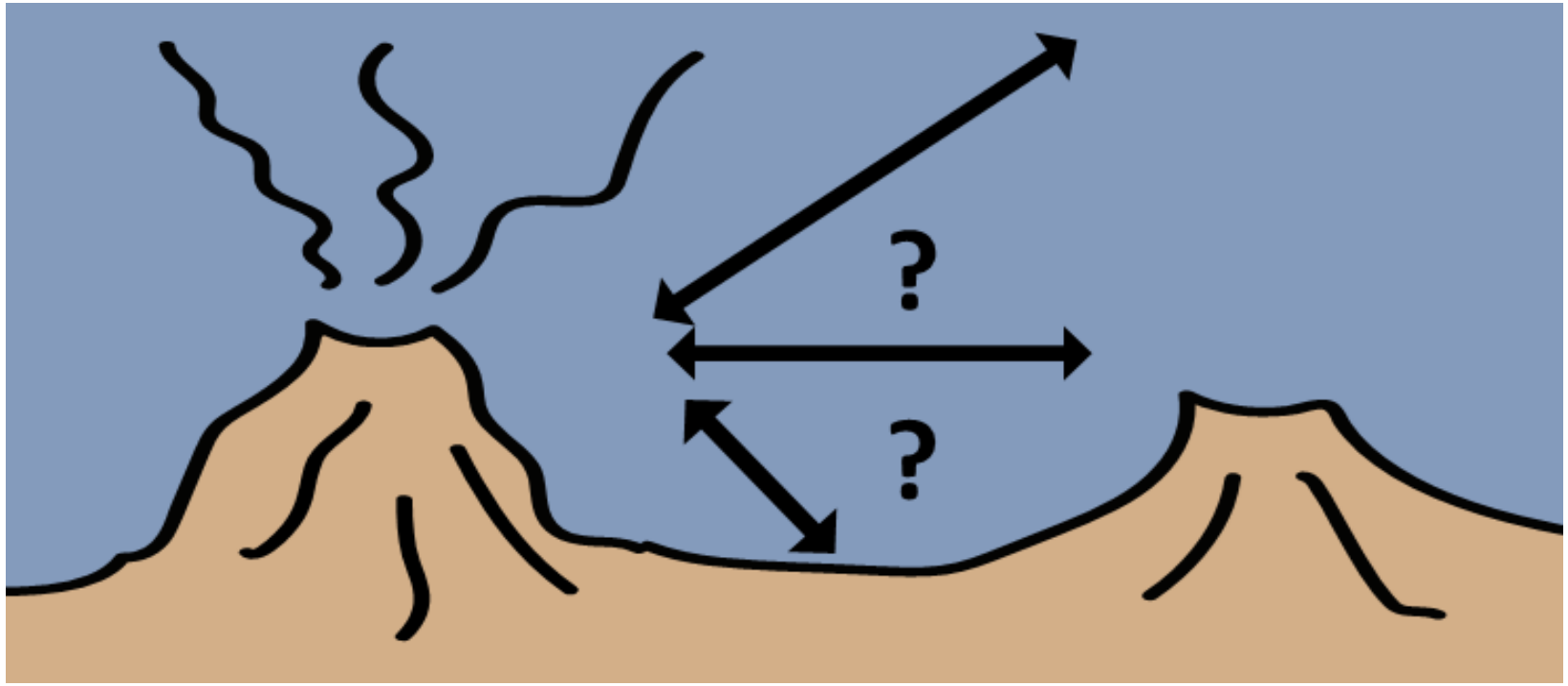
Biodiversity and connectivity at hydrothermal vents assessed by eDNA

