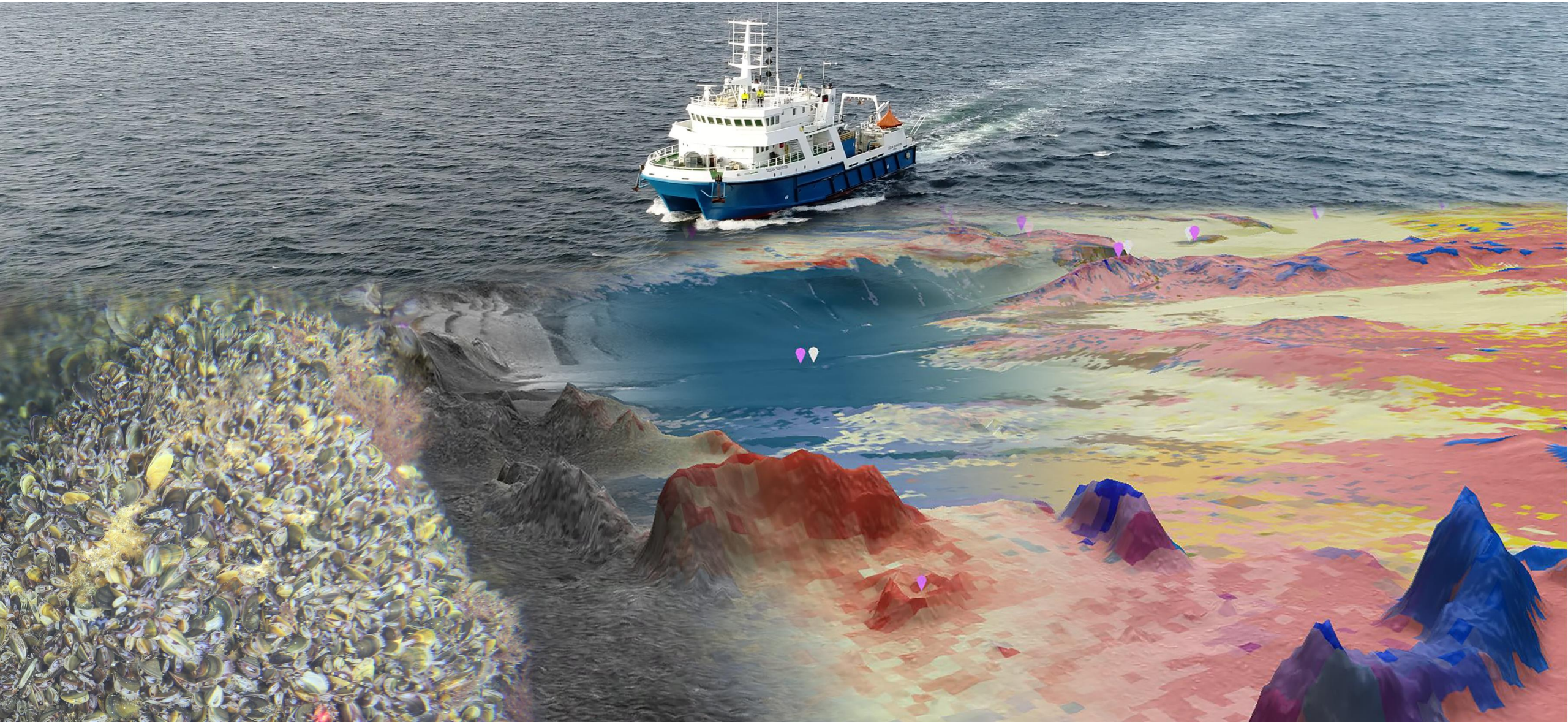
SGU
Sveriges geologiska undersökning
Geological Survey of Sweden

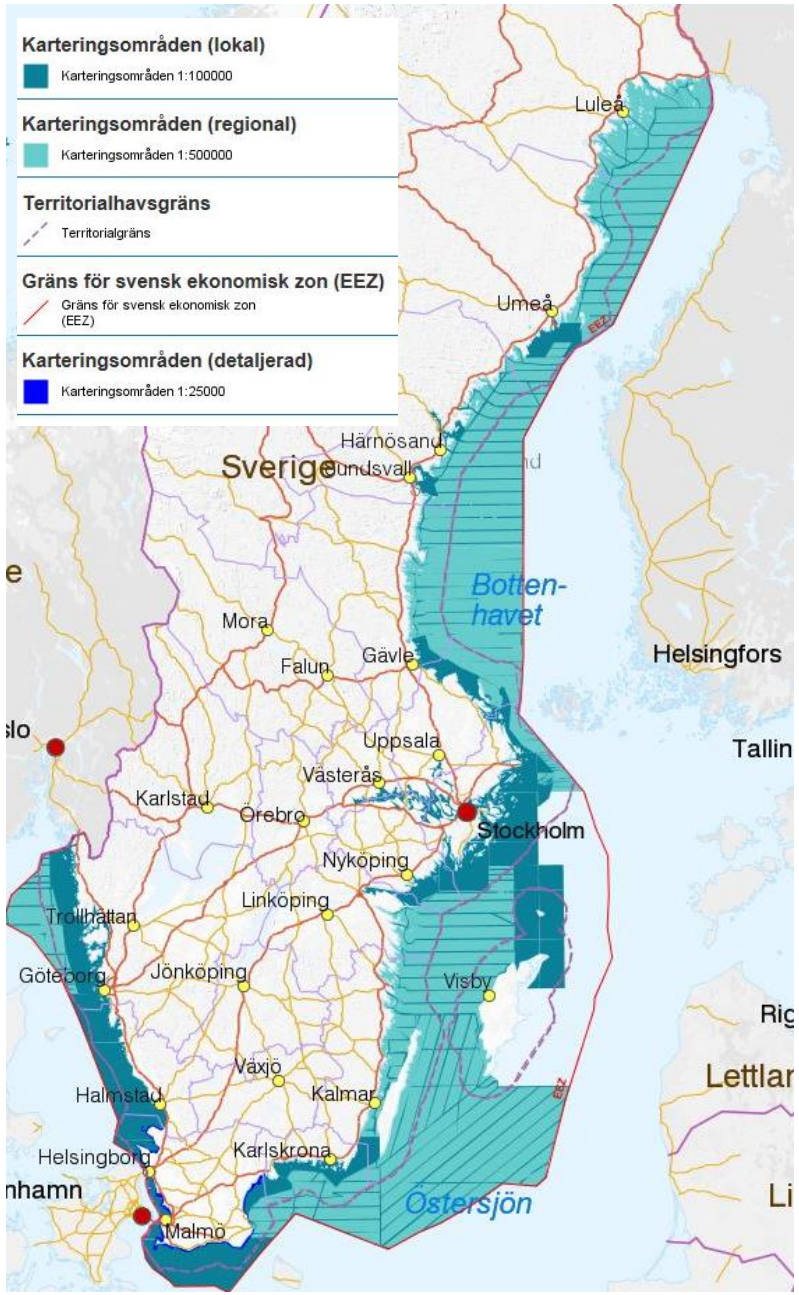
Habitat mapping in Sweden

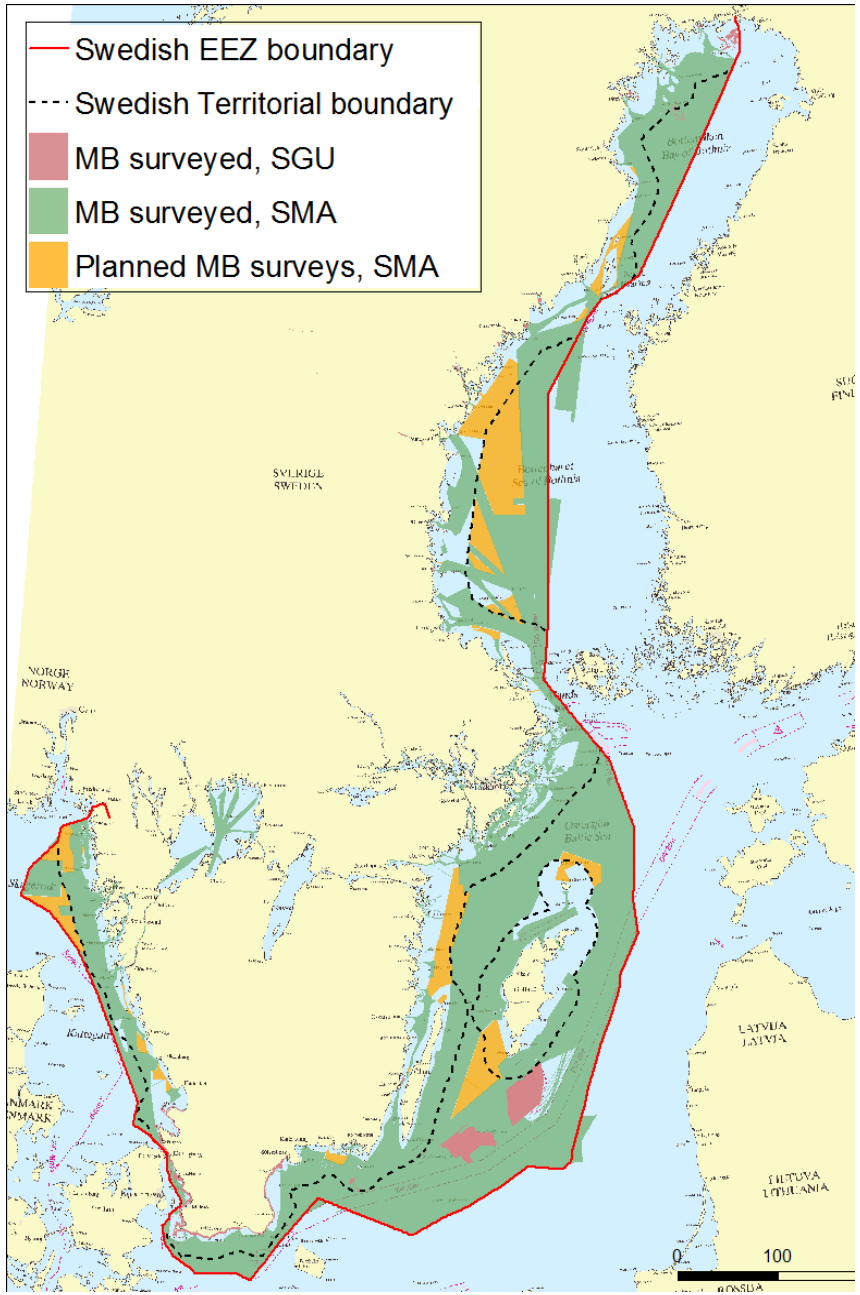
Status update for the “national mapping program”

