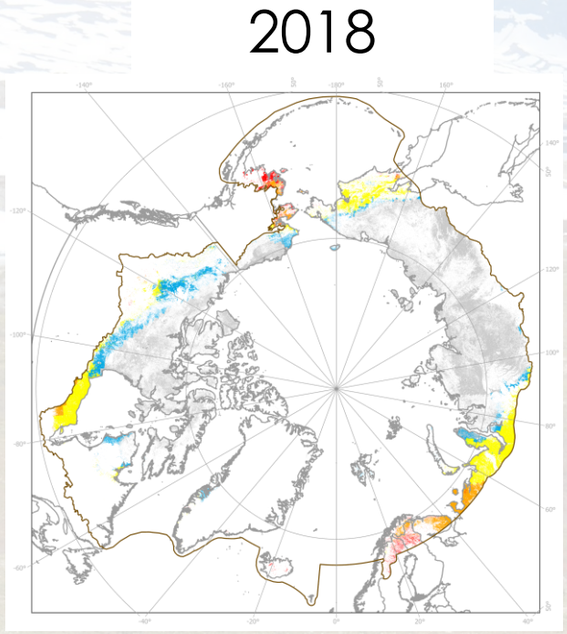
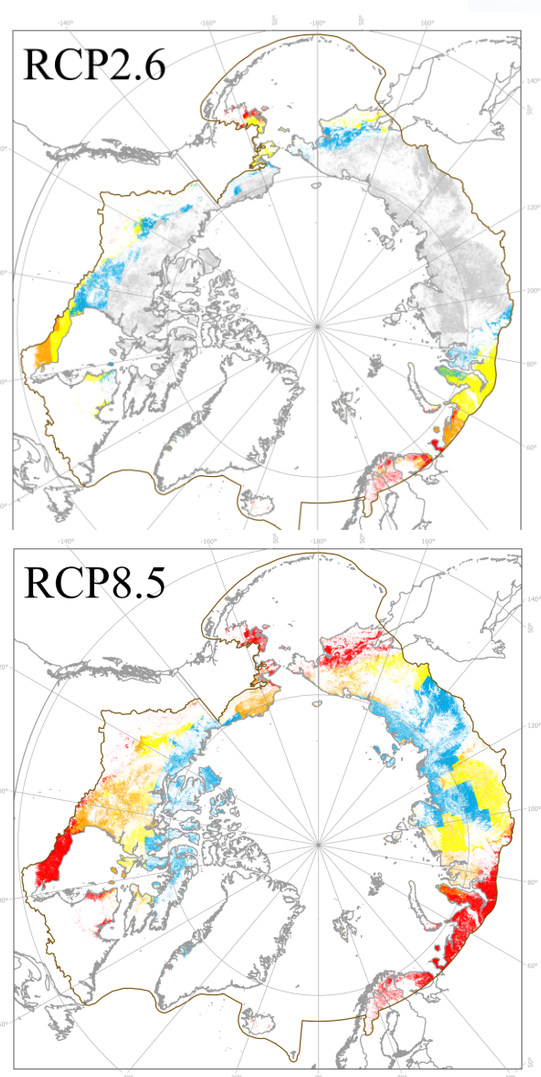
Vulnerability and Importance of Arctic wetlands as large-scale nature-based solutions for Sustainability in a Changing Climate

Highlights

- 25% wetland cover
- Vulnerability increase with time & RCP
- Small changes in RCP2.6
- 50% of wetland area vulnerable by 2100 in RCP8.5

