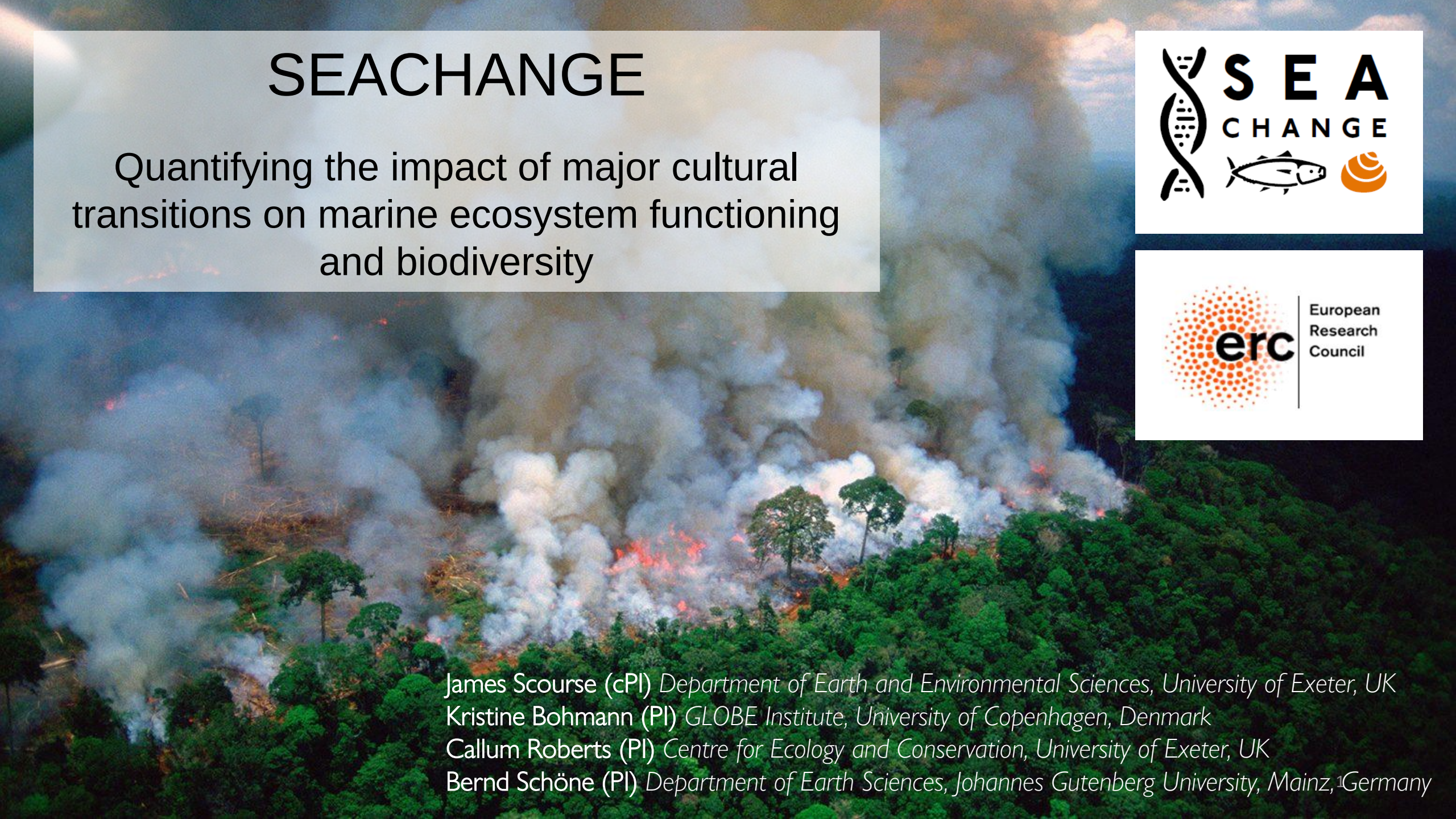
SEACHANGE

Quantifying the impact of major cultural transitions on marine ecosystem functioning and biodiversity



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Prevailing paradigms:

- Oceans are more resilient to human impact than land
- For most of history, human influences on ocean ecosystems have been minor and localised
- Significant human impacts are very recent

- We are now discovering that past human impacts have often occurred but have gone unnoticed and undetected due to *shifting baseline syndrome*

SEACHANGE will unlock the richness of oceanic history, *setting new baselines for understanding ocean environmental change* that extend beyond the range of instrumental and historical data

