

Introduction Pigiasituk

A marine sampling campaign onboard the research vessel William-Kennedy took place in the Nain archipelago in September 2021 (Fig. 1). We collected seabed and water column samples (Fig. 2) to investigate changes in sea ice and algal production in response to climate change, and to assess the distribution of marine geological hazards such as submarine landslides. This research will provide essential information for marine spatial planning and for predicting the impact of continued warming on the services supported by the coastal ecosystem.

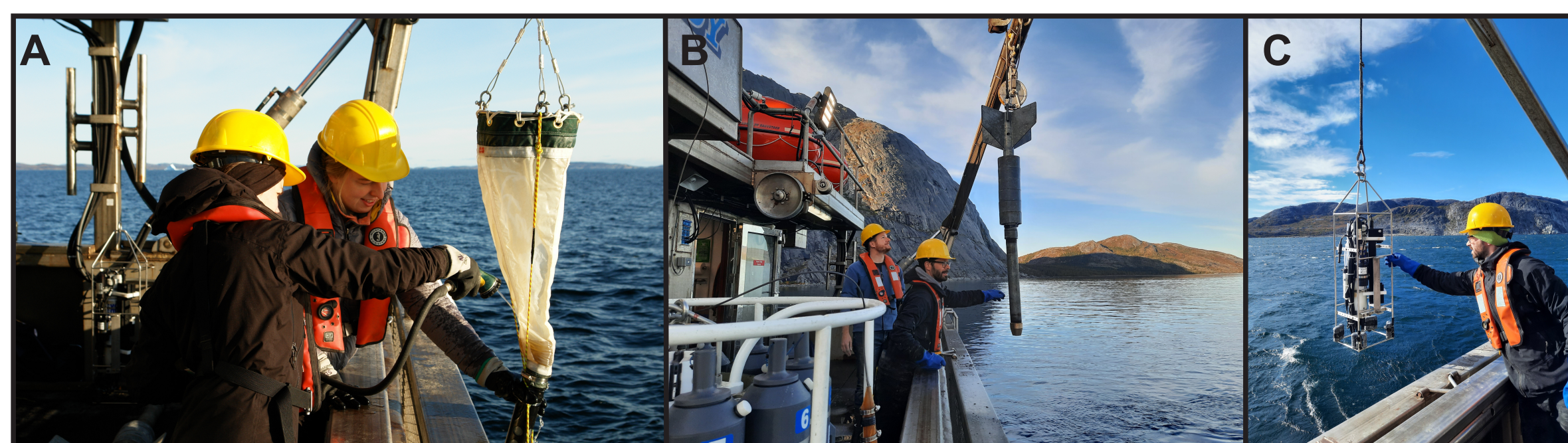


Figure 2. A) Phytoplankton net; B) Gravity coring; C) Conductivity-Temperature-Depth (CTD) sampling. Takutsak 2. A) Phytoplankton net; B) Inggajuit ottutausimajut; C) Kaujisattaumajut-Nigumminingut-itiningit (CTD) ottugattaumajut.

Imāni ottugannik umiatsuakut William-Kennedy iniKalauttuk Nainiup ikKangani September 2021 (Atjilik . 1). katsuiluakKugut ikKamit amma imait Kanuiingausinginnik (atjilik .2) imait sikunginni amma pigusonik unutsivalliamangāta silaujuk asianguvallianingani, kamagasuallutalu ikKamitait ilmanattumeninginnik sunanut sollu imaup ikKanginni sitoKattajut. Tamanna Kaujisannik pimmagittumik Kaujitsiniattuj ikKamitait pannaigutikagiamut amma uKagasuagiamut attuigajattunik nigumitsivalianingani ikajutsigajattunik sadjugiami imamiutait pigugunnaninginni.