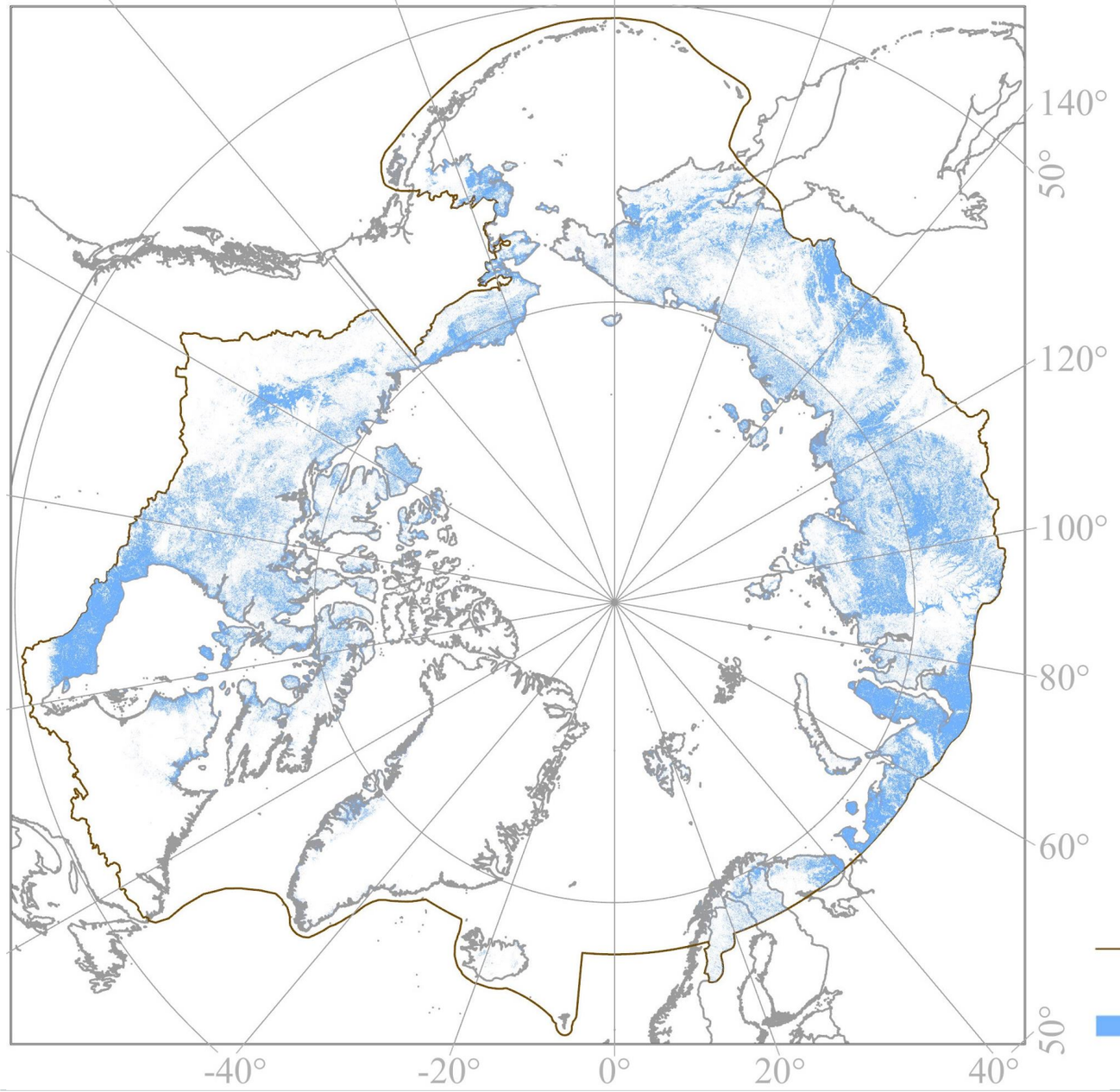




Elisie Kåresdotter, Georgia Destouni, Navid Ghajarnia, Gustaf Hugelius & Zahra Kalantari

Goal 1: mapping of Arctic wetlands

- Existing wetland maps
- Soil wetness
- Soil types



Where can we find Arctic wetlands?

- 25% of the Arctic landmass
- 99% in permafrost areas
  - Highly vulnerable to thawing of permafrost