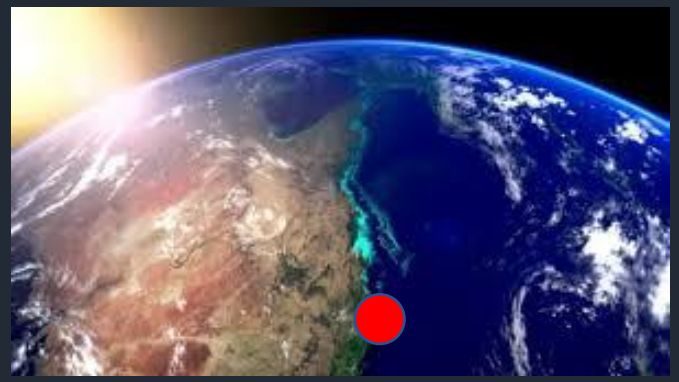
SEACHANGE will establish the impact of human activities on marine biodiversity and ecosystem functioning over an *extended time-depth perspective across multiple human cultural transitions that span millennia*

SEACHANGE sites, cultural transitions and workpackages:

Onset (1904) and cessation of whaling in Antarctica

Viking settlement (AD 874) and intensification of fishing to present, Iceland

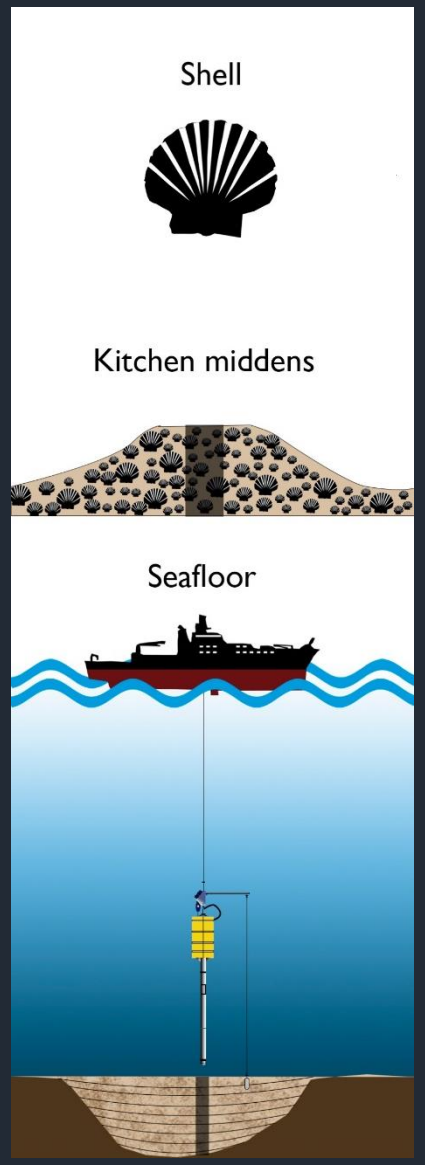
Our principal aim is: *To quantify the impact of cultural transitions on marine biodiversity and ecosystem functioning*

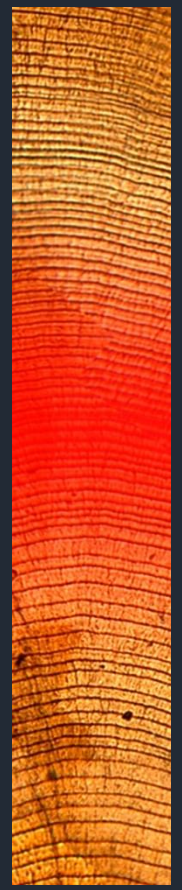


Aboriginal to colonial transition in Australia

Mesolithic to Neolithic transition, and transition to industrial fishing, North Sea

AIM: Food web complexity and biodiversity





- Zooarchaeology/palaeoecology
- Historical marine ecology
- Bulk and compound-specific stable isotope analysis
- aDNA/eDNA of shell, bone and sediment
- Numerical ecosystem modelling