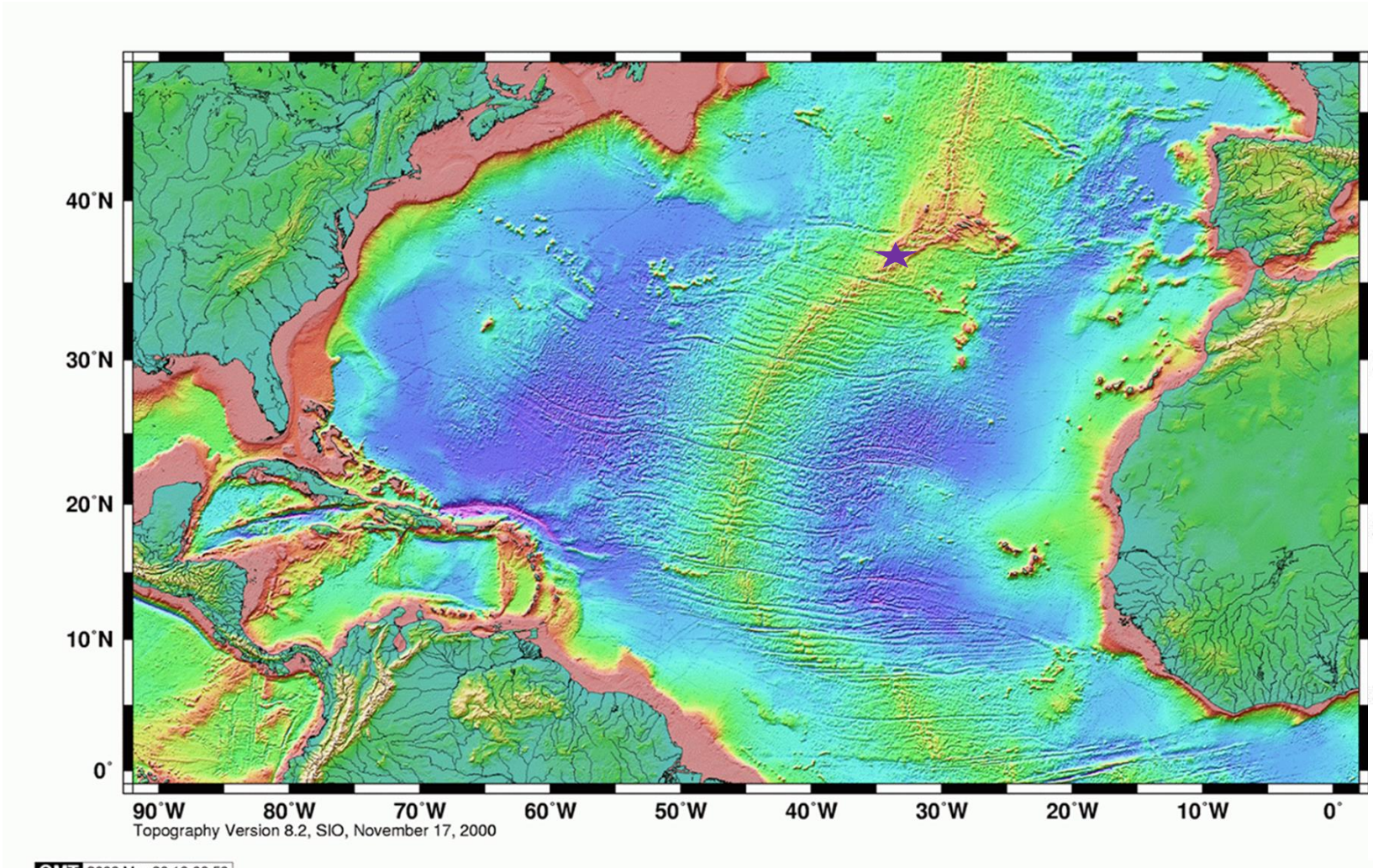
Rainbow vent field – a case study in 3D

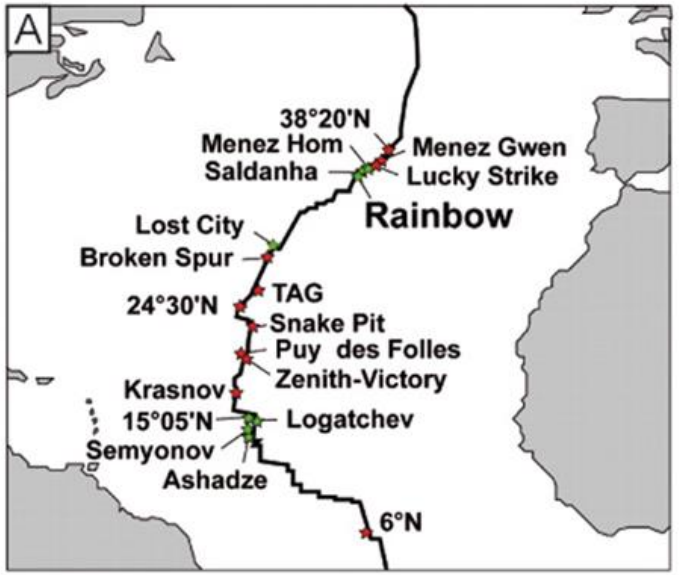


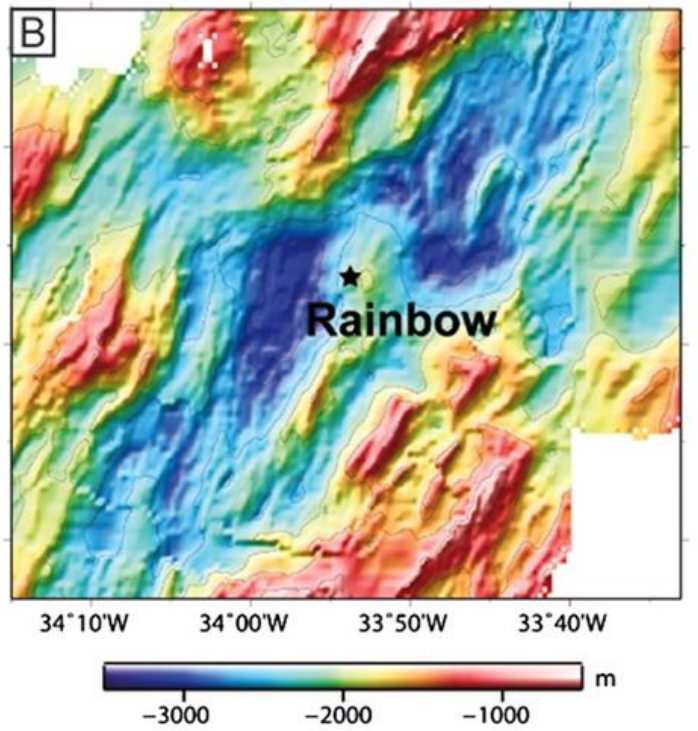
Royal Netherlands Institute for Sea Research