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Goal 2: How will wetland areas be affected by warming?

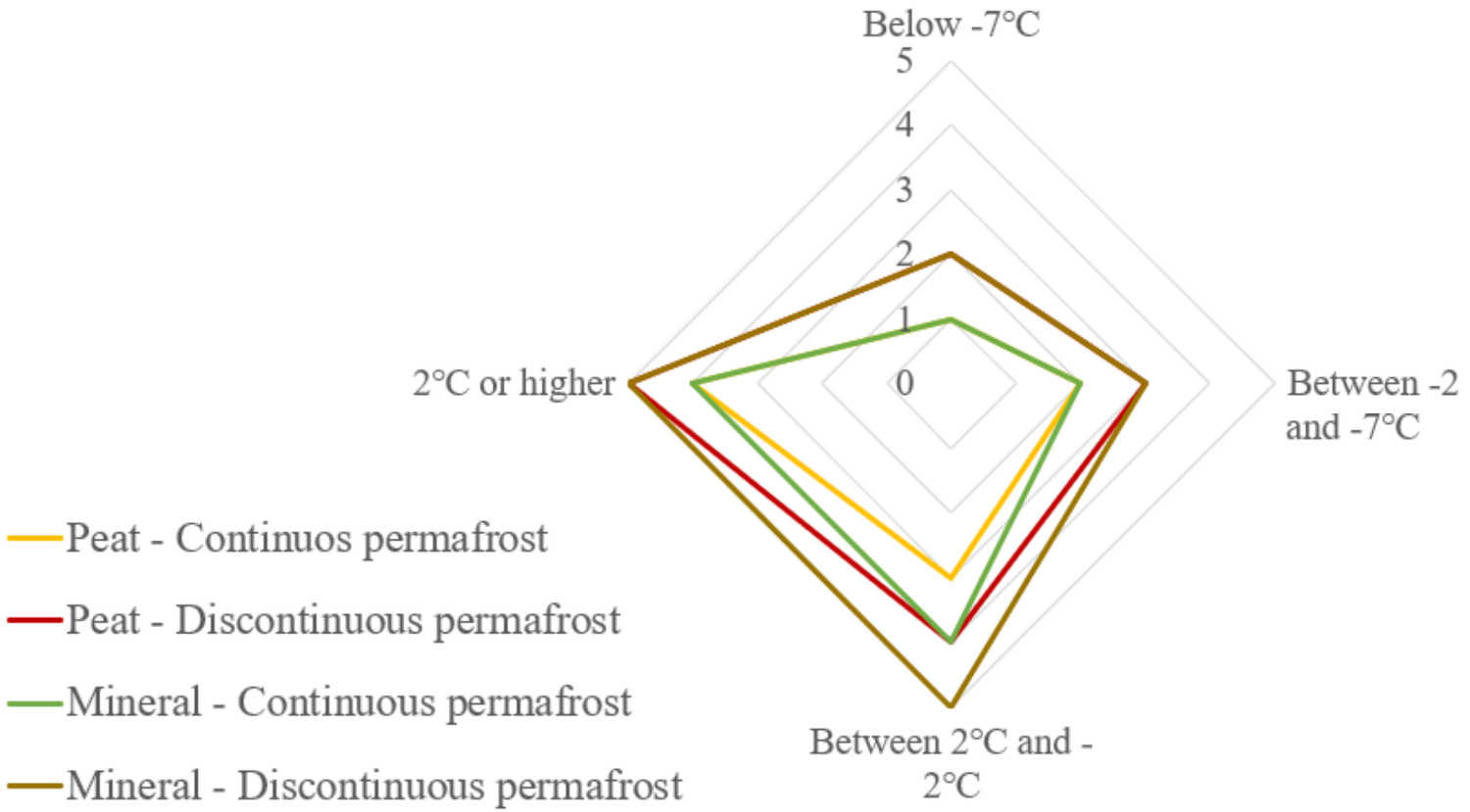
Vulnerability ranking indices

- Permafrost extent
  - continuous or discontinuous
- Soil type
  - peat or mineral soil
- Temperature

Scenarios

- RCP2.6, 4.5 & 8.5

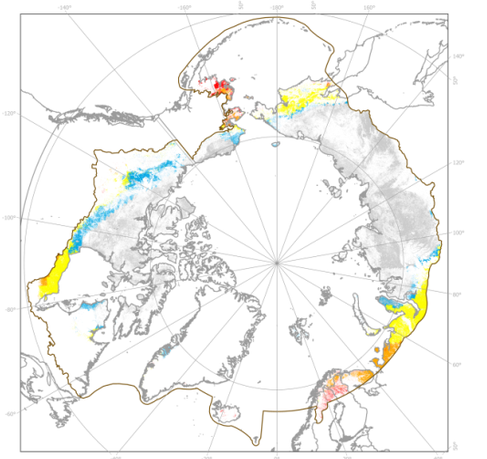
Goal 2: How will wetland areas be affected by warming?



