

INTERSECTIONS BETWEEN NATURE AND TECHNOLOGY

The studies in this chapter sought to examine specific intersection of natural forces and technological systems of organization. They range from an examination of the Titanic catastrophe, the Marconi network, and later analysis of the territory known as the Slave Geological Province in the Canadian Arctic.

The Titanic Scenario

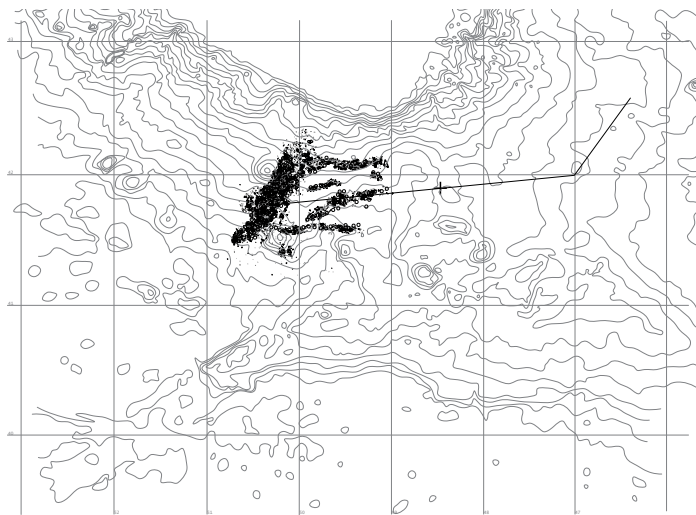
As mentioned above, the Titanic episode appeared out of a study of the Marconi Wireless Network. I was drawn to the event on its own terms as it presented a very well-documented and evident confluence of nature at odds with human desire and the available communication technology of the time.

Through examination of the records of all the wireless transmissions made between the Titanic and the ships in the vicinity of its crash, we see that not only was the mega-steamer warned of the danger of sea ice in the area, but the wireless operator on board chose to ignore the more urgent messages of ships closest-by that the boat was bound to strike an iceberg if it continued on course. Yet, the boat steamed on as the wireless operator transmitted popular news media announcements and personal messages between passengers on board and their waiting-parties on shore.

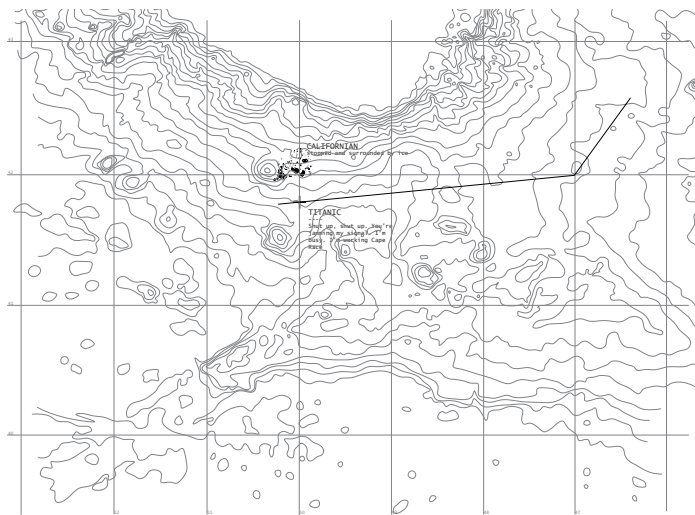
After striking an iceberg, the shortcomings of the “advanced” communication technology persisted. Firstly, the ship initially reported incorrect coordinates for its position. And, secondly, it could only communicate with one other ship at a time, making it difficult to coordinate an efficient rescue operation. The ship closest by the Titanic was not even aware of the distress calls but most likely could have saved more passengers than the Carpathia, who ultimately was responsible for locating the passengers privileged enough to obtain a lifeboat.

As such, we might look back to primitive navigational techniques that gain resilience through vision and atmospheric understanding.

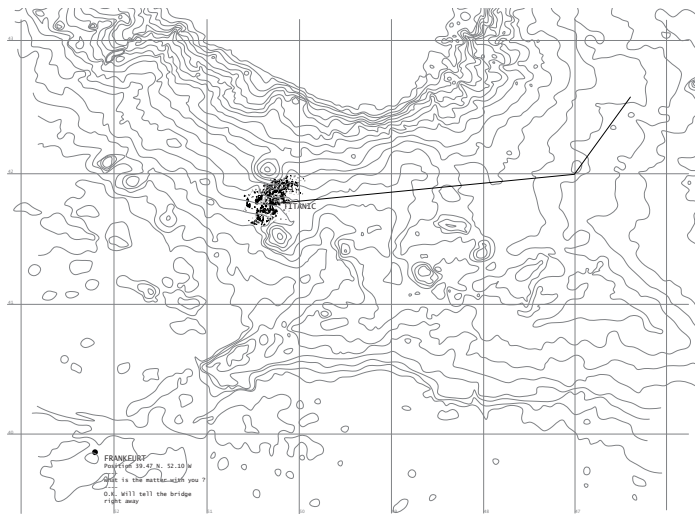
The Titanic approaches what has been reported as a field of ice



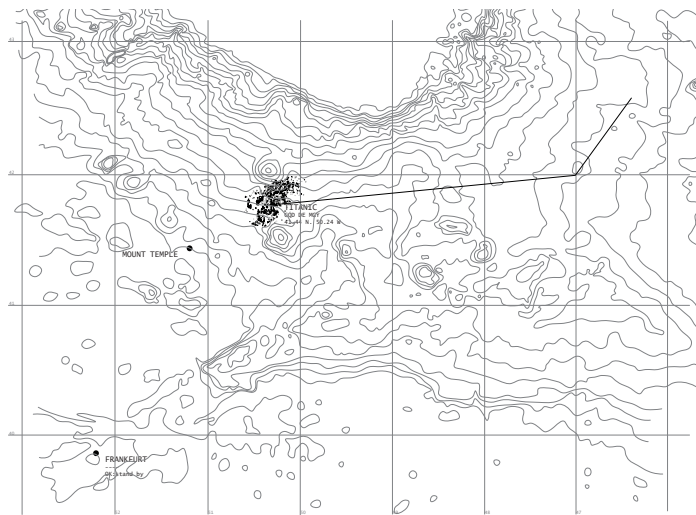
The Titanic ignores the ice warnings of the California



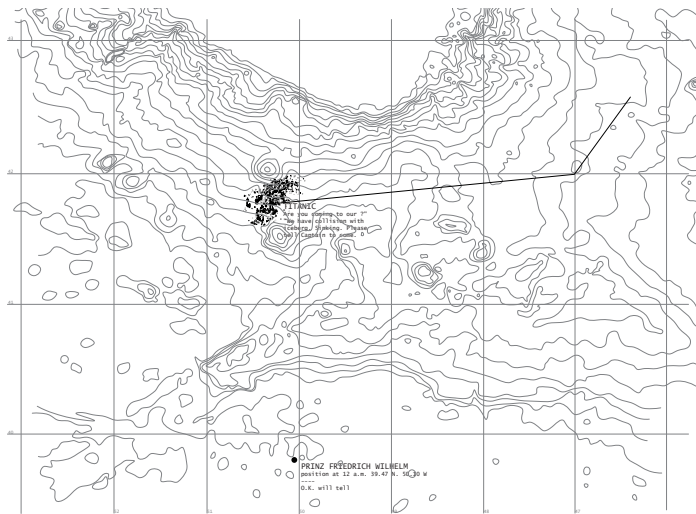
The Titanic strikes an iceberg and sends distress calls



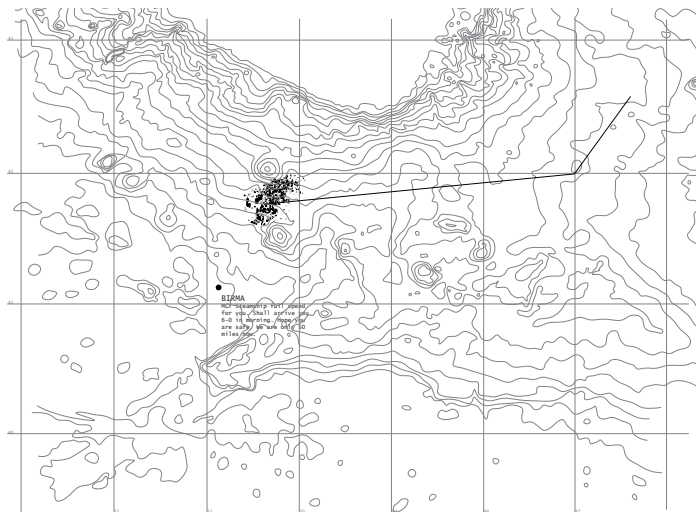
The distress calls are heard and responded to at different times by ships in the area, but some do not hear or respond



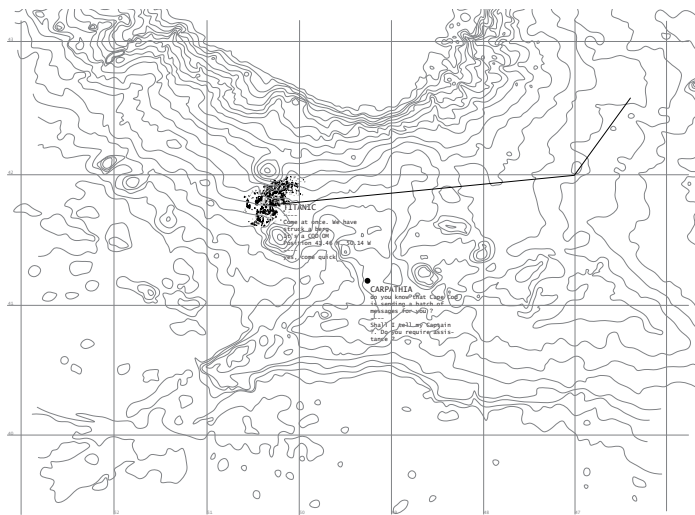
**Distress calls continue to be fielded from ships outside the rescue
range**



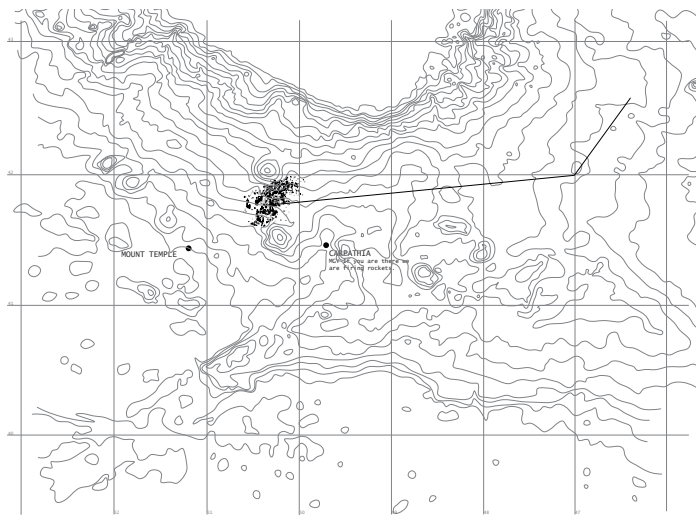
The nearby Birma is finally reached, but is still 30 miles away



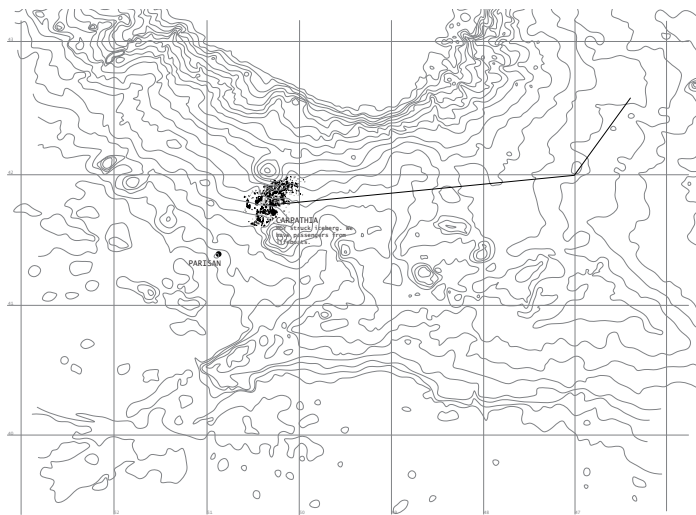
Carpathia finally makes a transmission with the Titanic after noticing a shore station's attempts to communicate with the sinking ship



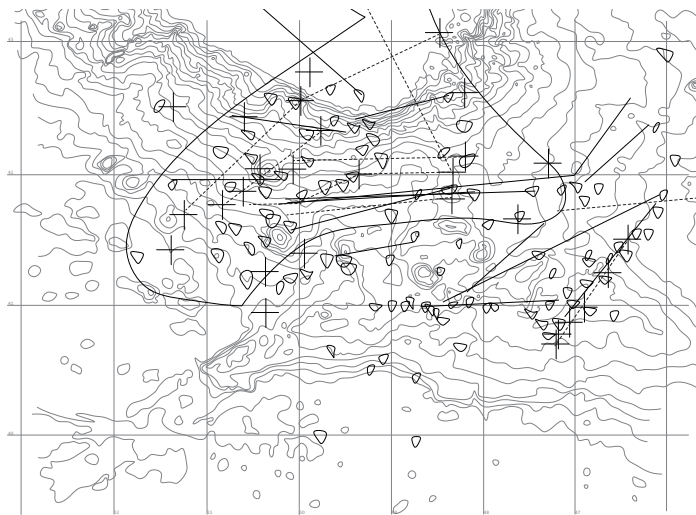
The Titanic loses contact



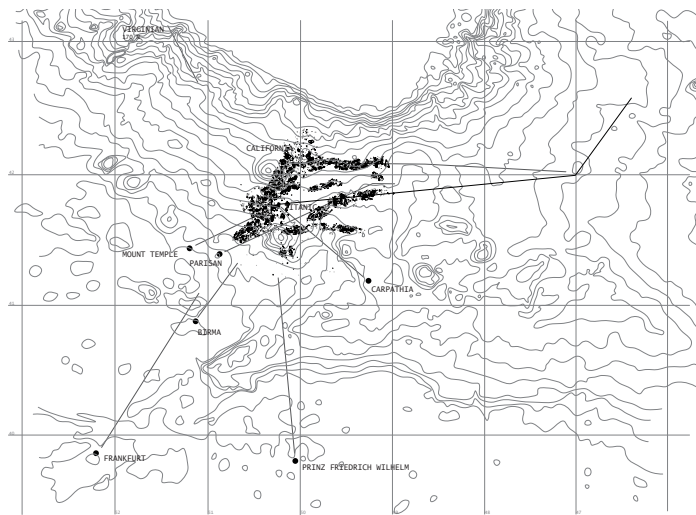
Carpathia rescues the passengers on lifeboats