ARCHIVE CHRONOLOGY METHOD

Kitchen middens

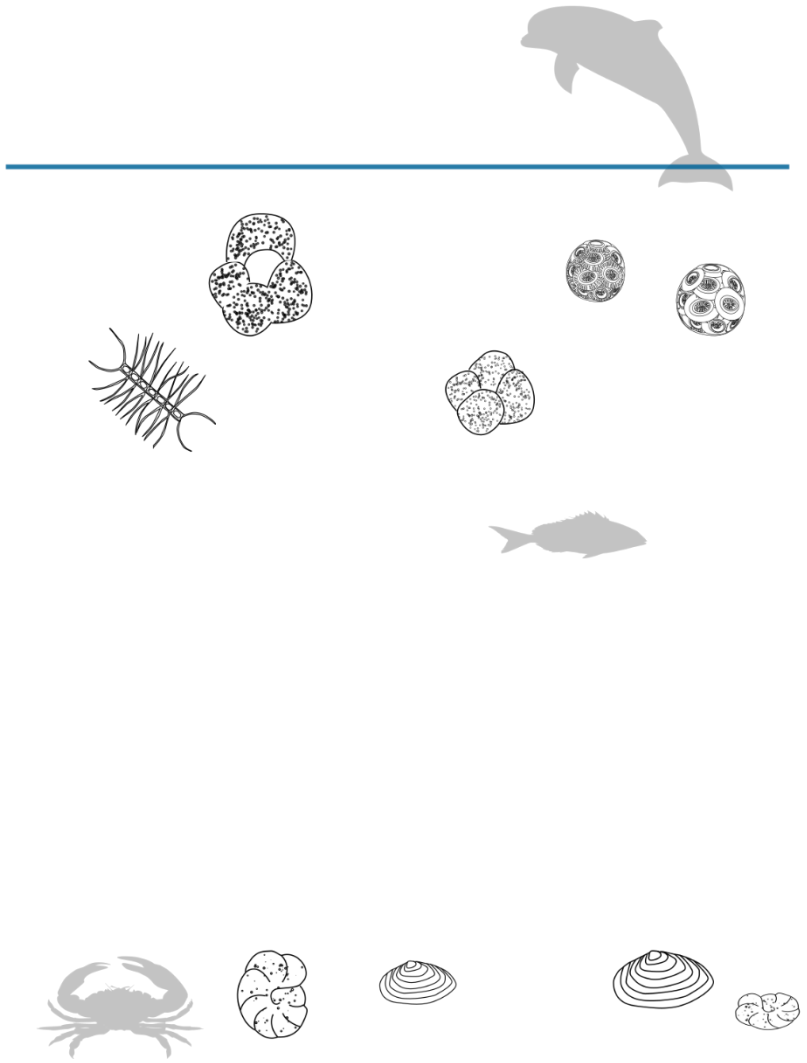
Bivalve shells

Sediments

Kitchen middens
zooarchaeology

Bivalve shells

Sediments
palaeoecology



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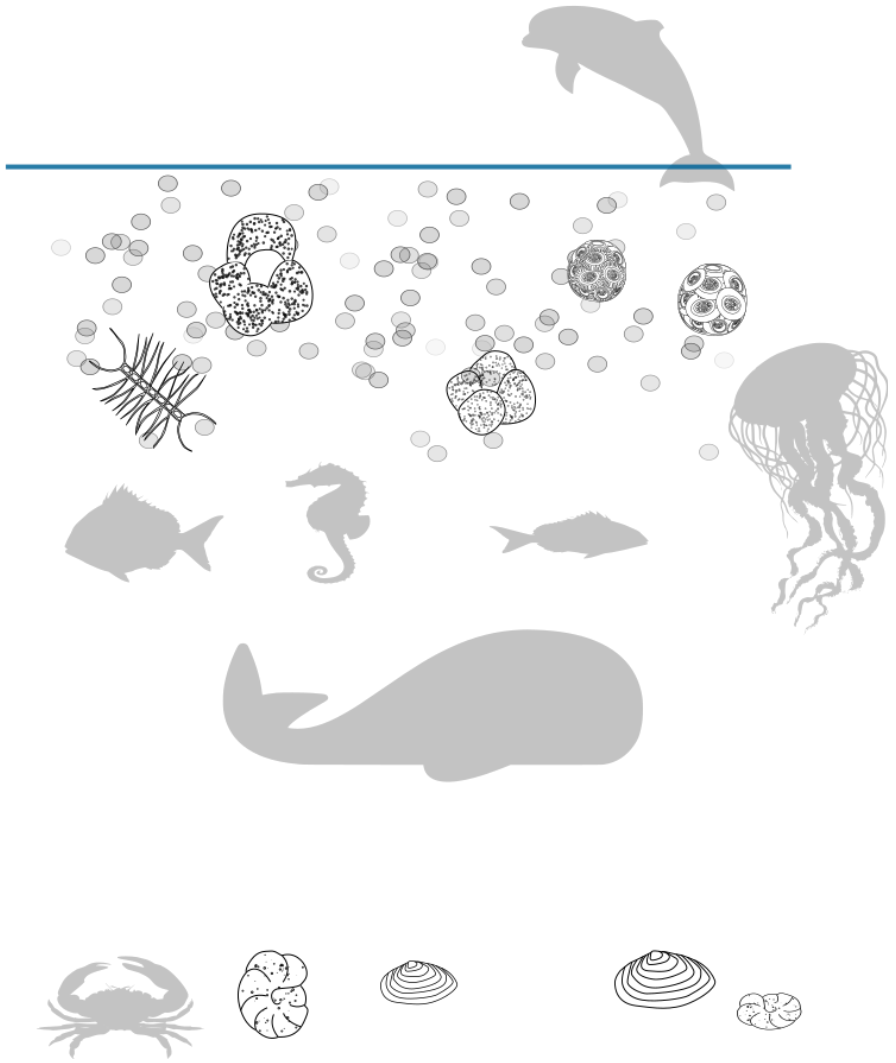
zooarchaeology
DNA