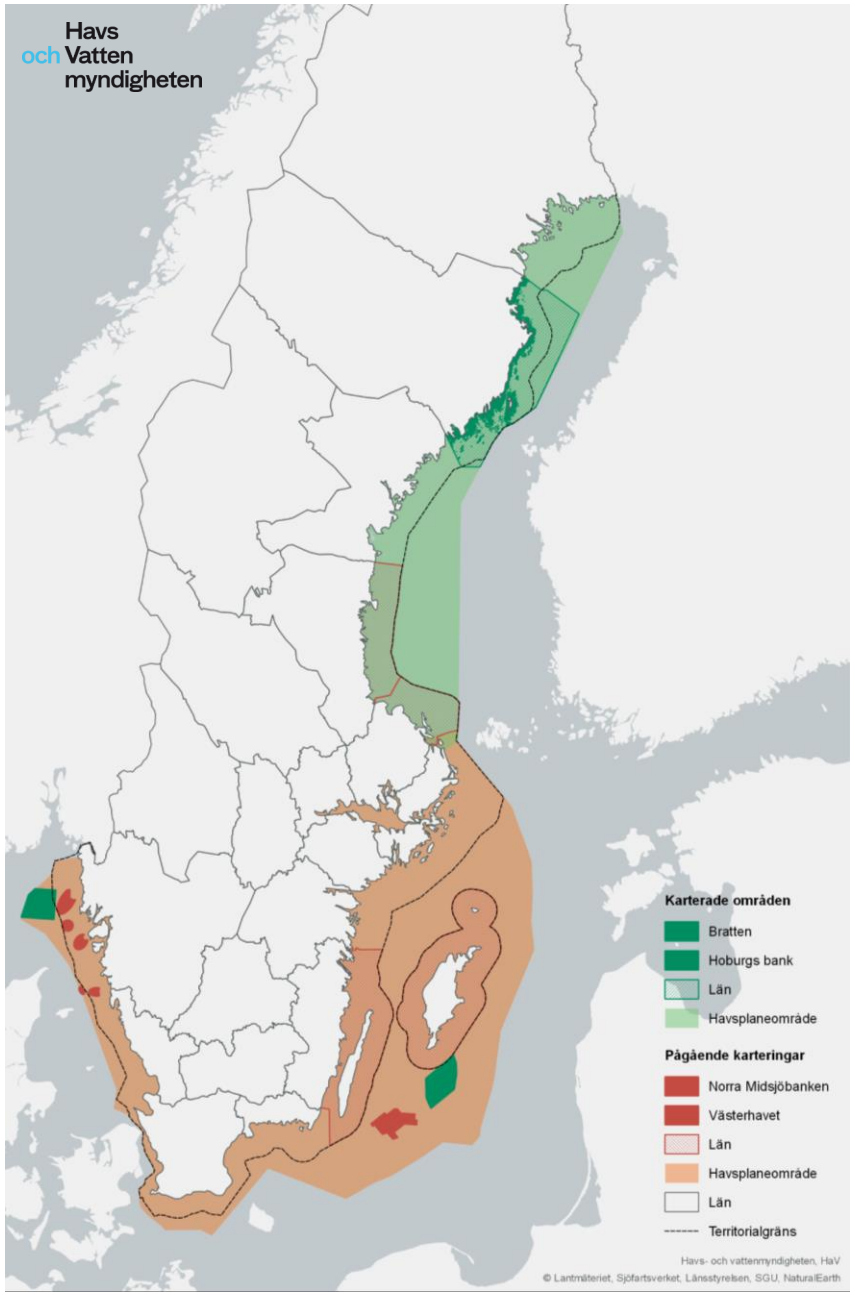
Gustav Kågesten (SGU), 20th Feb. 2020

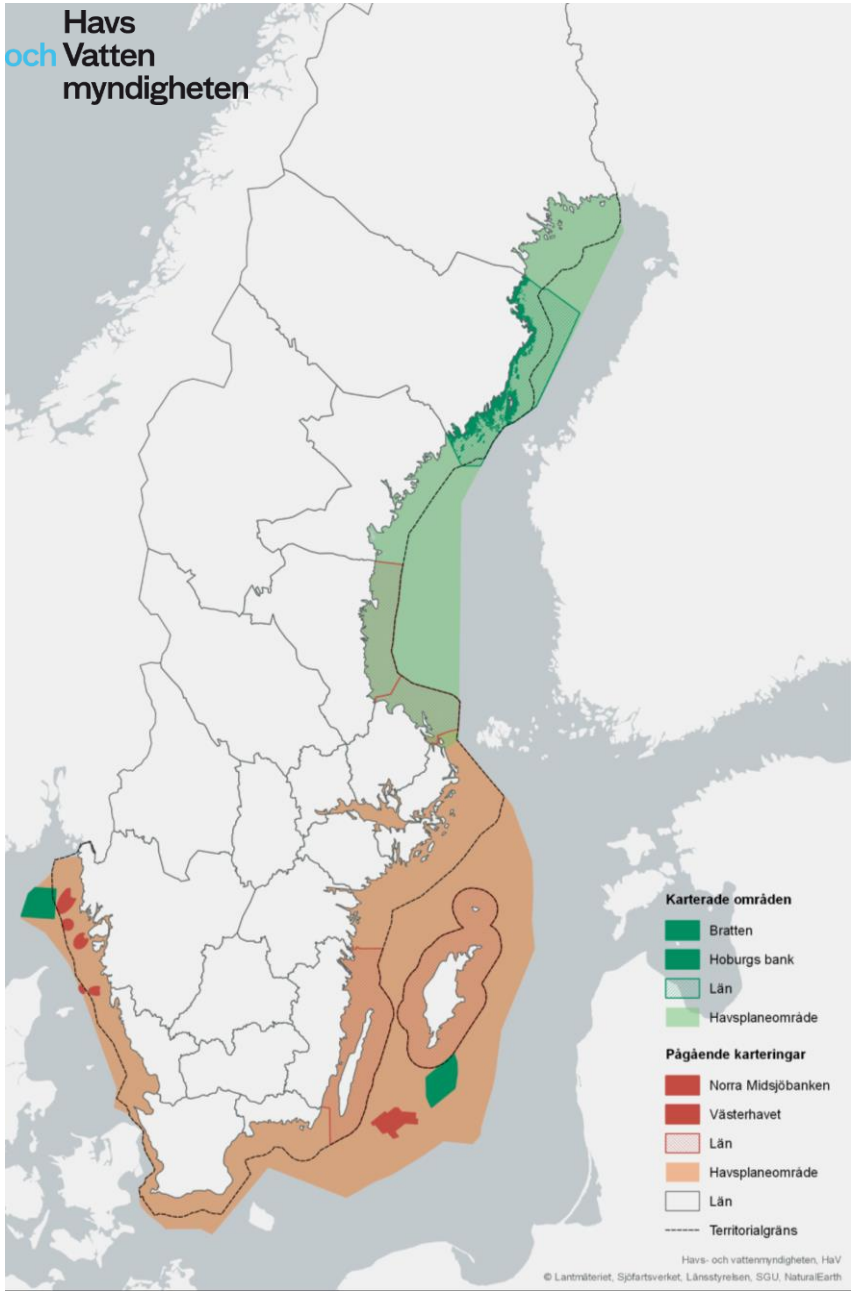
Havs och Vatten myndigheten




Karteringsområden (lokal)
Karteringsområden 1:100000
Karteringsområden (regional)
Karteringsområden 1:500000
Territorialhavsgräns
Territorialgräns
Gräns för svensk ekonomisk zon (EEZ)
Gräns för svensk ekonomisk zon (EEZ)
Karteringsområden (detaljerad)
Karteringsområden 1:25000
Luleå
Umeå
Härnösand
Sundsvall
Sverige
Botten-
havet
Mora
Falun
Gävle
Helsingfors
Uppsala
Tallin
Västerås
Karlstad
Örebro
Stockholm
Nyköping
Linköping
Trollhättan
Göteborg
Jönköping
Visby
Rig
Växjö
Lettlar
Halmstad
Kalmar
Helsingborg
Karlskrona
Östersjön
Malmö


Swedish EEZ boundary
Swedish Territorial boundary
MB surveyed, SGU
MB surveyed, SMA
Planned MB surveys, SMA
SVERIGE
SWEDEN
NORGE
NORWAY
LATVIJA
LATVIA
LIETUVA
LITHUANIA
0
100


Havs
och Vatten
myndigheten
Karterade områden
Bratten
Hoburgs bank
Län
Havsplaneområde
Pågående karteringar
Norra Midsjöbanken
Västerhavet
Län
Havsplaneområde
Län
Territorialgräns
Havs- och vattenmyndigheten, HaV
© Lantmäteriet, Sjöfartsverket, Länsstyrelsen, SGU, NaturalEarth