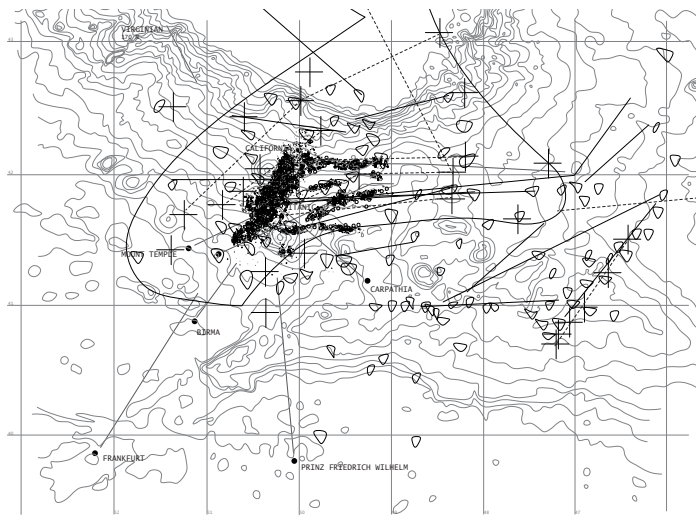
The accumulation of ice sightings in the incident area



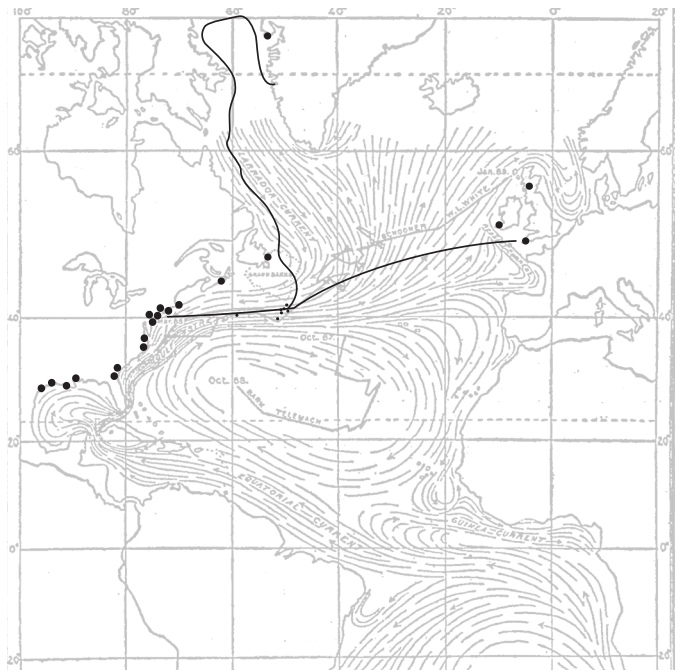
**The nearby ships and their trajectories after receiving the Titanic's
distress calls**



Layering of the sea ice sightings and the rescue coordination



**Map showing Atlantic Ocean currents, Marconi ship to shore stations,
and the intersecting routes of the Titanic and glacial breakup**

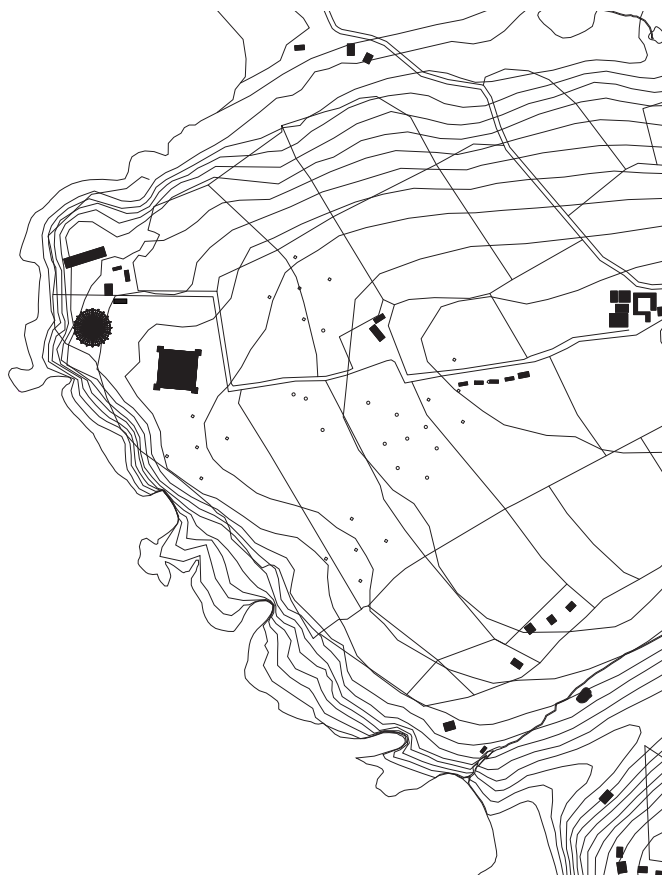


The Marconi Sites

The Marconi Wireless Network was serviced through a multiple transmission stations on both sides of the Atlantic Ocean. Large antennae towers were built at all of the stations, and some were used by Marconi as test sites. Each site also supported a different iteration of the wireless antennae device, which ranged from a kite, to small radial arrays, to groups of two-hundred feet high towers, to extremely large radial arrays, and eventually to the more intelligent linear directional arrays.

In all cases, the station sites are now abandoned except for some concrete foundations of the radio tower bases. Though they successfully serviced the Marconi network, none of the stations were integrated into their surrounding social structures and ecological processes. For example, the South Wellfleet station was forfeited to an eroding sea cliff, while the Clifden station was ransacked by the early Irish Republican Army as part of its struggle for Home Rule.

Poldhu, England 1900 -1935



Signal Hill, Newfoundland and Labrador 1901



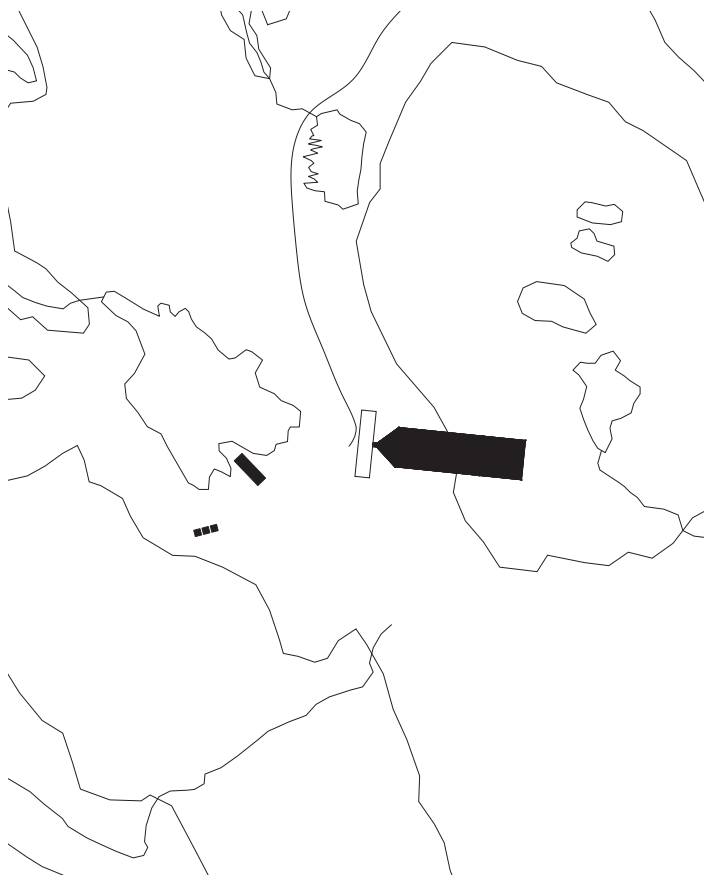
South Wellfleet, Massachusetts 1902 - 1919



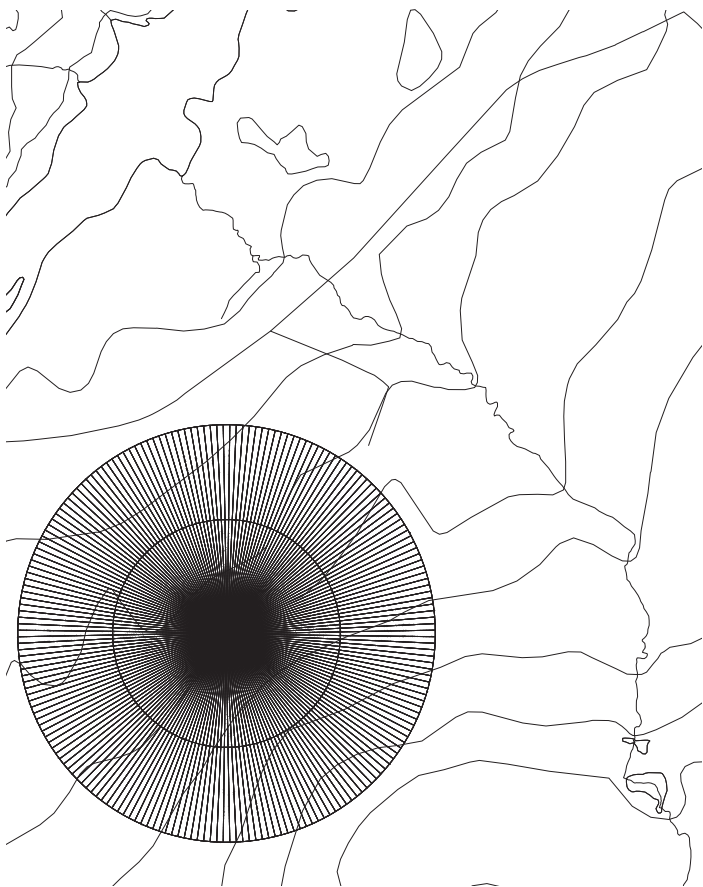
Table Head, Glace Bay, Nova Scotia 1901 - 1905



Clifden, Ireland 1905 - 1922



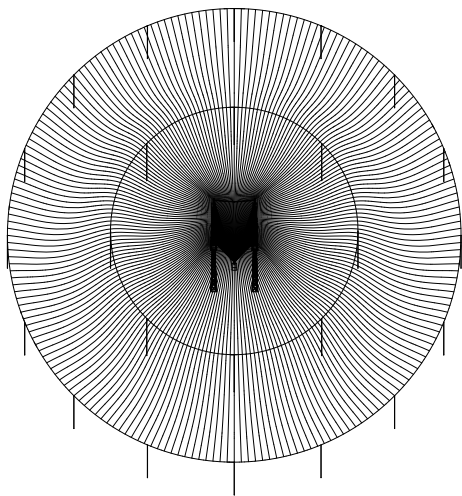
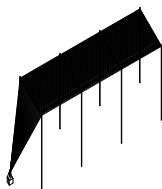
Port Morien, Glace Bay, Nova Scotia 1905 - 1946



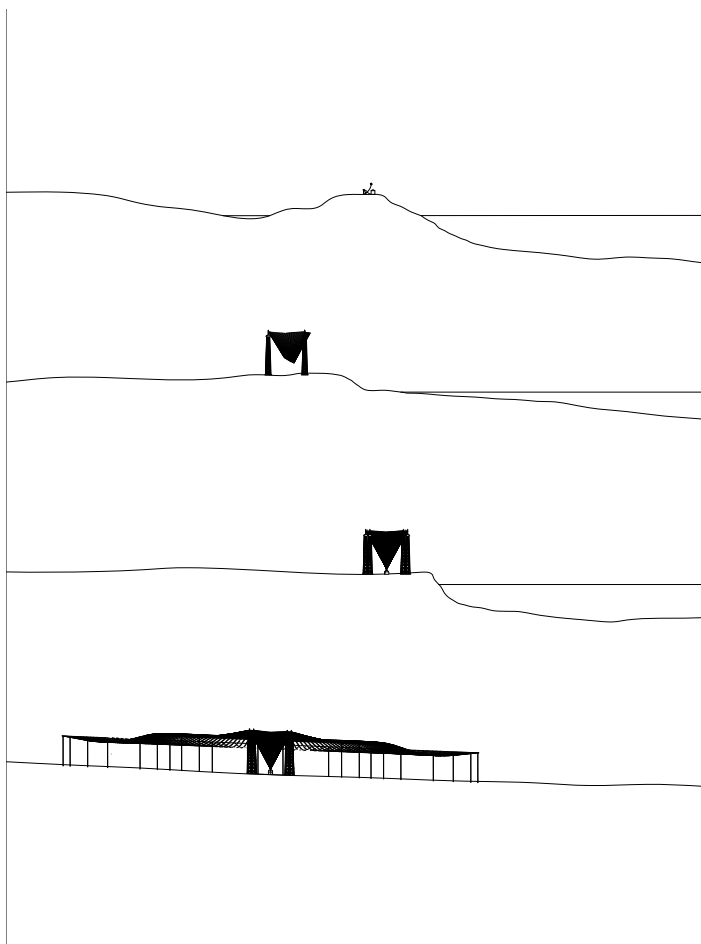
The early Marconi antennae at the same scale



