Henry Crawford
Reagan McKinney

Cryosphere

I. Target audience: Our audience is the public. Particularly those who are not within the scientific community, or those who respond most strongly through visual learning and experiences.
II. Main message: It is unequivocal that human influence has warmed the atmosphere, ocean and land. Elements of the cryosphere are now in states unseen in centuries. The intention of the 'Unprecedented Gallery' is to help those less familiar with the status of the cryosphere better understand its vulnerable future in wake of human-induced climate change.
III. Delivering the message: By presenting a series of stimulating and thought-provoking pieces, we aim to first expose the audience to the natural beauty of the cryosphere to build a sense of appreciation with these often-distant landscapes. Developing this emotional connection enables the audience to delve deeper into their feelings of empathy as we present compositions which embody the "unprecedented" change occurring in the cryosphere. It is this empathy which we hope will motivate viewers to make individual changes and encourage leading powers to address the climate crisis in alignment with the International Panel for Climate Change (IPCC) guidance.
IV. Work: See the attached presentation gallery

Henry Crawford
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Unprecedented

> "Most glaciers are shrinking (high confidence), the Greenland and Antarctic ice sheets are losing mass (high confidence), sea ice extent in the Arctic is decreasing (very high confidence), Northern Hemisphere snow cover is decreasing (very high confidence), and permafrost temperatures are increasing (high confidence)." [1]

Gallery Statement

The cryosphere refers to components of the Earth System that are frozen, with around 10% of Earth's land area being covered by glaciers or ice sheets[1,2]. It is unequivocal that human influence has warmed the atmosphere, ocean and land[3]. Elements of the cryosphere are now in states unseen in centuries[4]. The intention of the 'Unprecedented Gallery' is to help those less familiar with the status of the cryosphere better understand its vulnerable future in wake of human-induced climate change. The term 'unprecedented' is often used in scientific literature but its meaning is not well understood by the public[5]. We hope to share with the audience what unprecedented change is as it relates to the frozen components of Earth.

Frozen landscapes are illustrative indicators of climate change around the globe given their fundamental relationship with precipitation and temperature. Yet an unfortunate truth is that, to many, the cryosphere is a largely mysterious component of the Earth System given its inaccessible nature. Consequently, a report discussing the Greenland ice sheet, for example, may feel as foreign to the layperson as another world and the myriad of associated scientific data can become distant. Delivering scientific information alone is inadequate when it comes to communicating climate change and inspiring action[6]. There is increasing recognition on the important role psychology and perception play in addressing the climate crisis, and the negative effects of being psychologically distant to regions of concern[7]. Visual art can build a sense of connection and empathy with the cryosphere amongst the public. Perceiving art requires attention, and processing art demands elements of thought that are not normally accessed by typical communications about climate change[8].

By presenting a series of stimulating and thought-provoking pieces, we aim to first expose the audience to the natural beauty of the cryosphere to build a sense of appreciation with these often-distant landscapes. Developing this emotional connection enables the audience to delve deeper into their feelings of empathy as we present compositions which embody the "unprecedented" change occurring in the cryosphere. It is this empathy which we hope will motivate viewers to make individual changes and encourage leading powers to address the climate crisis in alignment with the International Panel for Climate Change (IPCC) guidance[2].

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1. IPCC, 2019: Technical Summary. In: IPCC Special Report on the Ocean and Cryosphere in a Changing Climate In press.

2. IPCC, 2021: Annex VII: In Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change. Cambridge University Press. In Press.

3. IPCC, 2021: Summary for Policymakers. In: Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change. Cambridge University Press. In Press.

4. IPCC, 2021: Technical Summary. In Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change Cambridge University Press. In Press.

5. Bruine de Bruin, W., Rabinovich, L., Weber, K., Babboni, M., Dean, M., & Ignon, L. (2021). Public understanding of climate change terminology. Climatic Change, 167(3–4), 37. https://doi.org/10.1007/s10584-021-03183-0