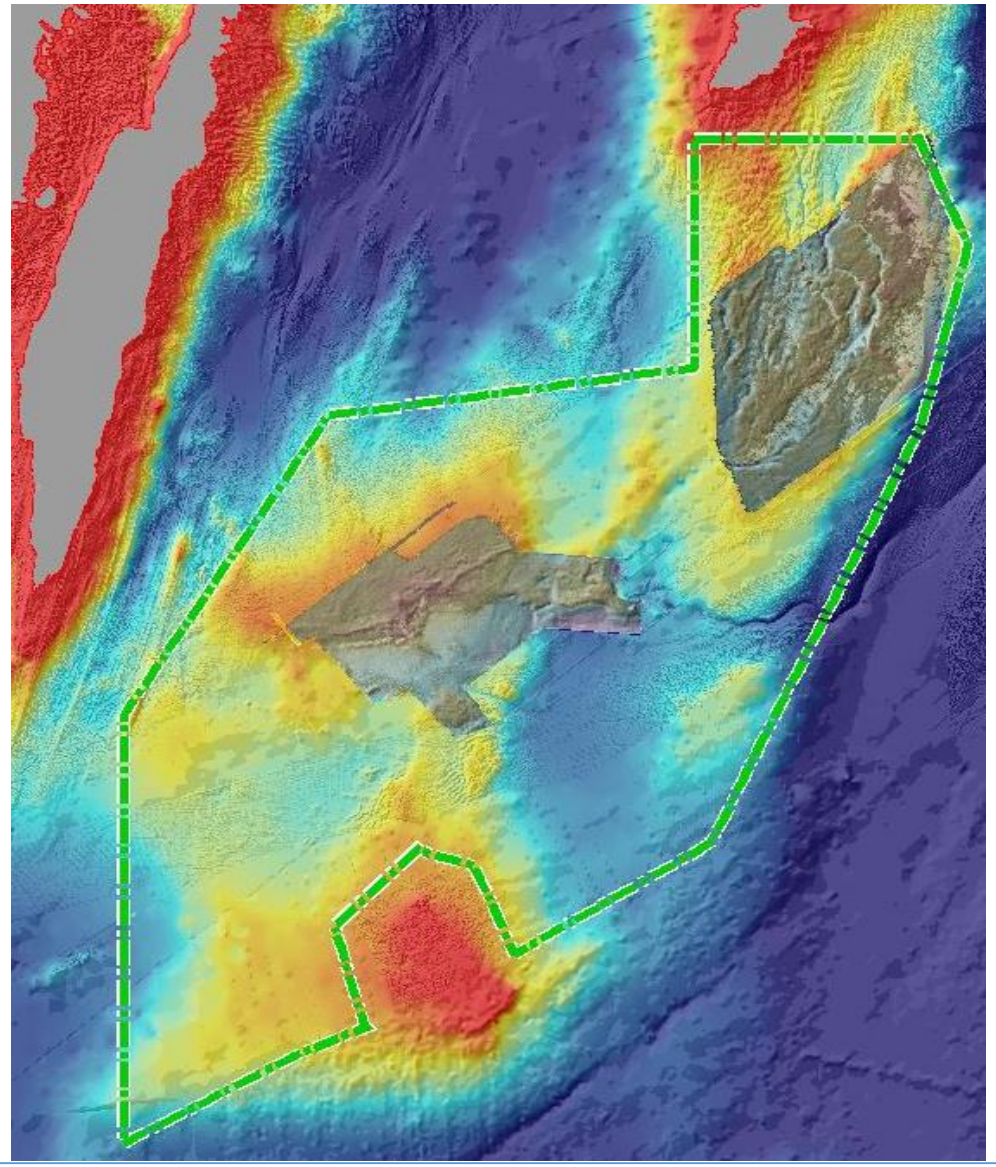


”National Marine Mapping program”

Who: Project funded by Swedish Agency for Marine and Water Management (SwAM)
Participants - SGU, SLU, Swedish Maritime Administration, counties and consultants
When: 2016 – 2020
What: habitat maps and species models and maps on various scales and resolutions
Next: (Hopfully!) phase two – an integrated program building knowledge from ground up for modelling & mapping in the age of digitalization

STATUS	AKTIVITET/UPPDRAG	UPPLÖSNING	BESKRIVNING	TILLGÄNGLIGHET
Klar	Bratten	2-10 m	Bathymetrisk 3D modell, backscatter	HaV/Lst Västra Götaland
Klar	Depth model	10 - 25 m	Batymetrisk 3D modell för alla län	Sjöfartsverket
Klar	Västerbottens county	10 m	Epibentos, Infauna, Sik, HUB, Naturvärden	HaV
Klar	Bottnian bay	250 m	Epibentos, Infauna, Naturvärden	HaV
Klar	Hoburgs bank, Baltic sea	5-10 m	HUB, N2000 naturtyper, Naturvärden och arter.	HaV och SGU
Klar	Westcoast offshore areas	uv-obs	Datainsamling inom 5 prioriterade områden	HaV, Lst VG
Pågående, klart sommaren 2019	North Midsea bank, Baltic	5 m	HUB, N2000 naturtyper, arter och habitat	(HaV och SGU)
?	National substrate model	25 m	Version 1.0, includes a new 10m depth model for Sweden	(SGU)
Granskning	Fish habitat mapping	25 m	Modellering uppväxtområden på befintlig data, Västkust och Östkust.	(SLU/HaV)
Permit pending	Habitat mapping Baltic sea	250 m	Epibentos, Infauna, Naturvärden, HUB, havsplaneområdet Östersjön	(HaV)

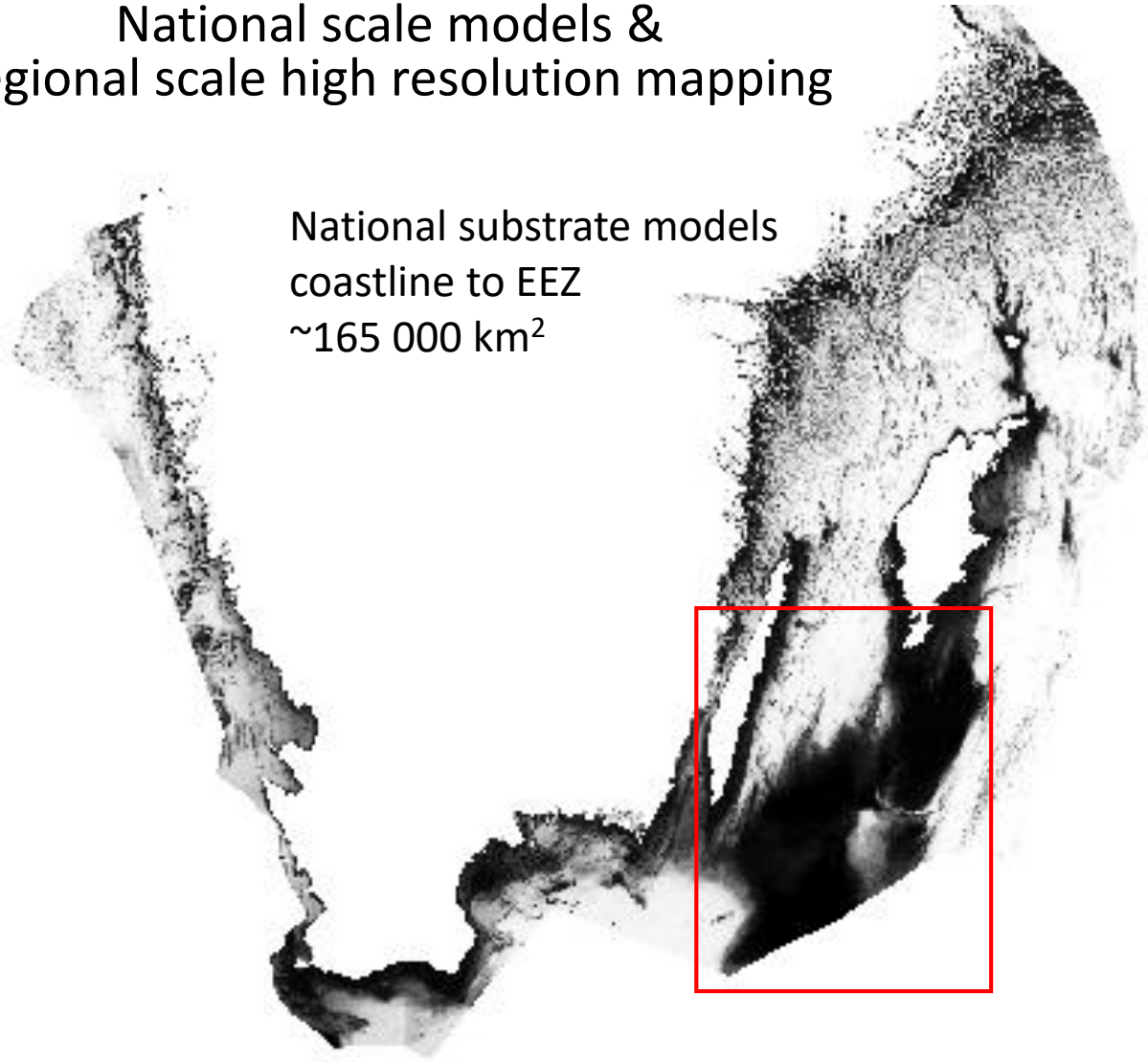
Hoburgs bank and North midsea bank ~2500 km^2



SGUs part so far…

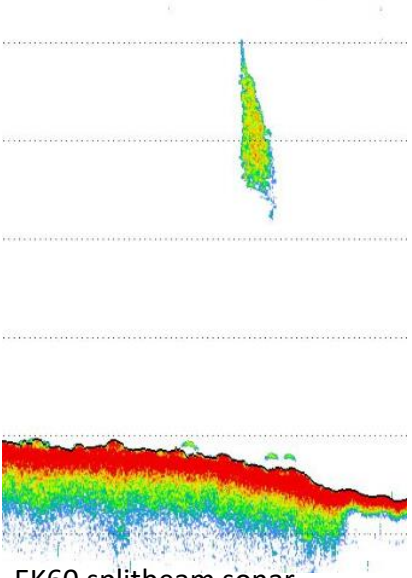
National scale models & Regional scale high resolution mapping

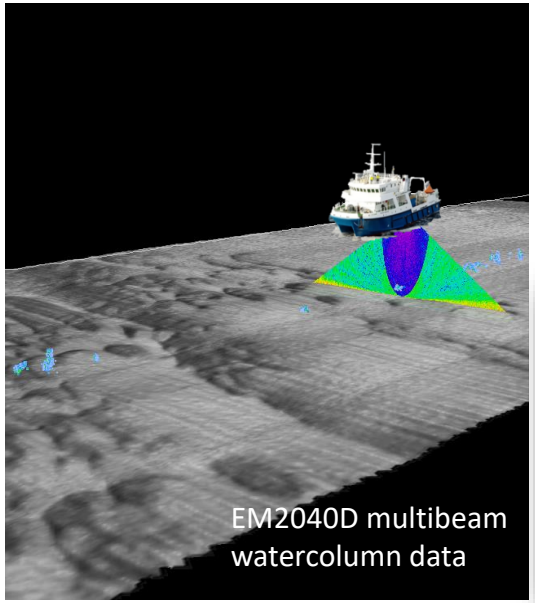
National substrate models
coastline to EEZ
~165 000 km^2

