



AN OVERVIEW OF RECENT HIGH LATITUDE DUST (HLD)- AND AEROSOL MEASUREMENTS IN ICELAND, ANTARCTICA, SVALBARD, AND GREENLAND, INCLUDING HLD IMPACTS ON CLIMATE



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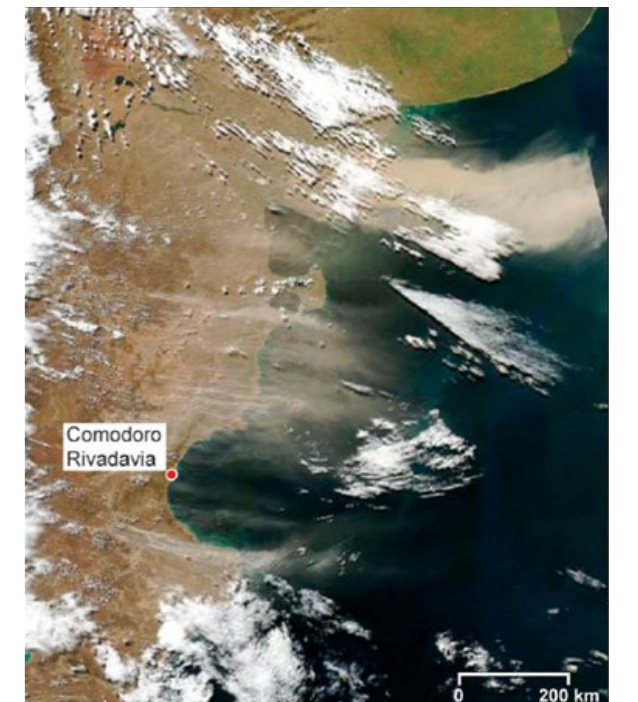
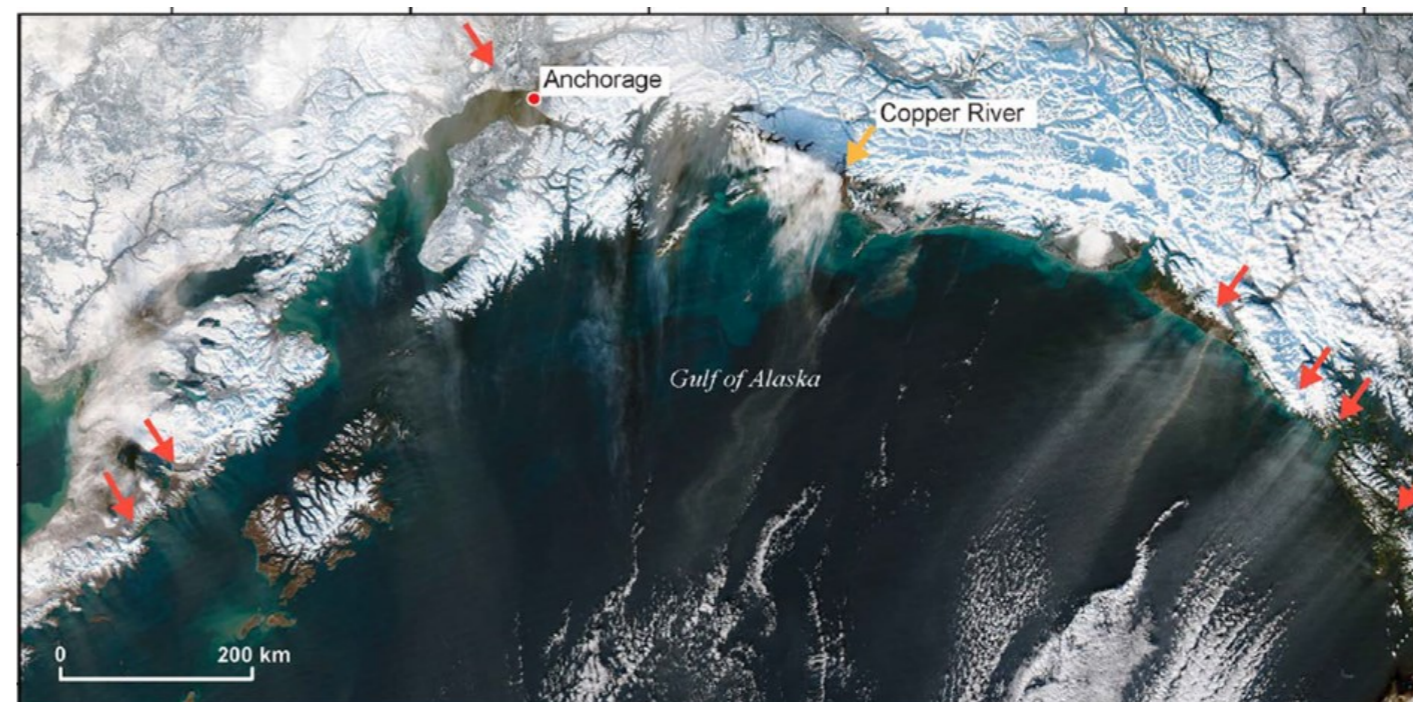
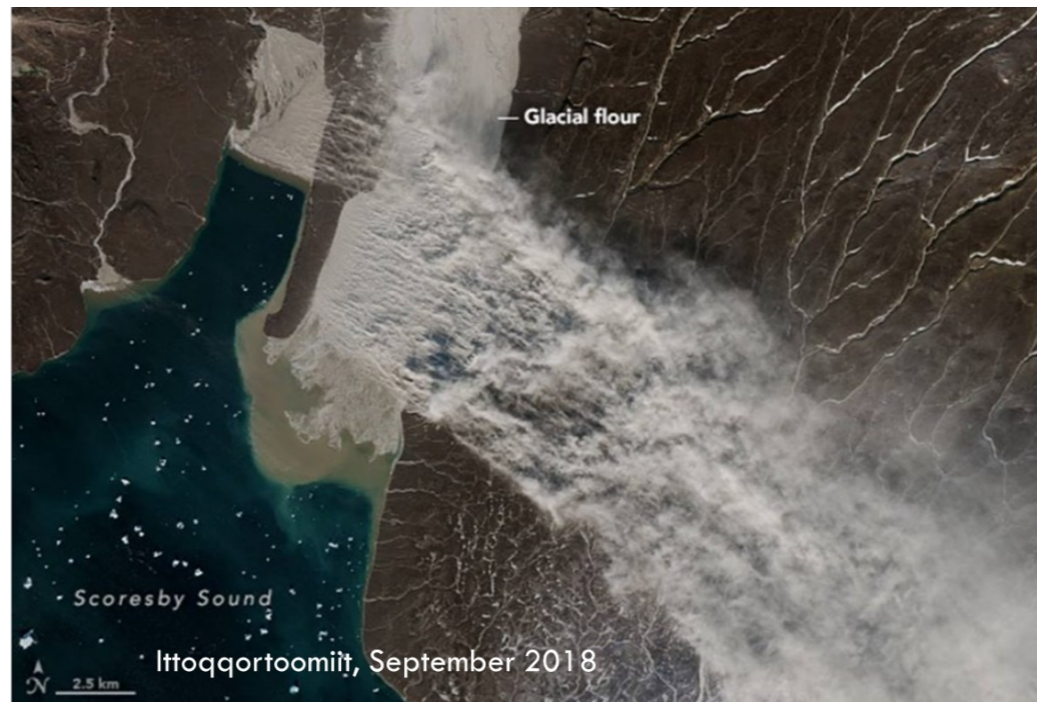