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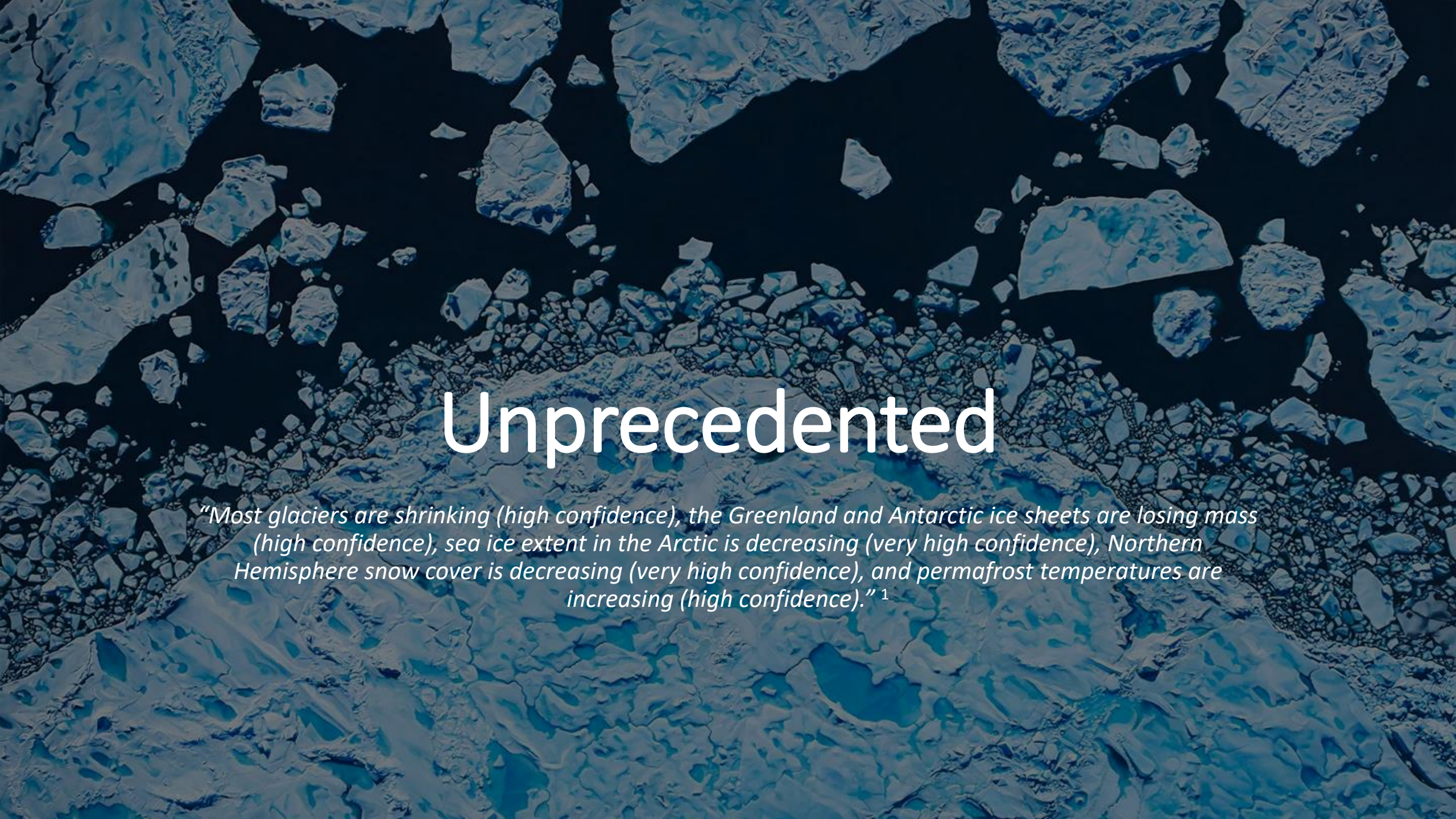

