Scenario for data discovery/federation and access through standardised web services discussion on cryospheric extremes

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Context

- The cryosphere is the part of the Earth system that includes
  - solid precipitation,
  - snow,
  - sea ice,
  - lake and river ice,
  - icebergs,
  - glaciers and ice caps,
  - ice sheets and ice shelves,
  - permafrost and seasonally frozen ground.

- The cryosphere is global, existing not just in the Arctic, Antarctic and mountain regions, but at all latitudes and in approximately one hundred countries.
- The cryosphere provides some of the most useful indicators of climate change, yet is one the most under-sampled domains of the Earth System.
- Improved cryospheric monitoring and integration of that monitoring is essential to fully assess, predict, and adapt to climate variability and change.

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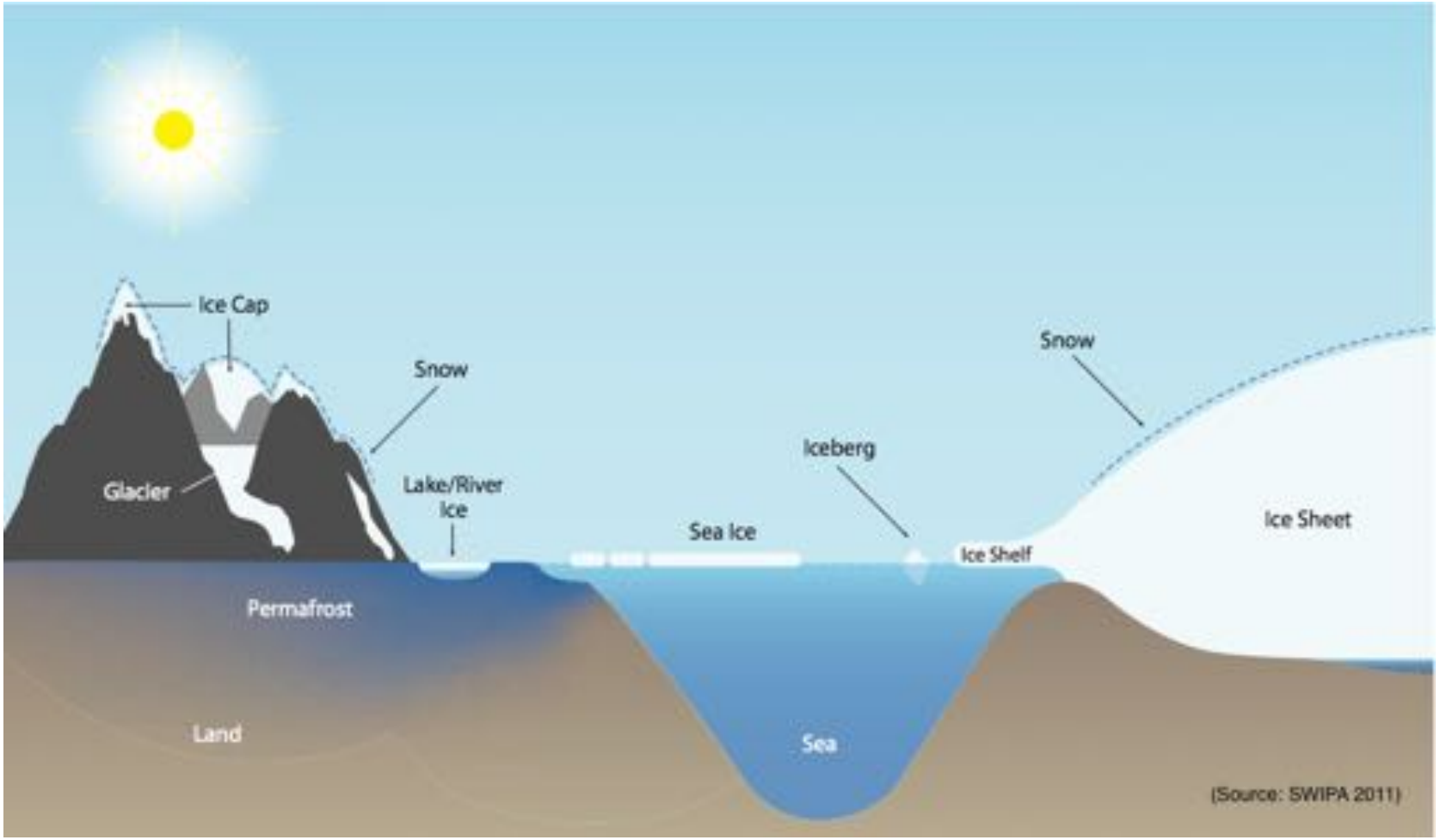

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Foto: Roger Zahl Ødegård/Trond Olsen, Sysselmannen på Svalbard

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Foto: Geir Barstein/Svalbardposten.no

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Questions

- Cryospheric extreme events in the past, present and the future is a very wide use case.
  - Examples of Cryospheric extremes provided by IASC Cryospheric Workshop by Jari Haapala
- In order to constrain the exercise, the use cases is constrained to past and present conditions, in the areas of transportation and infrastructure.
- This covers decreasing sea ice cover and thawing permafrost and their consequence on shipping and local societies.

