Blue-Action
WP5 Winter tourism case

19 January 2018

ARCTIC CENTRE
University of Lapland

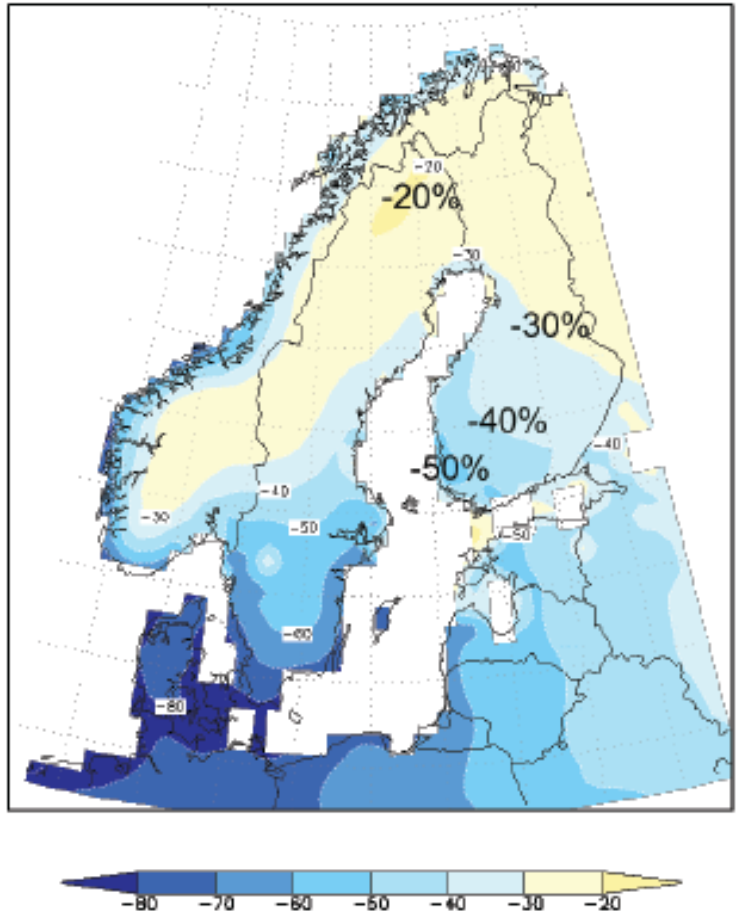
SRSL

RUKA!
SKI.RUKA.FI

Downhill skiing as a ”canary in the coalmine”

- Downhill skiing as an indicator of the impacts of climate change for winter tourism industry due to its strong dependence on the climatic conditions for economically successful operation (Haanpää et al. 2015)
- Snow-making a common adaptation strategy in skiing centers; important for snow security; used for ensuring early season start already now
- Fewer snow-cover days and delay of the arrival of winter in Northern Finland in the future

  -> machine-made snow increasingly important for ensuring early beginning of skiing season



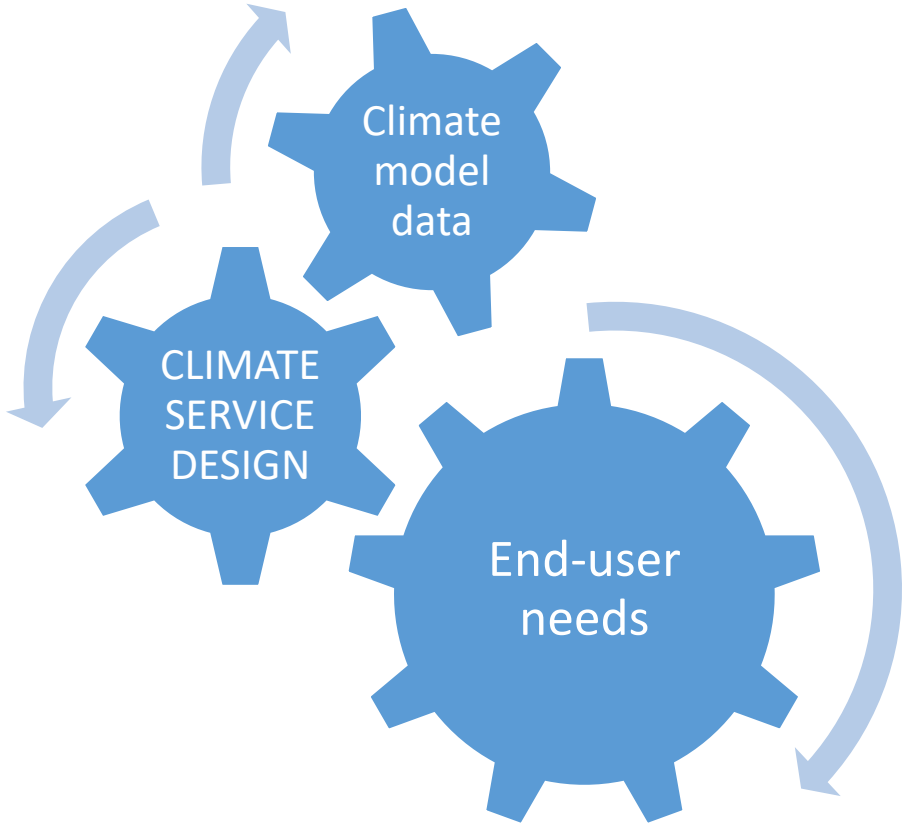
(FMI and the Regional Council of Lapland 2011)