Bivalve shells
DNA

Sediments
palaeoecology
DNA



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DNA
compound specific isotopes

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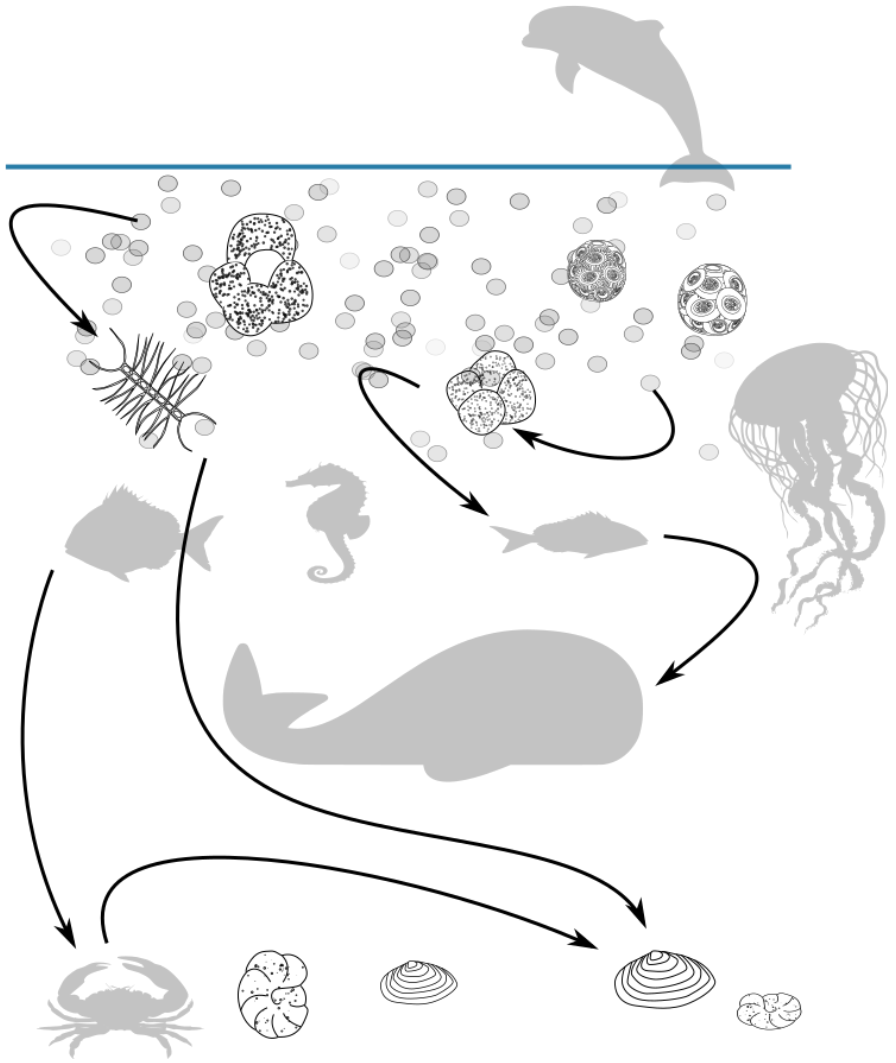