Utrecht University

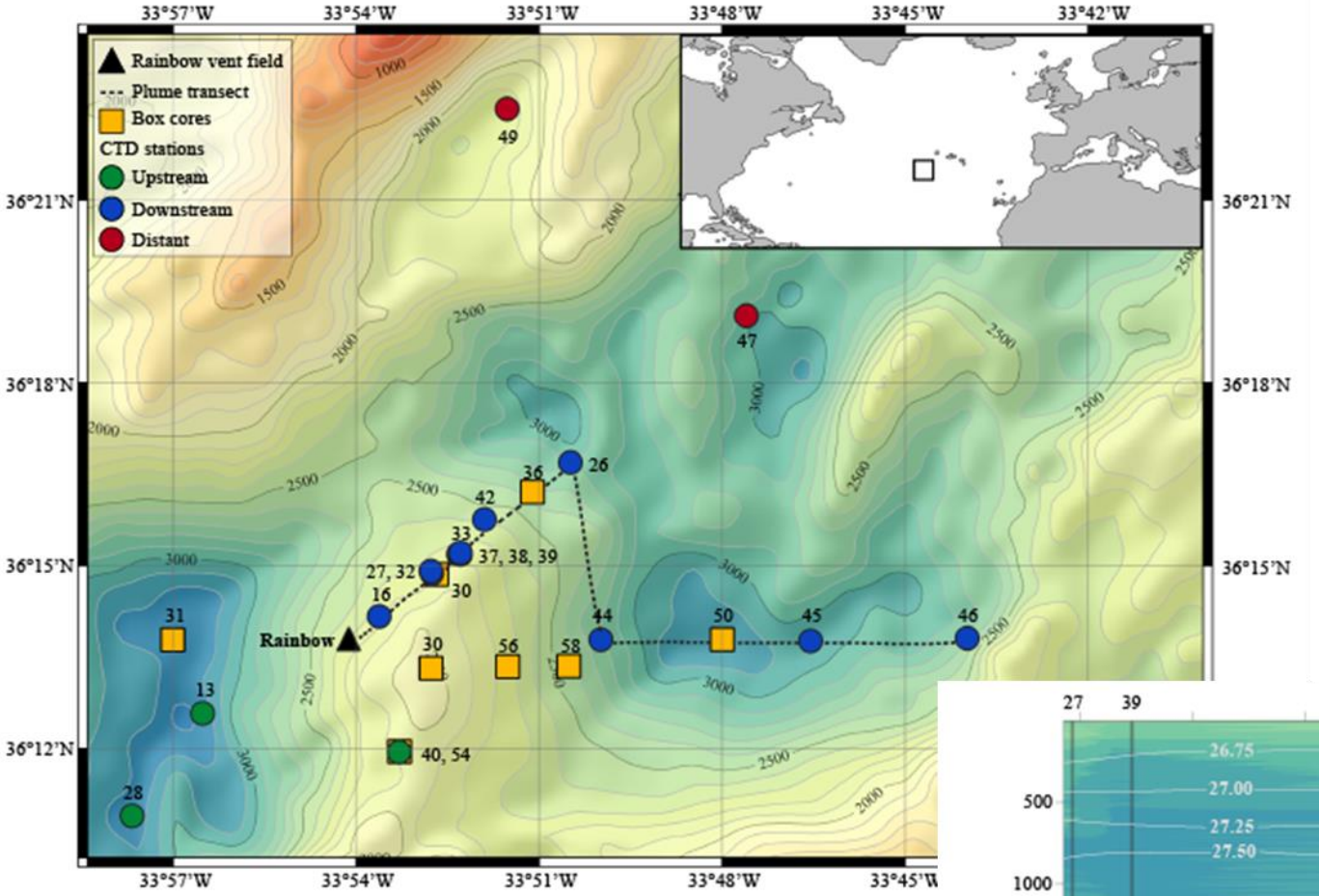
Rainbow hydrothermal vent

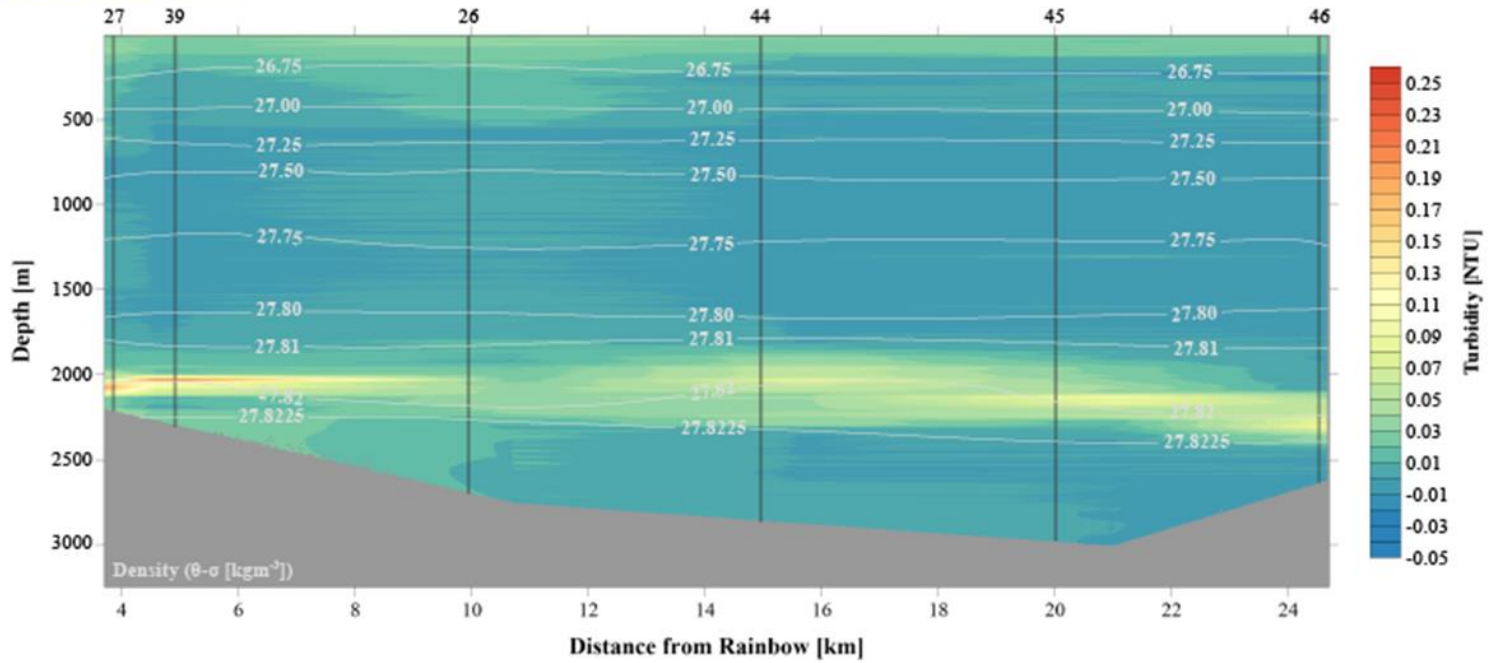






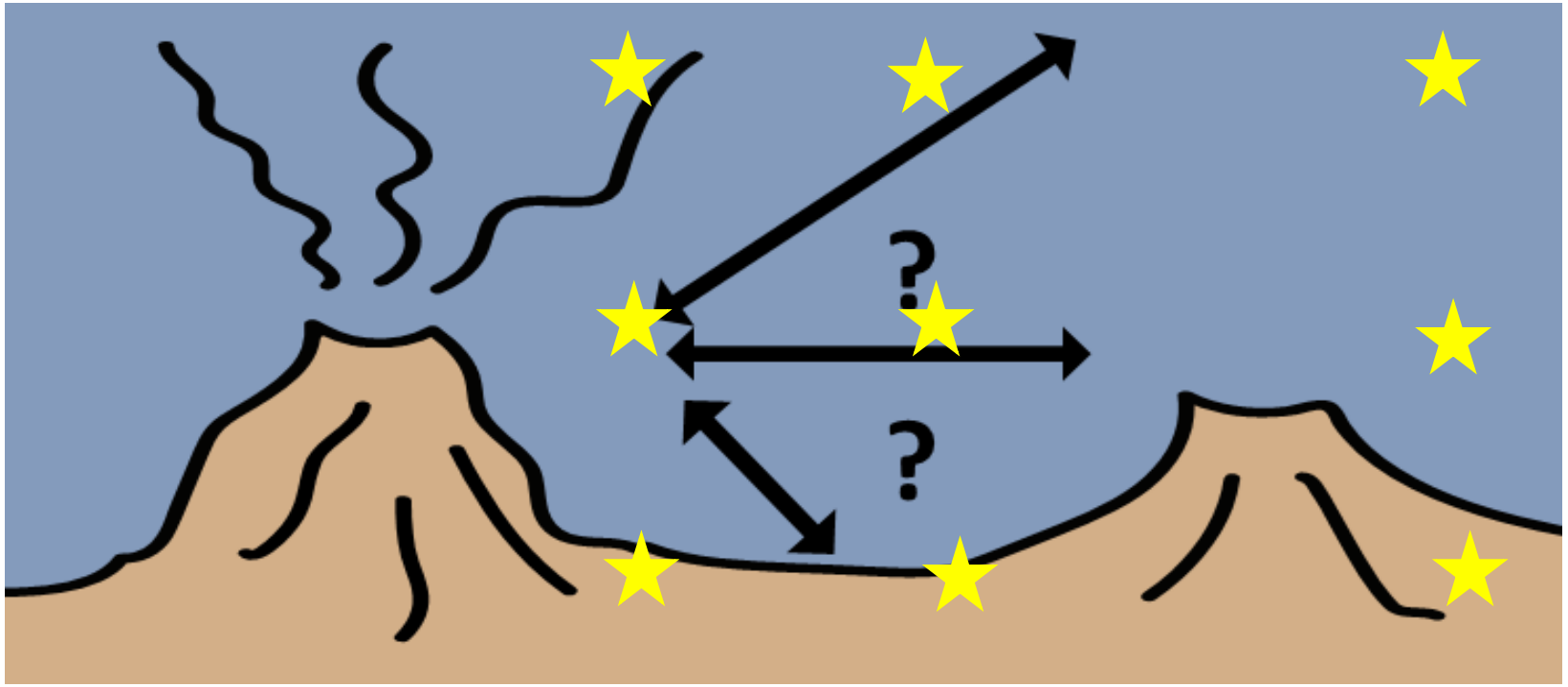
