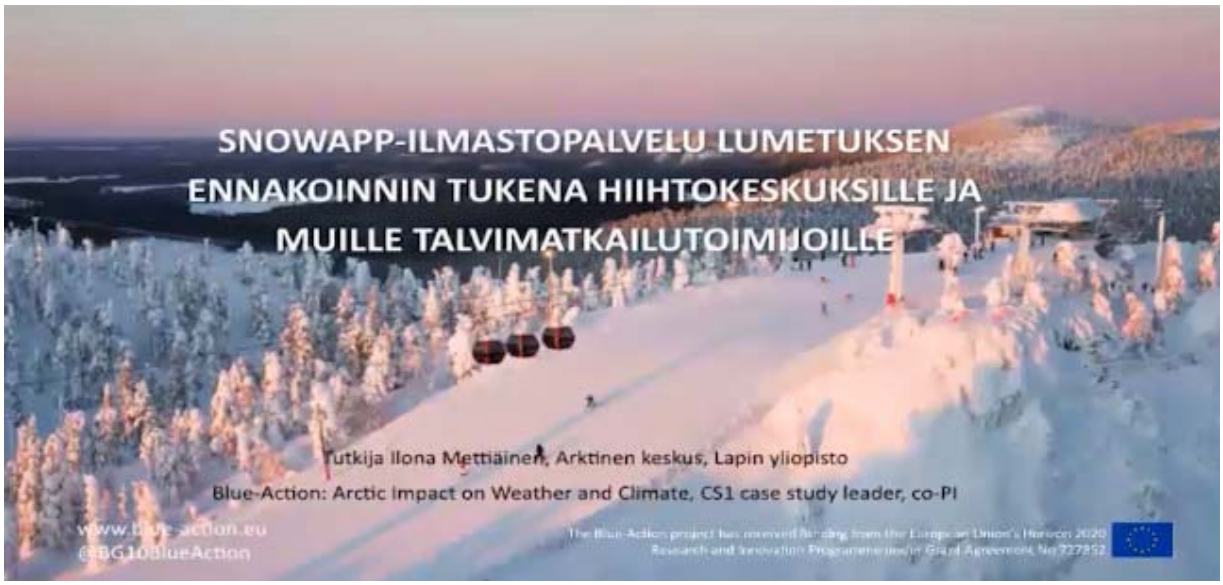
In his talk, Jusu Toivonen talked about the experiences and points of view of Rukakeskus Ltd. on the collaboration in the climate service co-design project. Sustainability leadership is important for Ruka. Much investment to support sustainability has been allocated since 2008. Participating in Blue-Action

has been part of it. The learning process was positive and there are many differences in the academic methods and times as compared to the approach used in business. Two extreme events were experienced during this period: the worst winter ever recorded, in 2018, and the best winter recorded in 2019. From their point of view there is a need in the market for a service like the one offered by CS1, especially in Southern Finland where conditions are closer to critical throughout the season.

The Snow App. Speakers: Martin Coath and Ilona Mettiäinen

The main features of the SnowApp and how to use it were shown to the participants. The scientific analysis on the reliability of the SnowApp climate service was presented. The presentation included also a demonstration of use of the SnowApp, and of the outcomes of the test phase during the 2019 winter season at Ruka. The outputs of this test were shared with the participants.

The recorded session was followed by a networking event and a discussion with the panellists.



Main results achieved

- The entire work set up in our case study has relied on a deep collaboration between scientists and the tourism industry through our co-design approach. The co-design process for this service proved also to be a successful way not only to integrate knowledge, but also to maximise the relevance and user-friendliness of the SnowApp. The best way of ensuring the uptake of our main output, the climate service, is its usefulness and relevance to the industry. End-user involvement has been found in several studies to be the key element in reaching this.
- Based on the outcomes of this final online event, we have succeeded in creating a climate service prototype that genuinely interests ski resorts. For the utilisation of the service after the Blue-Action project phase, the team is currently working on the Business Model Canvas, with the support of the partner Climate-KIC, addressing the intellectual property issues that lay a foundation to the commercial utilization of the service, and mapping the first set of potential customers in Finland and potentially abroad. The University of Lapland has handed the IP rights of the SnowApp to the members of the case study team.
- The event was very well received; this has proven that there is a wide interest among the targeted regional stakeholders in this type of service. Based on the webinar, more winter tourism industry

operators located in Northern and Central Finland have approached the team to start using the SnowApp and benefit from the service provided.