Unprecedented

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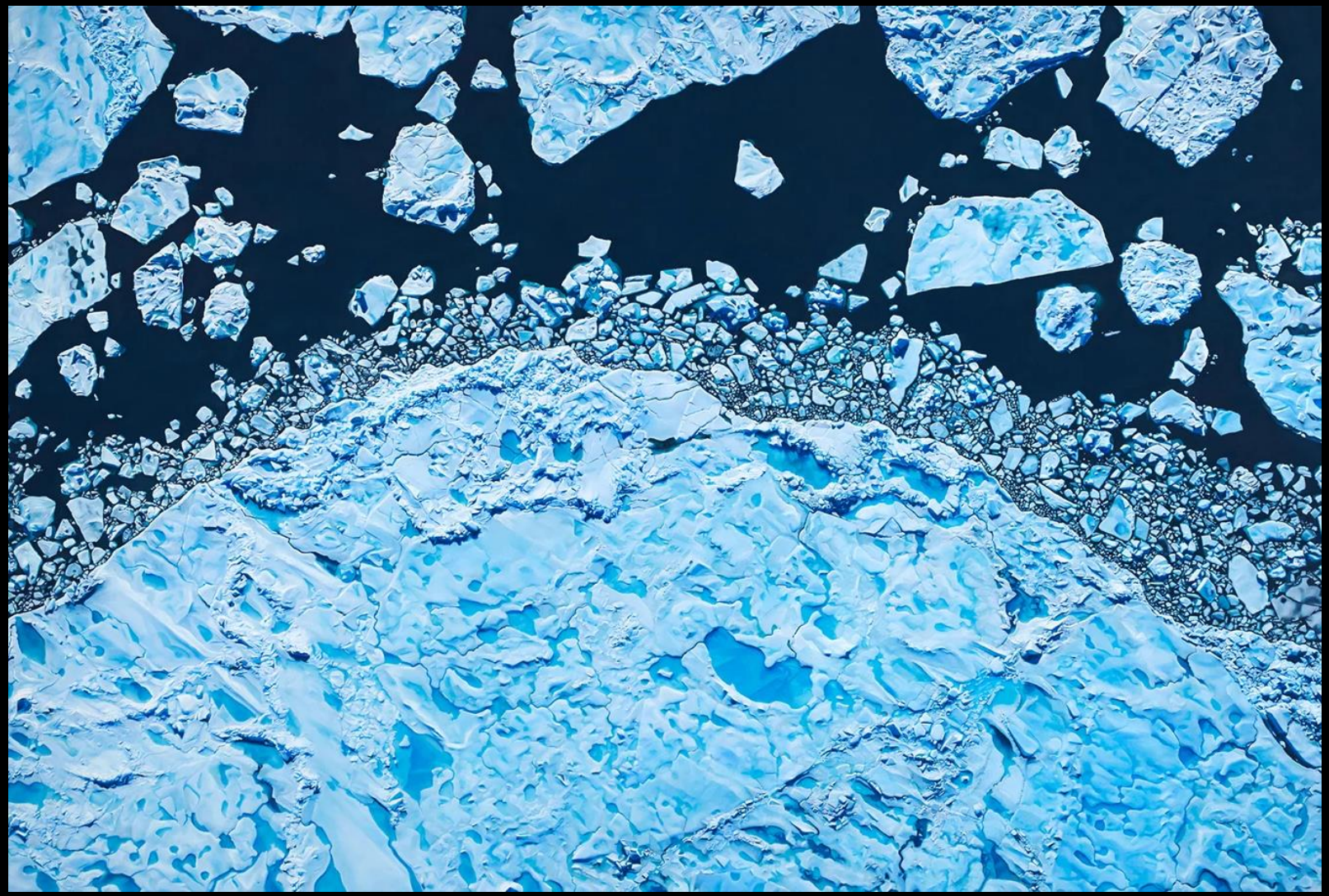
Cryosphere Beauty



Zaria Forman

Pastel [Link]

"The ocean and cryosphere support unique habitats and are interconnected with other components of the climate system through global exchange of water, energy and carbon."

-IPCC SPOCC, 2019

Zaria Forman

Pastel [Link]

"All people on Earth depend directly or indirectly on the ocean and cryosphere"

-IPCC SPOCC, 2019

Zaria Forman

Pastel [Link]

"...they are key components of the global climate system"

-IPCC SPOCC, 2019

Diane Burko

Acrylic [Link]

"the mountain cryosphere plays a major role in large parts of the world… with a significant influence on surrounding lowland areas even far from the mountains"

-IPCC SPOCC, 2019

Paul Nicklen
Photograph [Link]

"Around 10% of Earth's land area is covered by glaciers or ice sheets"
-IPCC SPOCC, 2019

Milen Tod

Oil Painting [Link]

"Ice sheets, glaciers and snowpack account for approximately 97% of freshwater resources"

- IPCC AR6

Unprecedented Change

Paul Nicklen
Photograph [Link]

"It is virtually certain that global mean sea level will continue to rise over the 21st century."
-IPCC AR6

Paul Nicklen
Photograph [Link]

" Current Arctic sea ice coverage levels...are at their lowest since at least 1850 (high confidence)"
-IPCC AR6 Technical Summary, 2021

Paul Nicklen
Photograph [Link]

"...a world whose climate system is rapidly changing, overwhelmingly due to human influence"

-IPCC AR6 Technical Summary, 2021

Diane Burko

[Link]

"It is very likely that anthropogenic forcing, mainly due to greenhouse gas increases, was the main driver of this loss"