Representation of the vulnerability ranking indices used

Vulnerability increases with time

2018 2050 2075 2100



1 2 3 4 5

Vulnerability ranking index

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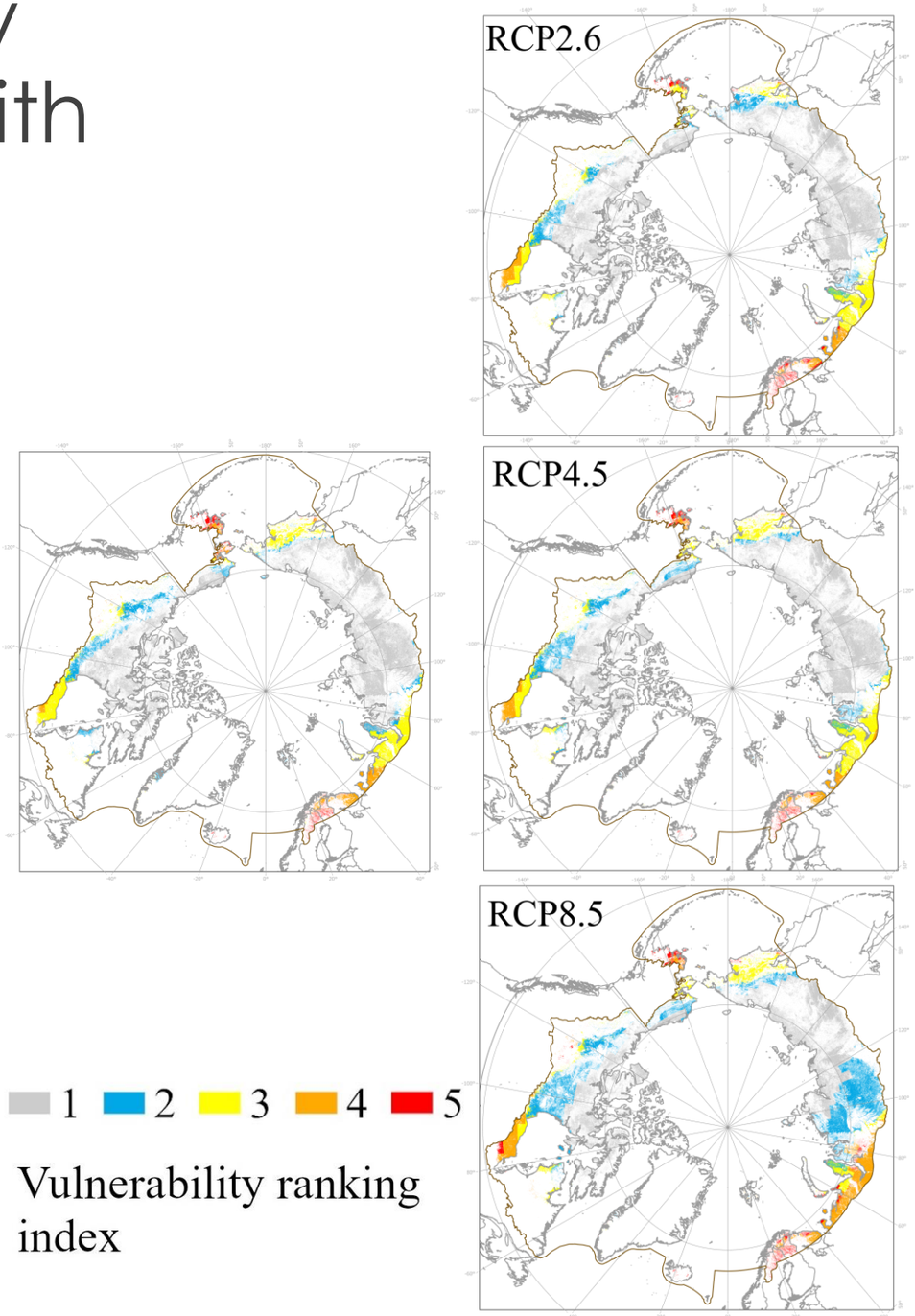