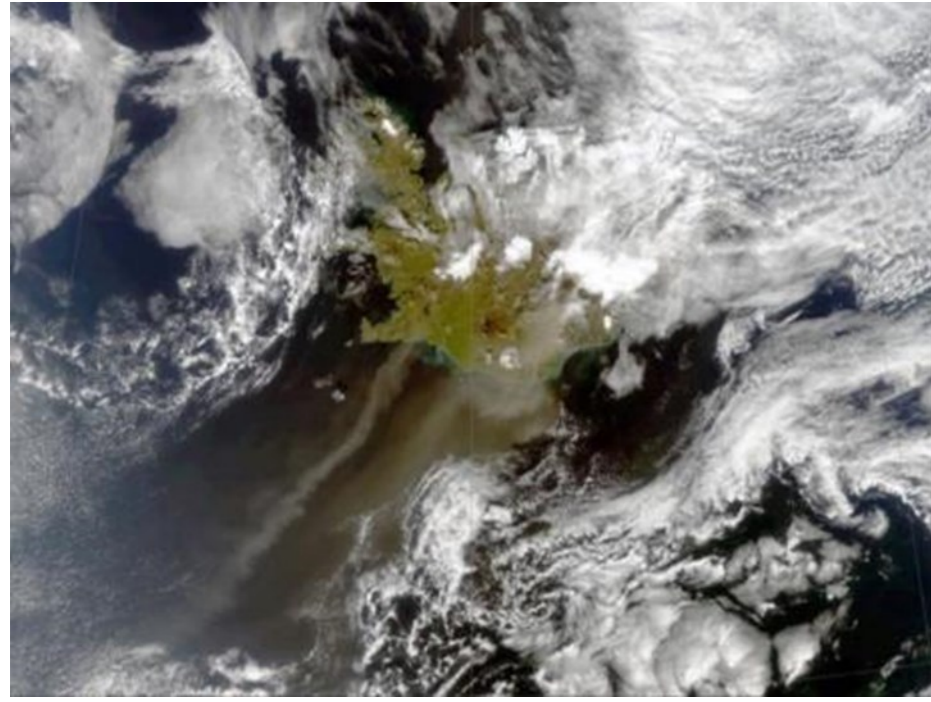
High Latitude Dust - active sources cover > 1,600,000 km² and contribute up to 5 % of global atmospheric dust budget (Meinander et al., 2022) - a climate-forcing driver for the cryosphere, atmosphere, and ecosystems (terrestr., marine and cryo.) changes (IPCC, 2019)