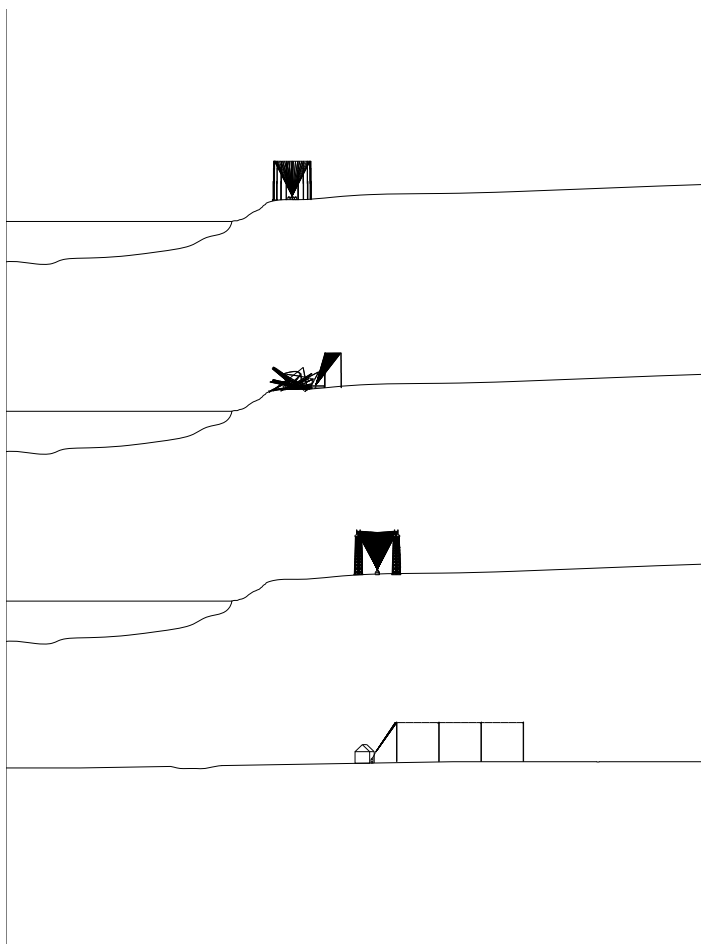
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Site Sections of North American Marconi Stations



Site Sections of European Marconi Stations



Extent of Atlantic Wireless Networks in 1922



The Northwest Passage

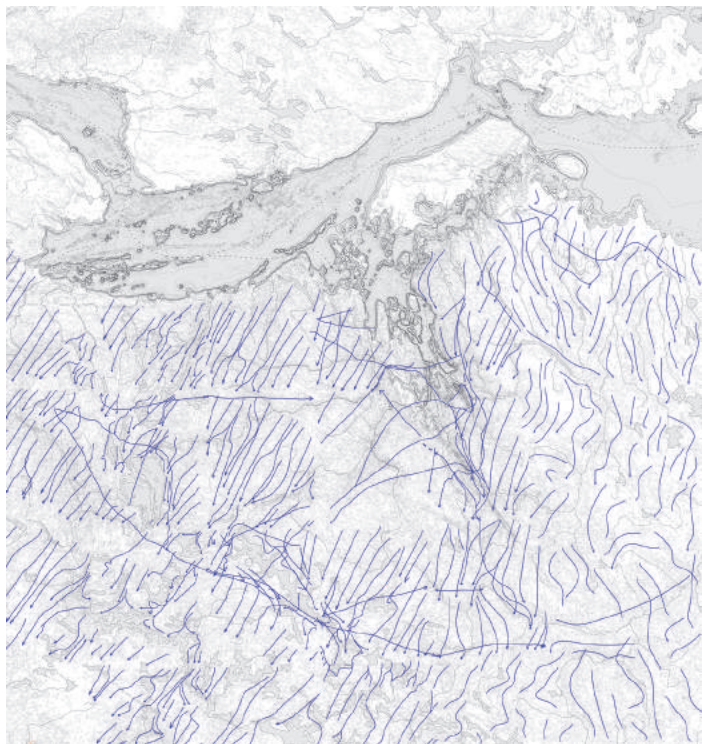
The Northwest Passage would extend through the Canadian Arctic Archipelago, an area that is predominantly inhabited and self-governed by Inuit populations. Up until the early 20th century, the stereotype of Inuits as Eskimos that live in igloos and hunt and fish for food was relatively true and is now so distant from the present. However, as white explorers began to map the area, the Inuit began trading with them and eventually fur trade networks were codified and trading posts were established. Yet, even at mid-century, the Inuit still tended to live in temporary group sites in the winter, and then were nomadically dispersed in tents and sod-houses across the land in the summer.

In the early 1950s, under the goal to establish its sovereignty over the Arctic, the Canadian government began subsidizing programs to provide housing, healthcare, and education in permanent settlements across Inuit territories. This effort coincided with the construction of the Distant Early Defense Line: a chain of radar stations jointly funded and built by Canada and the United States to warn of a Soviet attack from the North. Inuit people were recruited to help build the stations and were later employed to assist in their operation and maintenance. Villages began to grow around the main stations, and eventually grew into towns. These towns now range in size from one-to-two thousand people (despite the DEW Line's dismantling) and are growing at a rate five times as fast as New York City. Despite living in houses in these permanent settlements, the majority of Inuit people still hunt and fish for their food as an occupation, and partly to offset the extraordinarily high costs of imported food from the South.

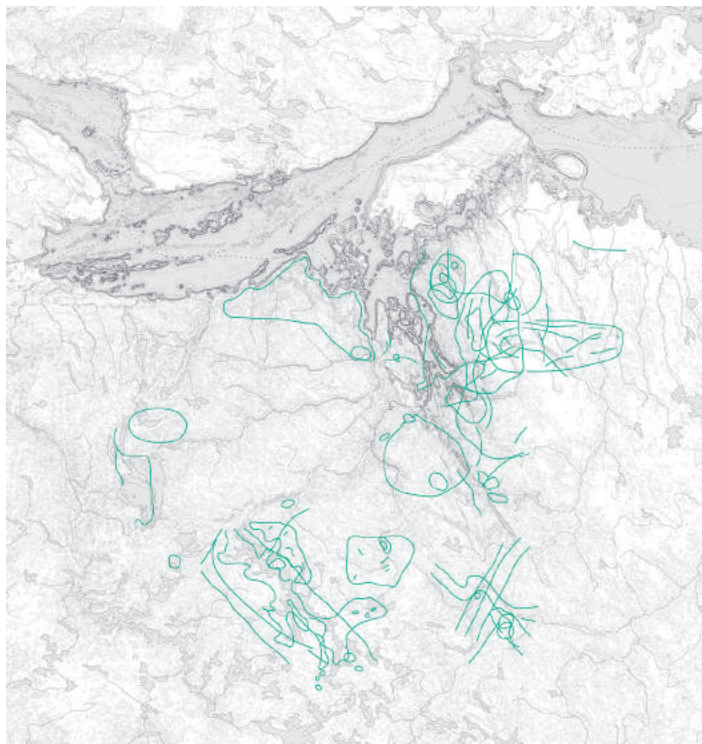
The site straddles the potential route of the Northwest Passage through the Canadian Arctic Archipelago, approximately 300 miles square of both land and sea



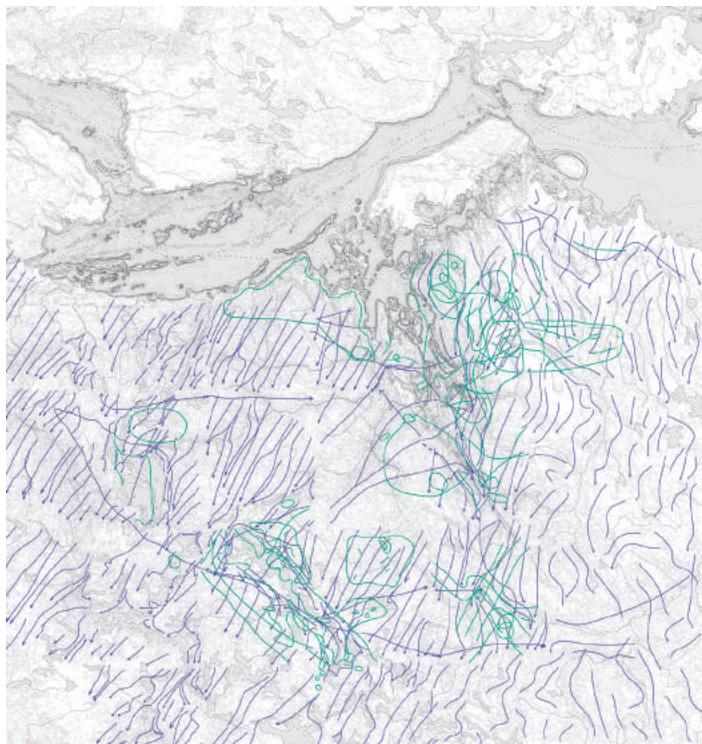
Fall caribou migratory routes



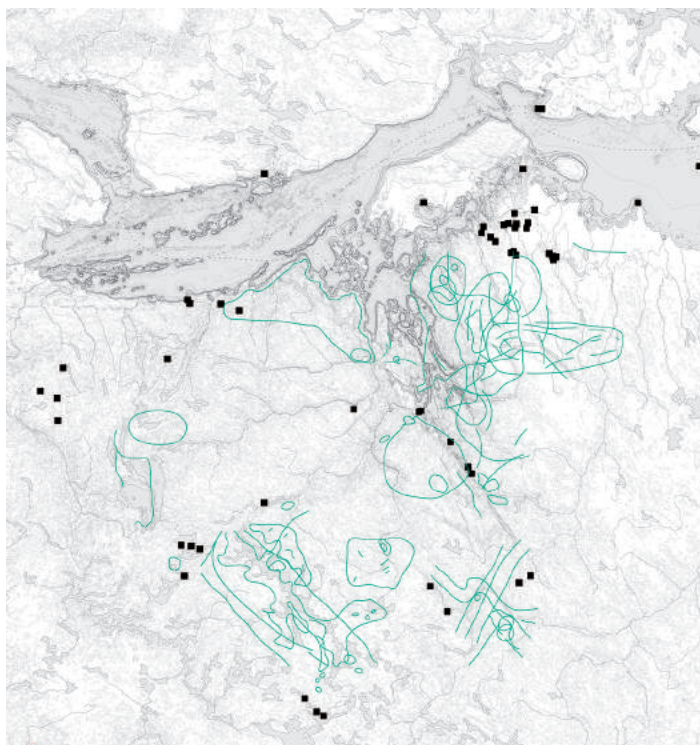
Caribou calving areas



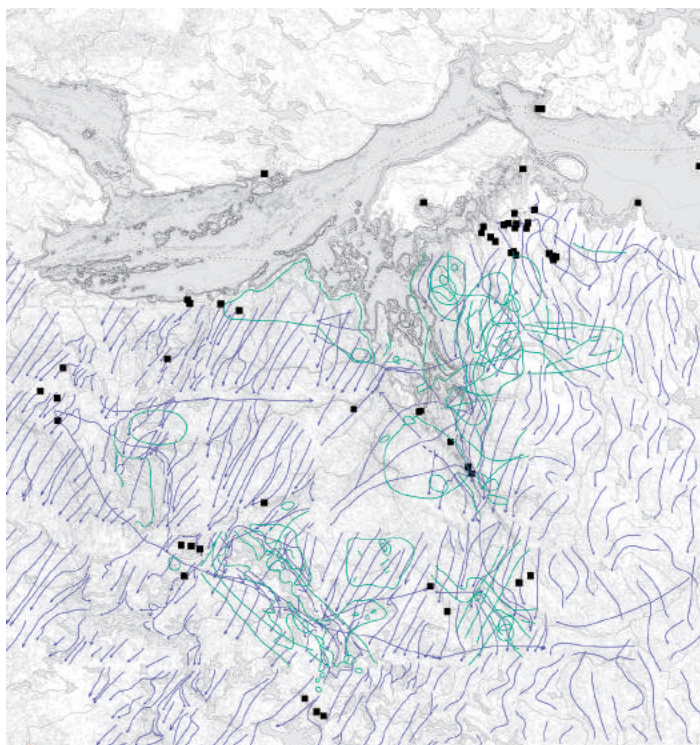
Spring and fall caribou routes and calving areas



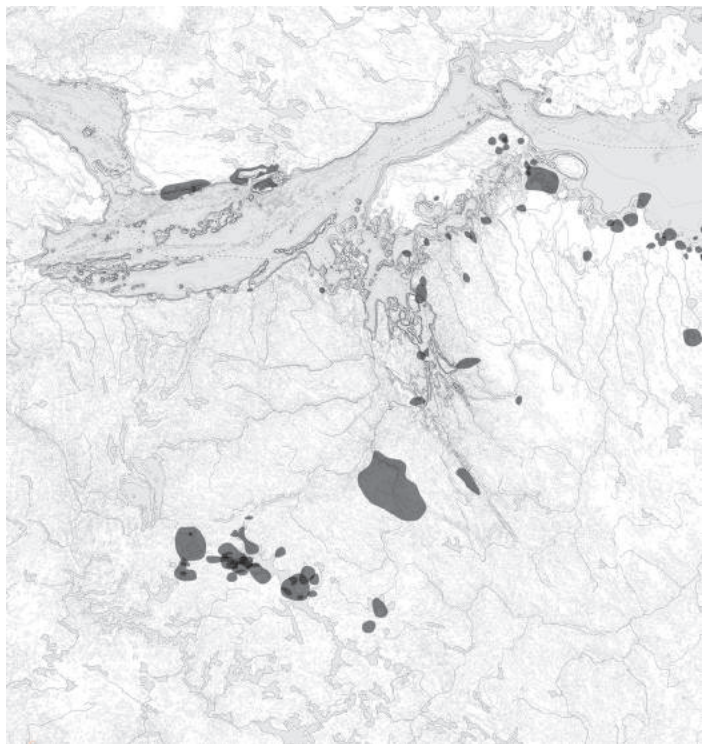
Inuit hunter camps sited in relation to calving areas