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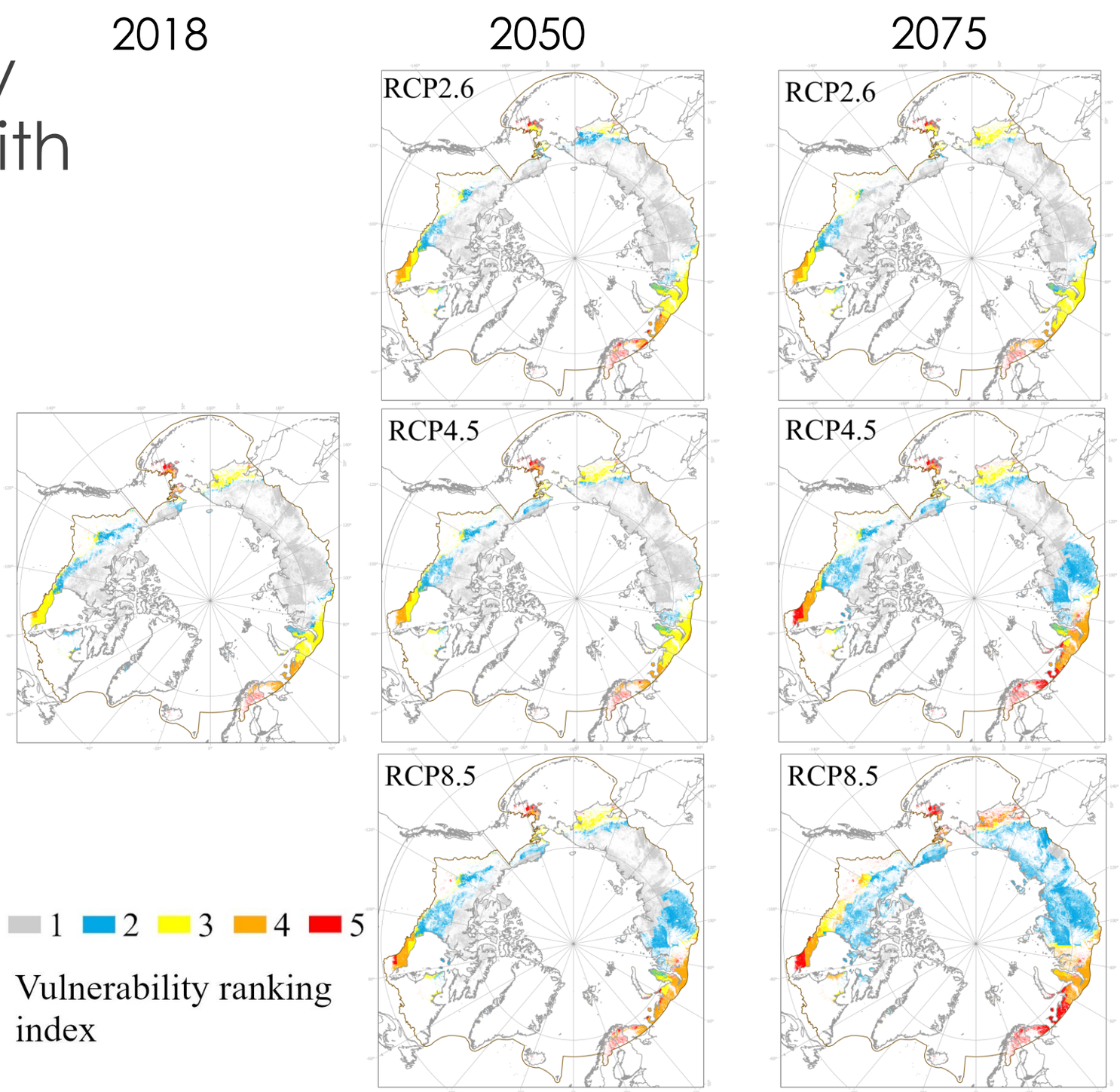

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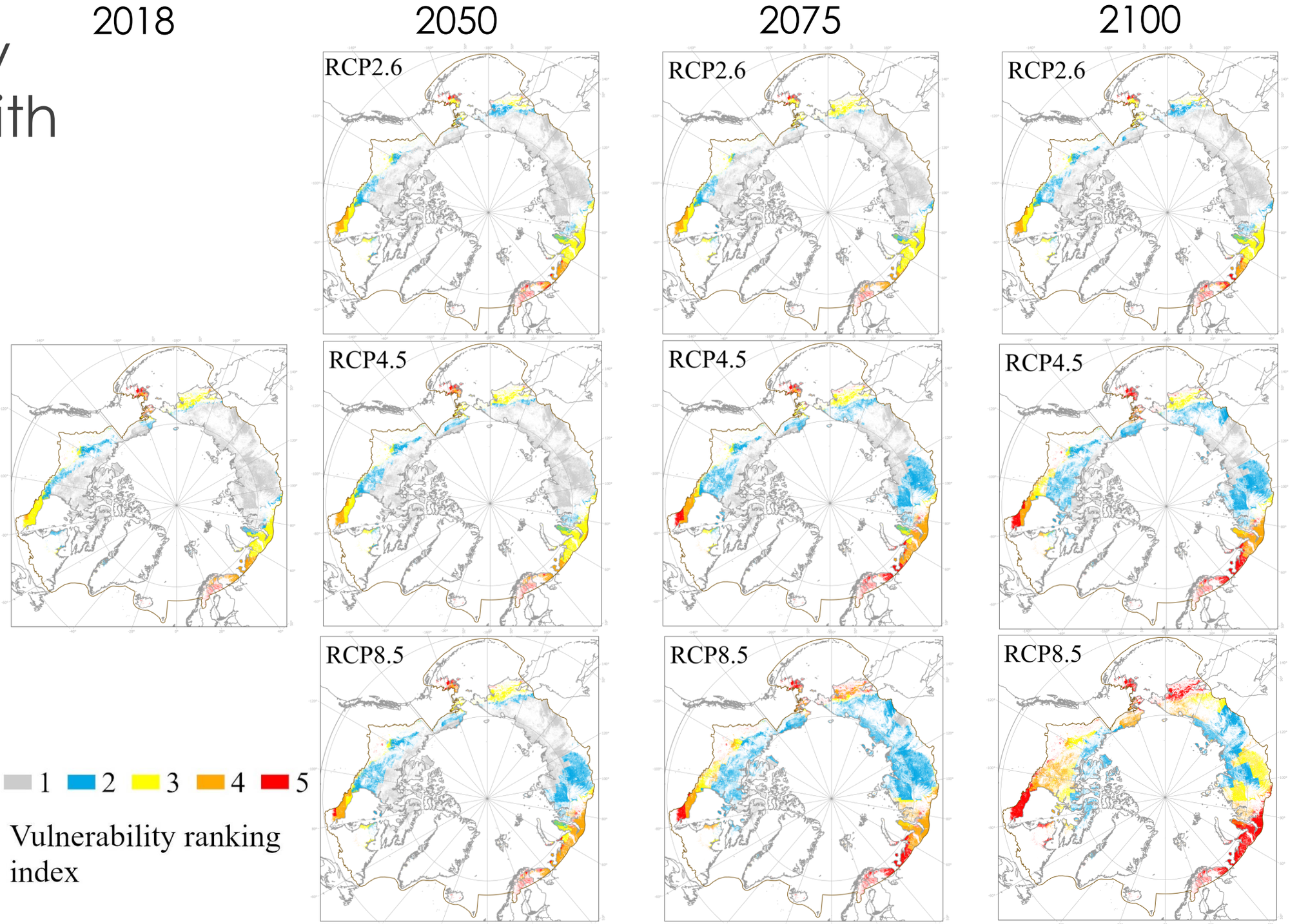
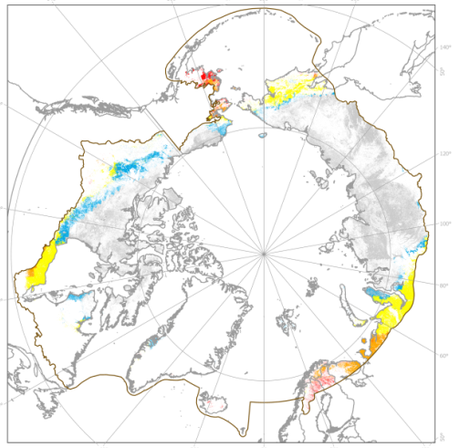