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isotope geochemistry

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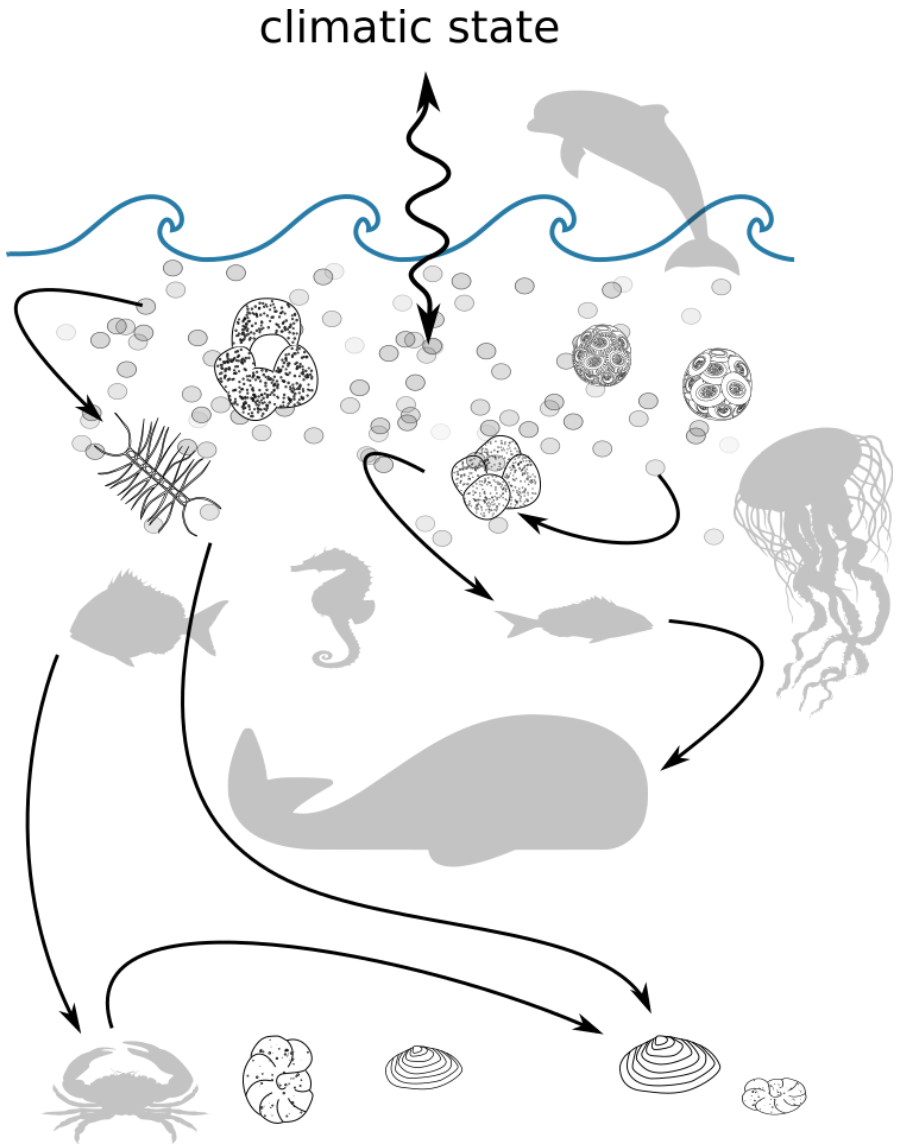
trace metal geochemistry



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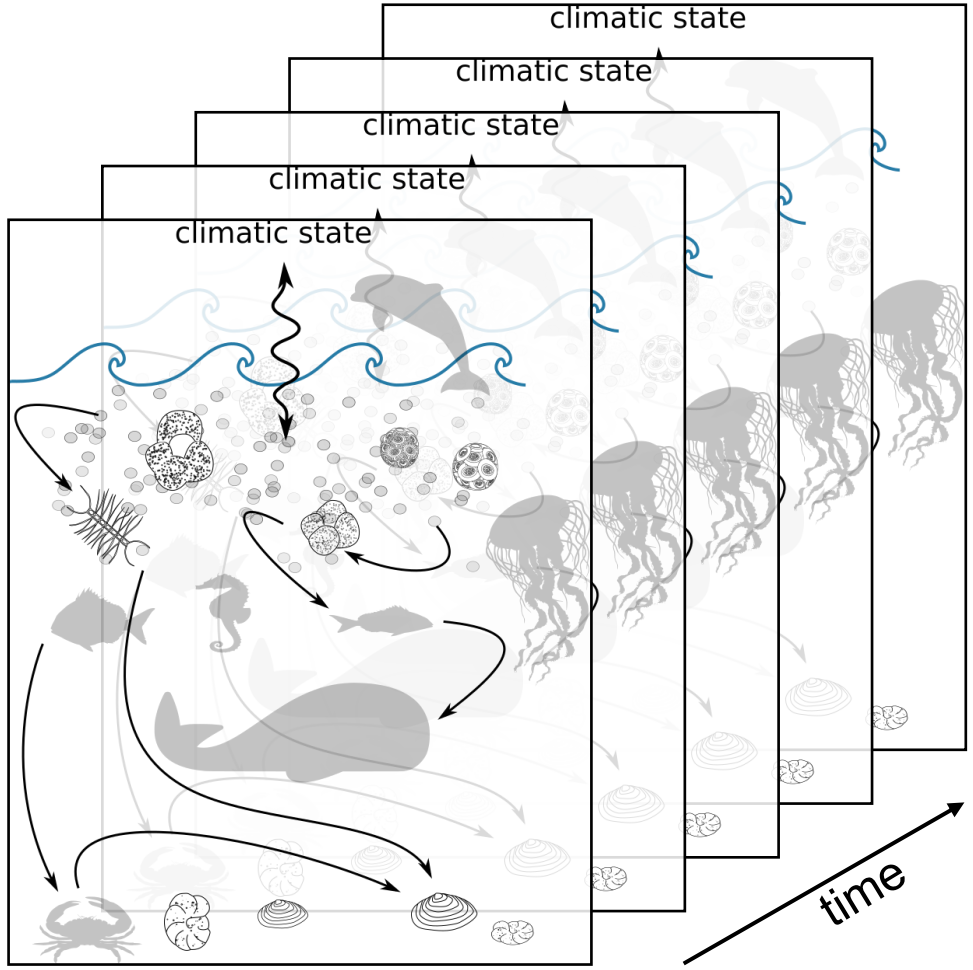