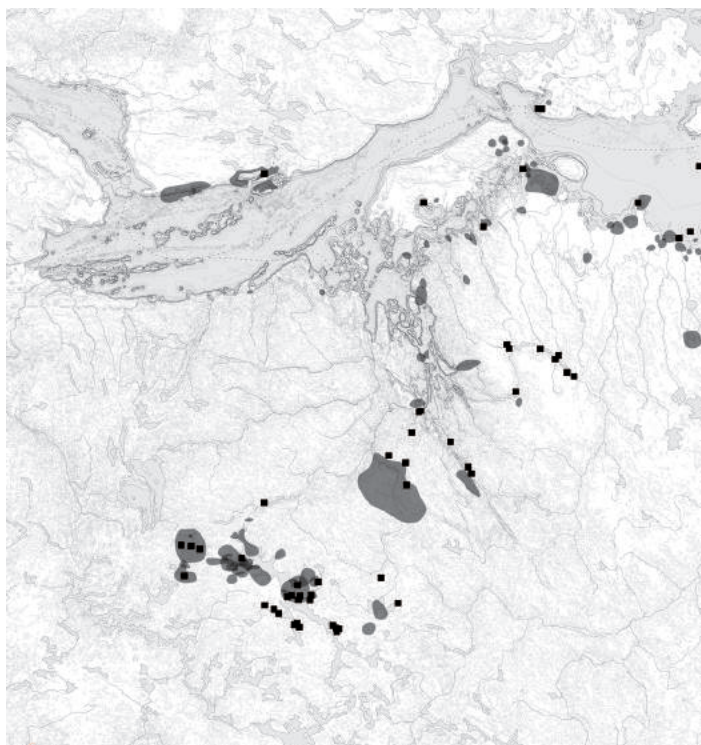
Camps in relation to all caribou routes



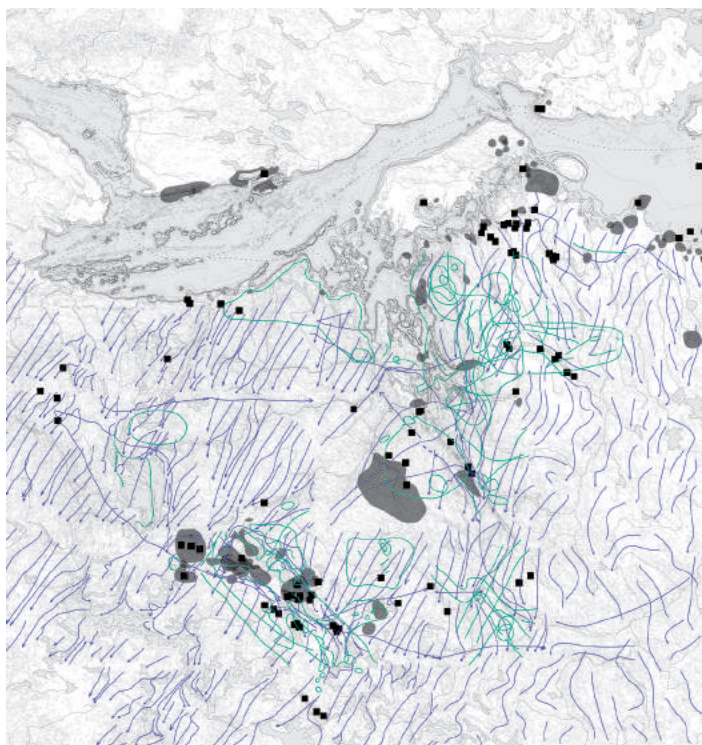
Main Inuit “harvest” or hunting areas



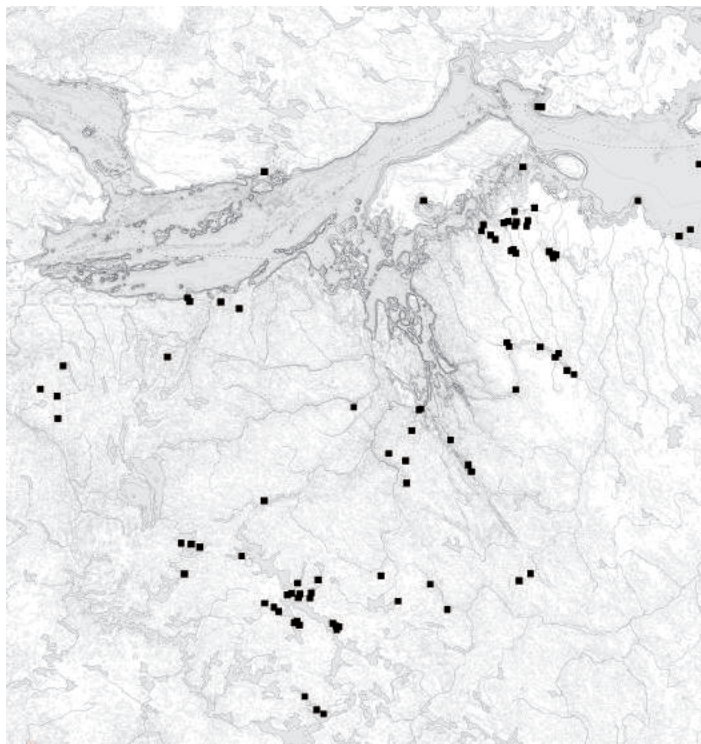
Camps sited in relation to “harvest” or hunting areas



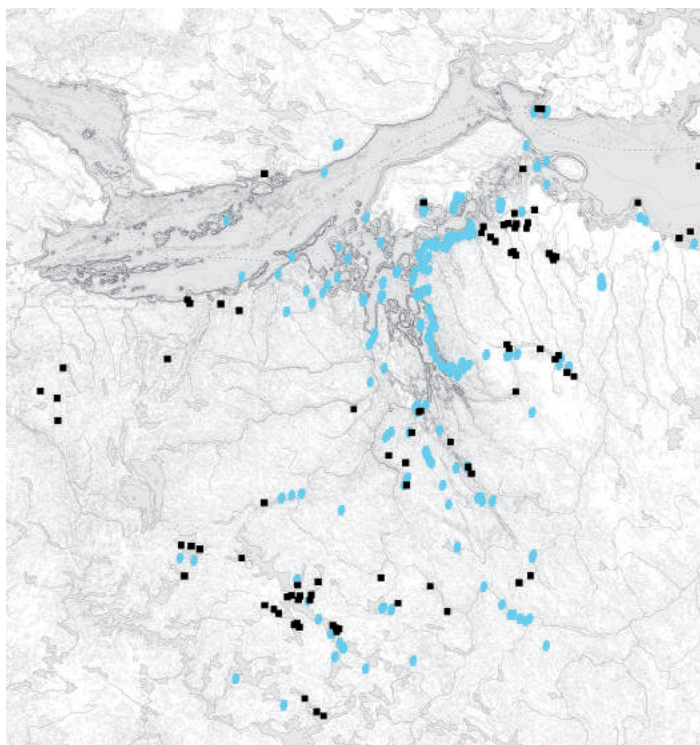
All camps, harvest areas, and caribou movements



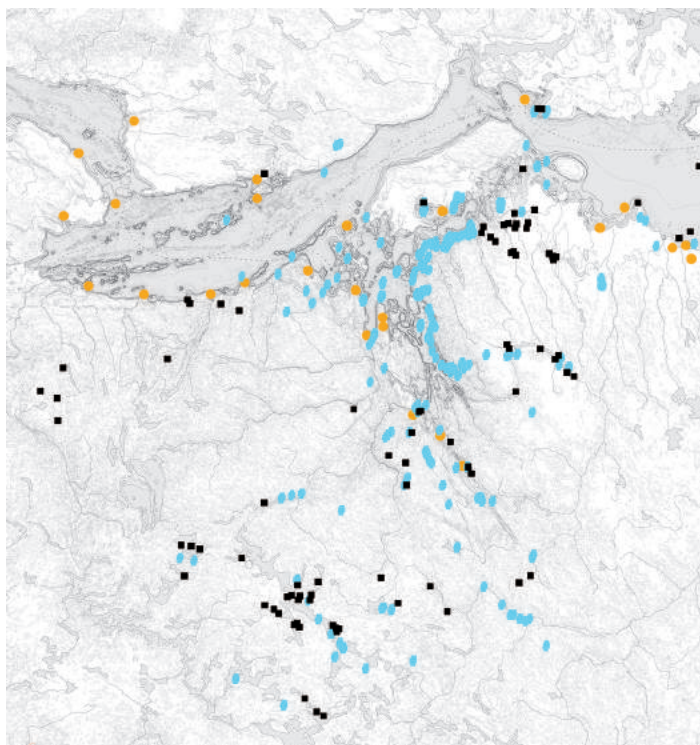
All camps



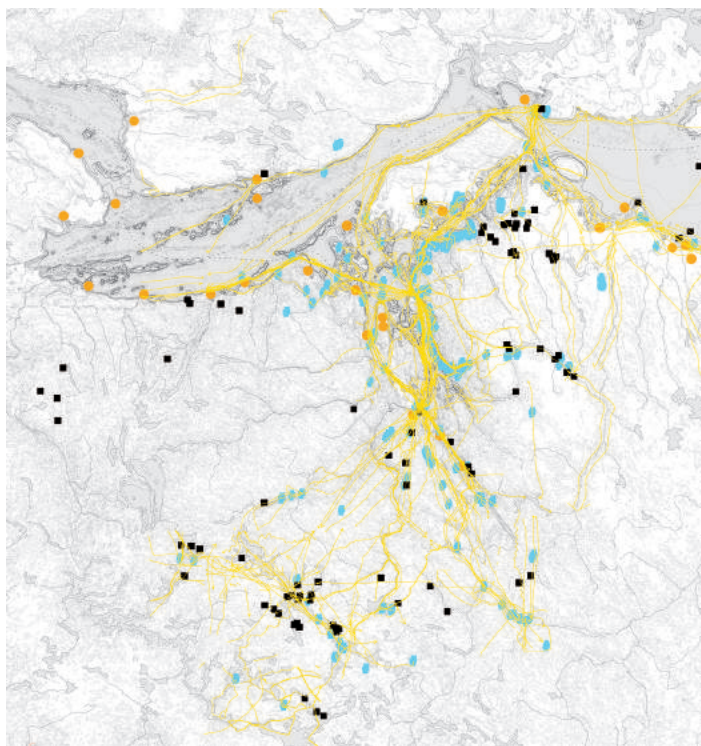
Inuit travel points and camps



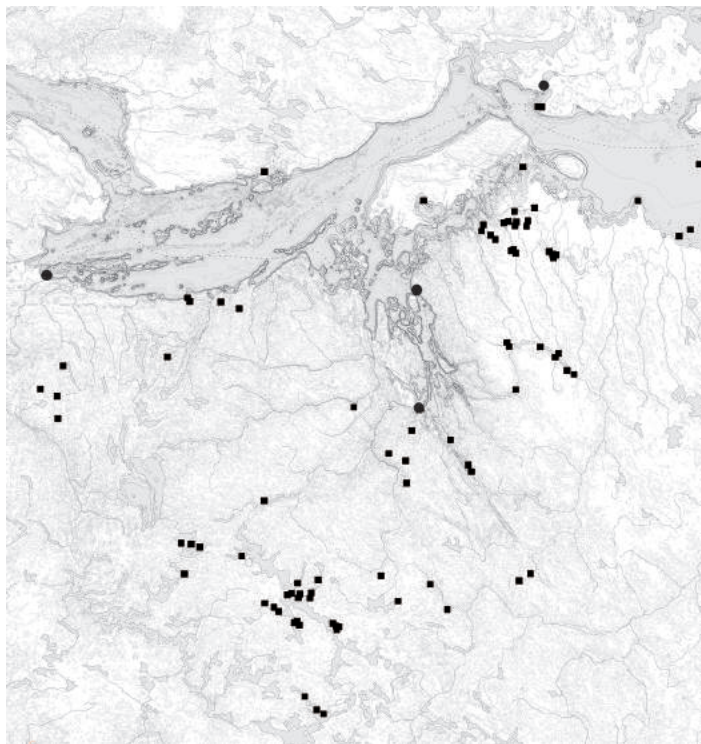
Trading posts, travel points, and camps



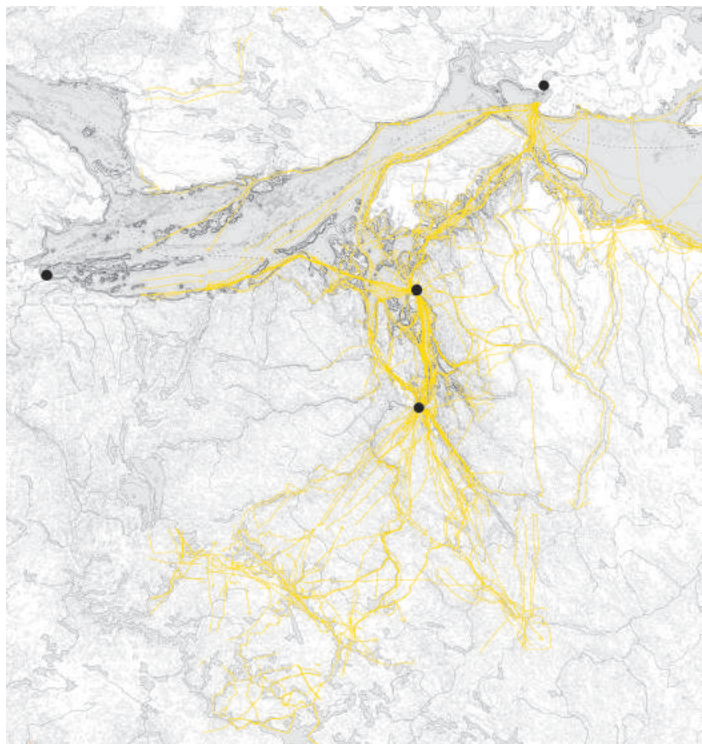
Inuit travel routes, trading posts, travel points, and camps