Iceland

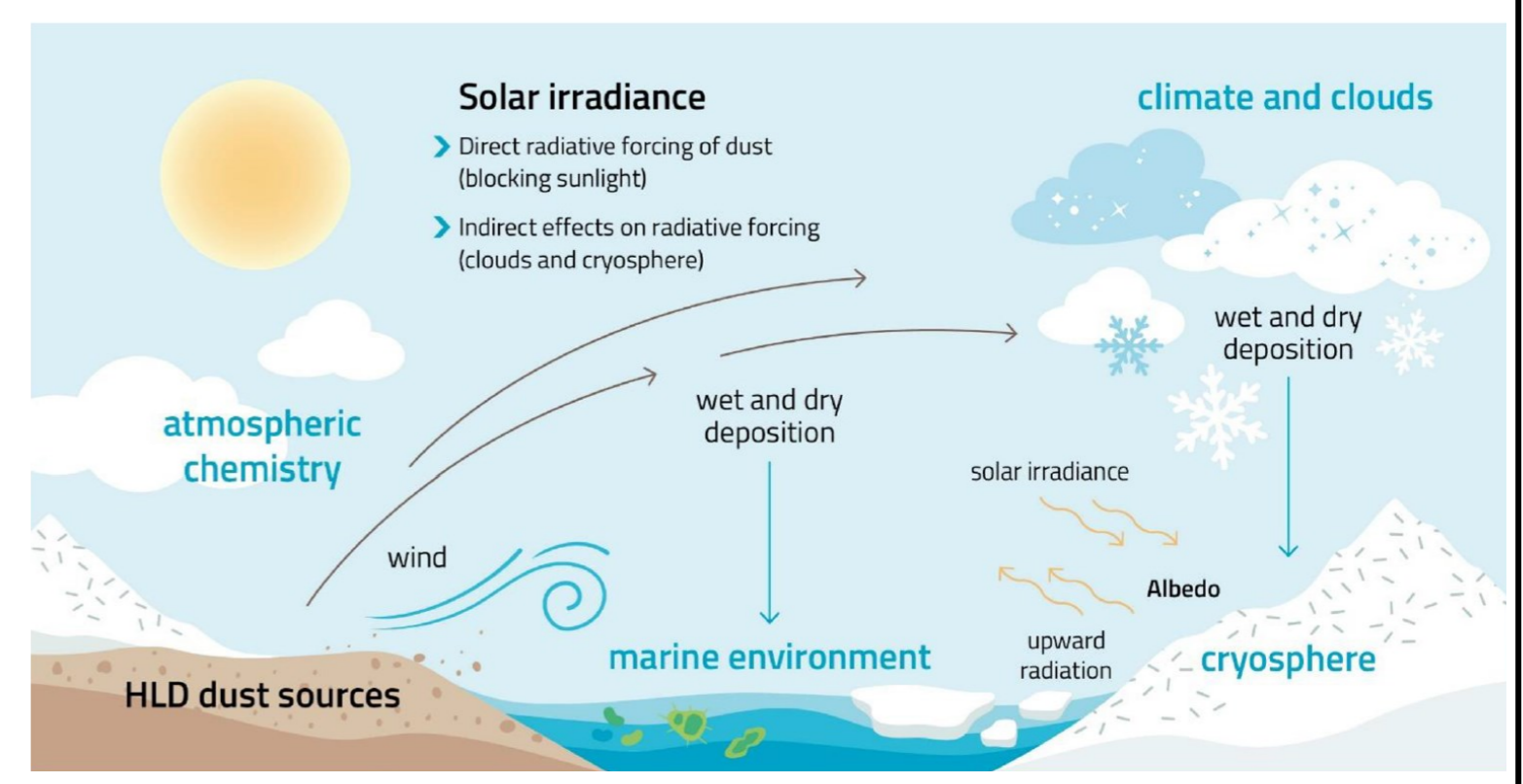
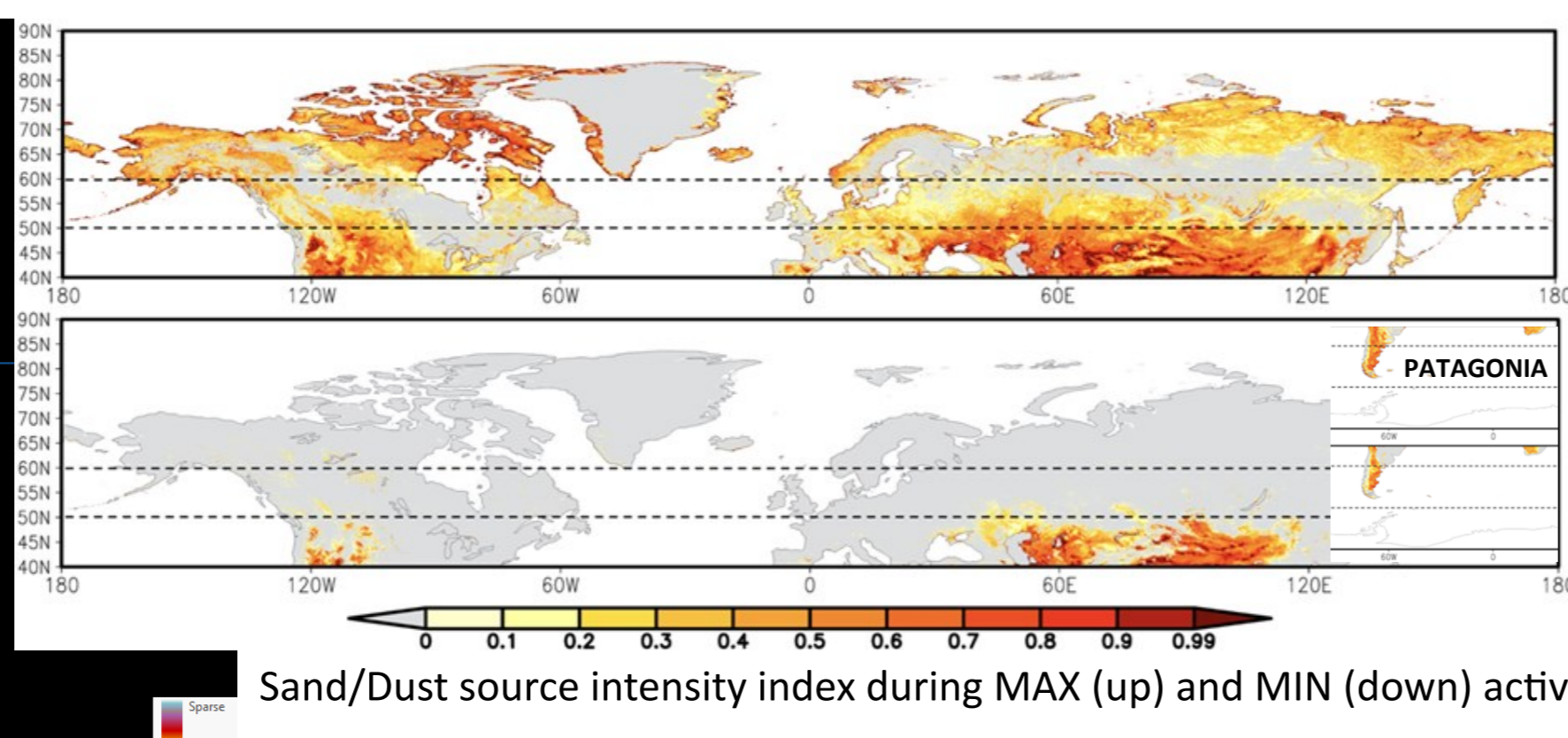