- The developed climate service can have even international commercial potential in ski resorts and for international winter sports events. The workshop was a good test to find out how the market would react to this product and indeed there is potential to begin providing this service in Finland.
- This service could be potentially expanded to other industries. For example, an almost identical thermodynamic approach could be used, but with different output, in agriculture and forestry. In that case instead of focusing on optimally low temperatures and relative humidity, the purpose could be to forecast frosts (using a similar approach of wet-bulb temperature, on the ground) which may damage crops or other plants. Applications of the climate service to completely different fields would, however, require some co-design and research.

Impact

The work presented here has contributed to the following expected impacts of Blue-Action.

- **Improve the stakeholders' capacity to adapt to climate change and contribute to better servicing the economic sectors that rely on improved forecasting capacity**

The following issues were addressed and discussed during the online event:

-The co-design process with Rukakeskus Oy ensured that the SnowApp is tailored to the needs of our partner and is easily modifiable to satisfy the needs of other winter tourism centres and allow them to adapt to changed climate conditions.

- The economic success of the winter tourism industry is dependent on cold and snowy conditions. When these conditions are not met, tourism centers may rely on machine-made snow, and snowmaking requires optimal wet-bulb temperature to be produced. The SnowApp climate service provides 4-week snowmaking conditions forecasts. Having access to reliable forecasts could have a positive impact, for example on fuel consumption in the case of centers which rely on this type of energy for snow production. Also, the impact could be reflected on the work hour costs of machine operators. In other words, we provide an optimization service to secure snow production for the winter tourism industry.

- **Improving innovation capacity and the integration of new knowledge**

The regional dissemination webinar "SnowApp-ilmastopalvelu lumetuksen ennakoinnin tukena hiihtokeskuksille ja muille talvimatkailutoimijoille" also contributed to learning and sharing knowledge between academia and businesses.

- **Strengthening the competitiveness and growth of companies by developing innovations meeting the needs of European and global markets; and, where relevant, by delivering such innovations to the markets**

The interest showed by the audience at the online event indicated that there the SnowApp could be easily adopted and replicated in other ski resorts in Northern Finland, as planned in the DoA, but also in Southern Finland, allowing them to strengthen their business and introduce savings in the operations.