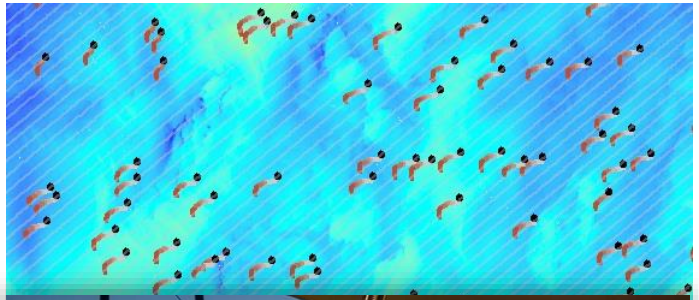


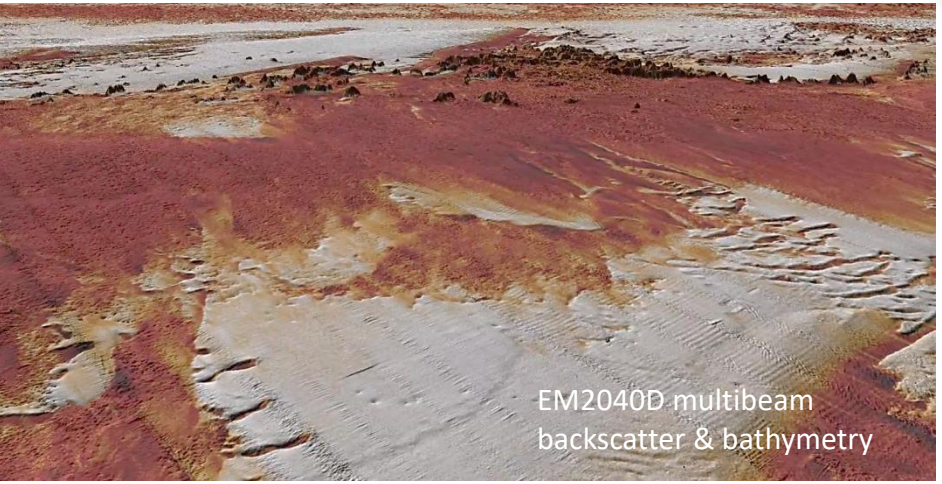
Habitat surveys with Ocean Surveyor

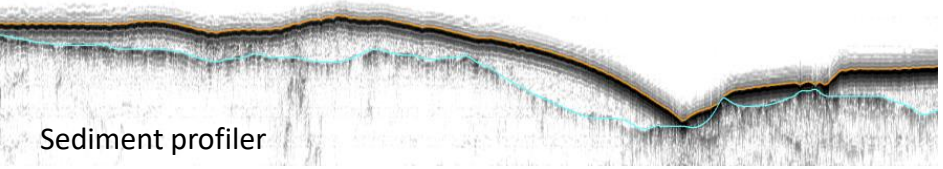
16h survey / 8 h sampling routine

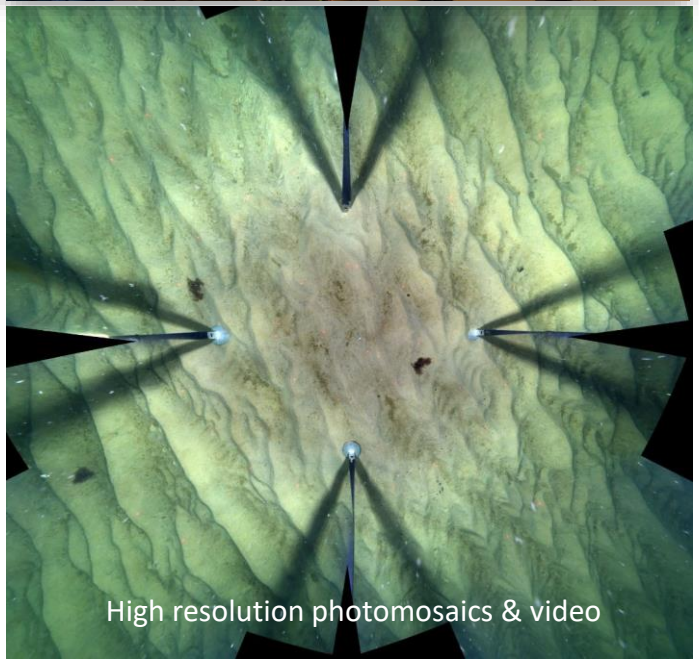




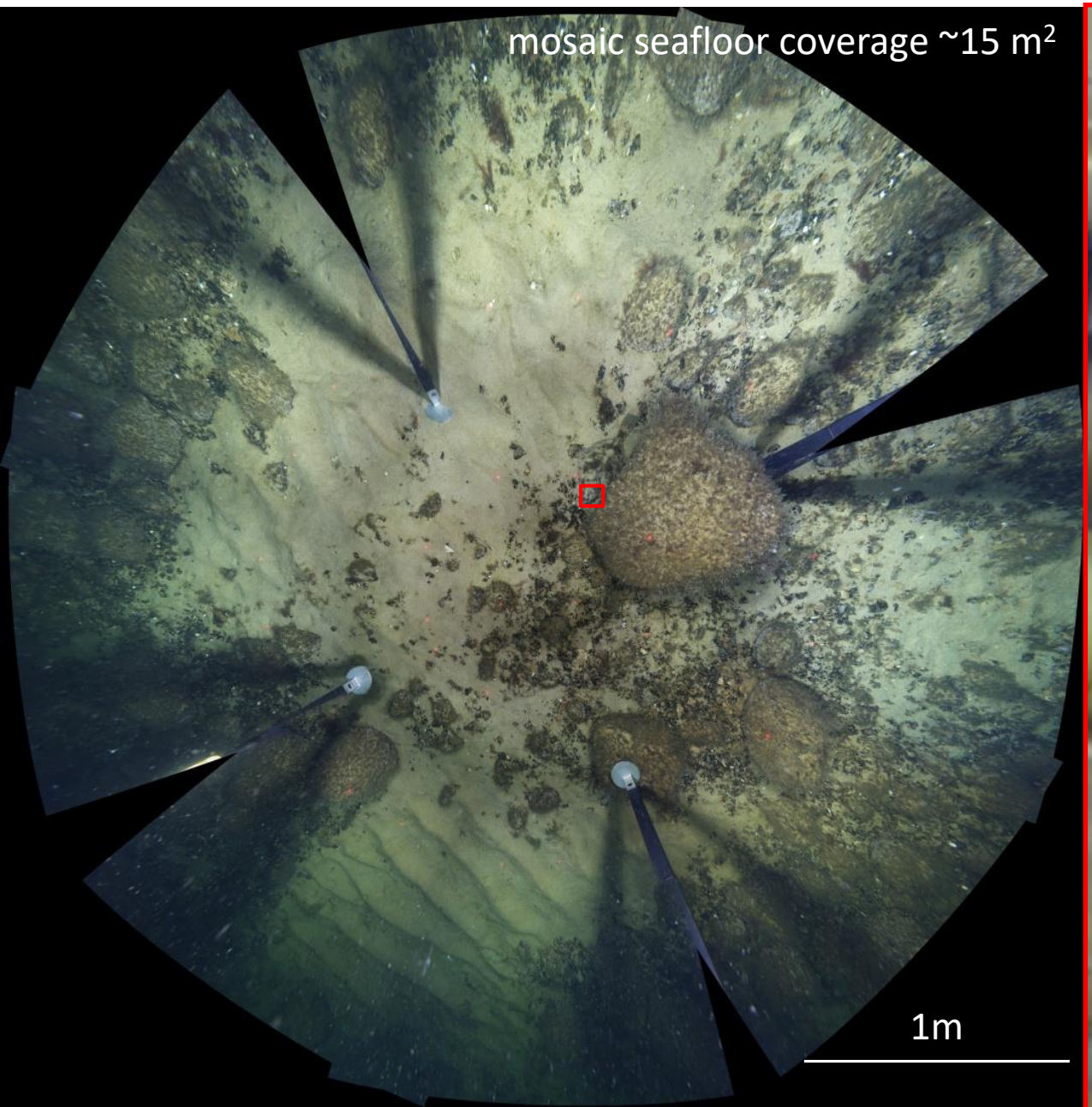