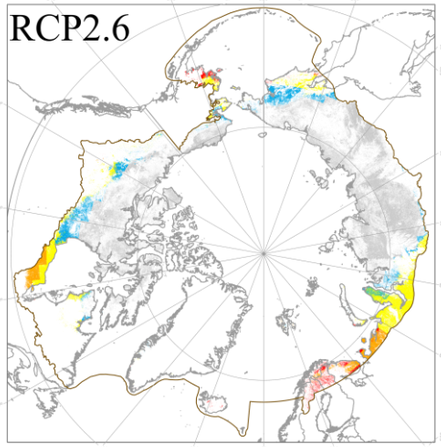
Vulnerability increases with time & RCP

Small changes in RCP2.6

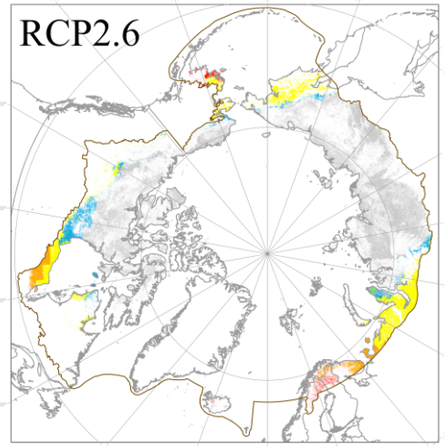
2018



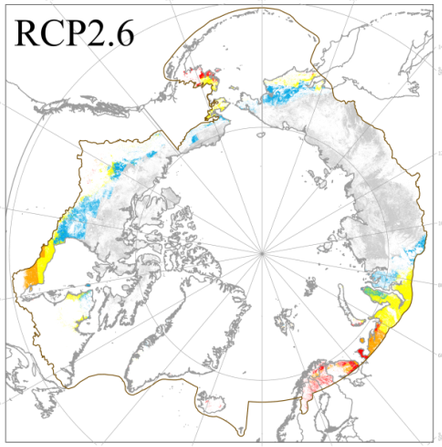
2050



2075



2100

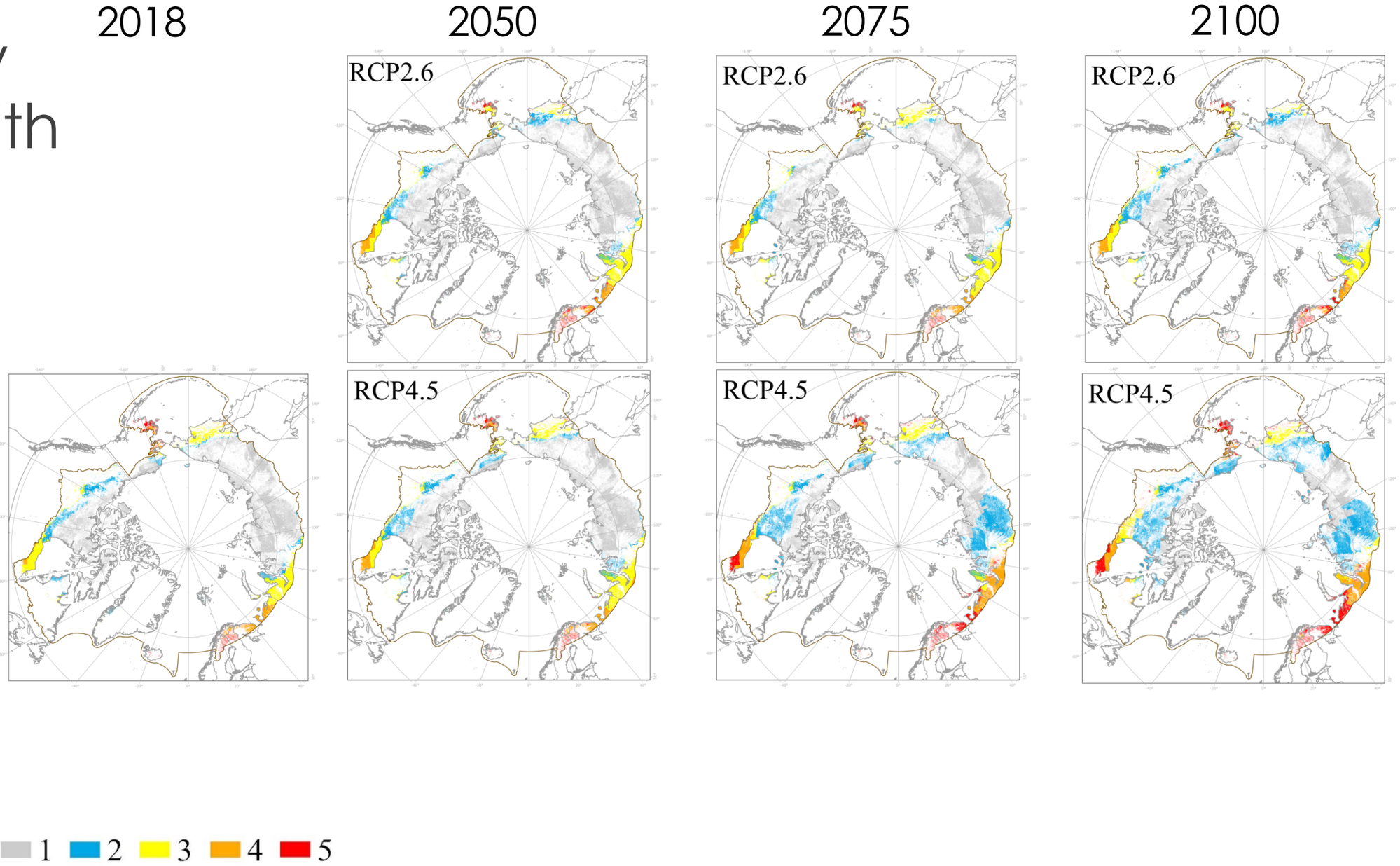