Marine geological hazards Imamiutanik ilmanattumetitsigajattut

The seabed sediment of the Nain archipelago varies considerably throughout and sits on variable slopes. The deposition of fine sediment on the steep slopes favours the presence of submarine landslides. Many of these landslides are present where steep cliffs extend underwater and are composed of a mixture of rock and sediment. One of the bigger landslides is in Ten Mile Bay (Fig. 3) and is located at the outlet of a river. Landslides are common seaward of rivers because of higher sediment accumulation on steep slopes. The age of the landslide will be estimated with sediment cores collected on the seabed and can range anywhere between a few hundred years old to a couple of thousand years old.

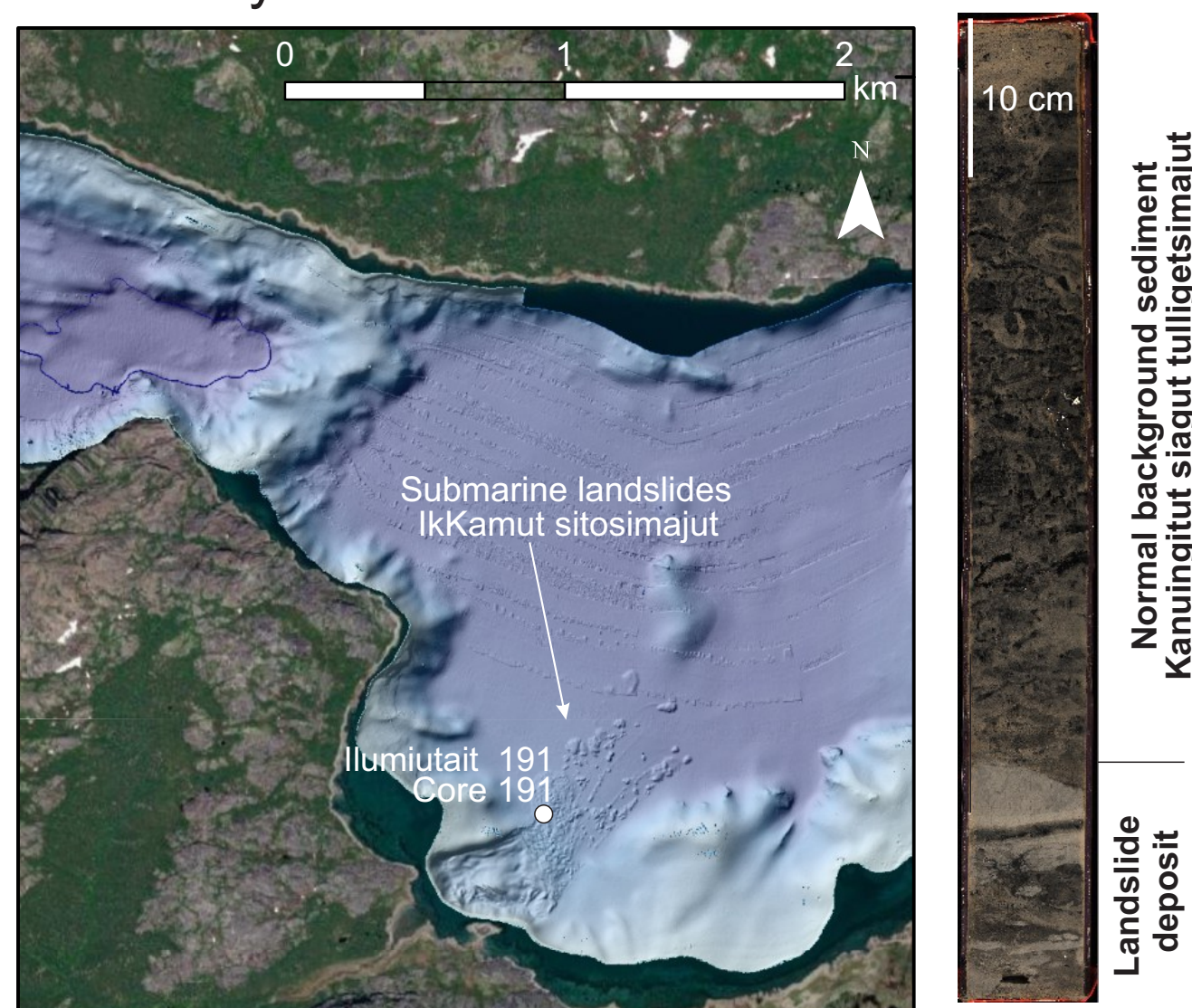


Figure 3. Submarine landslide in Ten Mile Bay (left) with evidence from a sediment core (right) Takutsake 3. IkKamut sitosimajut Kangidluasummi (saumiani) takujausot Kulligetijut (talippiani)

IkKami pigugunnat Nainiup imagijangini adjigetisiangittut ilonnāgut amma iniKallutik adjigengituni ikKaup natsanganni. AkKisimausigut adjjungittut puttunitsani natsaujuni sitogaluasongujut. Ununningit ikKamitait majukKaneluattut ilingajut imaup ikKanginnut amma sanimiutaKallutik ujaganik amma ikKamitait. Ilangat sitogāluaKattajut iniKajut Kangidluasummi (atjilik .3) amma iniKalluni imāni kongujop sanani. Nunani sitogājut takutsait Kanitānettut kongujunnt puttunitsanik kommeKattajut puttunitsamemmata sitogasot KakKani. Ununningit sitigasot kamagijauniattut tulligenut katitsutaumajunut imaup ikKangani amma tamānesimallutik hongtagiallatāni jārini kamagijaullutik ikKamitait katitsutaumajut ikKamit tamānesimagajattut hongtagiallatani jārini tausentigillatānūjārini.