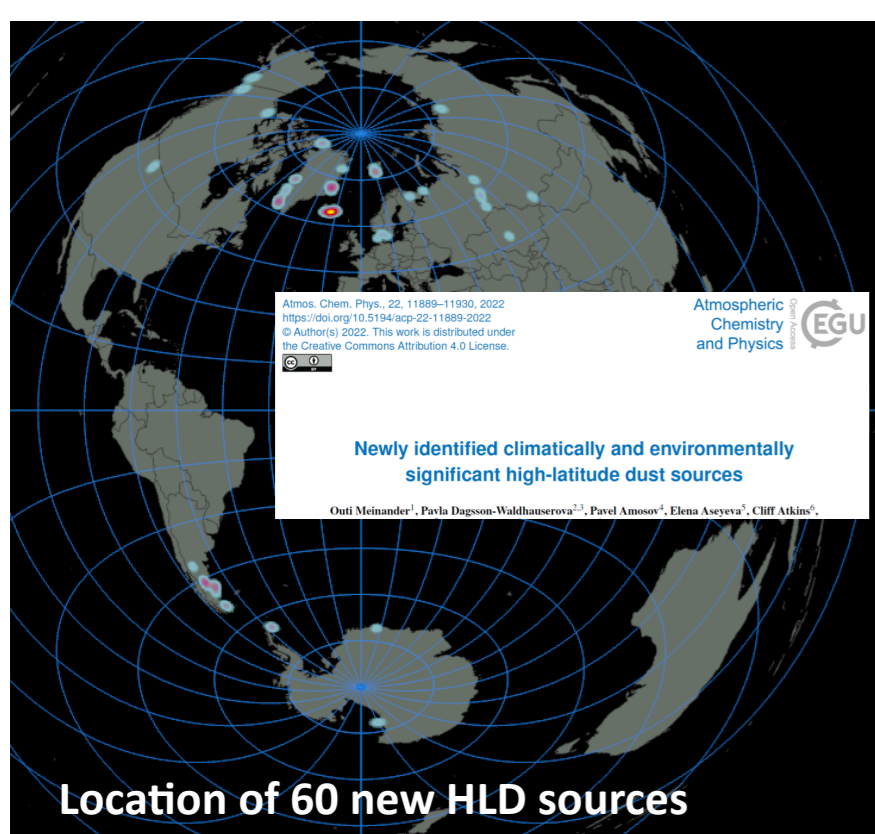
Greenland