1 2 3 4 5

Vulnerability ranking index

Vulnerability increases with time & RCP

Small changes in RCP2.6



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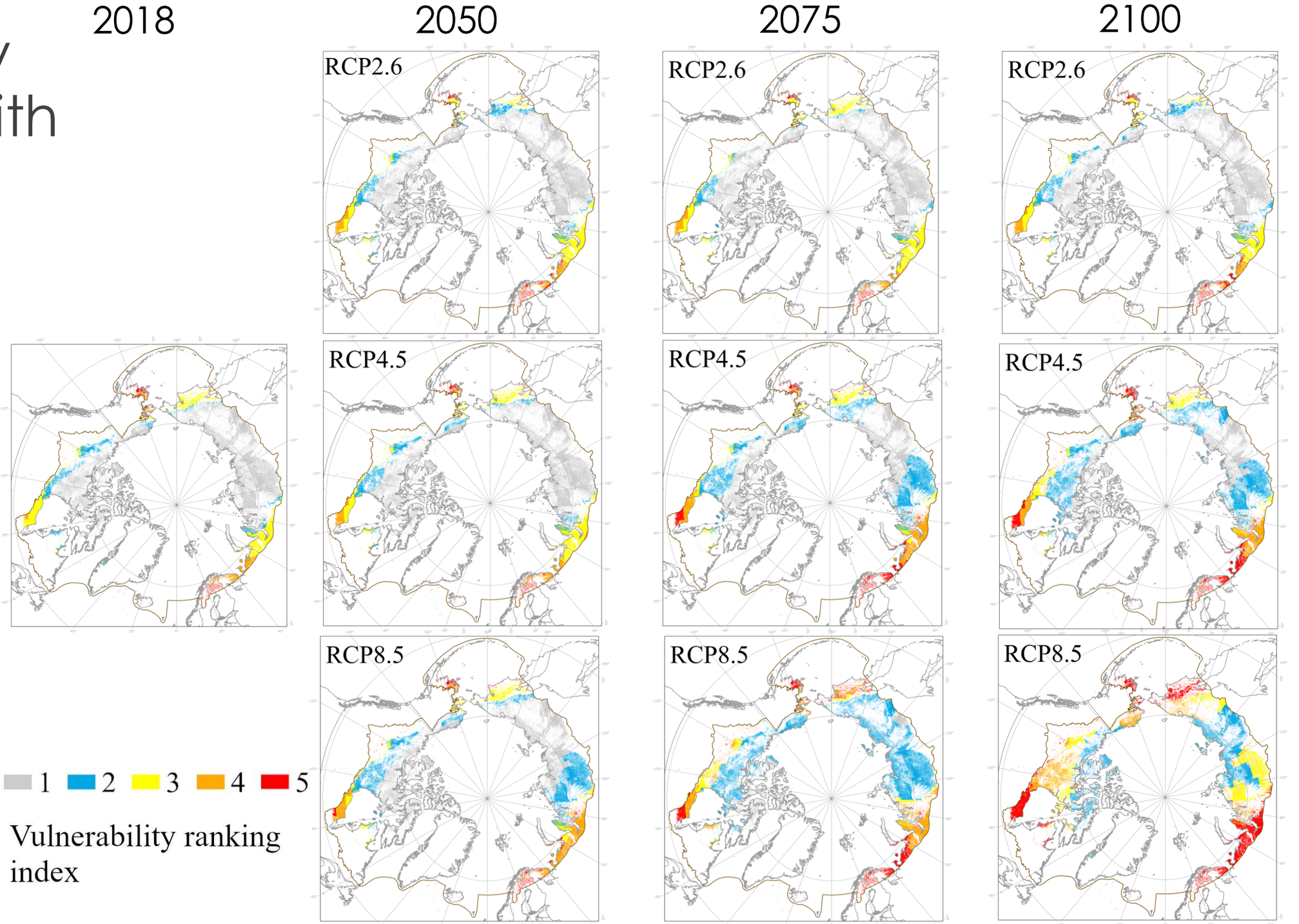
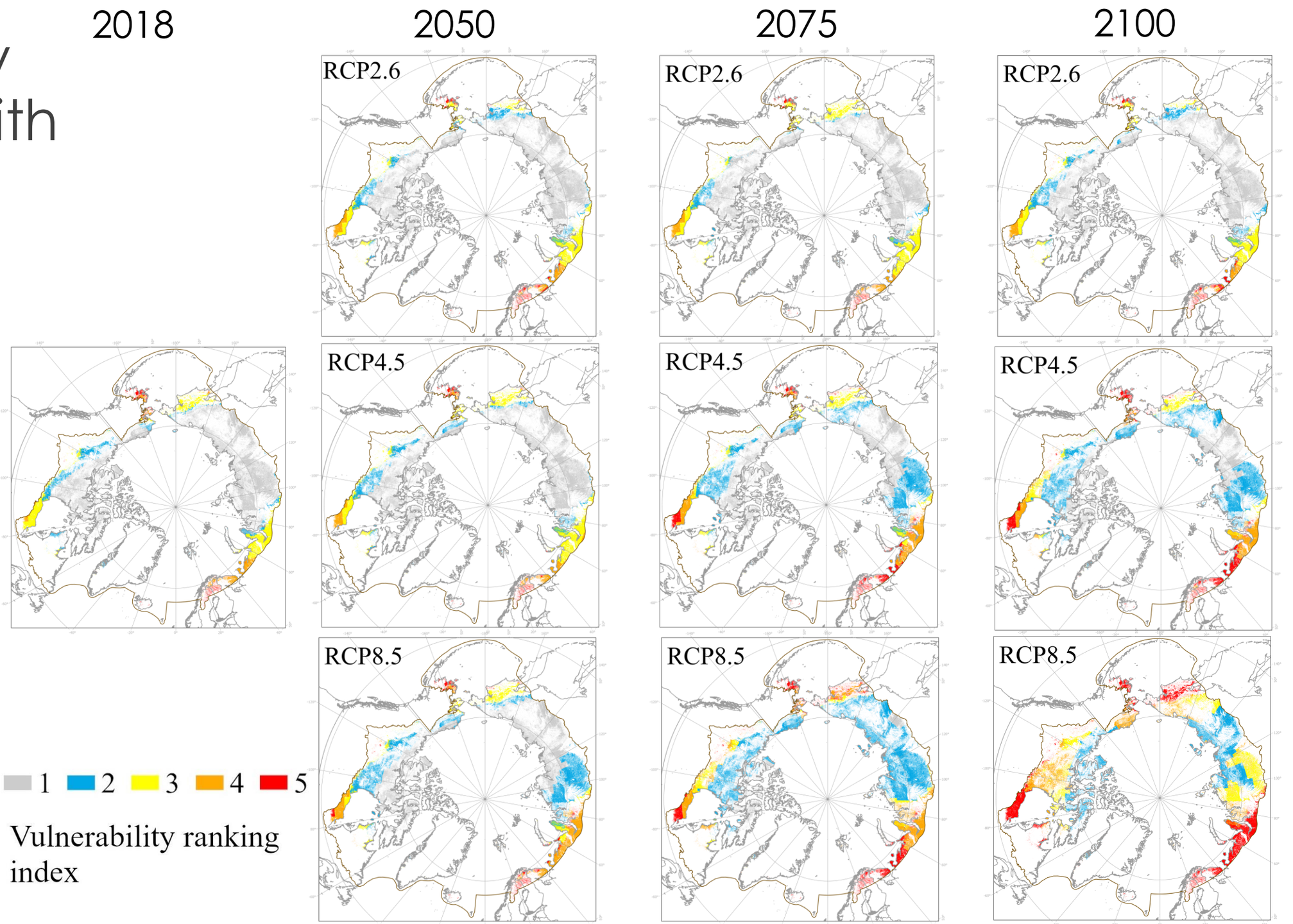