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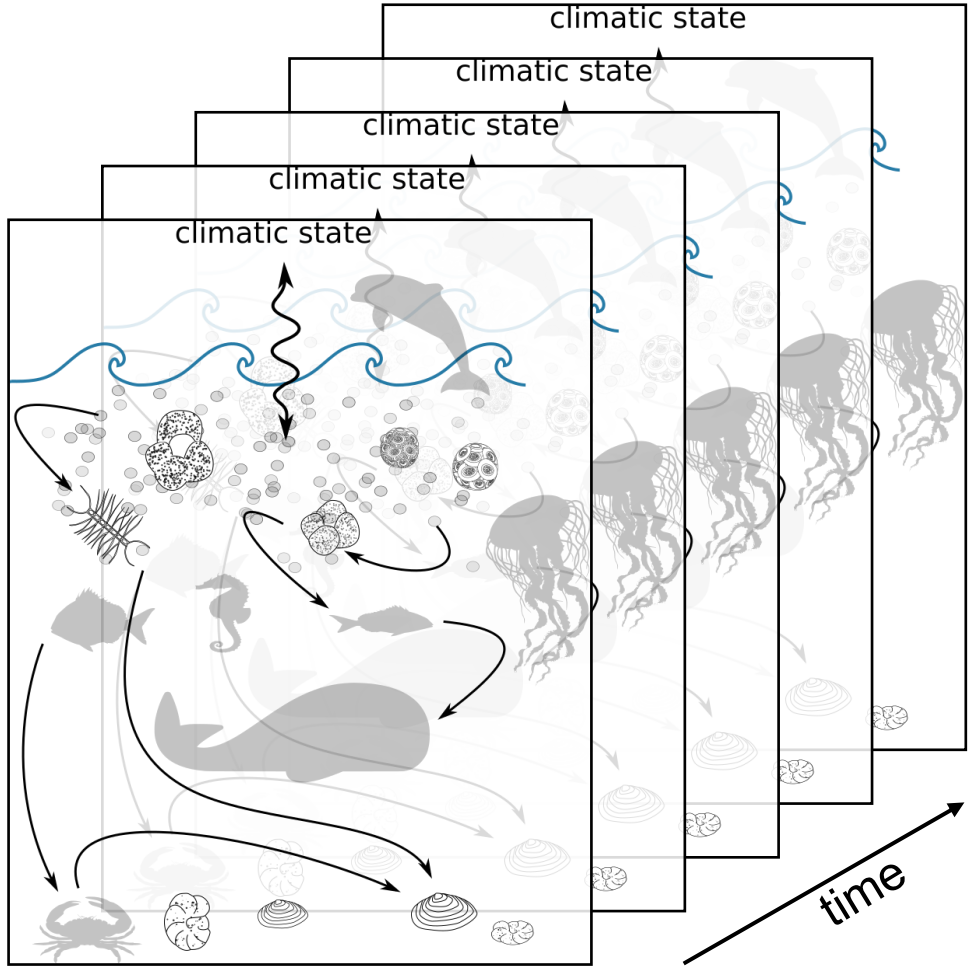
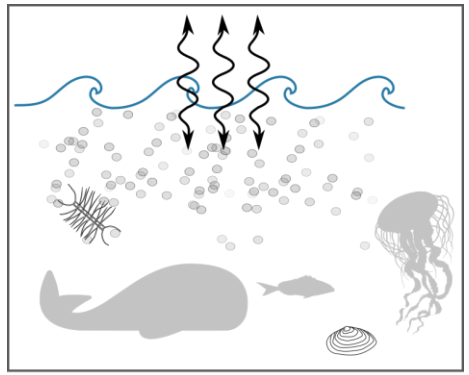