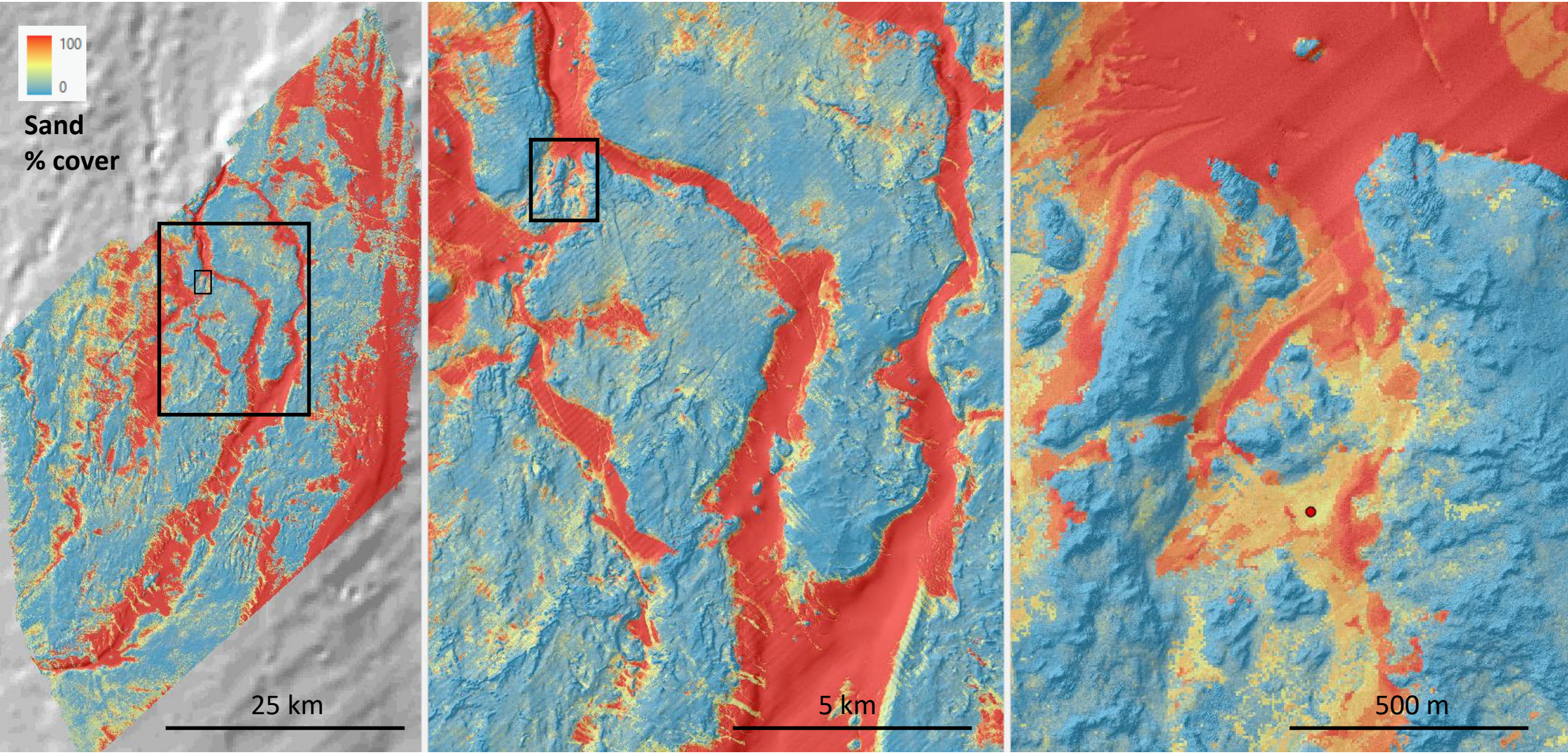




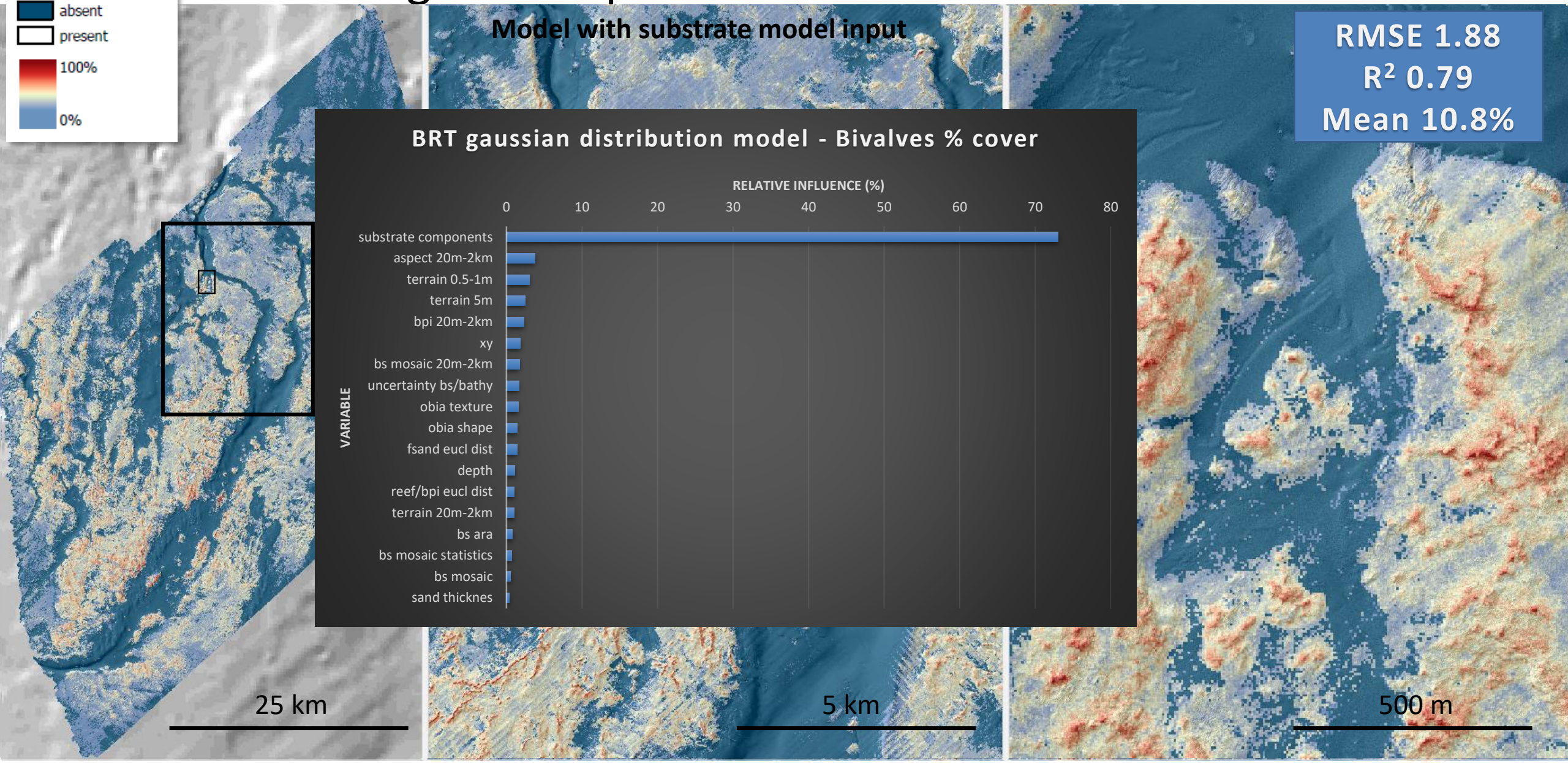
Ground-thruthing with samples and cameras



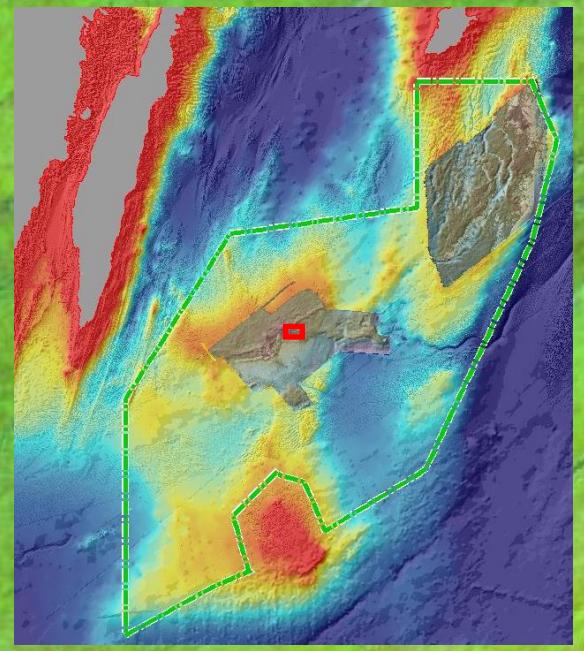
High resolution models – Boosted Regression Tree model (R, Caret package)