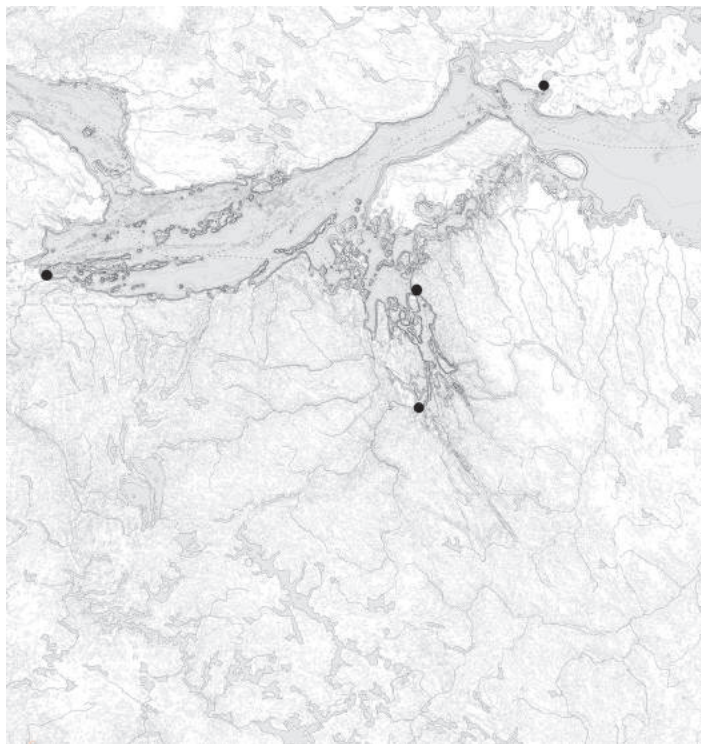
All camps and settlements



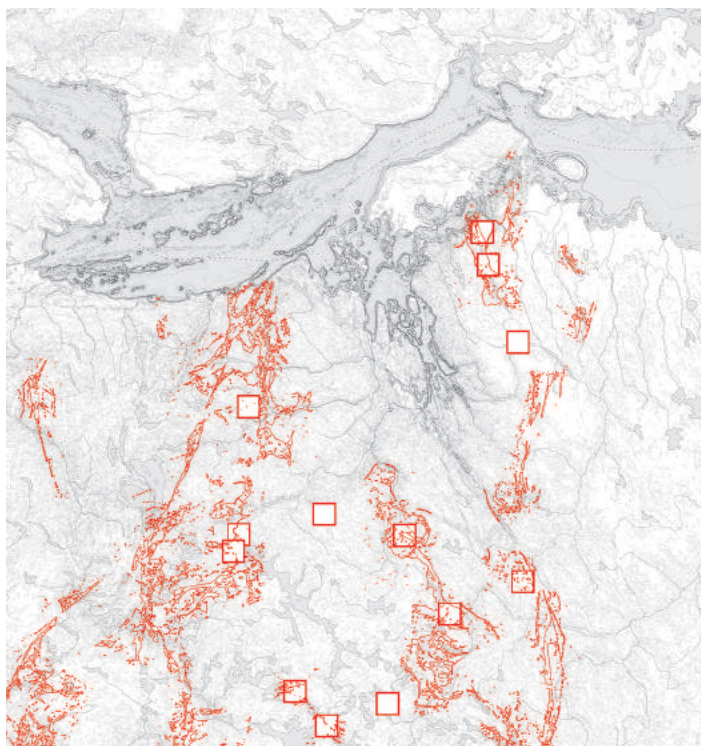
Travel routes and settlements



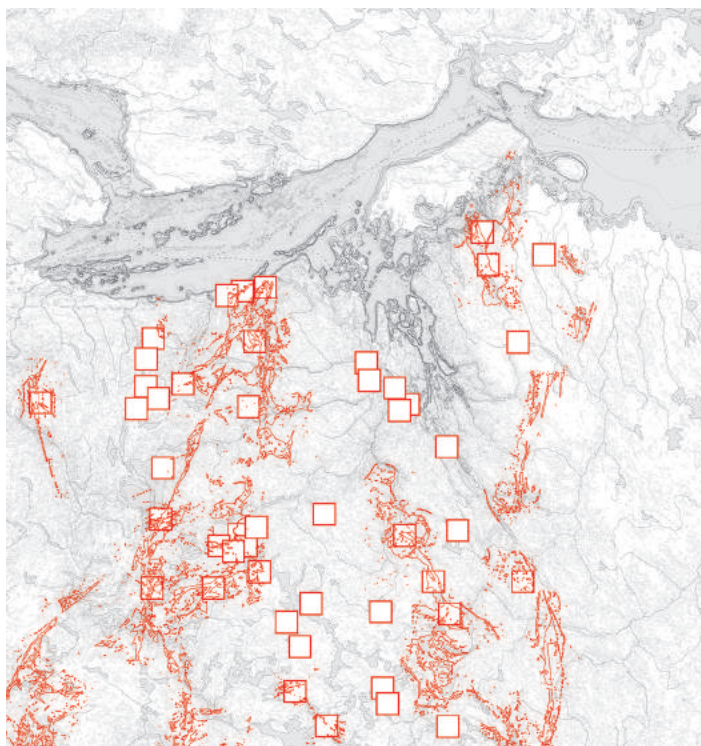
Permanent Inuit settlements



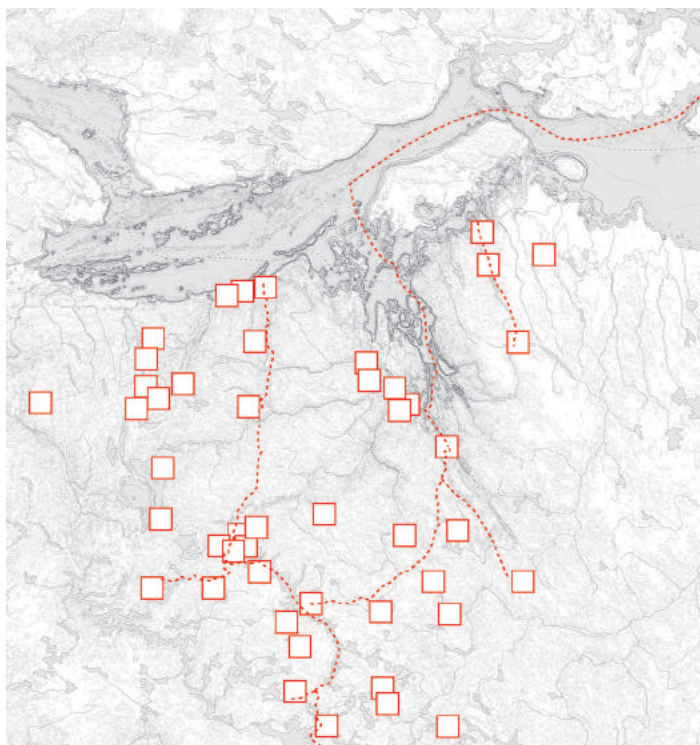
Current mining sites in operation or exploration



Current and proposed mining sites



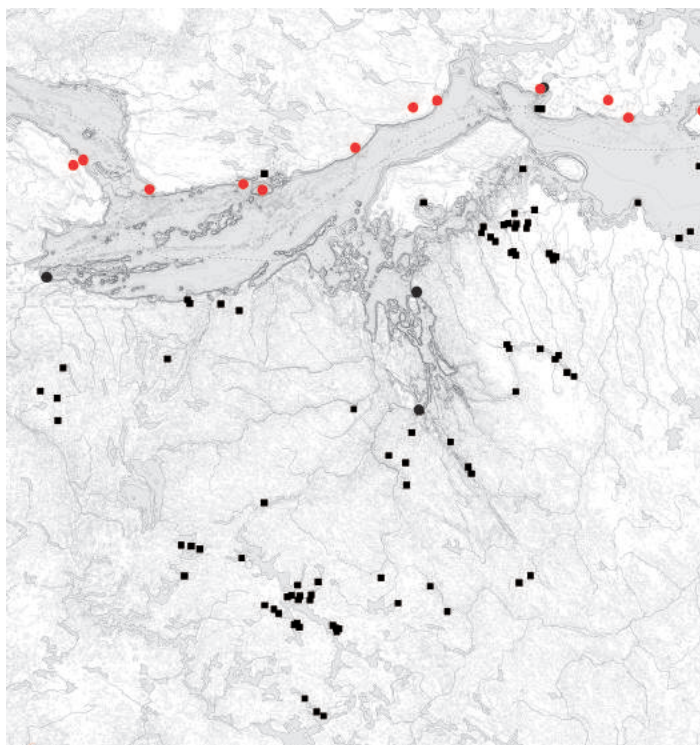
All mining sites and proposed new shipping and road routes



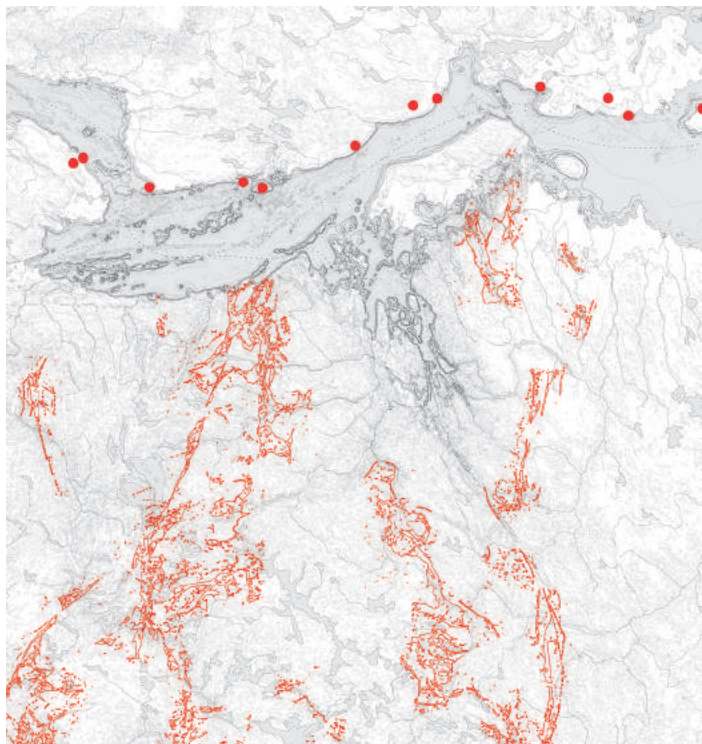
DEW Line stations



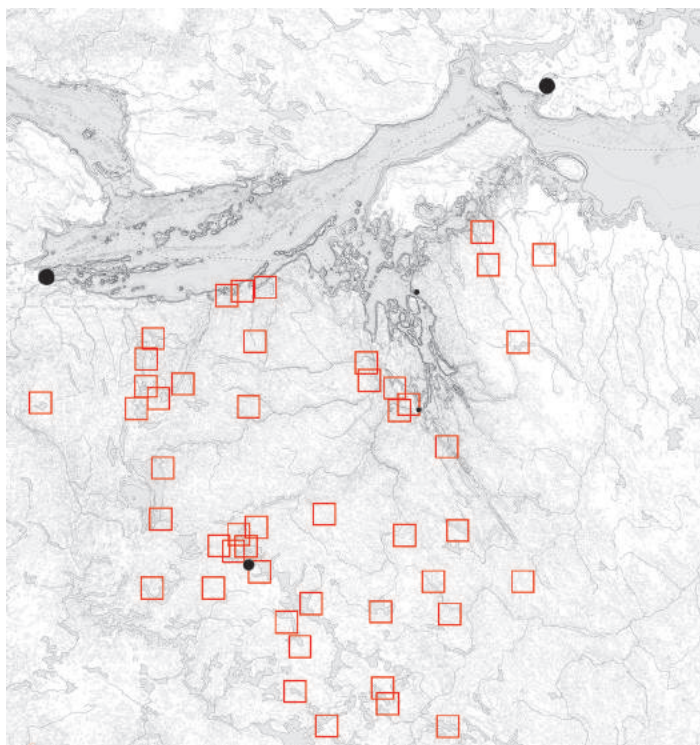
Camps and DEW Line stations



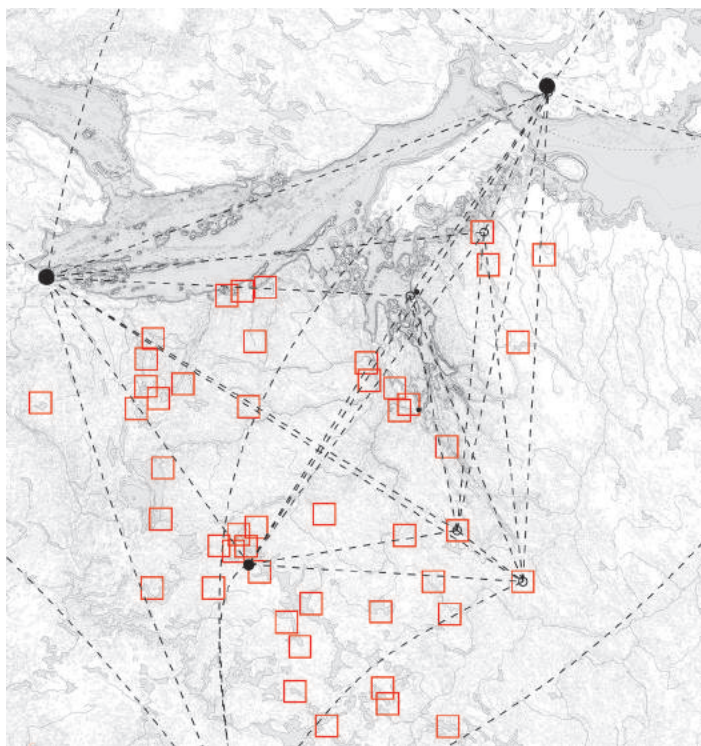
The South's interest in the North - air routes, Cold War era DEW Line stations, and areas of interest to the mineral extraction industry



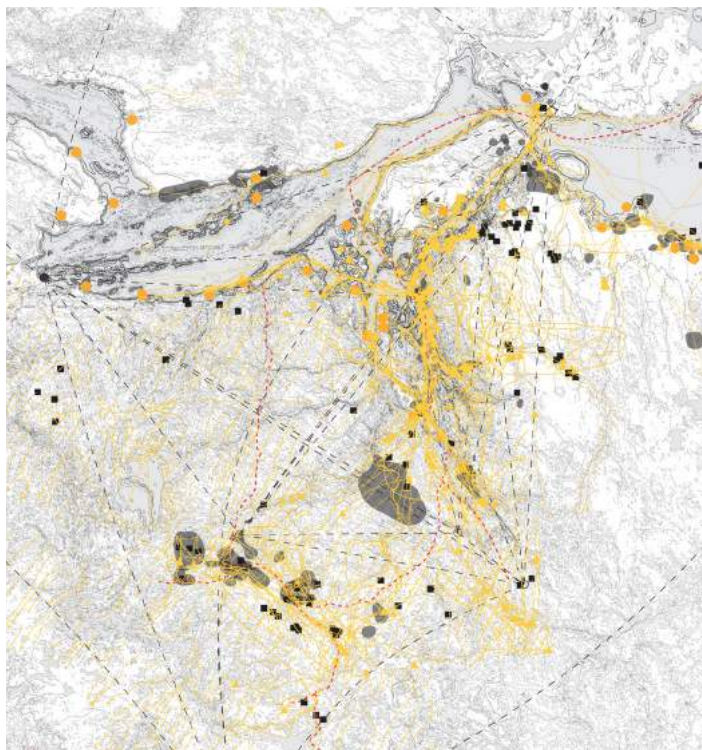
**Mining sites and two major towns which grew around the main DEW
Line stations at Cambridge Bay and Kugluktuk**



