



## **End Users Needs Report: Weather and climate data for Northern Finnish winter tourism centers**



**Blue-Action: Arctic Impact on Weather and Climate** is a Research and Innovation action (RIA) funded by the Horizon 2020 Work programme topics addressed: BG-10-2016 Impact of Arctic changes on the weather and climate of the Northern Hemisphere. Start date: 1 December 2016. End date: 1 March 2021.



The Blue-Action project has received funding from the European Union's Horizon 2020 Research and Innovation Programme under Grant Agreement No 727852.

## Blue-Action Deliverable D5.1

### About this document

**Deliverable:** D5.1 End User Needs Report

**Work package in charge:** WP5 Developing and Valuing Climate Services

**Actual delivery date for this deliverable:** 1 July 2017

**Dissemination level:** CO

#### Lead authors

Arctic Centre University of Lapland: Pamela Lesser

Rukakeskus Corporation: Jusu Toivonen

#### Other contributing authors

Arctic Centre, University of Lapland: Roxana Contreras and Martin Coath

#### Reviewer

Danish Meteorological Institute: Chiara Bearzotti

#### We support the Blue Growth!

Visit us on: [www.blue-action.eu](http://www.blue-action.eu)

Follow us on Twitter: [@BG10Blueaction](https://twitter.com/BG10Blueaction)

Disclaimer: This material reflects only the author's view and the Commission is not responsible for any use that may be made of the information it contains.

## Index

Summary for publication .....	4
Work carried out.....	<b>Fehler! Textmarke nicht definiert.</b>
Climate and Tourism.....	<b>Fehler! Textmarke nicht definiert.</b>
Winter Tourism in Finnish Lapland: The Case of Rukakeskus Corporation.....	<b>Fehler! Textmarke nicht definiert.</b>
Case Study Methodology .....	<b>Fehler! Textmarke nicht definiert.</b>
End User Needs Report Methodology .....	<b>Fehler! Textmarke nicht definiert.</b>
Ruka’s Anticipated Data Needs .....	<b>Fehler! Textmarke nicht definiert.</b>
Challenges and Opportunities for Climate Services .....	<b>Fehler! Textmarke nicht definiert.</b>
Main results achieved .....	<b>Fehler! Textmarke nicht definiert.</b>
Progress beyond the state of the art .....	<b>Fehler! Textmarke nicht definiert.</b>
Impact.....	<b>Fehler! Textmarke nicht definiert.</b>
Lessons learned and Links built .....	<b>Fehler! Textmarke nicht definiert.</b>
Contribution to the top level objectives of Blue-Action.....	<b>Fehler! Textmarke nicht definiert.</b>
References (Bibliography) .....	<b>Fehler! Textmarke nicht definiert.</b>
Dissemination and exploitation of Blue-Action results .....	<b>Fehler! Textmarke nicht definiert.</b>
Peer reviewed articles .....	<b>Fehler! Textmarke nicht definiert.</b>
Uptake by the targeted audiences .....	<b>Fehler! Textmarke nicht definiert.</b>
Intellectual property rights resulting from this deliverable.	<b>Fehler! Textmarke nicht definiert.</b>

## Summary for publication

Research on the effects of climate change on the tourism industry is relatively new. Currently, this field has approached a transition phase, from observing climate change effects on a system to assessing and understanding its vulnerable points and studying adaptation measures, which is what is needed for future development strategies.

Tourism in Finnish Lapland, and in particular the ski industry, is highly dependent on climate and weather conditions as these have a direct impact on the timing and availability of snow, snow making, and snow storage conditions. While the effects of climate change are typically described in negative terms, the potential impacts during the winter are generally seen as positive. For example, milder winters in the north can be a positive phenomenon since tourists usually cannot participate in outdoor activities during extremely cold days.

On the other hand, studies also suggest that Northern Fennoscandia is one of the fastest warming regions in Europe, and Finland is a country that has one of the fastest warming rates over the last half century, with the highest increases in temperature in November, December and January. For the skiing industry, proper winter conditions are key to commercial success.

The client for this case study, Rukakeskus Corporation, is a family business in charge of the ski resorts of Ruka and Pyhä, in Northern Finland. Rukakeskus is one of the leading tourism companies in Finland employing around 200 people and responsible for nearly 20 per cent of annual ski pass sales with approximately 26 million euros in revenue. One of their primary business objectives is to continue to be the most snow-sure ski resort in Europe as Ruka already provides more than 200 ski days a year, more than any other ski resort in the world apart from those located on glaciers. Ruka focuses on the early and late seasons since that is when very few other ski resorts have snow, and as a result, many training groups currently favor Ruka during those periods. Given the changes in climate that are already visible, it is a distinct possibility that even more race teams will gravitate to Ruka not only for the early and late seasons but for the entire ski season.

Ruka has successfully operated their ski resort for decades based on a combination of weather forecasts, planning and experience. However, Ruka has always prided itself on an extremely progressive energy efficient and green business, and they realize that with the Arctic warming at twice the rate, they have already seen changes in the duration of the ski season and know their operations will inevitably be further affected. Ruka has identified data they feel would help them in their decision-making and benefit their business. This includes long-term winter forecasts for temperature, wind, cloud cover, snow fall amounts, changes in the length of the winter season, estimates of when winter starts (“permanent” snow falls) and ends (snow melts) and global climate and weather trends such as El Niño and their affects in the ski resort area are

### **Blue-Action Deliverable D5.1**

of particular interest. For the summer season, forecasts that include more detailed information about temperatures, rainfall, sunshine, and humidity would also be helpful. While Ruka has identified information they think would be useful, this deliverable is not intended as an analysis based on modelling data, but rather, Ruka's first pass at providing their needs themselves. As the project continues, there will be an iterative process between modellers, the UoL and Ruka to determine what kind of data is not only useful for Ruka but feasible for the modelers to provide. As this deliverable is due Month 7, it has been too early to start this process. Thus, Deliverable 5.1 is supposed to be a first pass at identifying Ruka's needs and will be subsequently revised as the project goes on.