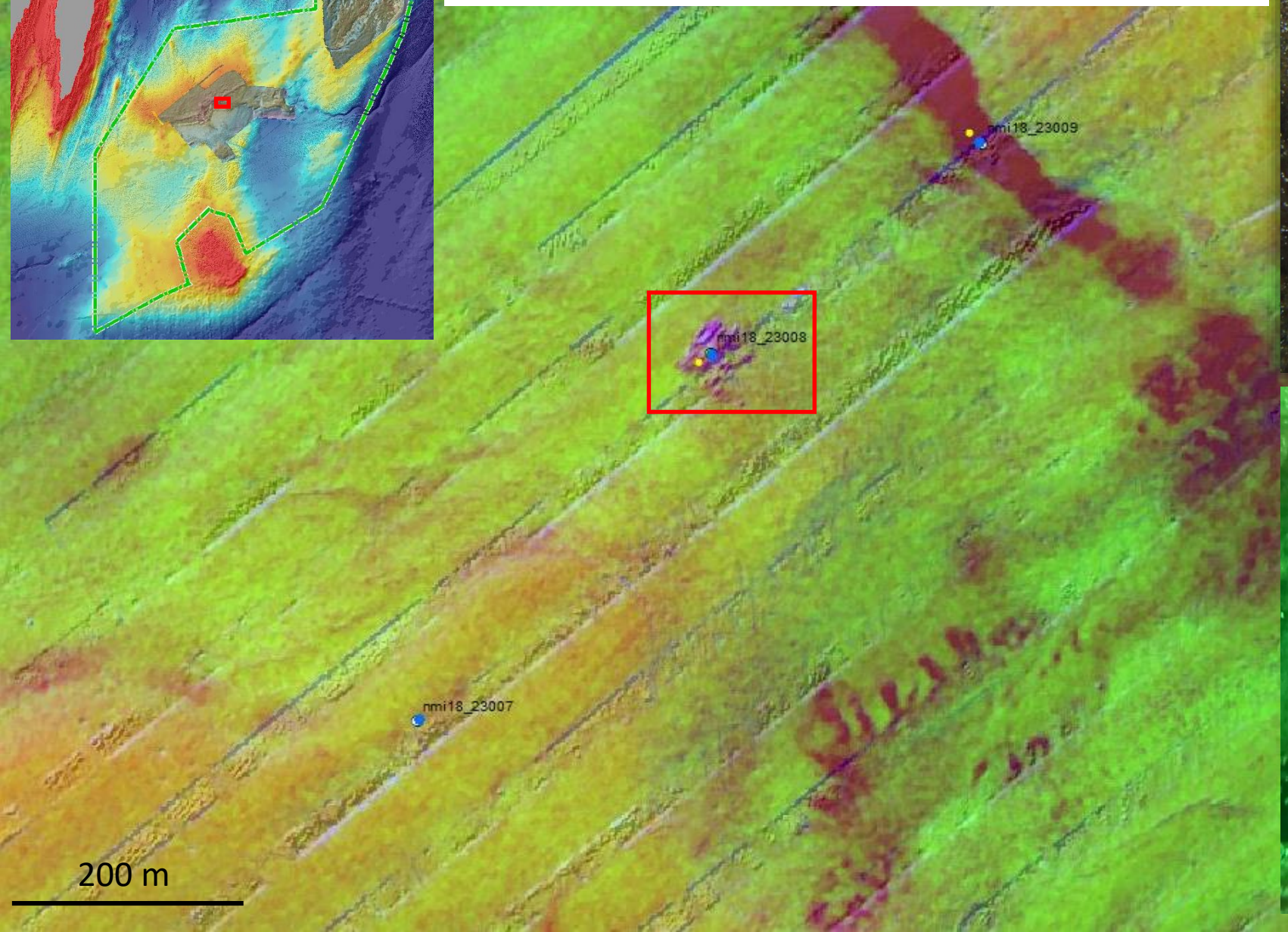


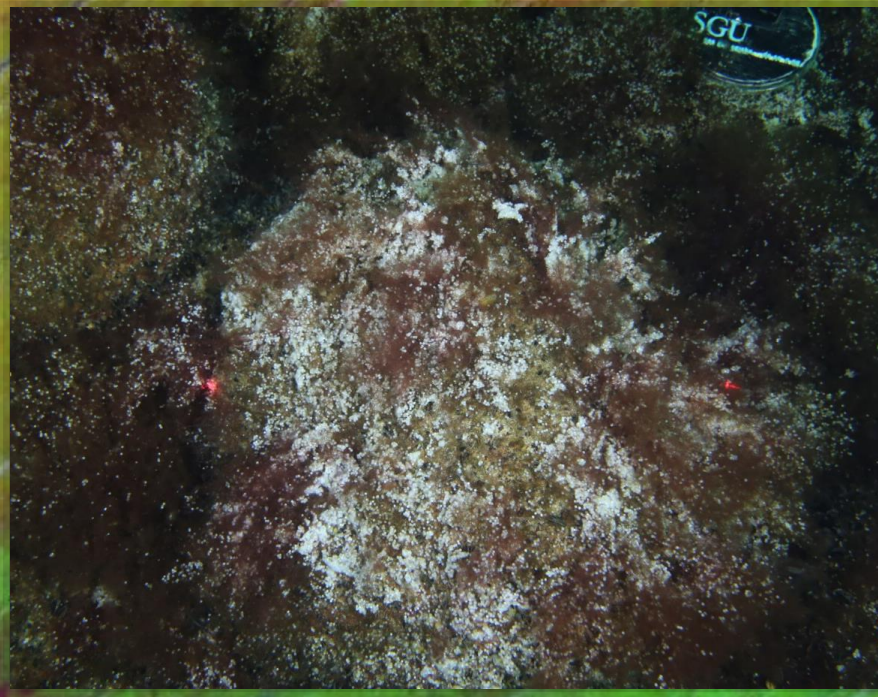
Biological components: bivalves cover 0-100%



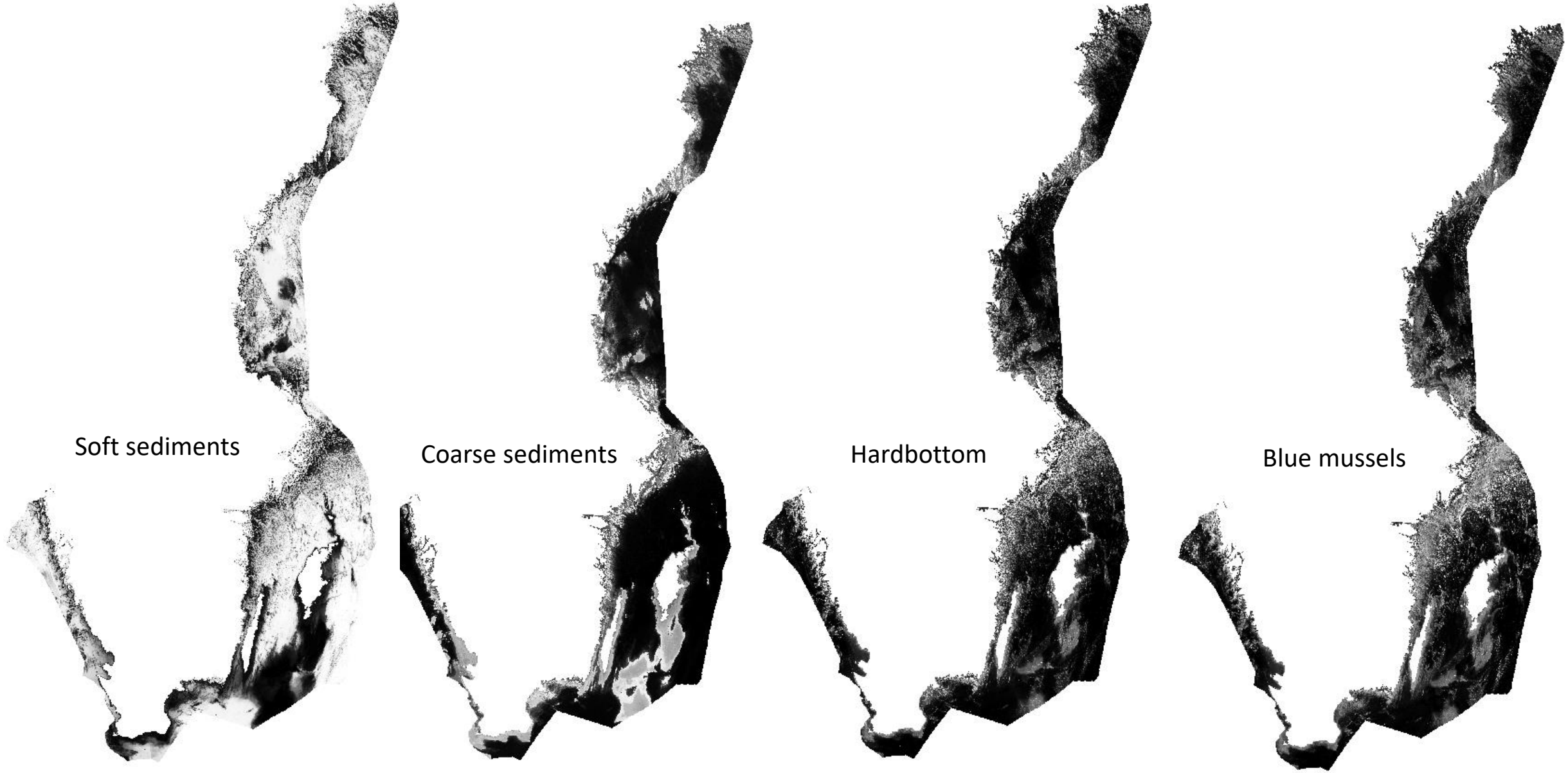
Special places can be very small
Small patch reefs of hard clay and boulders - spawning locations for herring on North Midsea bank





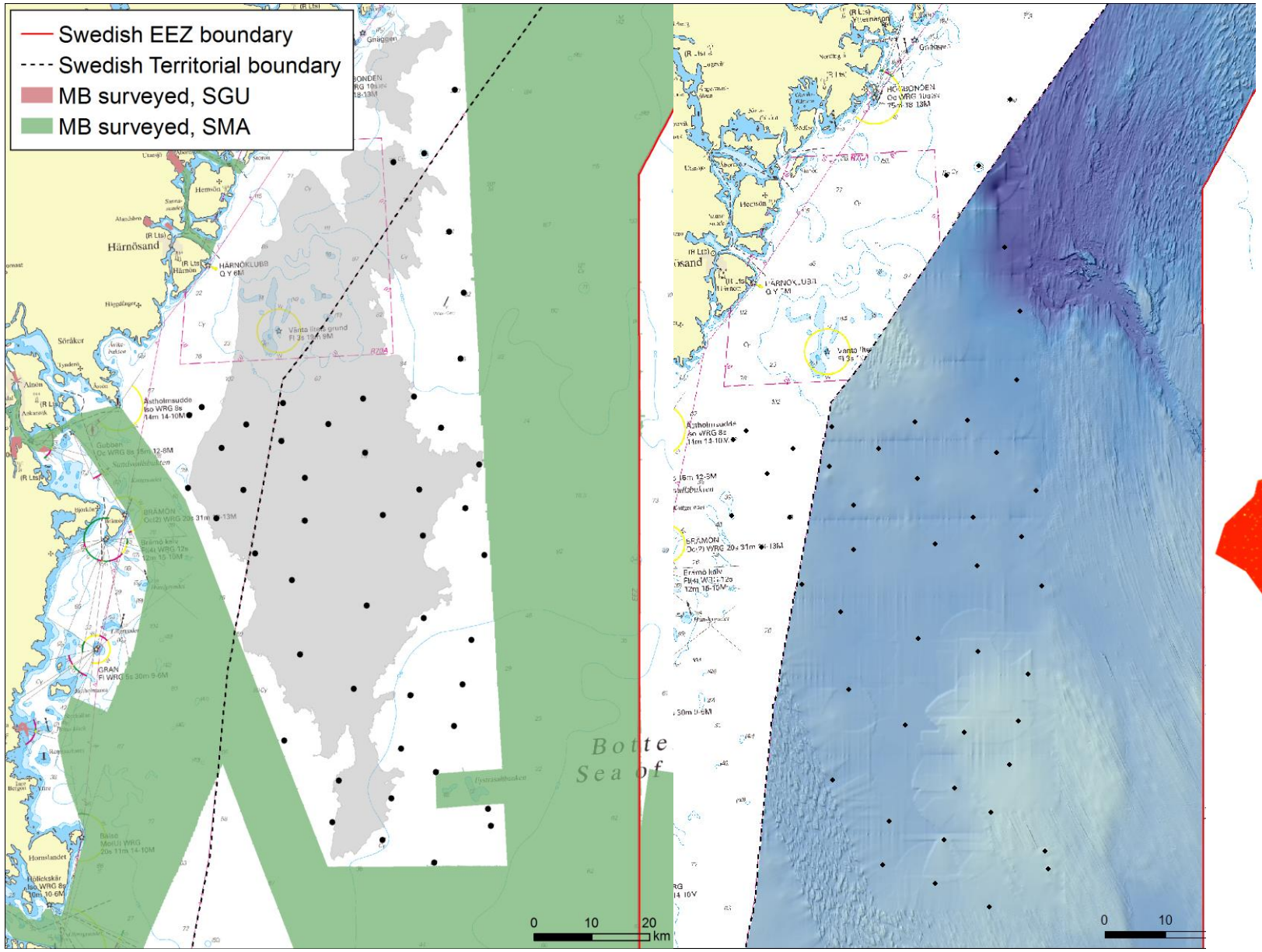


National scale models version 1.0 (work in progress)