Rainbow hydrothermal vent





- Turbidity
  - Haalboom et al., 2020

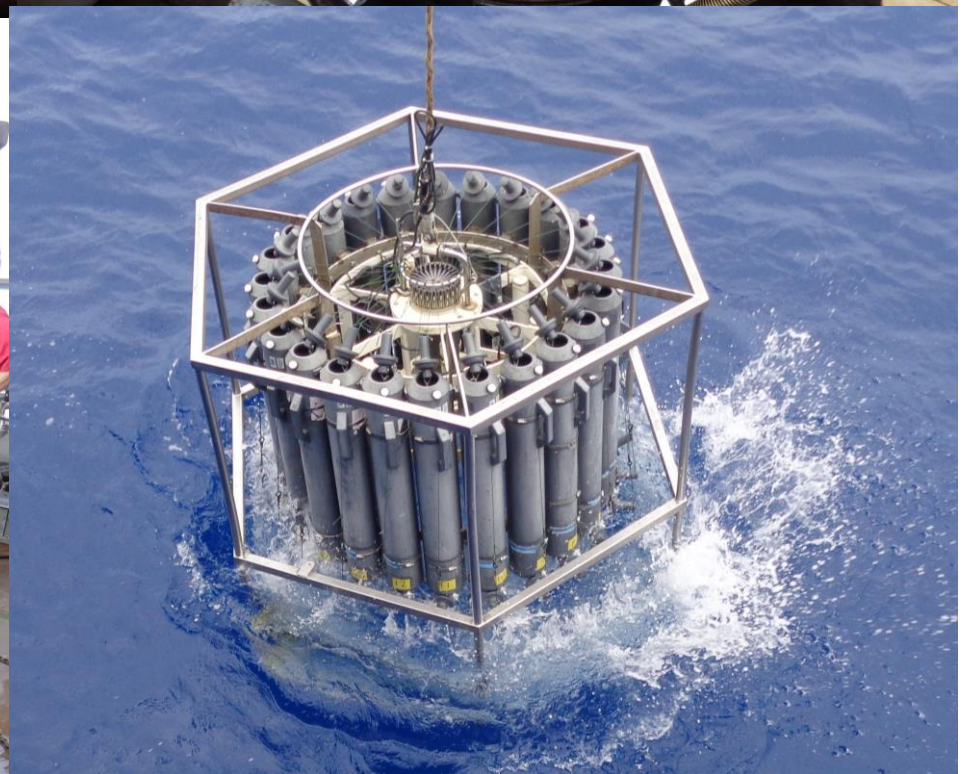
Hydrothermal vent biodiversity / connectivity