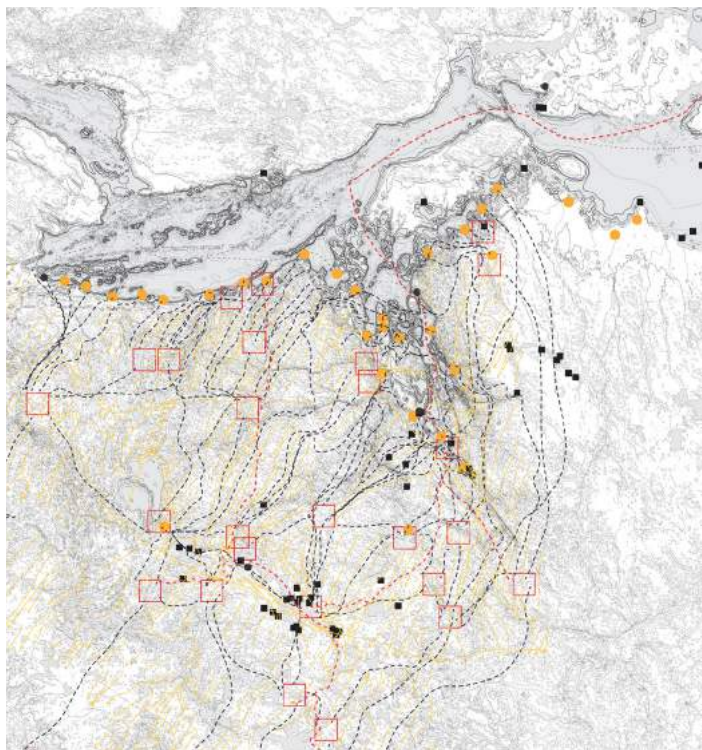
**Mining sites and Inuit population centers today with air routes into
the area**



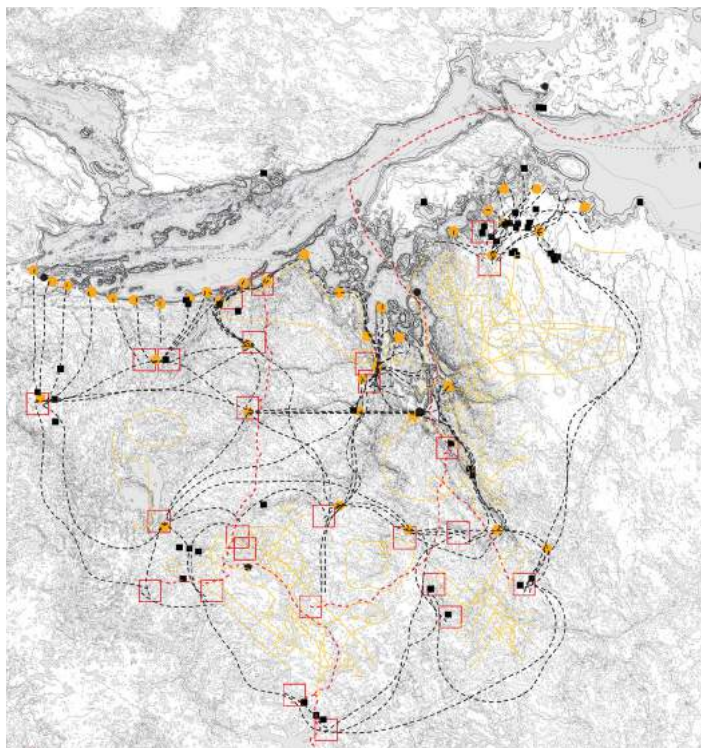
Inuit travel routes, caribou migratory paths, hunting areas, and camp sites still used today. The two proposed mining roads are in the heavy red dashed lines.



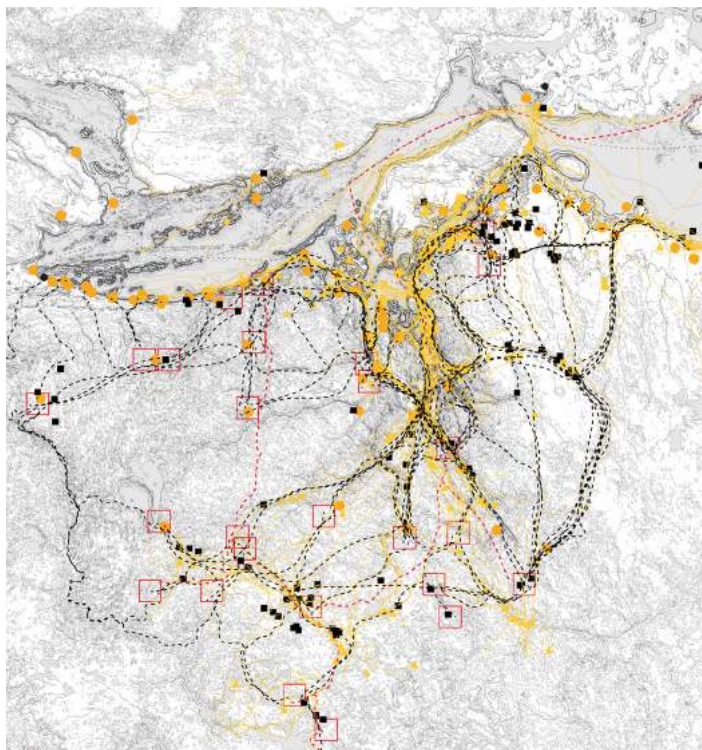
Potential of re-routing sea to mine travel aligned with seasonal caribou migrations



Potential of multiple connections between mines and multiple ports



Potential of mining routes based on Inuit travel routes

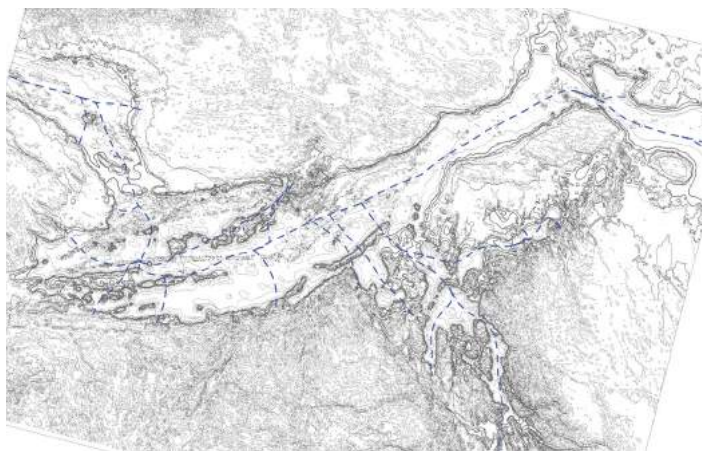


**The western side of the first transatlantic wireless transmission,
Coast of Newfoundland**

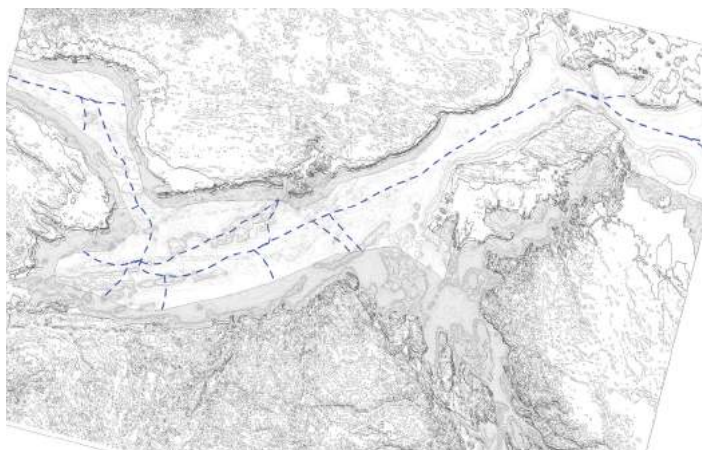
The Northwest Passage Sea Ice Consolidation

The behavior of the sea ice in the Coronation Gulf, which cuts through the site territory, grows from the land in the late fall to form a nearly solid over-water ground plane in the winter. In the spring, the gradually begins to melt, break-up, and retract back to land to leave a navigable water body for a few weeks in the late summer. The break-up and consolidation periods make travel in the water or over the ice a treacherous endeavor, in need of navigational guidance.

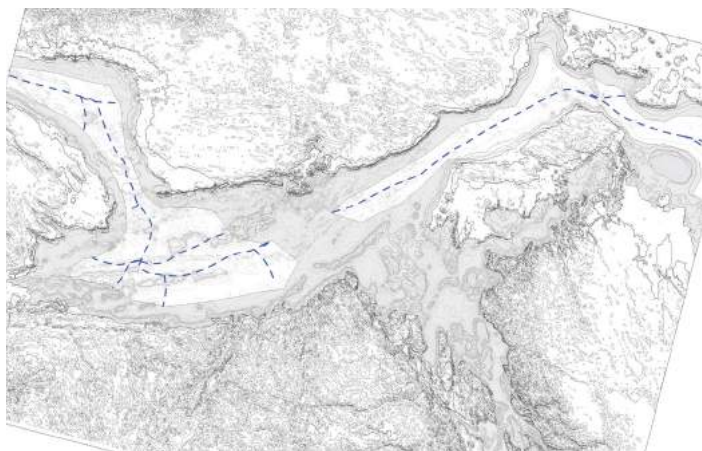
The sequence of drawings ahead diagram the freeze-up of the ice in the Coronation Gulf in 2012 and speculate on the progression of boat travel to snowmobile routes above the frozen sea.



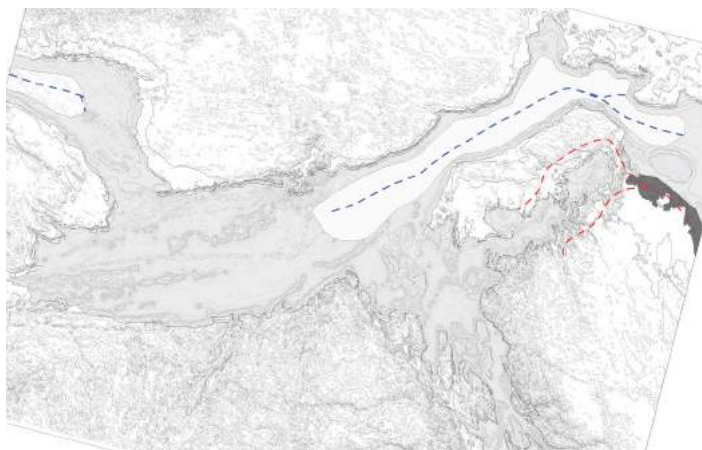
Land-fast ice begins to offset the shoreline



As the ice advances, it restricts boat travel



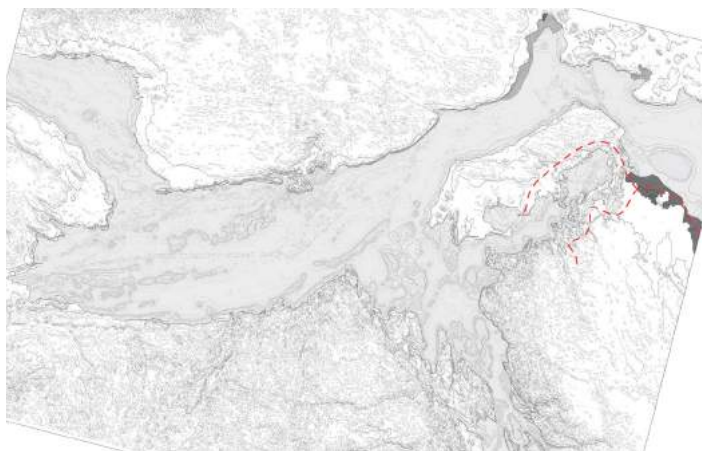
As temperatures continue to drop, the ice grows more dense and in some places allows for snowmobile travel



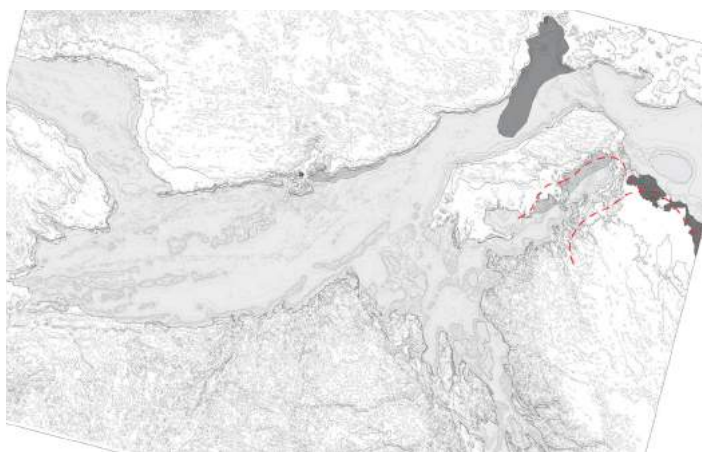
Ice extends across the whole Gulf, preventing water traffic but yet
too thin to support travel atop it



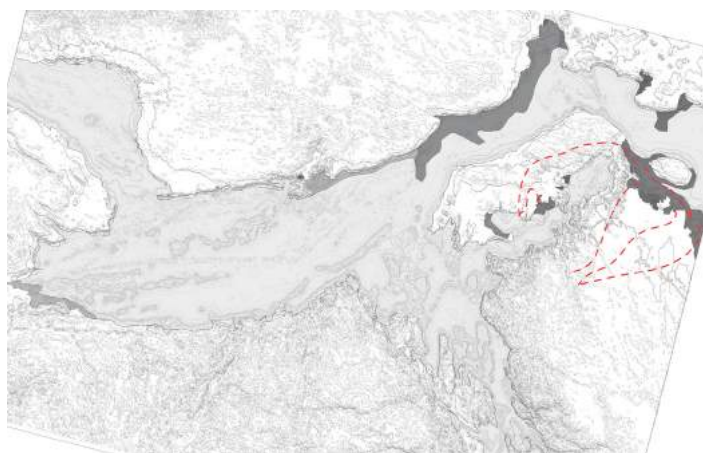
Denser ice also begins to grow out from the land