Alaska

Patagonia

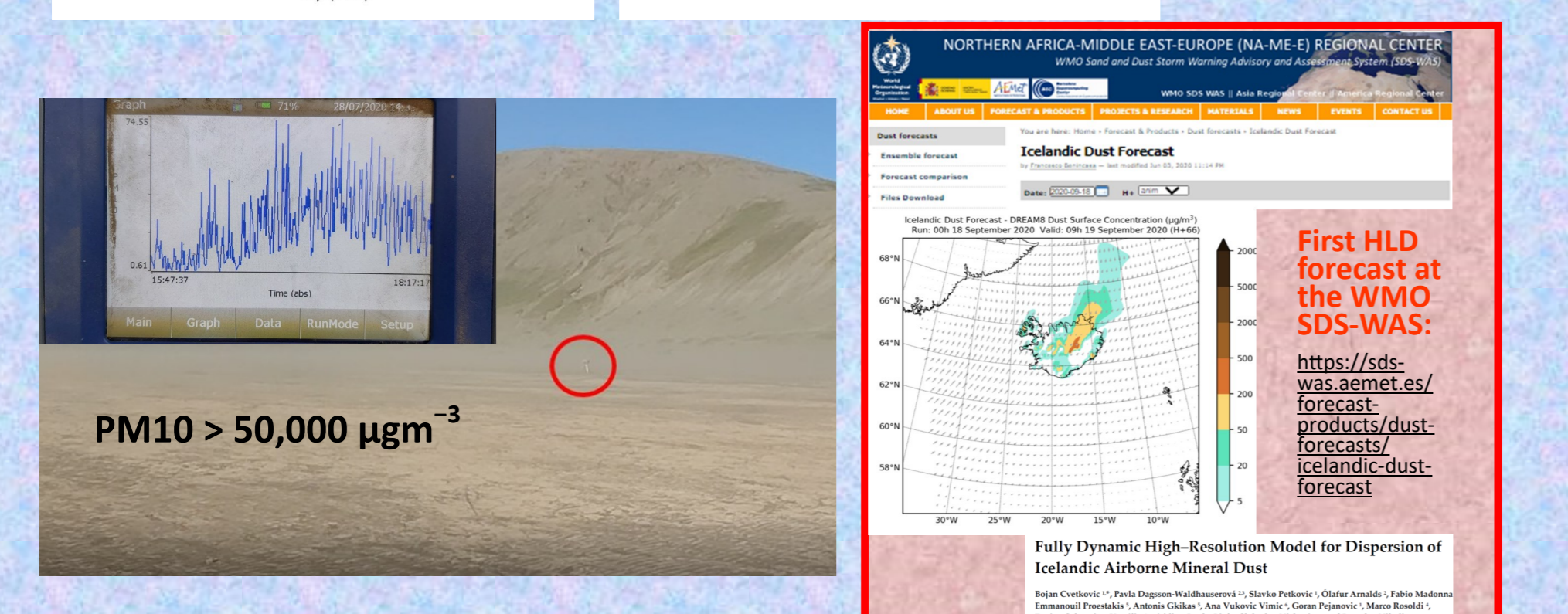
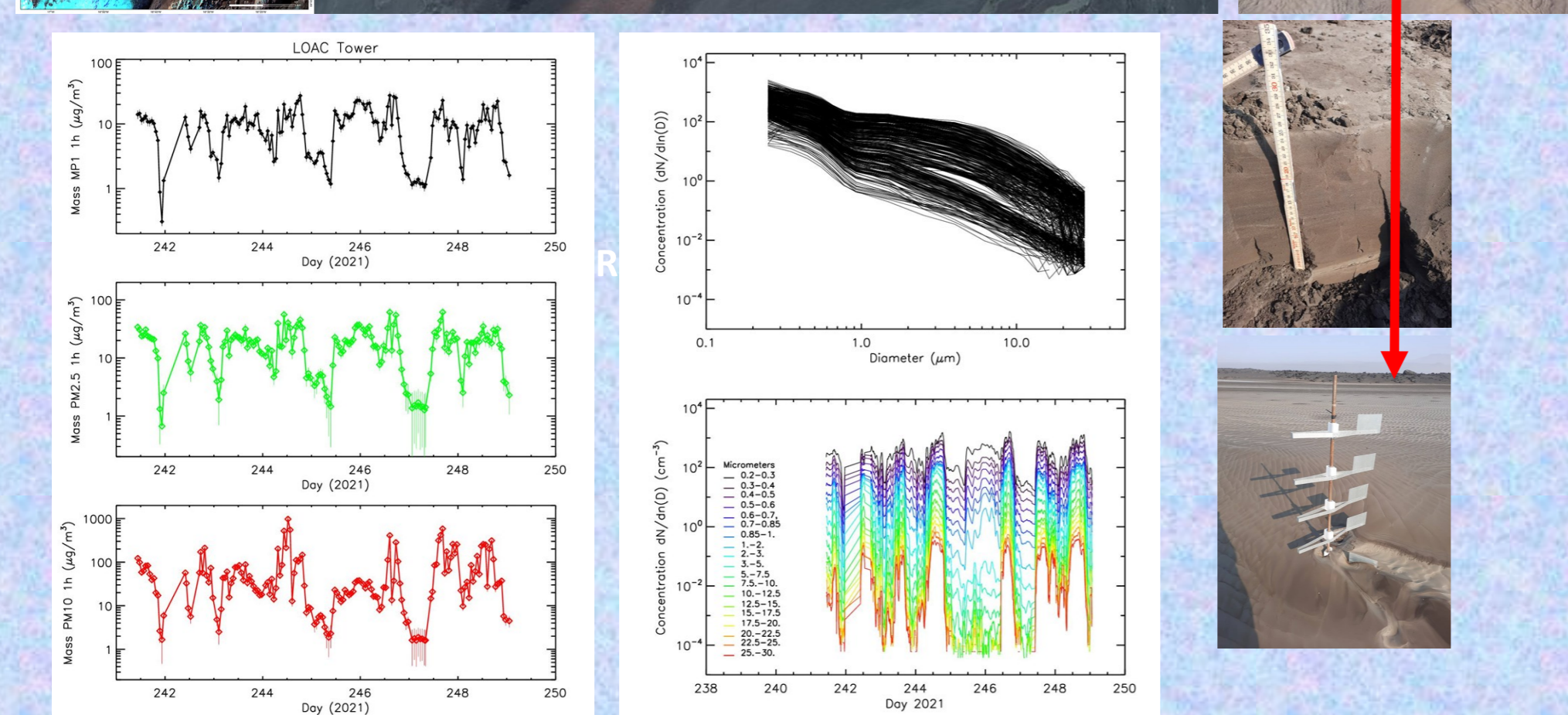