Sampling at & around vent site

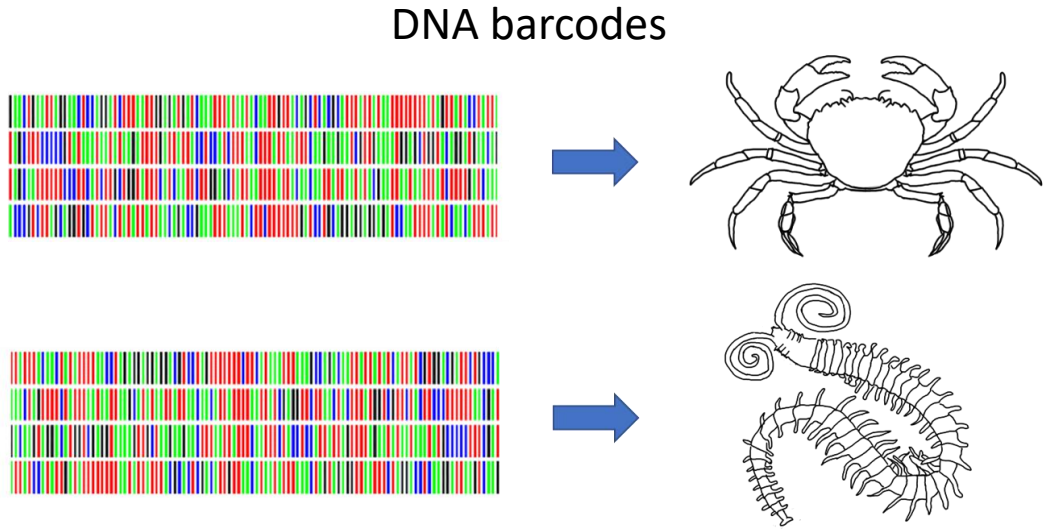
- look for changes in biodiversity
- trace vent-endemic species

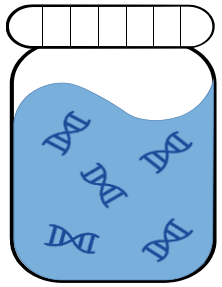
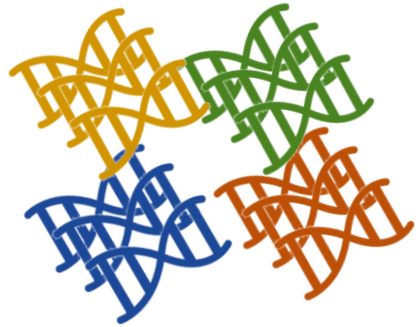
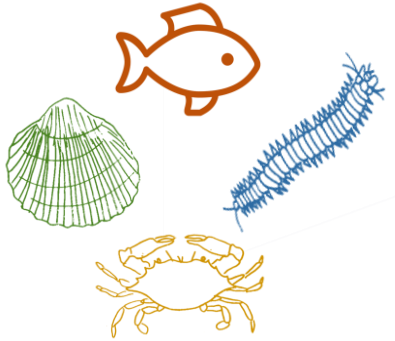
Sediment samples



