



# Extreme weather events and tourism: past, present and future impacts and adaptation in Iceland

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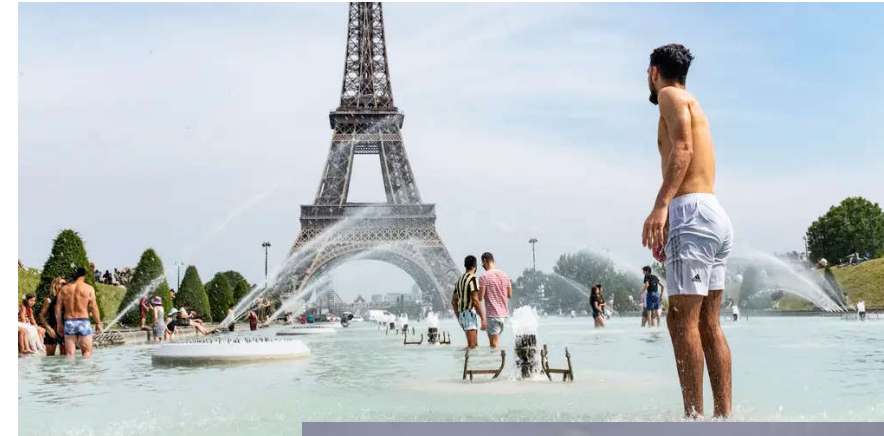


**UNIVERSITY OF ICELAND**

# Extreme weather events

'...an event that is rare at a particular place and time of year (rarer than the 10th or 90th percentile of a probability density function), ... may vary from place to place in an absolute sense' (IPCC, 2015).

Extremes (anomalies) in temperature (e.g. heatwaves), precipitation (e.g. heavy rainfall and snowfall) and wind speed (e.g. storms and hurricanes).



# Weather extremes and tourism research in Iceland

- Project status and scope

- **Aim:** Exploring past and future extreme weather events' impacts on the Icelandic tourism sector and the sector's capacity to adapt to these impacts.
- Climate fund grant Ministry of the ENR (partly funded)
- Climate change adaptation research on Icelandic tourism sector (Welling, 2020)
- **Scope:** Tourism sector in (SE) Iceland, from +/- 2000 - 2035
- **Partners:** Icelandic Meteorological Office, Icelandic Tourism Board

- Justification of research project

- Stakes are high: impacts are noticeable already (in issues, risks and costs) and future projections estimate an increase in freq./intensity/duration of extreme weather events (IPCC, 2012).
- Adaptation by tourism sector is necessary, ... but how?
- Dearth of research on tourism and weather extremes in Iceland and beyond

The screenshot shows the Iceland Magazine website. At the top, there's a navigation bar with 'Iceland Magazine' and a temperature indicator '9°C'. Below the navigation bar, there's a featured article titled 'Roads on the Golden Circle are closed, as are mountain passes in the Westfjords and N Iceland' by Emma, dated Nov 17 2018. The article includes a photo of a person in a snowy landscape. Below the article, there's a weather map of Iceland titled 'Wind - Wednesday 10:00 GMT' showing wind direction and speed. The map is color-coded by temperature, with a legend at the bottom ranging from 0 to 42 degrees Celsius. To the right of the map, there's a 'MOST POPULAR' section with a small image and text. At the bottom of the screenshot, there's a section titled 'ICELAND REVIEW' with a photo of a person in a snowy landscape and the title 'Extreme Weather Across Iceland Into Wednesday' by Jelena Ciric, dated December 9, 2019, with tags for Nature, Travel, and News.

# Project Plan



## Phase 1: Current adaptation (autumn/winter 2021)

**Goal:** Assessing current adaptation to weather extremes among tourism businesses in Iceland

**Methods:**

- Interviews with actors in key business (tour operating, transportation and accommodation)
- Online survey among tourism businesses

**Outputs:**

- Extreme weather proxies (e.g. precipitation, storm): **Phase 2**
- Affected tourism performance indicators (e.g. visitor numbers, cancellations, cost of damage): **Phase 2**
- Adaptation strategies/means (e.g. insurance, product or income differentiation, technical means): **Phase 3**
- Capacity indicators (e.g. financial resource, available institutions, network participation): **Phase 3**

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## Phase 2: From past to future impacts (spring 2022)

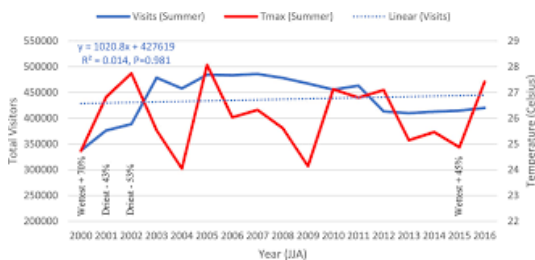
**Goal:** Assessing future weather extremes' impacts using temporal weather extreme analogs

**Methods:**

- Temporal analog study (e.g. Hewer and Gough, 2019, Ruttly et al. 2017)
- Cross referencing analog study results against weather extremes model projections

**Outputs:**

- Projections of frequency, duration and geographical spread of future weather extremes
- Estimated changes and spread of tourism performances under weather extremes projections



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## Phase 3: Future adaptation (summer 2022)

**Goal:** Assessing current tourism business' capacities to adapt to future projections of weather extremes' event and impacts

**Method:**

- Focus groups (Welling et al. 2019)
- Survey

**Outputs:**

- Insight into current adaption capacity to cope with future impacts
- Recommendations to enhance tourism actors'/sector's capacity to cope with future weather extremes





Thank you for your attention

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