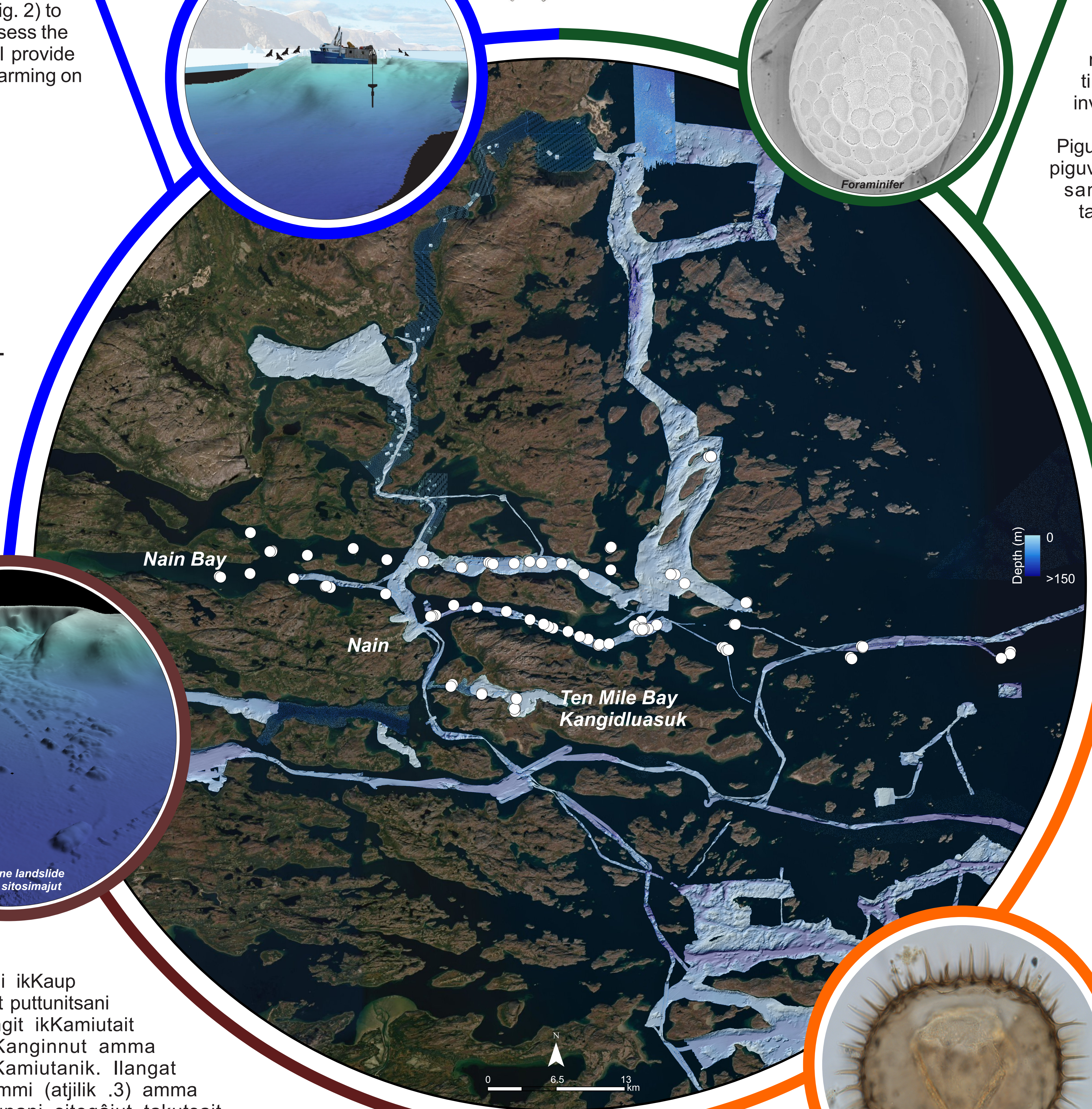


Figure 1. Sampling stations from the 2021 RV William-Kennedy expedition. White dots are sampling stations. Takutsak 1. Ottugapviujut iluagut 2021 RV William-Kennedy Kiigutinni. KaKuttait taKutsait ottugapvemejūt . KaKutsisimajut

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Fingerprint of biological production and sea ice AkKisimauset nunamiutait piguvallianingit amma imaup sikongit

The microscopic organisms at the base of the marine food web leave a fingerprint in the marine sediment after they die. By studying their remains preserved in the sediment (e.g., skeletal parts, molecules), we can reconstruct changes in biological production and sea ice through time, at a time-scale extending to several millennia. These microscopic organisms are found alongside large invertebrate organisms that are particularly abundant near the rattles (polynyas) (Fig. 4).

Pigugunnat atānettut imamiutait niginasuttausot ākKisimausiKasot Kanugalak imaup ikKanginni piguvallianingit. Kaujisallugit amiakKungit piulimajajut ikKami (e.g., saunikuit, pigusot), sanagunnaKugut asiangujunik nunamiutajunik amma imamiutajunik Kangatsolippat, tamānesimallutik unuttugiallatāni miliunigiallani. Tamakkua pigugunnat takujausot saniani anginitsani pigusoni unuttumagiusot Kanitanginni ingganijut (takutsak. 4).



Figure 4. Surficial sediment along an inshore/offshore transect Takutsak 4. Tulligetisimajut kangidluni/ imappini

Hotspots of export production Unuluasot aullatitauasot pigianinginni

As a first step, we explored the modern distribution of microfossils in the upper 1 cm of sediment that has accumulated on the seafloor (Fig. 4). Although the rattles on both sides of Hillsbury Island appear to be highly biologically productive, preliminary results show two hotspots of export production to the seafloor: in Nain Bay and Ten Mile Bay (Fig. 5).

Sivullimki, KimmigulaukKugut ullumiullutik pigusongulittunik tajjami puttunitsami 1 cm tuligejuni unutsivalliasimajut seaor? (takutsak. 4). Ingganet tamagennigaluattulugik Kikittasuumi malunnatok pigupviuluanninga, Kaujisautisiumajut takutitsijuk maggoluanik piguviuluasunik ikKami imaup ikKangani: Nain Bay amma Kangidluasumi (takutsak .5).