Other sources: New Zealand, Antarctica, Svalbard, Canada, North Eurasia, ..



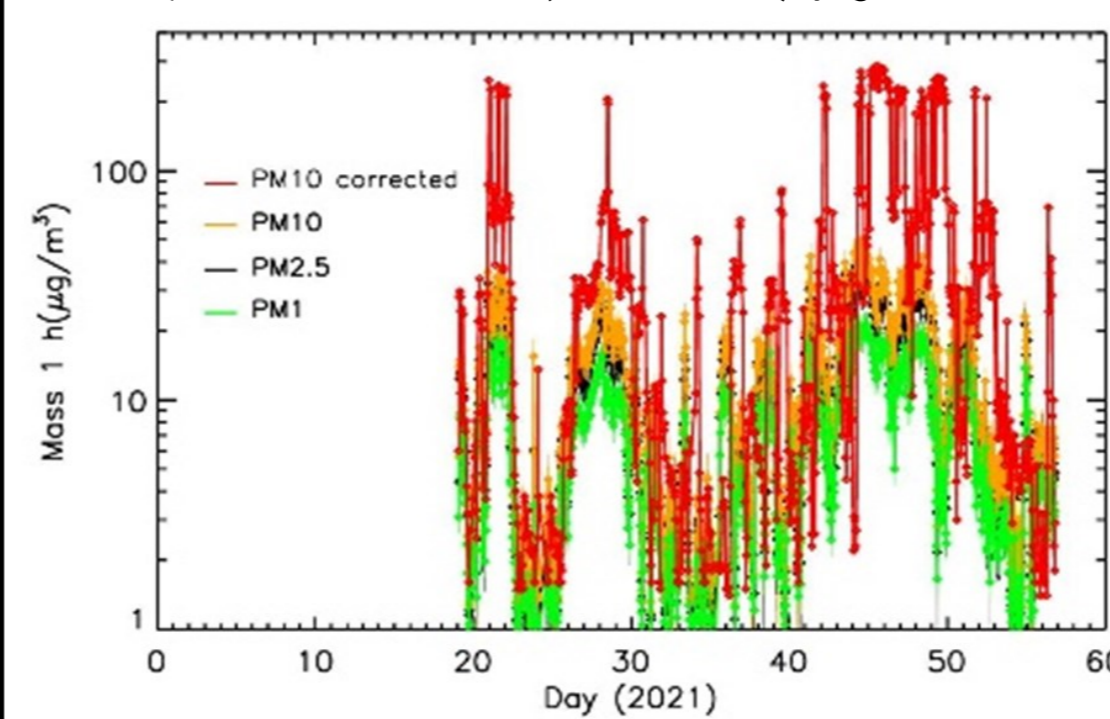
Climatic and environmental impacts of HLD