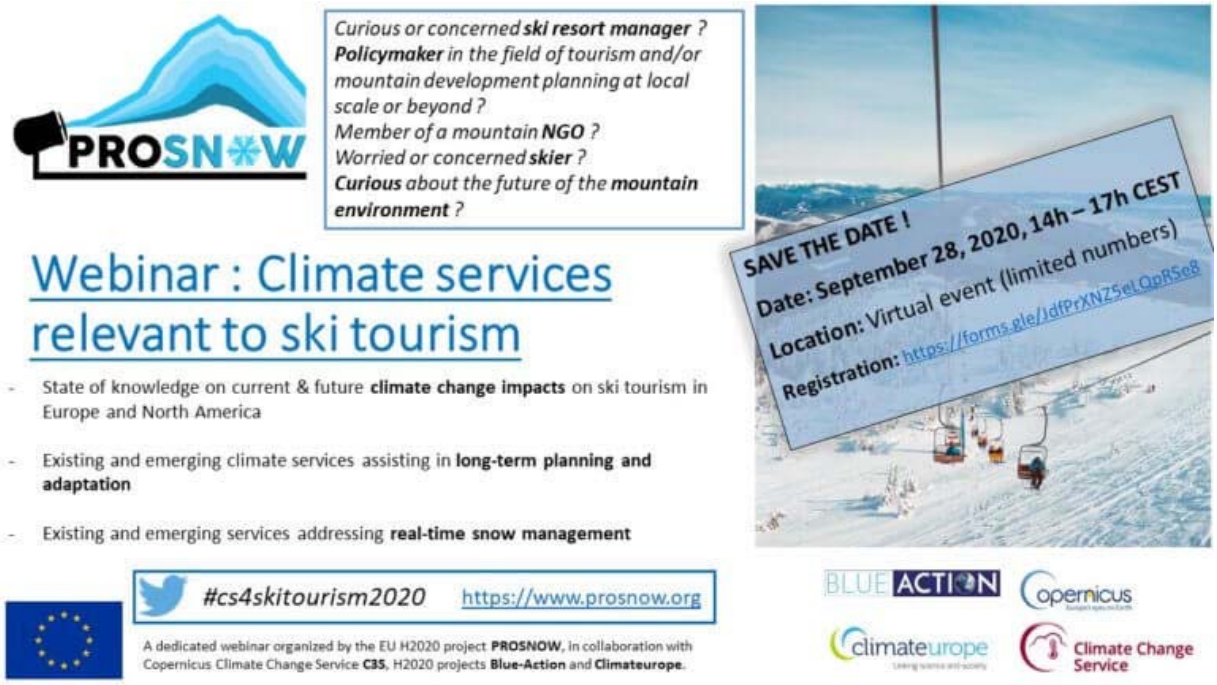
Lessons learned and Links built

Links were built and further strengthened to the ski resort industry in Finland, to other EU funded projects in Northern Finland related to winter sports, such as the Energiatehokas Arktinen Lumi (ERDF) project ([1]), as well as with the Arctic Sport network that is coordinated by the Regional Council of Lapland.

[1] https://blogi.eoppimispalvelut.fi/arktinenlumi/

On 28 September 2020, our team presented the SnowApp and the results of our work at the webinar organized by the PROSNOW (H2020) project. The webinar was supported by **Copernicus Climate Change Services**, in particular its novel "Mountain Tourism Meteorological and Snow Indicators" dataset, the H2020 project Climateurope, and was organized in cooperation with the Horizon 2020 project **Blue-Action**. An audience of 70 persons from research institutes and ski industry attended the event. Information about the online event can be found here: http://prosnow.org/climate-services-for-ski-tourism/ Thanks for this event, our results have been disseminated to a European audience of operators involved in the winter tourism industry. The collaboration with PROSNOW has been very interesting and useful, as well as the contacts and collaboration with the EU-MACS and MARCO (H2020) projects in the earlier stages of our work.

- The CS1's presentation (Mettiäinen & Coath) at the PROSNOW event: https://www.zenodo.org/record/4118350#.X6uhxN5KjR0
- Recording of our intervention: http://prosnow.org/webinar-climate-services-relevant-to-ski-tourism-september-28-2020-6



Contribution to the top level objectives of Blue-Action

This deliverable contributes to the achievement of the following objective indicated in the Description of the Action:

Objective 7 Fostering the capacity of key stakeholders to adapt and respond to climate change and boosting their economic growth

The specific practices carried out during this project to promote stakeholders' capacity to adapt and respond to climate change were those related to the optimization of a process which can in principle demand enormous energy resources. Working with Ruka as a partner to develop this tool was a big challenge because they are already carbon neutral and their commitment with the environment is very high standard; therefore, we co-designed a service tailored to serve the most demanding possible client in the Finnish winter tourism industry. This will provide a real opportunity to accommodate a wide range of capacities regarding adaptation and response, since the spectrum of all winter tourism operators covers a variety of geographical areas and sizes and hence their capabilities are unequal.

Dissemination and exploitation of Blue-Action results

This workshop was targeting operators of the winter tourism industry located in Finland. Communication plays a crucial role in ensuring the uptake of our results by the audience we have targeted with our service. This includes:

- Efficient marketing of the events through promotion of various channels (including social media, press releases, emails to relevant organisations and persons) and relevant networks.
- Broad sharing of knowledge (presentation, recordings…) online for transferring knowledge to a potential audience larger than the one attending the workshop. As indicated in the Description of the Action, the audience for this deliverable is the general public (PU) and the documents related to this activity are made available in open access via Zenodo and CORDIS.