RUKA skiing center as the end-user and business partner in the case study

- 200 ski days per year
- 34 slopes
- First to open slopes; opening of season in 2017 on 6th October
- Forerunner in environmental programs

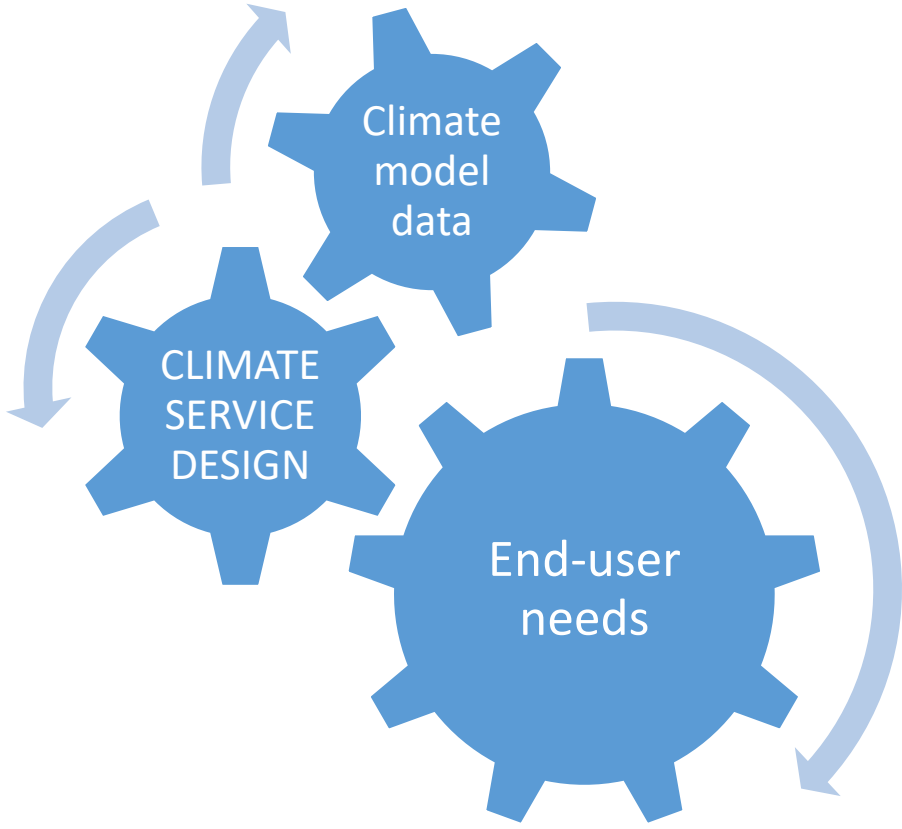
Co-design of climate service for RUKA

- Features of service design
- Business specificity
- Science communications, collaborative planning, knowledge co-production, public engagement in science
- Transdisciplinary work, learning



End-user involvement

- A success factor for developing climate services
- End-user needs identified (reported in D5.1)
- Some challenges in obtaining the information that is needed from RUKA
- Some of the data is commercially sensitive
- Fieldwork in February



Work done and progress made (1)

- Acquisition of modeled data
- Group meeting number 1 (March 2017)
- Acquisition of meteorological data and end-user needs
- Group meeting number 2 (July 2017, WP meeting)
- Acquisition of information on snow-making technology and decision-making practices in RUKA
- Connecting weather conditions and costs of snow-making
- Development of assessment and evaluation methods, review
- Multiple skype meetings and discussions, emails

Work done and progress made (2)