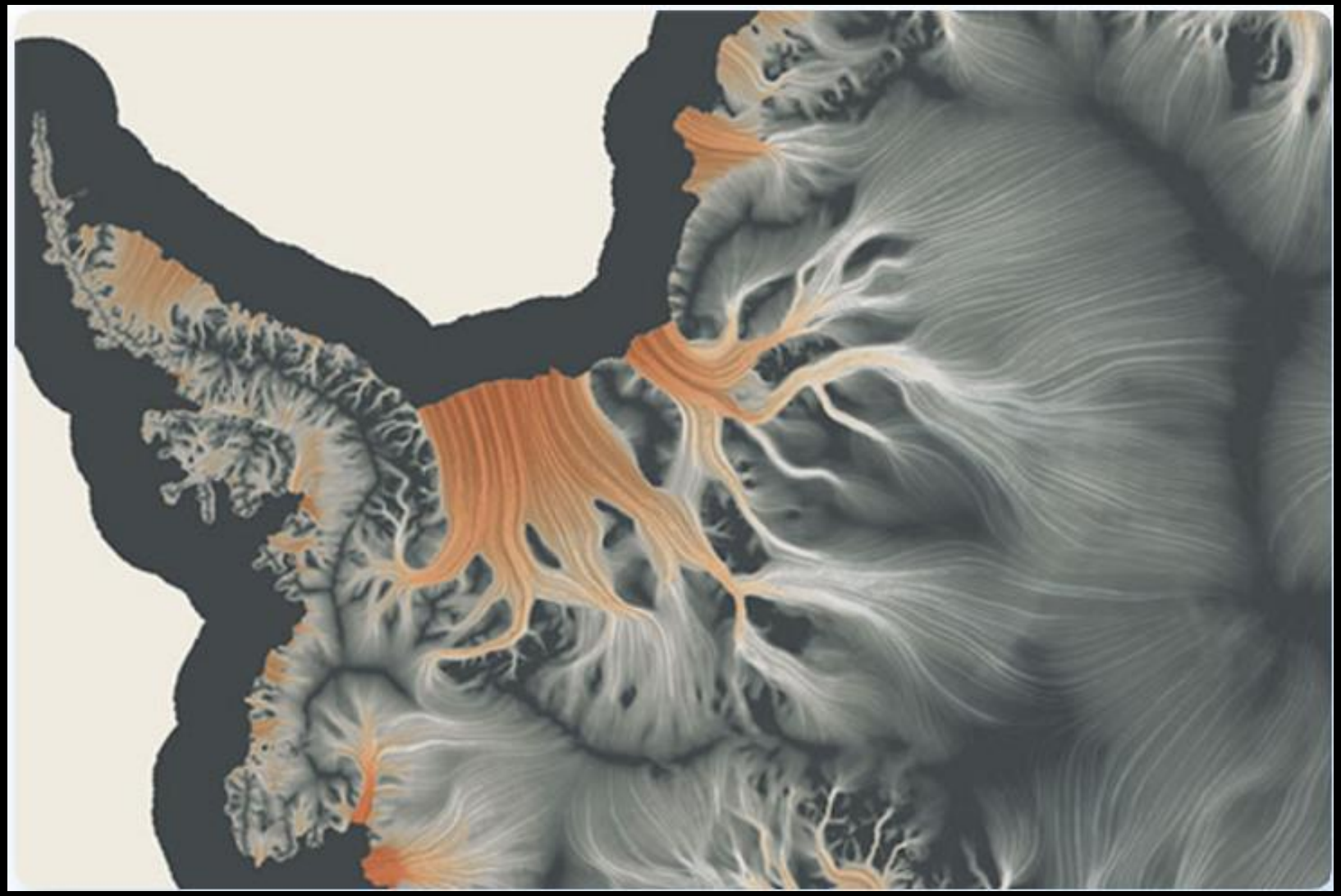
-IPCC AR6 Technical Summary, 2021

Diane Burko

[Link]

"Mountain and polar glaciers are committed to continue melting for decades or centuries (very high confidence)."

- IPCC AR6



John Patchett et al.