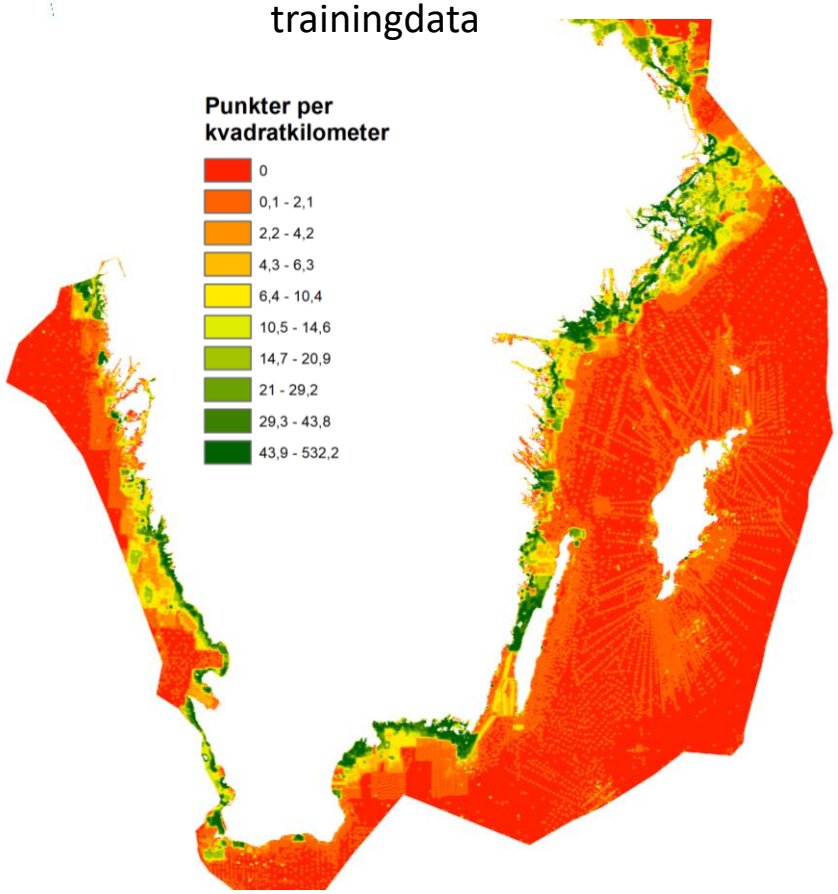


NATIONAL SCALE MODELS

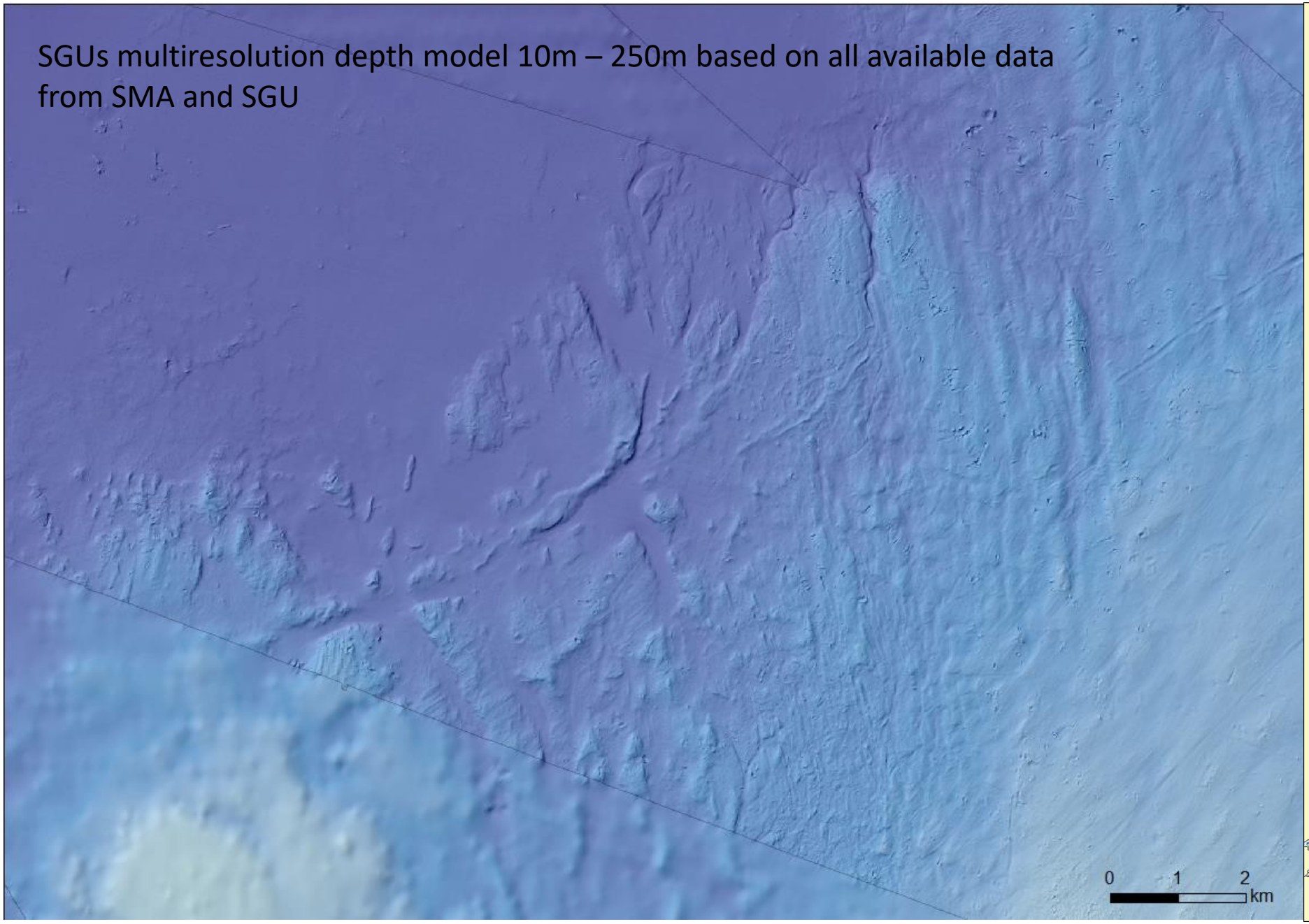
To make useful maps you need useful data

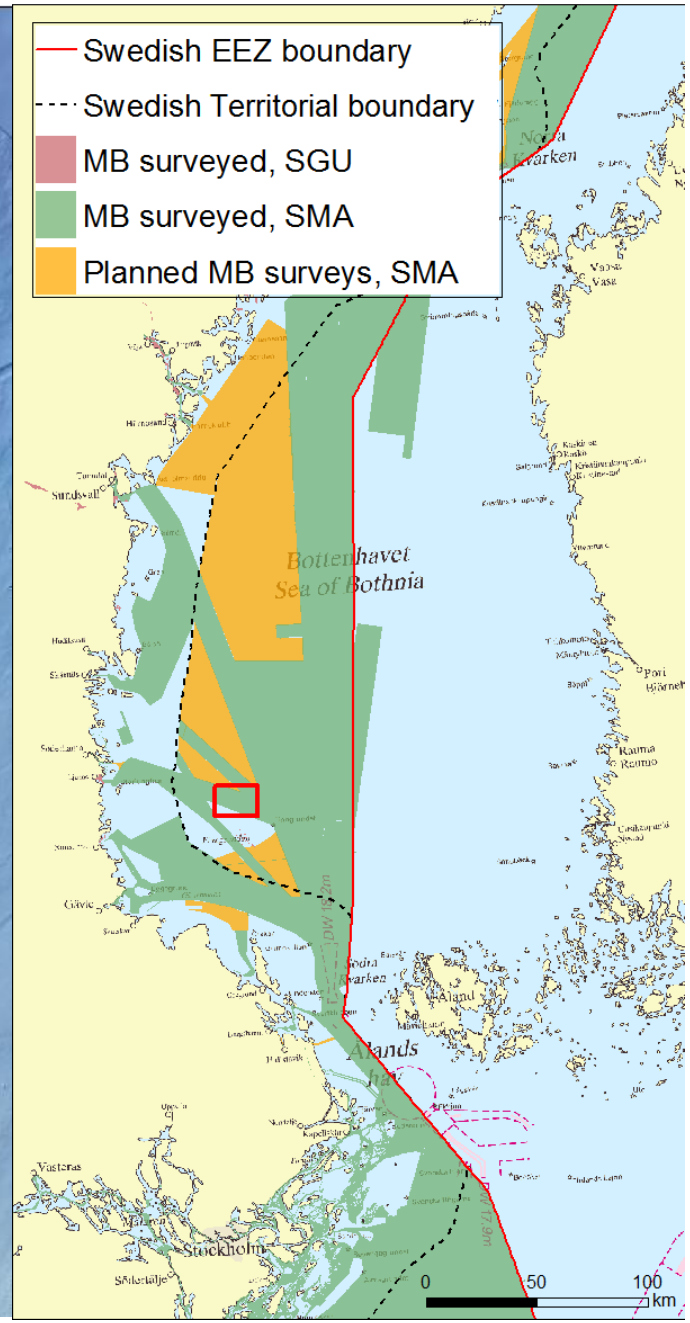


Density of substrate trainingdata



SGUs multiresolution depth model 10m – 250m based on all available data from SMA and SGU