Water samples

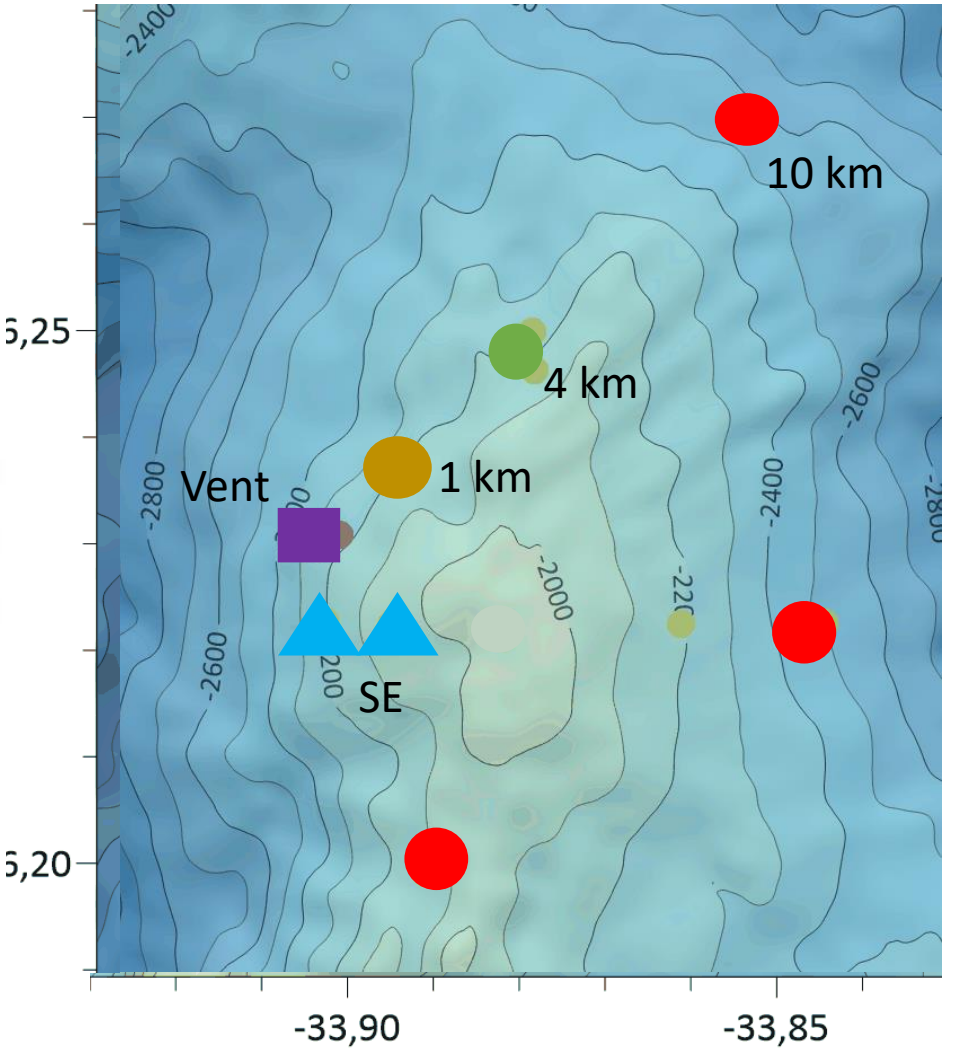
eDNA metabarcoding



Environmental sample	DNA extraction	PCR amplification	Sequencing - HTS	Identification
			CCTGCTGATCATCGATCA CCTGCTGATCATCGATCA ACTGCTGATCATCGATCA ACTGCTGATCATCGATCA ACTGCTTATCATCGACCA ACTGCTTATCATCGACCA TCAGCTGATCATCGATCA TCAGCTGATCATCGATCA ACTGCTGATCATCGATCG ACTGCTGATCATCGATCG	