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Perspectives

- Two focal regions
  - Northern Bering Sea
  - Svalbard
- Approach
  - Adaptation of local communities to local climate change
  - Potentially large scale cause

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The following questions might be asked

- Has the risk for avalanches in Longyearbyen increased the last 30 years?
- Is the permafrost changing and will this affect the local infrastructure in Longyearbyen?
- Can changes be attributed to changes in the atmospheric circulation and are these changes related to the diminishing sea ice?
- Are local and regional observations sufficient?
- Are they sustainable?
- How will they evolve?

- What oceanographic, biological, and other environmental (i.e. sea ice) marine observations and research are currently underway in the Bering Strait region?
- What are the objectives, timelines of these initiatives?
- What outreach protocols/opportunities are currently in place for coastal stakeholders in western and northern Alaska to learn about the ongoing work and/or past results that might be relevant?

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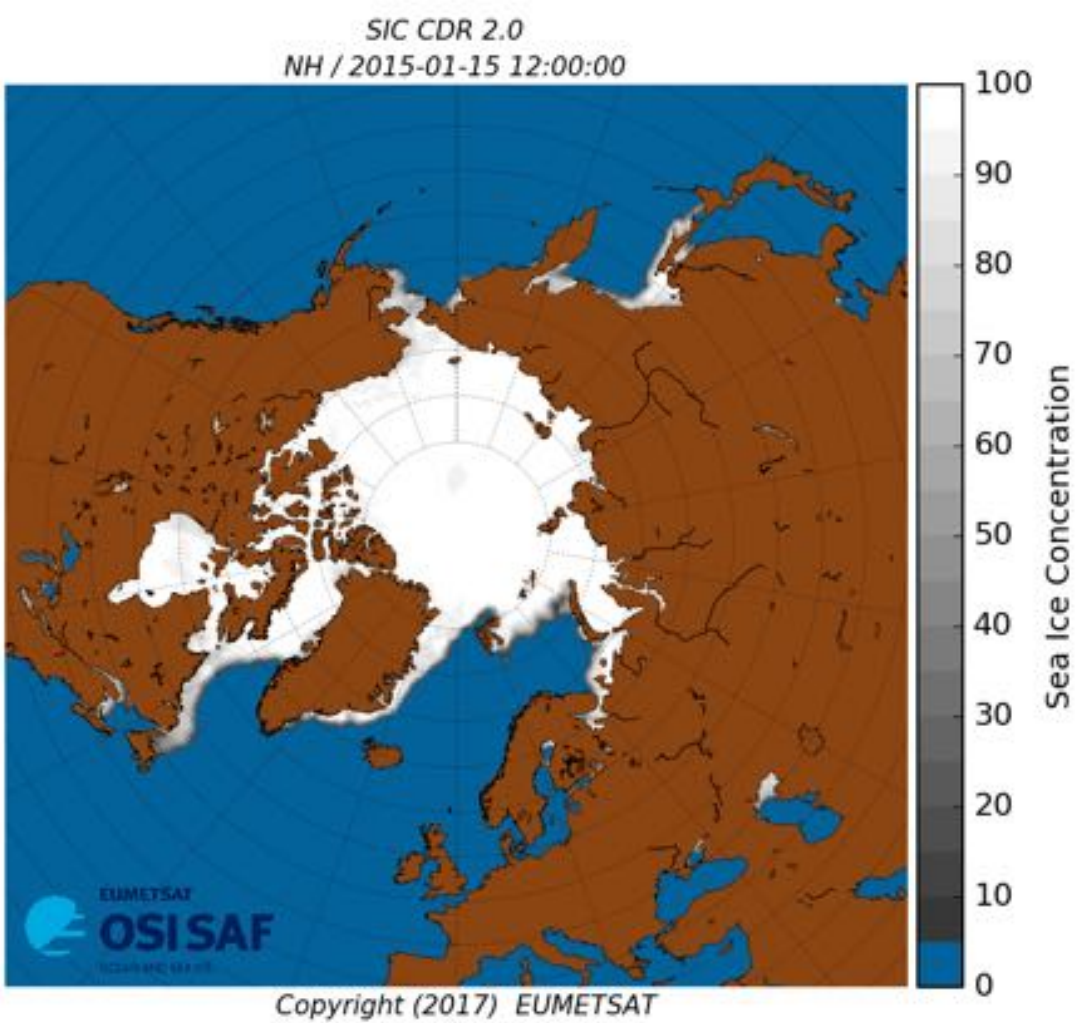