Iceland 2021 - LARGEST INTERNATIONAL HLD FIELD CAMPAIGN

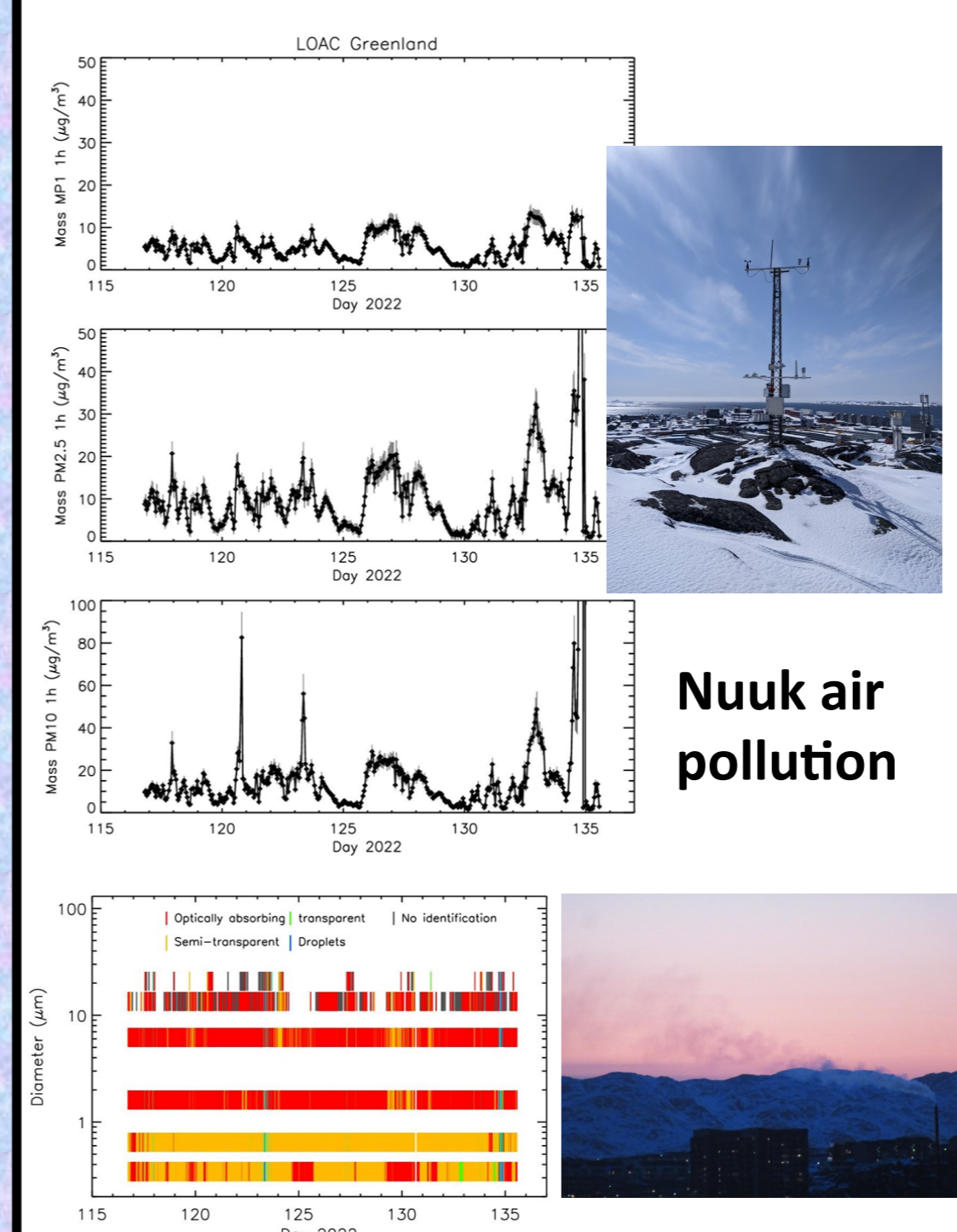


Antarctica 2021 - extremely dry summer

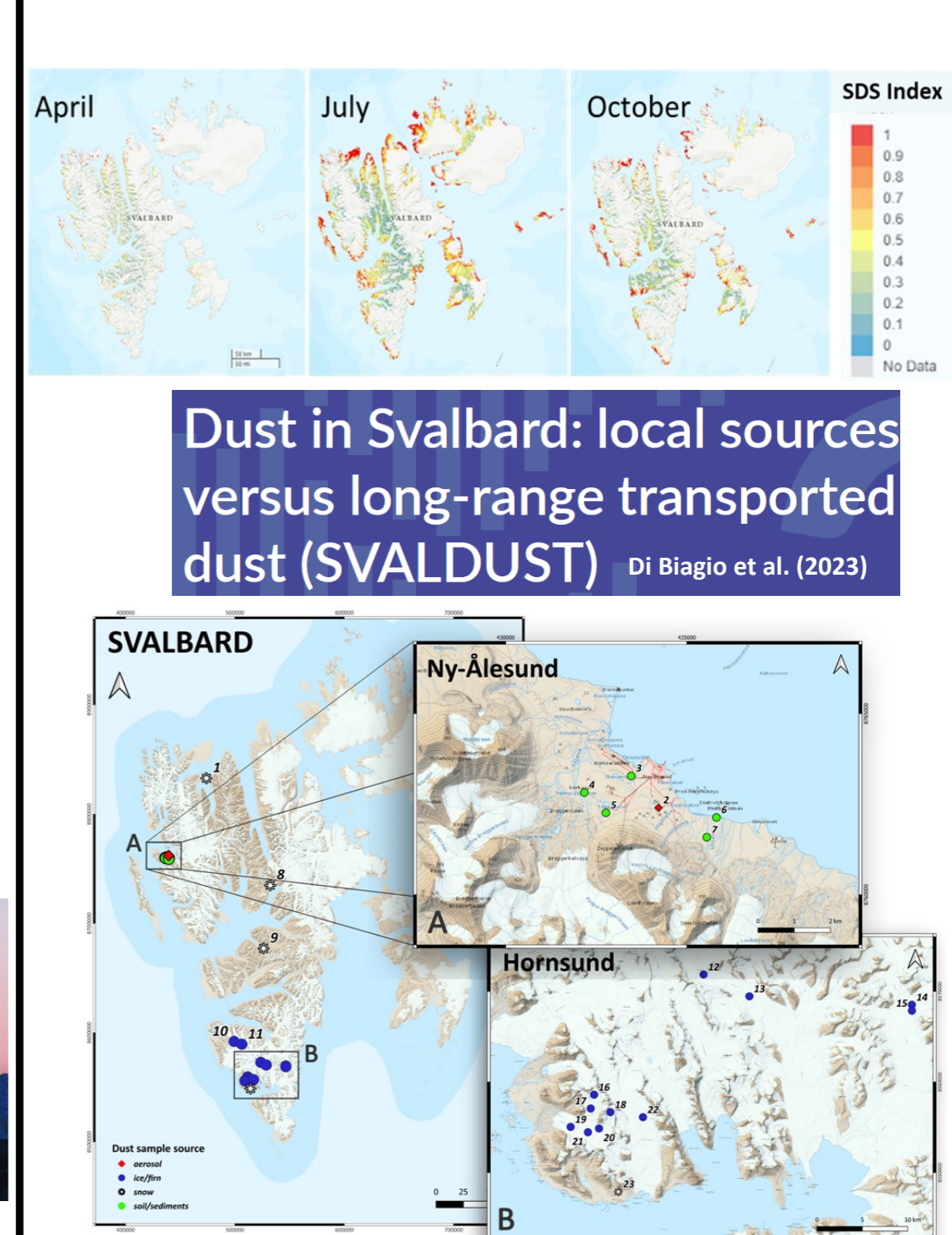
Mean (median) mass concentrations:
PM₁₀ = 13.5 ± 2.3 (10.4 ± 1.7) µg m⁻³
PM_{2.5} = 11.5 ± 2.2 (8.7 ± 1.6) µg m⁻³
PM₁ = 7.3 ± 1.1 (5.8 ± 0.9) µg m⁻³
Recalculated PM₁₀ = 45.1 (19.3) µg m⁻³ (blocked inlet on the instrument LOAC)



Greenland 2022



Svalbard 2023



CONCLUSIONS

HLD is a critical risk to the climate in the Arctic/Antarctica. HLD impairs air quality and reduces snow/ice albedo + increases melting.



Icelandic Aerosol and Dust Association (IceDust)
Rykrannsóknafélag Íslands (Rykís)

IceDust Association invites you to participate in **HLD WORKSHOP** in Iceland in February 2024
More info on **publications** and events at the IceDust website <https://icedustblog.wordpress.com/>