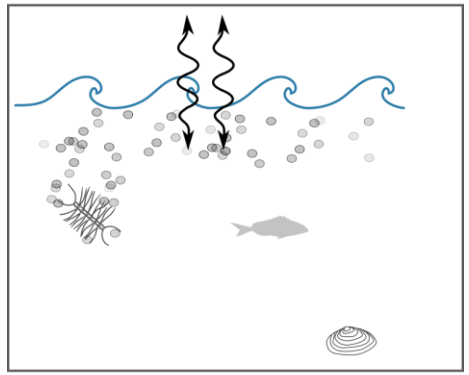
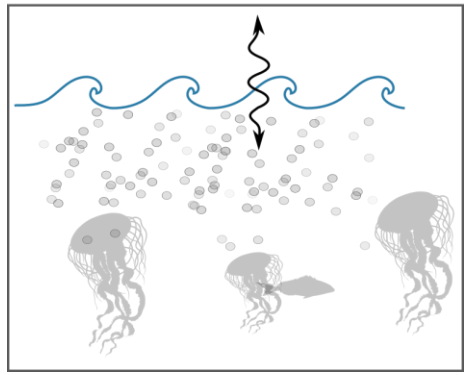
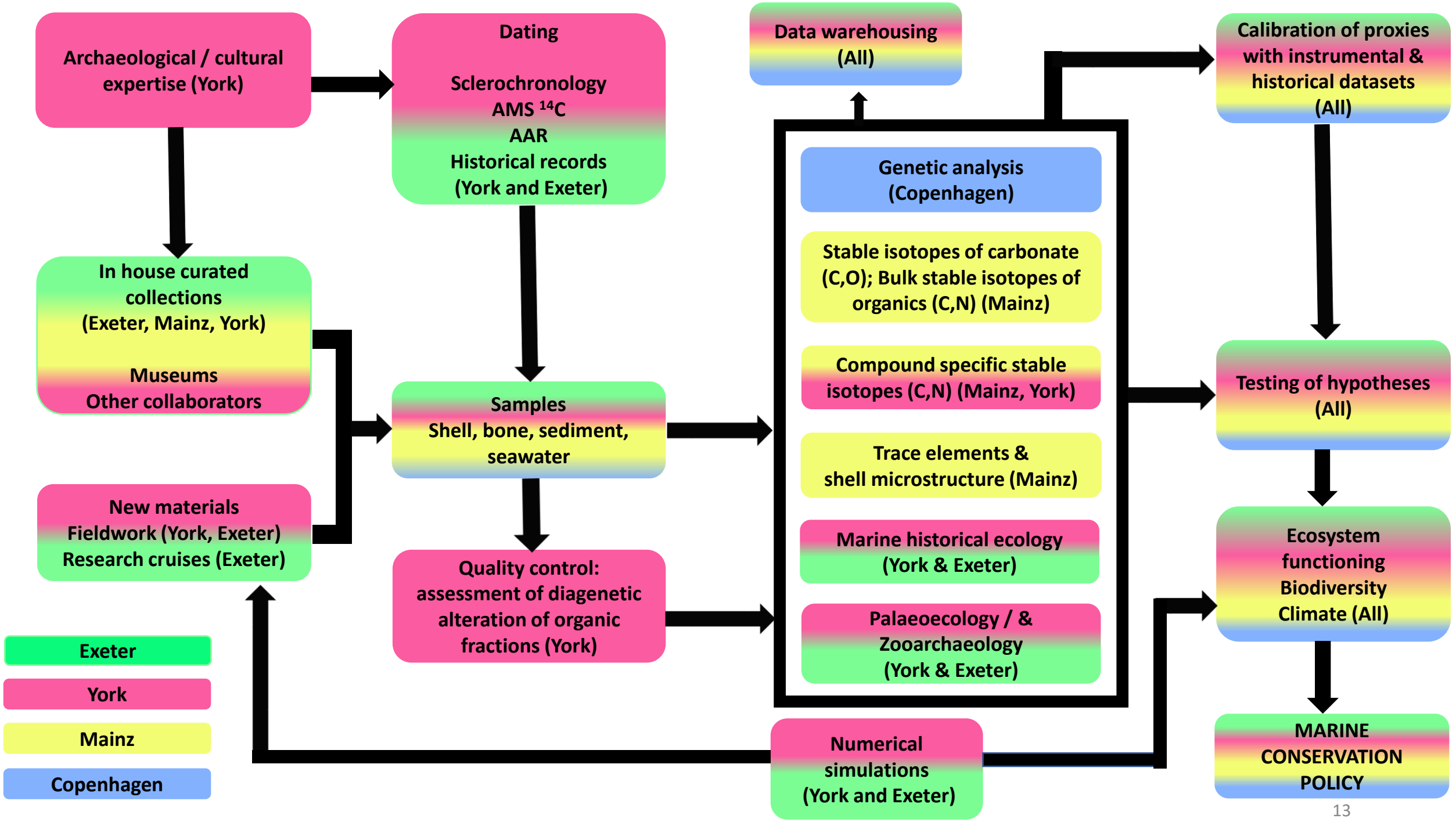