Vulnerability increases with time & RCP

Small changes in RCP2.6

50% of wetland area vulnerable by 2100 in RCP8.5

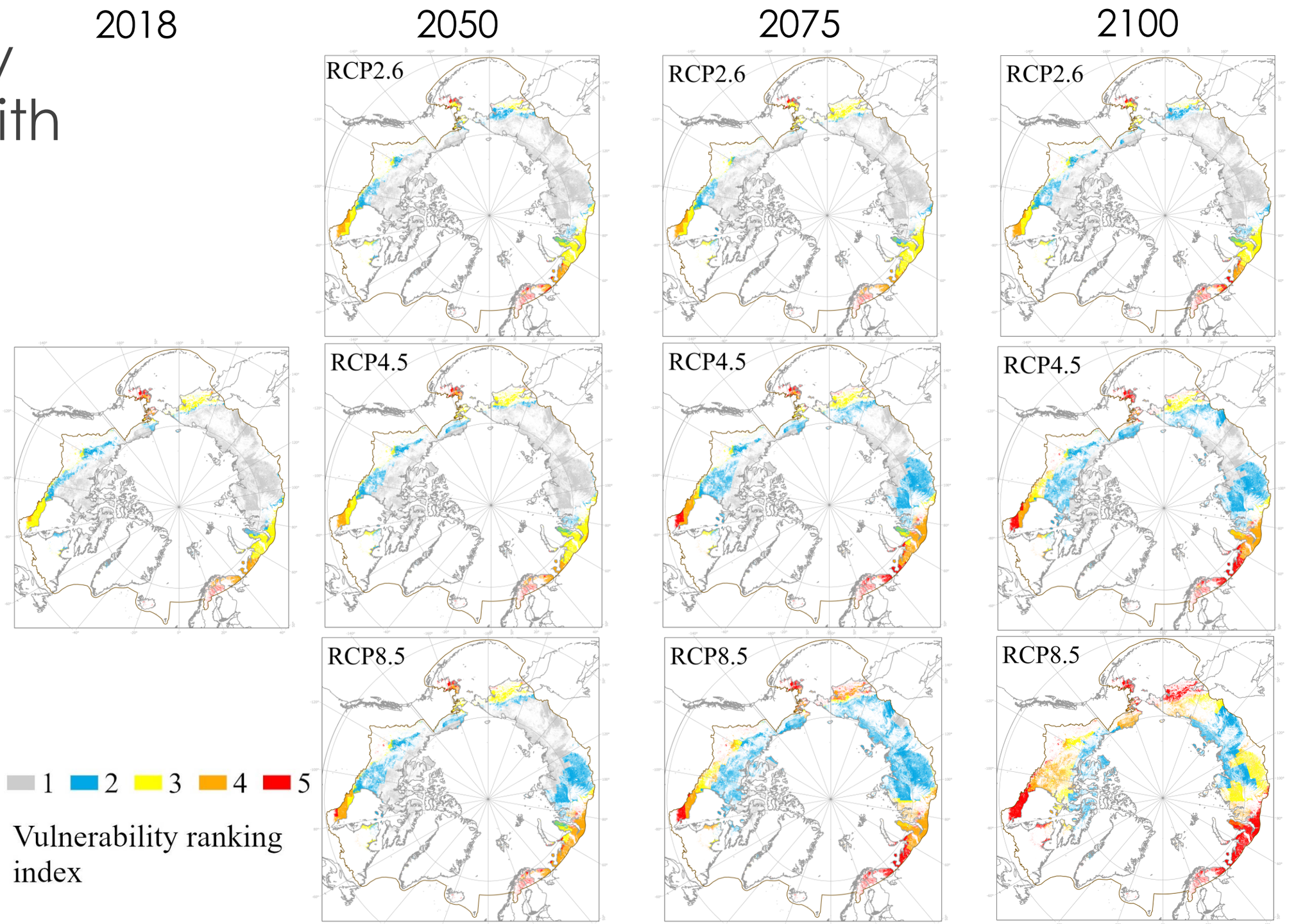


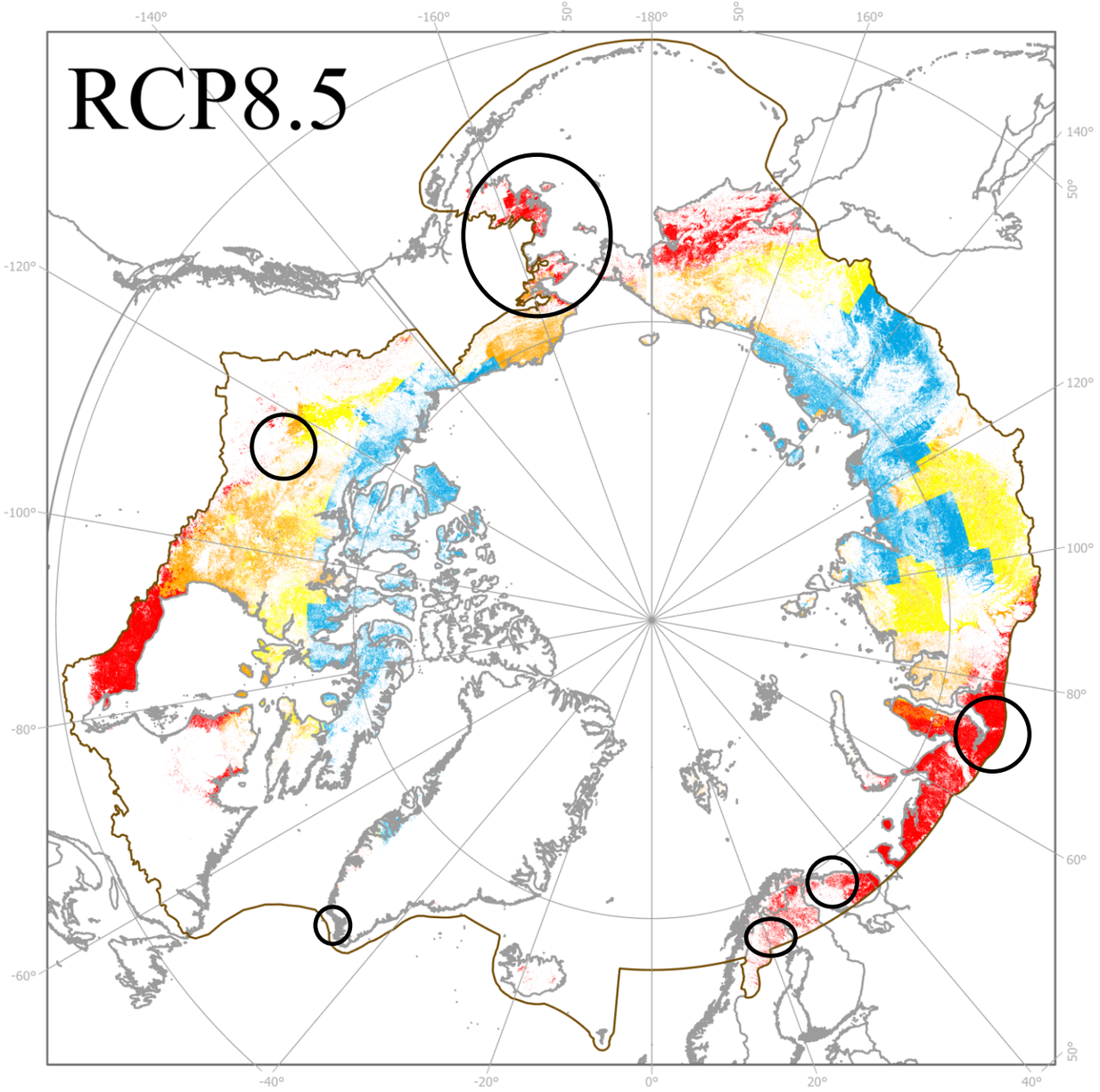
Vulnerability increases with time & RCP

Small changes in RCP2.6

50% of wetland area vulnerable by 2100 in RCP8.5

More than double that of 2050 & of RCP4.5





Vulnerability in 2100 RCP8.5

Highlighted in circles are the most vulnerable areas with the highest population density

- large proportion of indigenous people

4 of 6 highly vulnerable already in 2018

1 2 3 4 5 Vulnerability ranking index

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Take home message

Arctic wetlands & the ecosystem services they provide are important for sustainability and are threatened by climate change

Knowledge is essential for wetland assessment, adaptation & mitigation decisions, for efficient and sufficient planning

Maintaining wetlands as NBS is important to avoid negative impacts to social, economic and environmental aspects resulting from a rapidly changing Arctic

The full article is soon published in Earth's Future. Feel free to contact me to be informed when it's available online:

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