eDNA sediment samples

Preliminary results, available on request



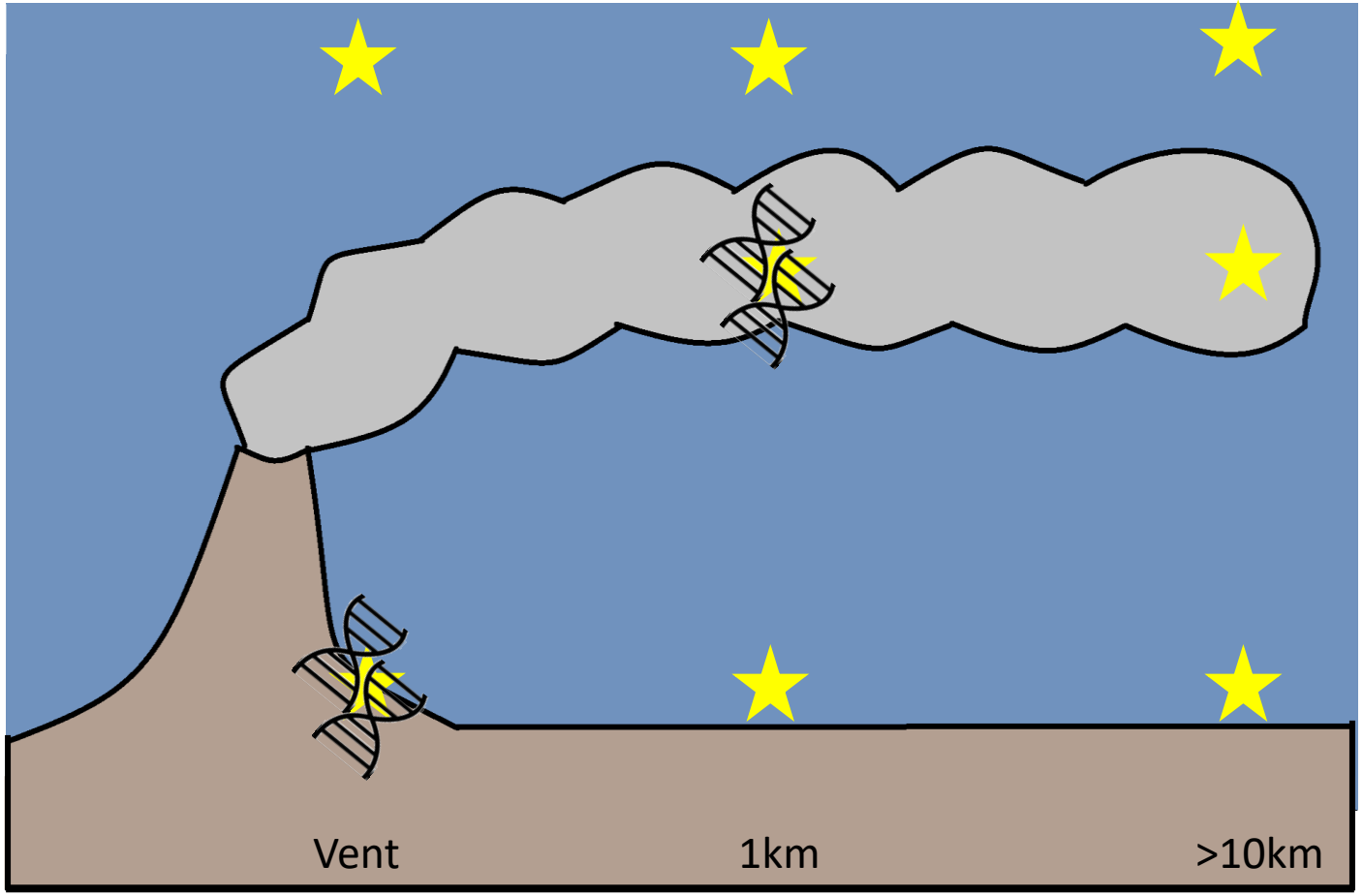
eDNA sediment samples

Preliminary results, available on request

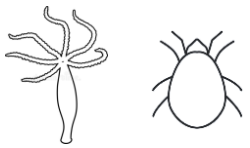
eDNA sediment samples

Preliminary results, available on request

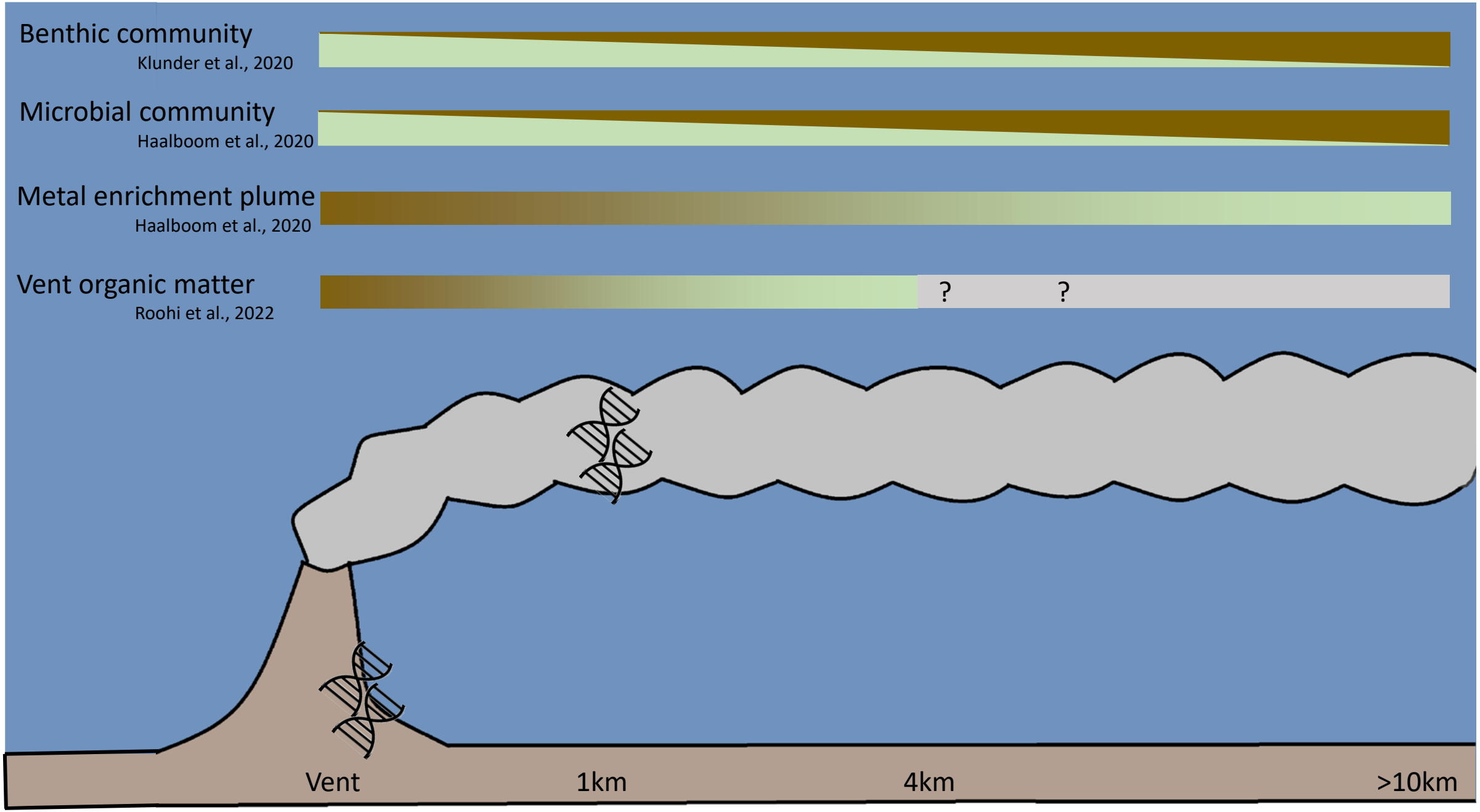
eDNA sediment / water samples



- Unique DNA sequences from vent sediments



- Found in water samples:
  - Bottom water @ vent
  - Plume layer @ 1km


Benthic community
Klunder et al., 2020
Microbial community
Haalboom et al., 2020
Metal enrichment plume
Haalboom et al., 2020
Vent organic matter
Roohi et al., 2022
?
?
Vent
1km
4km
>10km

The UU-NIOZ joint project: Protecting deep seabed hydrothermal vent fields through area-based management tools

→ **Catherine Blanchard & Samantha Robb**
The ISA's area-based management tools: a state of affair





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