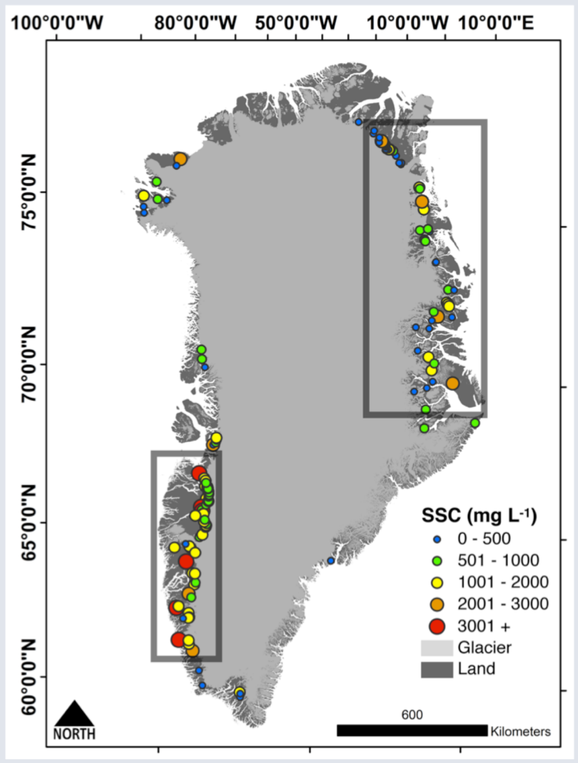
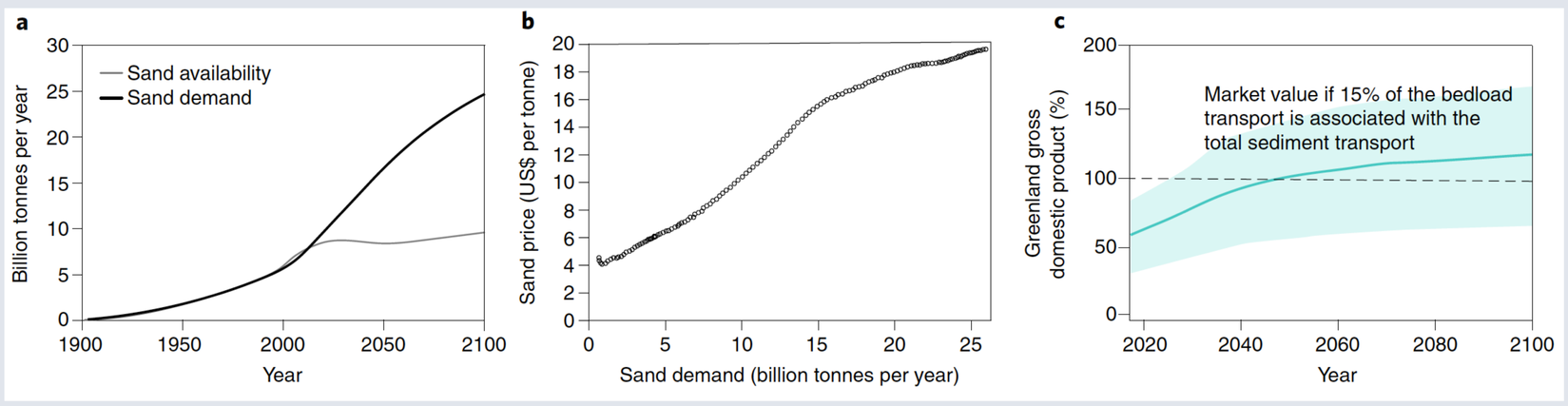
Sand Resources are Running Out, Except in Greenland

Greenland's Ice grinds down rock and produces large amounts of sediment. Field and satellite data show that glacial meltwater carries an estimated 8% of the world's river sediment flux. Along the coast these sediments accumulate in sandy deltas.

This abundance in sediment is in stark contrast to the rapid depletion of sand resources globally. The worldwide demand for sand has grown exponentially, due to urbanization, infrastructure and coastal protection.




(Photo courtesy: N. Krog-Larsen)



Global changes in sand demand and availability and economic model of the relationship between sand demand & price

Sediment Fluxes from Greenland are estimated to amount to ~ 8 % of the world's total (Overeem et al., Nature Geoscience 2017).

Projected market value of total sand deposits delivered annually at Greenland's coast (Bendixen et al., Nature Sustainability, 2019).

Can the abundance of sand and gravel provide an opportunity for Greenland to become an exporter of aggregates and relieve an increasing global demand?

Greenland seeks to diversify its economy, and has emphasized a development strategy focused on new mining industry. The magnitude of sand delivery to the coastal zones by Greenland Ice meltwater is significant and thus of potential value for the Greenlandic economy. However, a great deal of uncertainty exists around what impacts sand mining would have on the local environment and communities. Future research with Greenlandic government and industry will be essential to document the quality and future quantity of sand delivered to the coast and how sand mining impacts local ecosystems and associated ecosystem services.

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