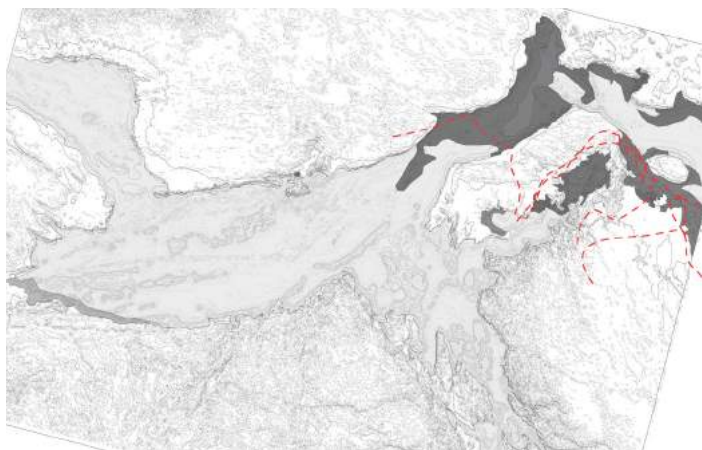
The ice is close to forming a new ground plane across the Gulf



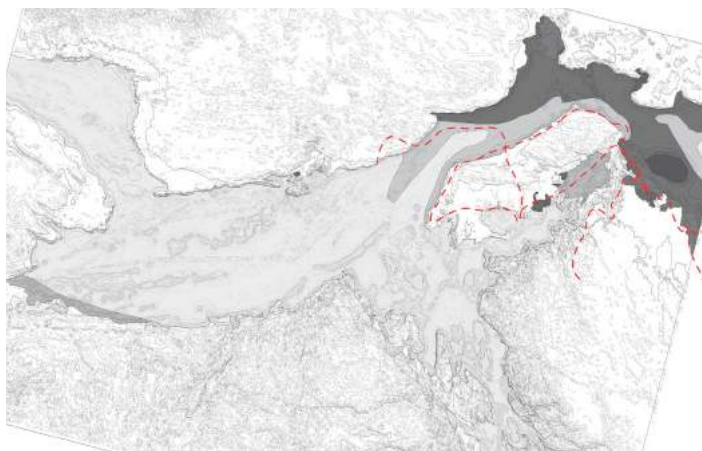
Subject to unpredictability, the denser ice retreats to land



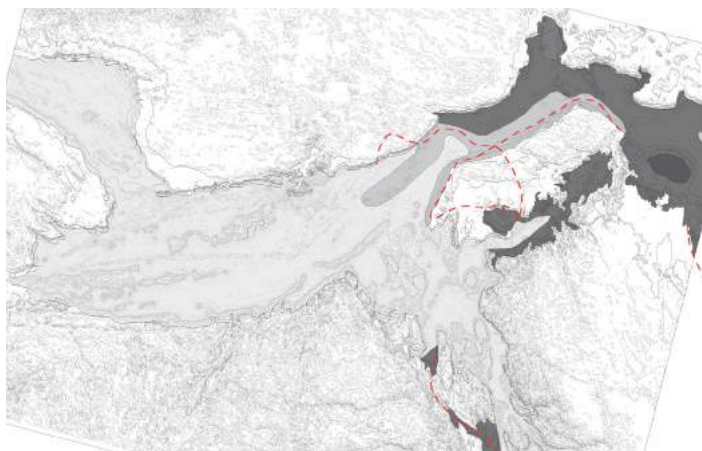
The ice eventually forms a temporary link above water



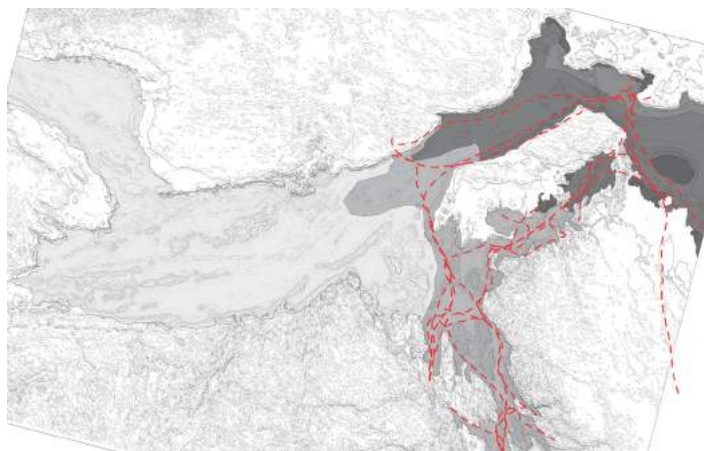
The ice has a moment of scaling back



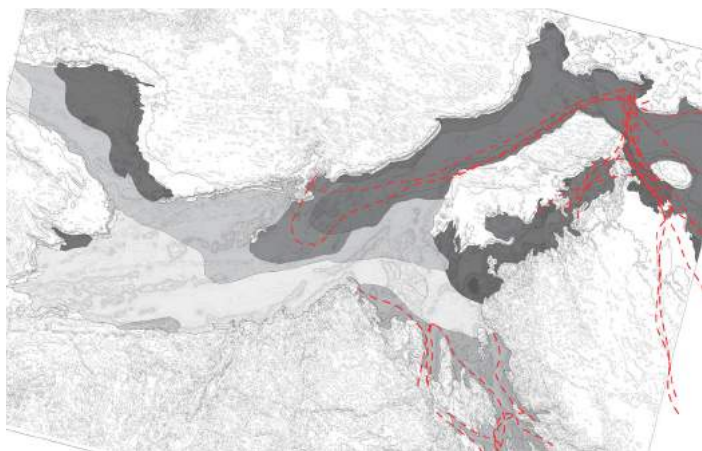
The ice continues to grow more dense



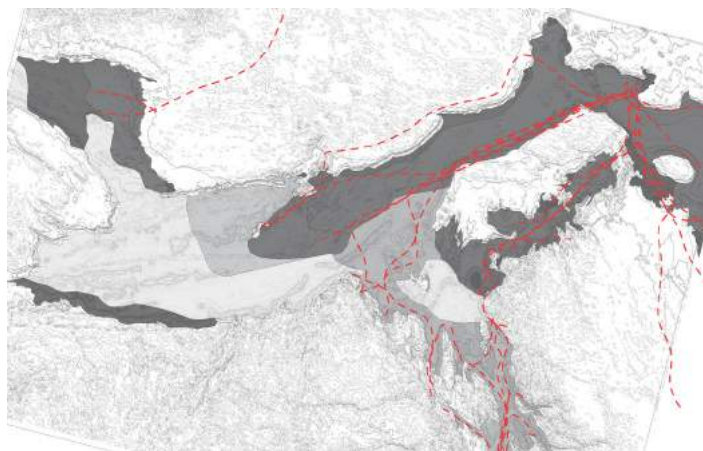
As the ice consolidates, it allows for new travel routes



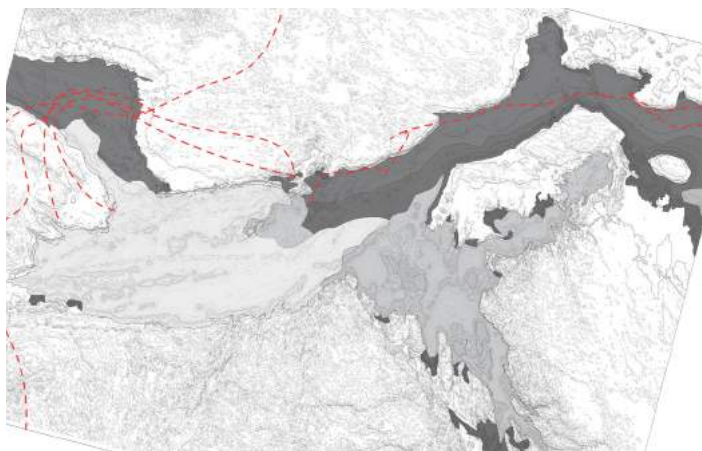
The thickest ice begins to extend toward the center of the Gulf



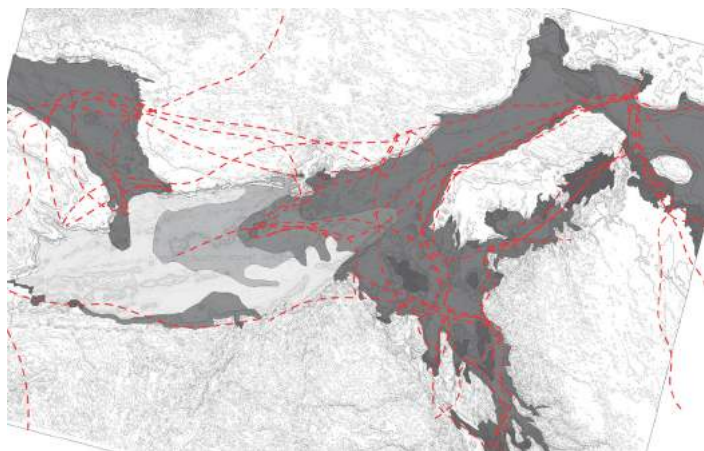
Continued densification out from land



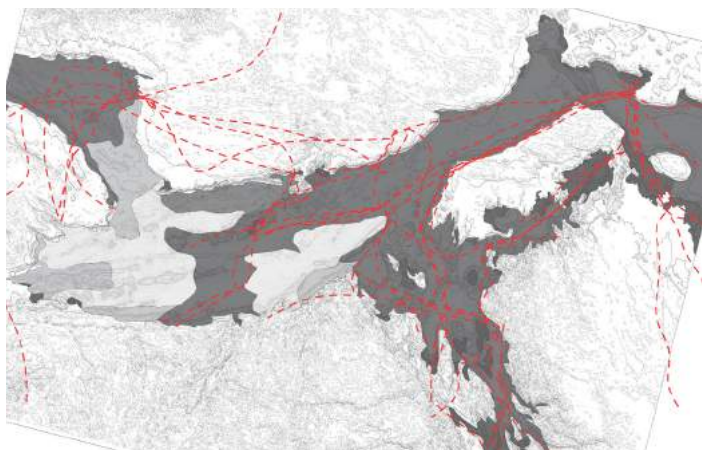
The densest ice again retreats



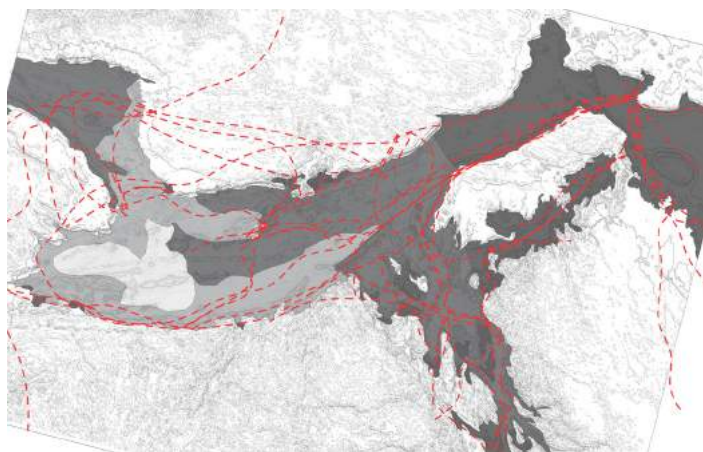
Land-fast ice grows south out of Bathurst Inlet



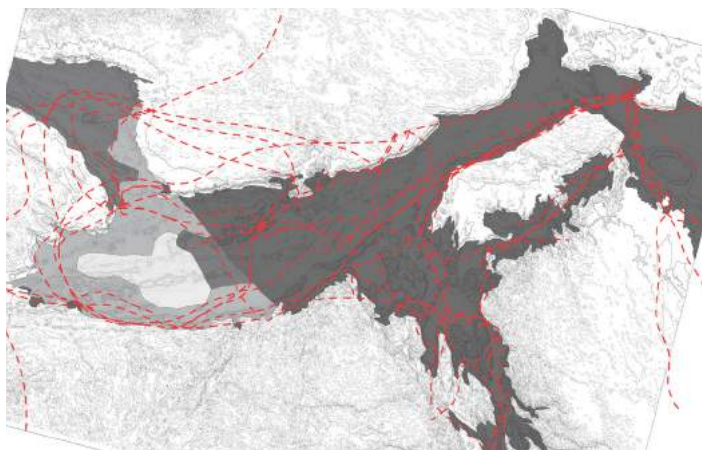
**The dense ice coming out of Bathurst Inlet joins with the ice growing
south from Victoria Island**



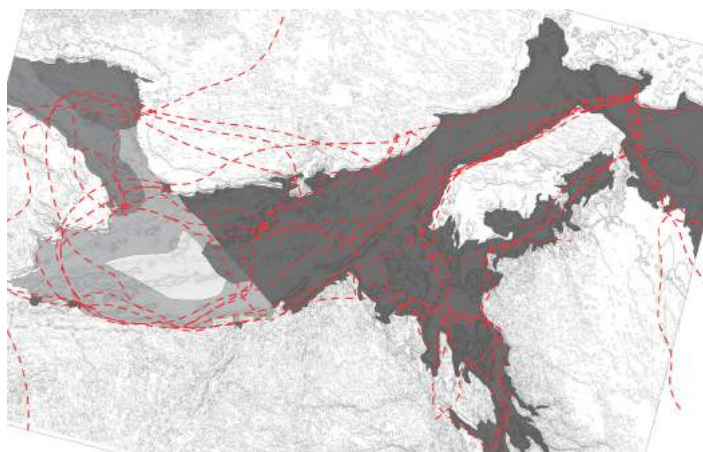
The gulf is near to be fully navigable as a sheet of ice