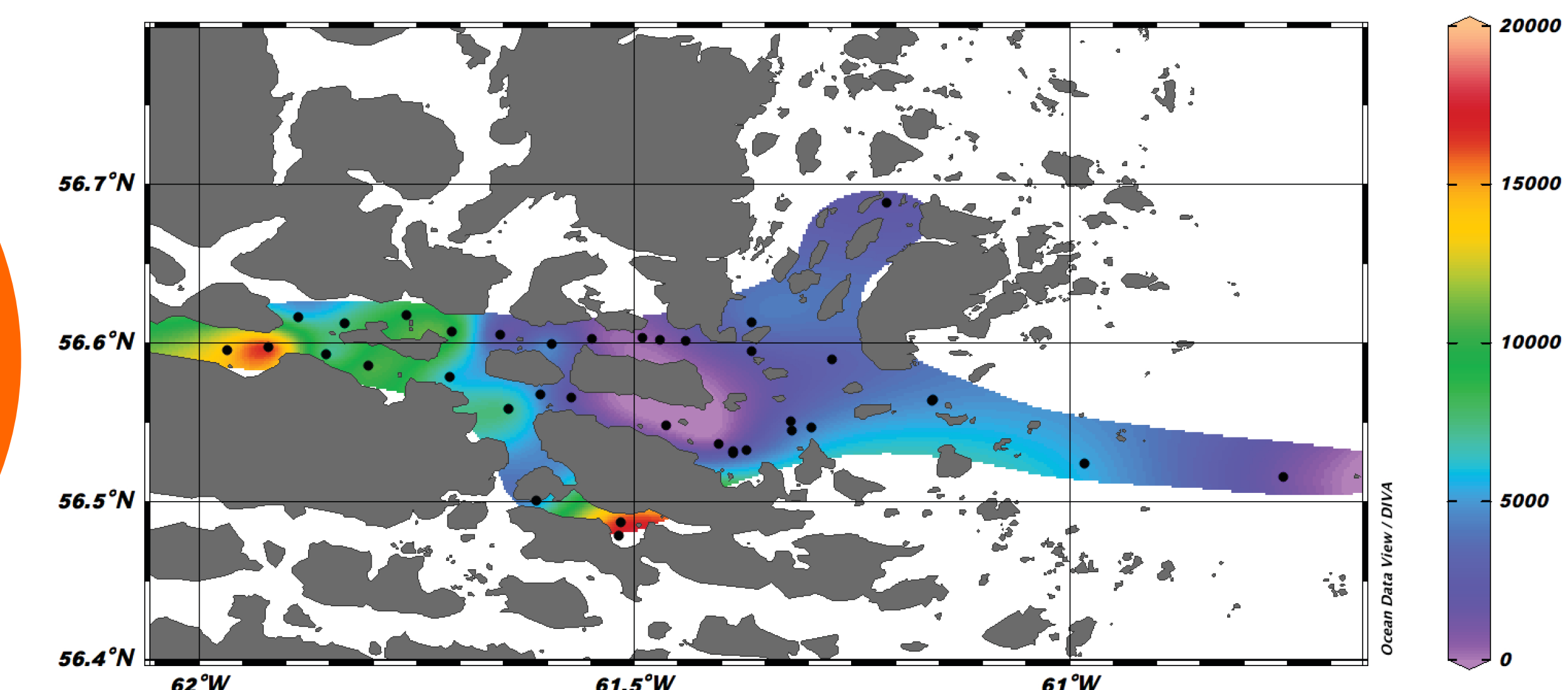


Figure 5. Total concentrations of dinoflagellate cysts (cysts g⁻¹) from the studied sites (black dots). The areas coloured in red represent regions with the highest concentrations Takutsak 5. Katillugit dinoflagellate cysts (cysts g⁻¹) Kaujisapviusimajunit (Kinnitait). Tauttsāmajut aupaluttamik puttunippauKatajut