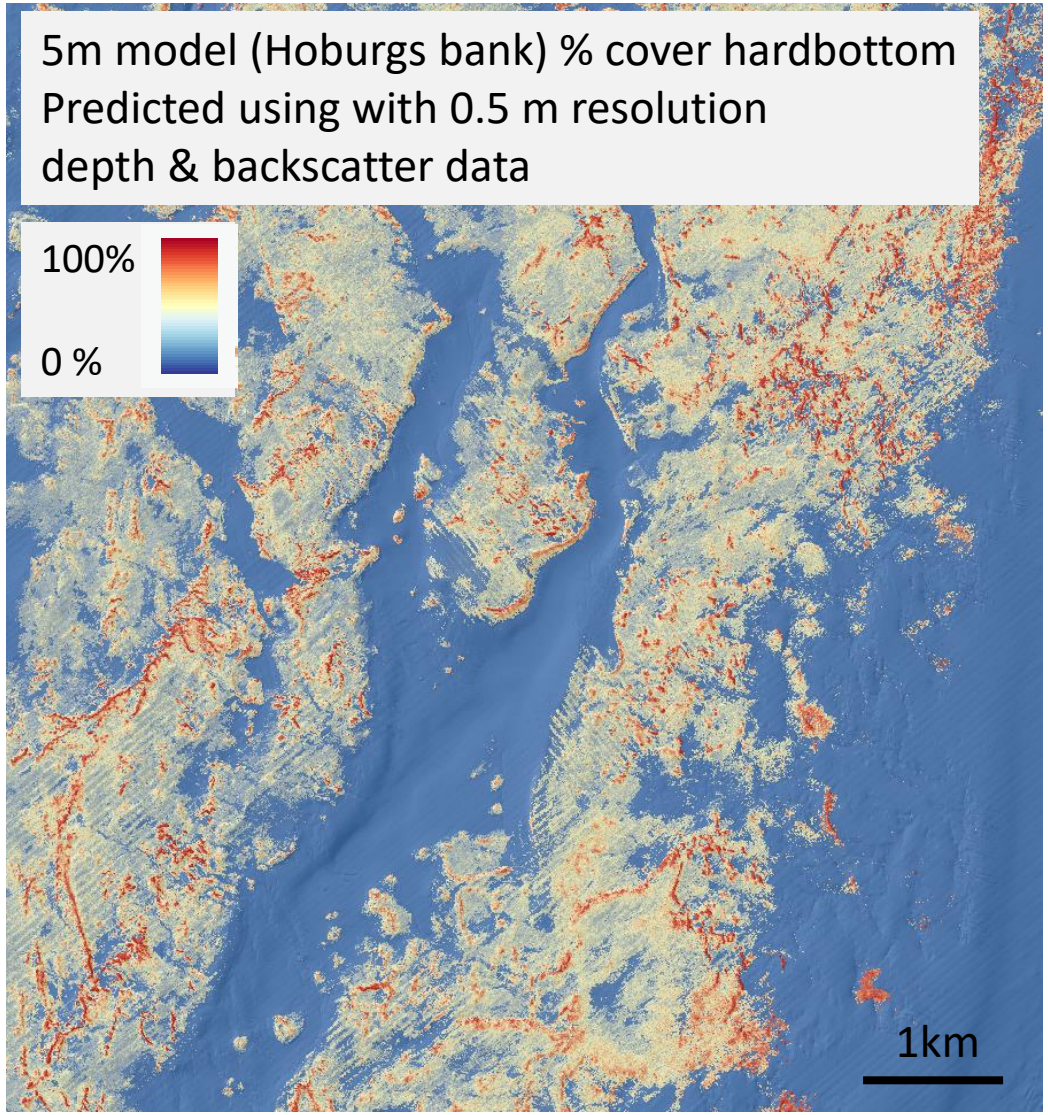


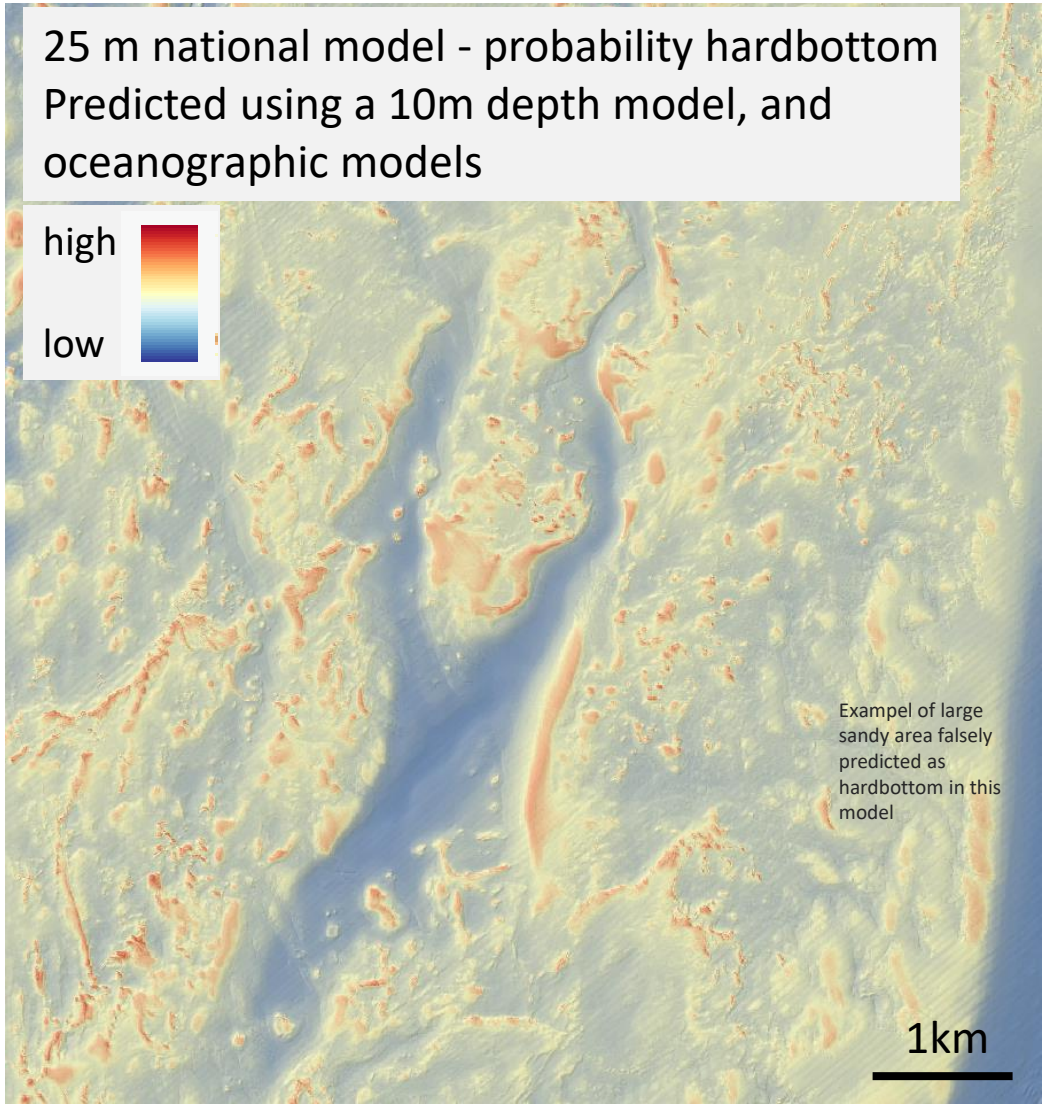
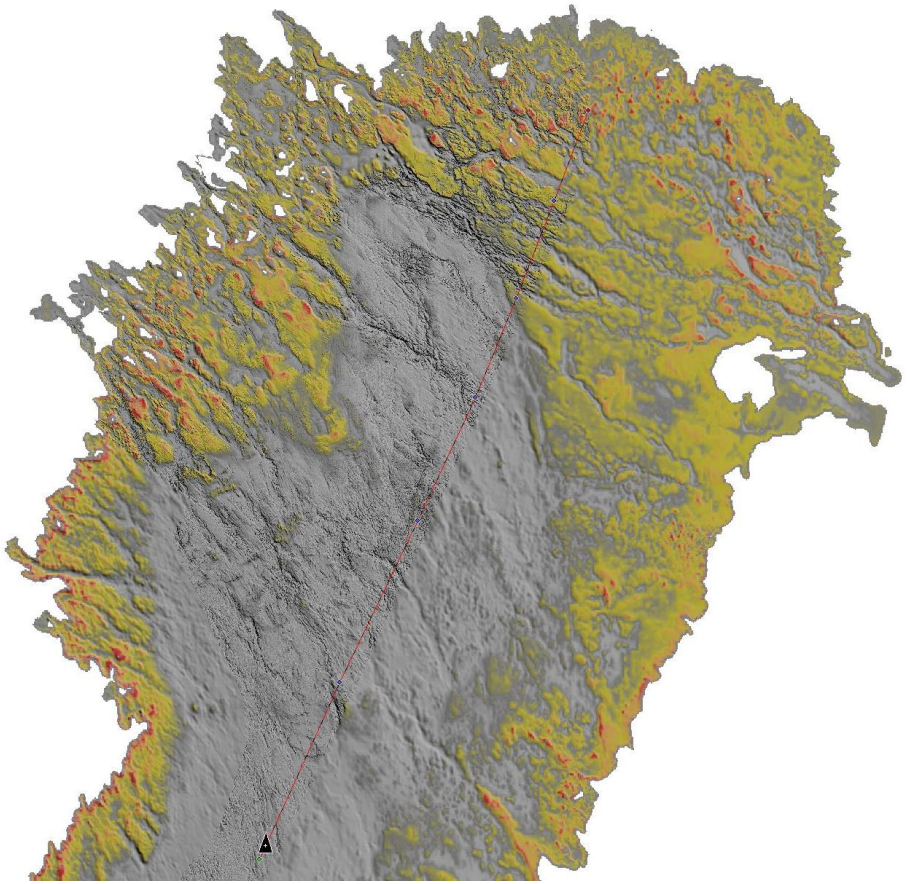
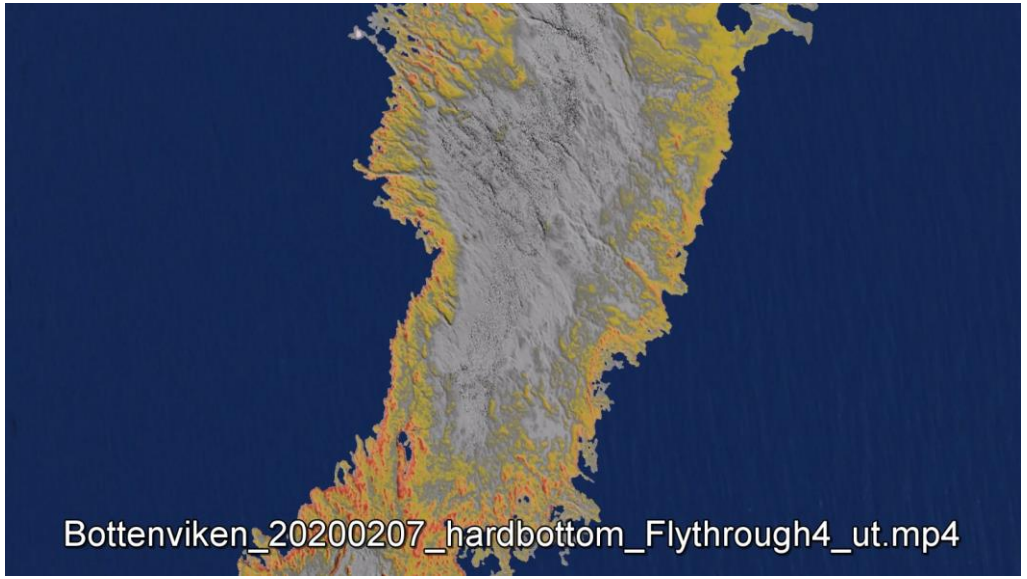


Comparing regional and national habitat models

Quality/resolution of training data & environmental data is key

There are limits to what we can accomplish with modelling - backscatter data is one of missing pieces





A closer look at the Bothnian Bay