Modelling








Archaeological / cultural expertise (York)
Dating
Sclerochronology
AMS ^{14}C
AAR
Historical records
(York and Exeter)
Data warehousing
(All)
Calibration of proxies with instrumental & historical datasets
(All)
In house curated collections
(Exeter, Mainz, York)
Museums
Other collaborators
Genetic analysis
(Copenhagen)
Stable isotopes of carbonate (C,O); Bulk stable isotopes of organics (C,N) (Mainz)
Compound specific stable isotopes (C,N) (Mainz, York)
Trace elements & shell microstructure (Mainz)
Marine historical ecology
(York & Exeter)
Palaeoecology / & Zooarchaeology
(York & Exeter)
Samples
Shell, bone, sediment, seawater
Testing of hypotheses
(All)
New materials
Fieldwork (York, Exeter)
Research cruises (Exeter)
Quality control:
assessment of diagenetic alteration of organic fractions (York)
Ecosystem functioning
Biodiversity
Climate (All)
Exeter
York
Mainz
Copenhagen
Numerical simulations
(York and Exeter)
MARINE CONSERVATION POLICY

SEACHANGE:

SYNERGETIC

TRANSFORMATIVE

HIGH RISK HIGH GAIN

RESILIENT

WORLD-CLASS TRAINING

NOVEL

SEACHANGE will establish a baseline and sample inventory for future analysis

PLANNING, WRITING AND SUBMITTING YOUR PROPOSAL

- Develop an idea that is novel that can only be tackled via synergy between the potential PIs
- ERC likes risk
- Don't worry about societal or economic impact; focus on disciplinary/academic impacts
- The proposal should not consist of several standalone entities that could be tackled via separate proposals
- Stress-test: If one component of the structure fails, or if one PI isn't involved, it all fails
- Each PI should have a well-defined role within the whole (no duplication of expertise)
- Each potential PI should be of the calibre to be competitive in ERC Starting, Consolidator or Advanced grant schemes
- Select a team that is diverse (gender, age, affiliation…)

- Really believe in the proposal
- Devote 2 months fulltime to writing the proposal. Clear the diary! It's big!!
- Get the finances sorted early to avoid last minute panics/meltdown
- Get the research offices in each institution talking together early
- Early planning is vital

PREPARING FOR THE INTERVIEW (Well done!!)

- Use your 4-page summary as the basis for the presentation, but…
- Prepare for detailed technical questions by having backup slides available
- Prepare for a generalist audience. Only one or two members of the panel will have any expertise in the field.
- Think intelligent 12 year old and then make it simpler
- Have no more than 10 slides
- Use the slides to emphasize why this has to be a Synergy proposal

- Practice, practice, practice….be confident, assured and not arrogant
- All the PIs should speak
- Organise a mock interview with panel members who have ERC experience and/or who you fear the most…
- Be prepared to scrap your presentation and start again
- Use Arial font!!! Don’t use a nice arty obscure font that isn’t supported by the setup in Brussels

THE INTERVIEW

- You'll be asked to wait in a waiting room with all the other groups presenting
- Wear smart semi-formal colourful clothes, not dull suits
- The panel will be ~15 strong, with a Chair, and two of the panel will have been assigned your proposal to present and lead the Q/A. These might be quite technical and may focus on only one or two aspects of the proposal
- The formal presentation is only ~10 minutes, with ~30 minutes of questions
- Be prepared for off-beam questions from the non-specialists on the panel
- It's not as frightening as it sounds! It was actually an enjoyable experience
- Go for several beers afterwards!

THE PROJECT

- Contract negotiation takes an age and is very rigorous and detailed (we had to completely re-profile our budget)
- I was under the impression that ERC grants conferred much more freedom/agency to develop the science as the PIs see fit. This is not true. Auditing, and the fear of auditing, makes ERC just as constrained and mechanistic/micro-managed as other EU schemes (Horizon 2020) e.g. much more so than UKRI/NERC
- Explain everything to your Project Officer in good time – keep the communications flowing
- BUT, these grants are huge, very prestigious, enable great (and risky) science to be attempted, and provide a superb platform for PhD and postdoc training
- GOOD LUCK!!