Model Output [Link]

"glaciers have retreated since the second half of the 19th century; this behavior is unprecedented in at least the last 2,000 years"

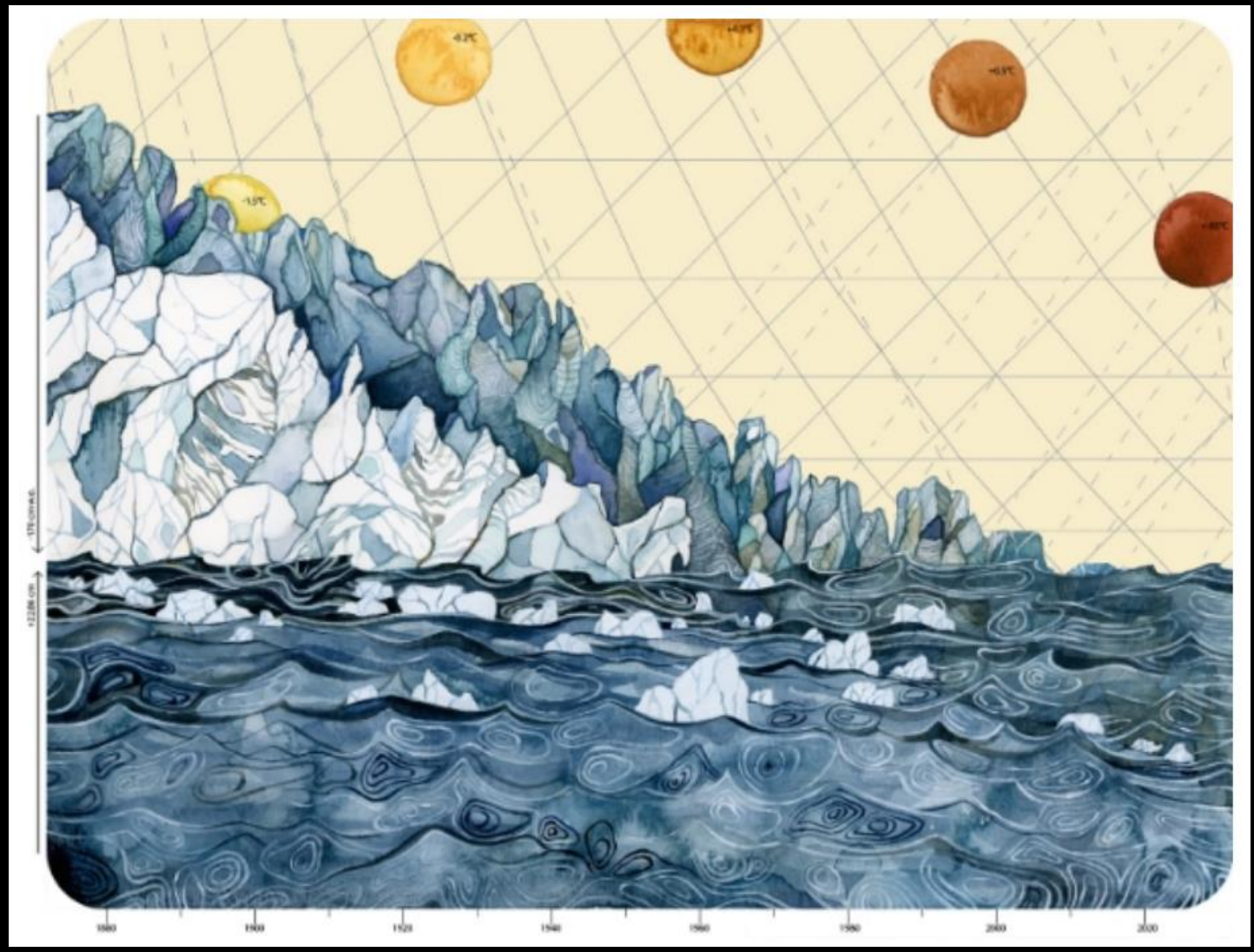
- IPCC AR6

Jill Pelto

Watercolor [Link]

"glaciers will continue to lose mass at least for several decades even if global temperature is stabilized (very high confidence)"

- IPCC AR6



Jill Pelto

Watercolor [Link]

"sea level is committed to rise for centuries to millennia due to continuing deep-ocean warming and ice-sheet melt (high confidence)."

- IPCC AR6

Artists

- Zaria Forman; https://www.zariaforman.com/
- Diane Burko; https://www.dianeburko.com/au-seeing-climate-change-1
- Paul Nicklen; https://paulnicklen.com/
- John Pathchett et al.; https://e3sm.org/scientific-visualization-of-e3sms-cryosphere-campaign-simulations/
- Jill Pelto; https://www.jillpelto.com/
- Milen Tod; https://milen.com/

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