- Identification of end-user needs (D5.1) (6/2017)
- Development of a methodology for acquisition of information and communication with the client (D5.2) (1/2018)
- Evaluation methods for economic feasibility (value) of the climate service and decision-making process (D5.3) (1/2018)

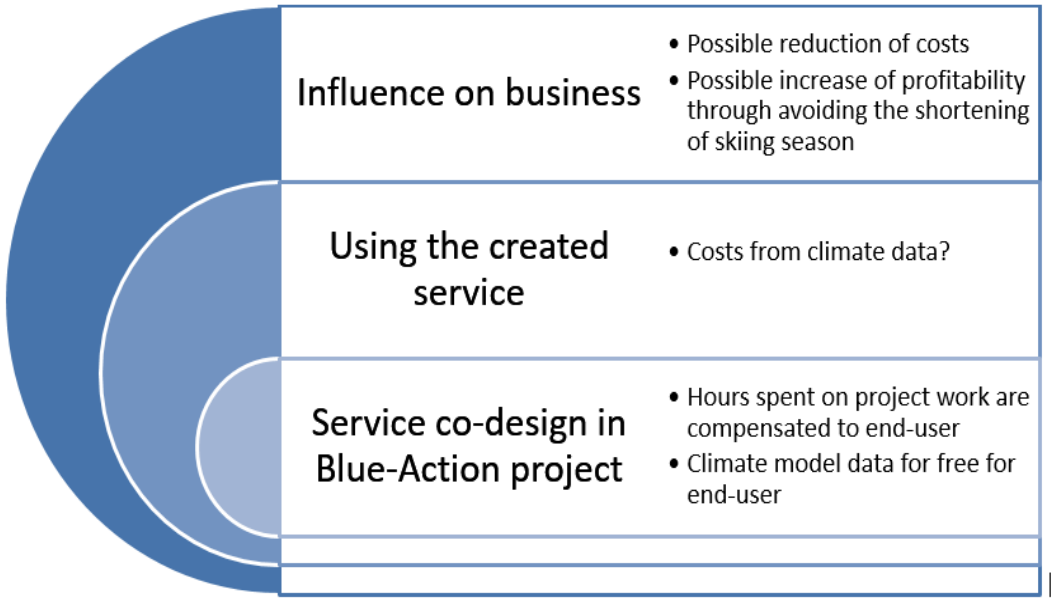
Key aspects

- It has already been established that snow-making is the most important expenditure, and therefore needs to be addressed with the models
- Meteorological data of the region is used for the development of a prototype model, for snow-making costs (dependent on temperature and humidity)
- First focus on snow-making; snow-storage issues to be included at a later stage in this iterative process
- The ultimate purpose is to reduce the uncertainty related to the snow-making process, in terms of the way in which decisions on snow-making and the start of the season are made

Linking weather conditions and costs of snow-making

- Snow-making is the most important expenditure, and therefore needs to be addressed with the models
- Three key parameters that influence snow-making: temperature, (absolute) humidity and wind speed
- The main link between weather conditions and costs of snow-making is energy consumption

Evaluation methods (draft)



Evaluation of the outcome i.e. the climate service

Process evaluation

Quantitative aspects (economy)
VALUE - How much would the end-user be willing to pay for the climate service?

Qualitative aspects (decision-making on snow-making and season start)
Influence on the decision-making process; reduction of uncertainties

Conclusions (1)

- The climate service we are co-designing can potentially be very valuable for skiing centres
  - Machine-made snow a widely used adaptive strategy in skiing centers and important for snow security
  - Reducing uncertainty on season start and on longer-term investments
  - Cost-efficiency and environmental aspects
- Maximizing energy-efficiency in snow-making
  a) Helps reduce the costs of snow-making as an adaptive action in skiing centres
  b) Helps avoid the increase of environmental impacts of snow-making and hence to avoid snow-making from being, in fact, maladaptation
- Adaptation + mitigation = adaptigation

Conclusions (2)

- New model for science-to-business and business-to-science?
- Business idea for a start-up?

Plans for 2018

- Currently working on deliverables due in the end of January 2018
  - D5.2 Model Information Utilization Report
  - D5.3 Assessment and Evaluation Methodology Report
- Case study meeting in Ruka in February, including some fieldwork; video and photo materials for communications
- Continuing towards being able to test the climate service
- As our work proceeds, we will need more precise climate model data (e.g. better resolution)
- Writing some early papers
- Participation in Lapland Tourism Parliament (in 2018 or 2019)

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