Multiple over-ice paths form as the ice reaches consolidation



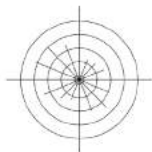
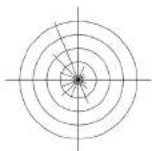
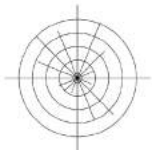
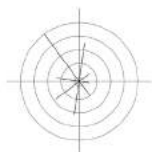
**The sea around Kugluktuk is last to fully freeze because of the outflow
of the Coppermine River**



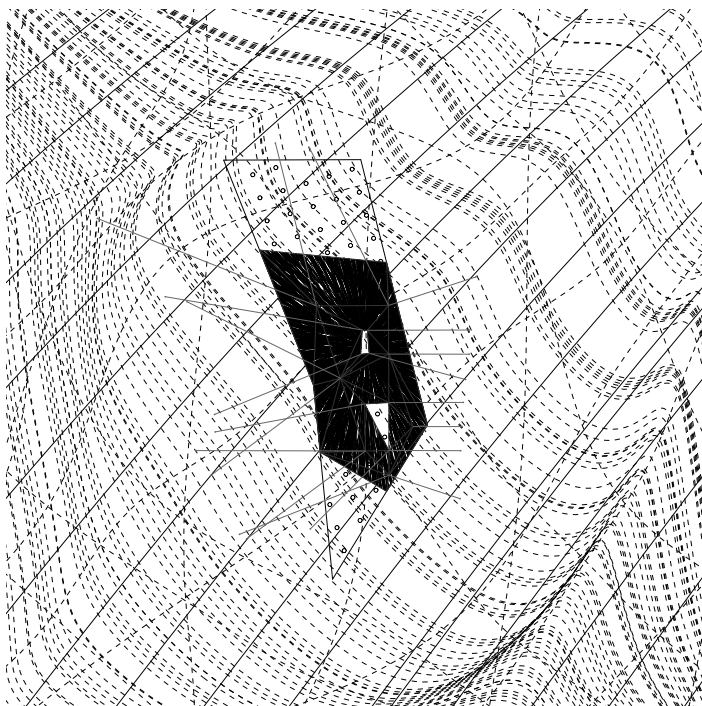
Windhouses

In an early attempt to synthesize ideas of an overlapping inhabitation structures and seasonally shifting settlement patterns, a series of tents, or Windhouses, were proposed. The tents would be constructed in forms related to traditional Inuit summer houses, where the sloped tent walls respond to prevalent wind conditions wherever they are sited. Floating platforms resting on thermopiles support the tents and define their footprint. Constructed out of aluminum poles and tied-down, the walls would be assembled out of stitching together animal furs salvaged from local towns. Chimney's suck the smoke from fires and seal oil lamps to the outside.

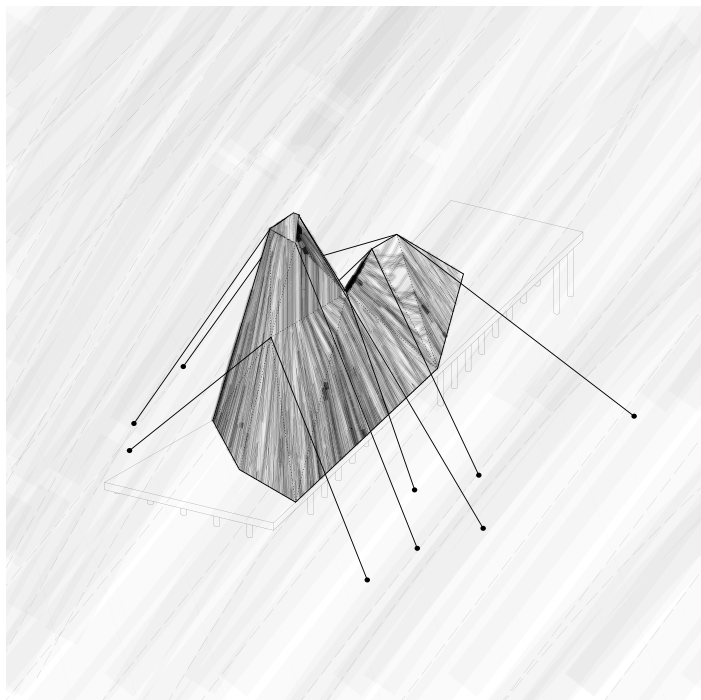
Wind directions in four locations and the corresponding tent form.
The locations from top to bottom are Bathurst Inlet, George Lake, the
proposed Bathurst port site, and Lupin Mine



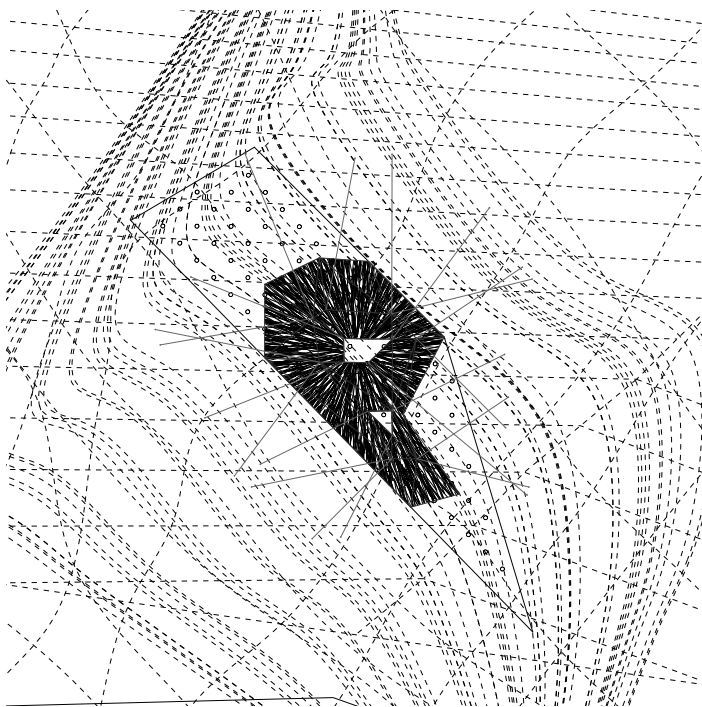
Bathurst Inlet Tent, top view



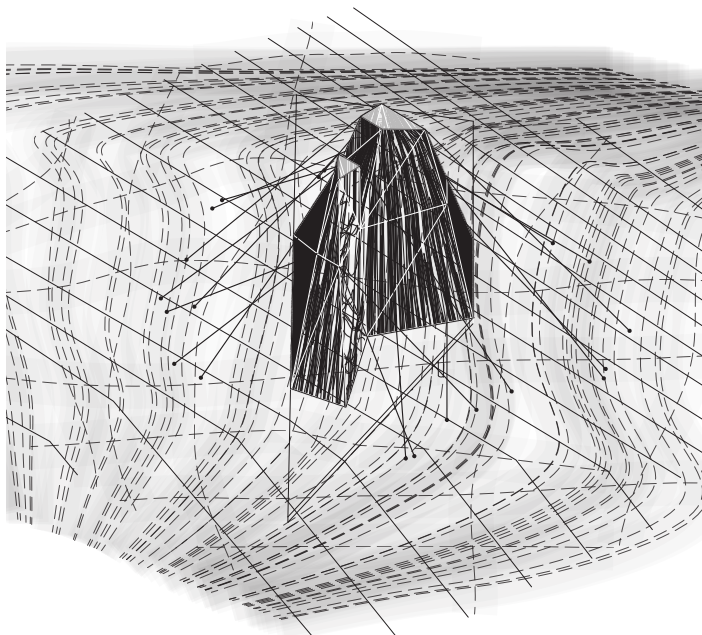
Bathurst Inlet Tent, Perspective



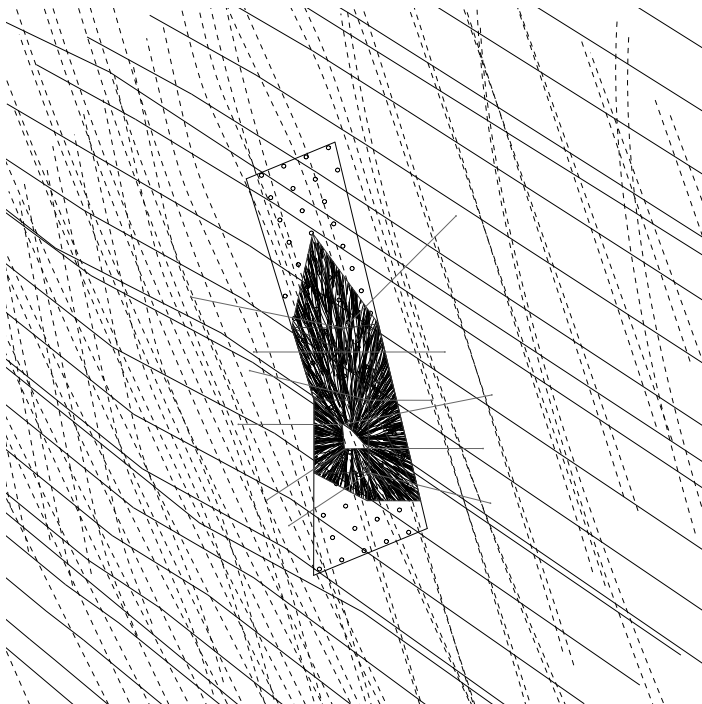
George Lake Tent, top view



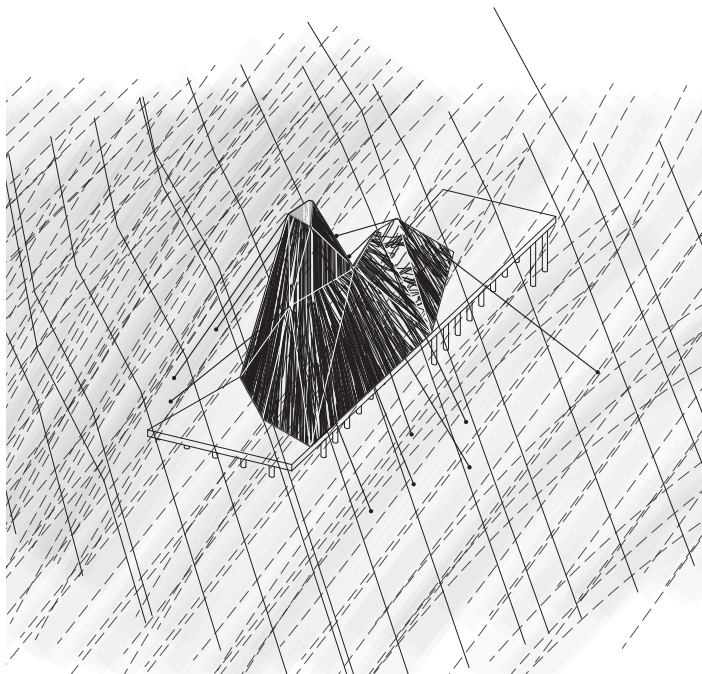
George Lake Tent, perspective



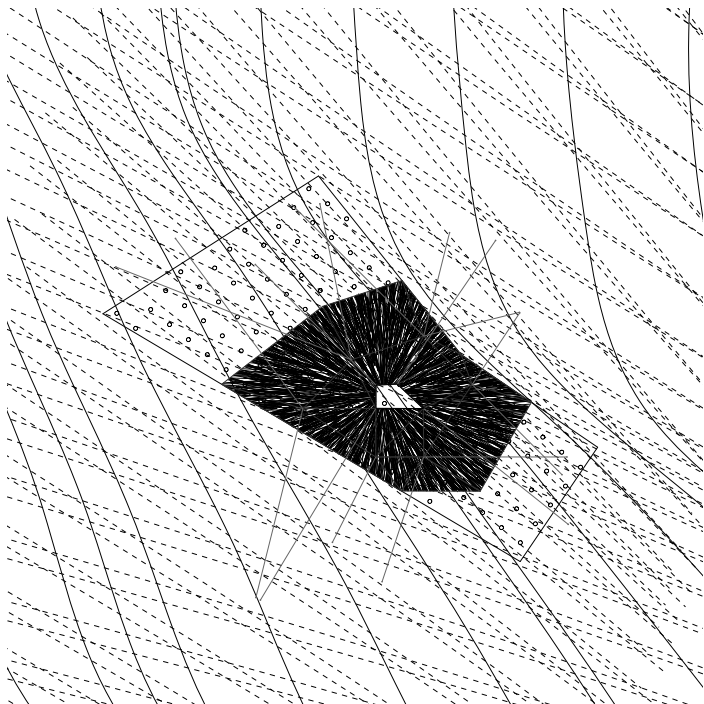
Bathurst Port, top view



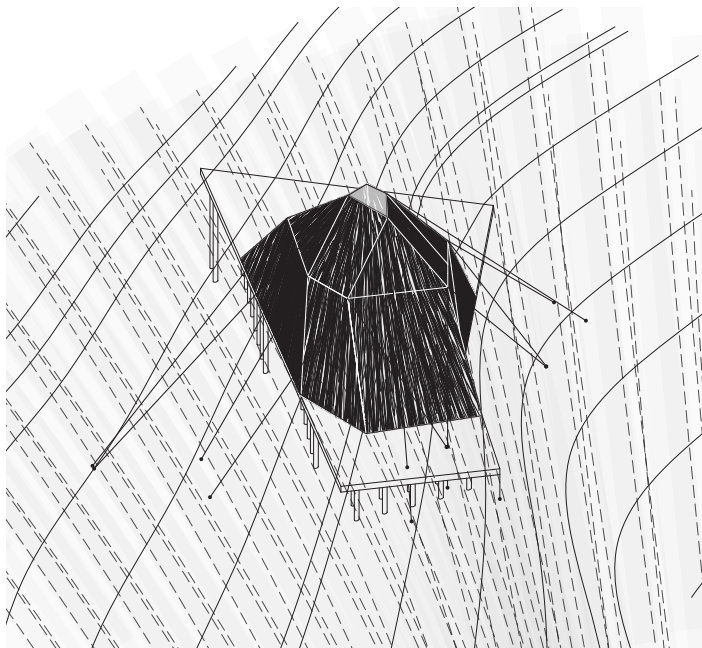
Bathurst Port, perspective



Lupin Mine, top view



Lupin Mine, perspective



Afterword