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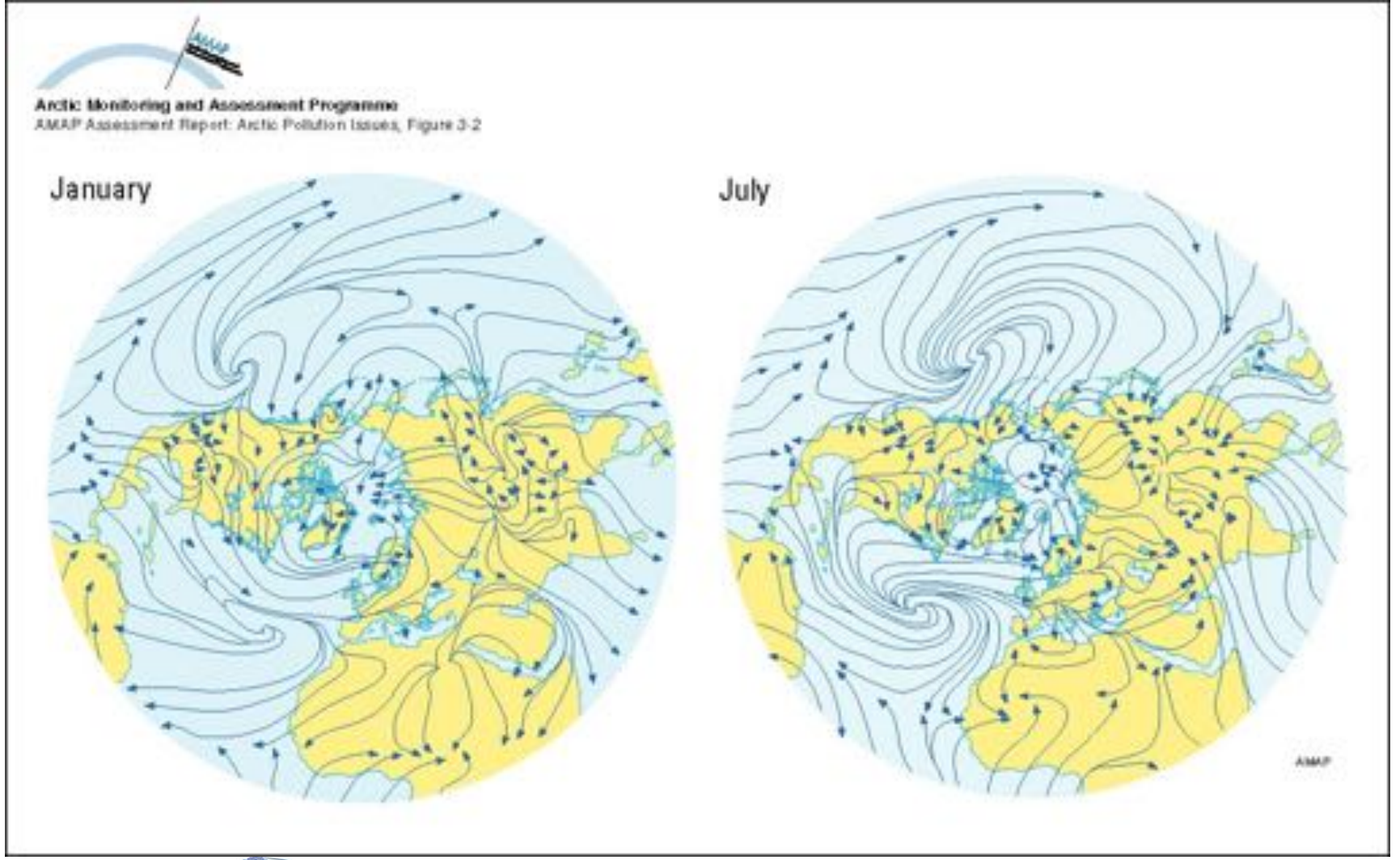

Wendland, W.M. and R.A. Bryson, 1981. Northern hemispheric airstream regions. Monthly Weather Rev. 109: 255-270. (AAR Figure 3.2)