

Submarine canyons: how important are they for connecting coastal and deep-sea ecosystems?

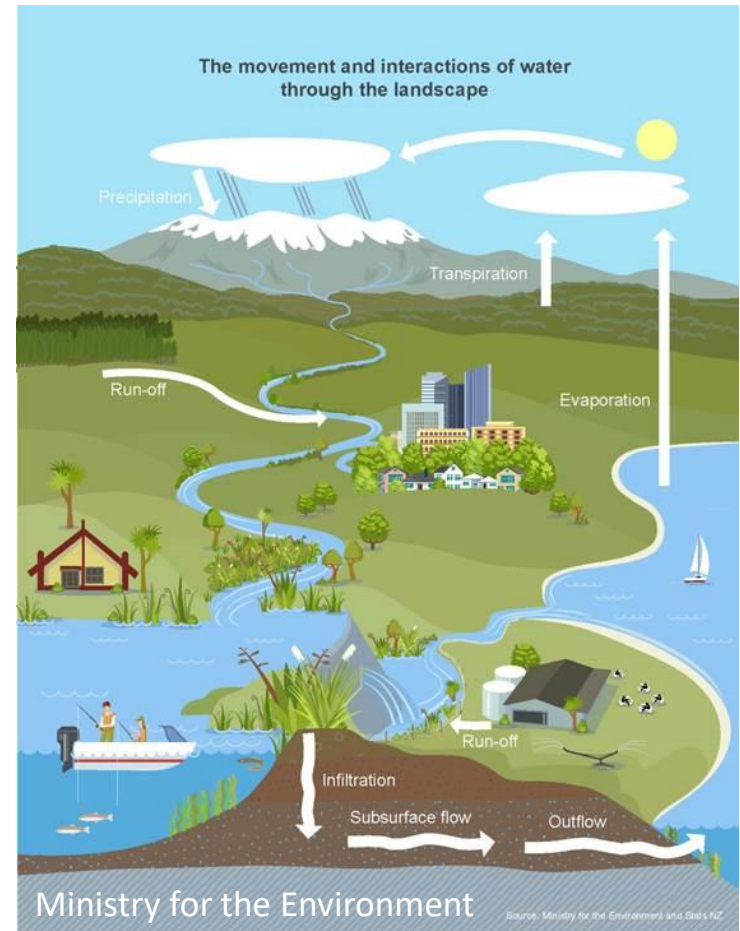
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Ecosystem connectivity

Well-known connection between catchments, rivers/lakes, and coastal ecosystems

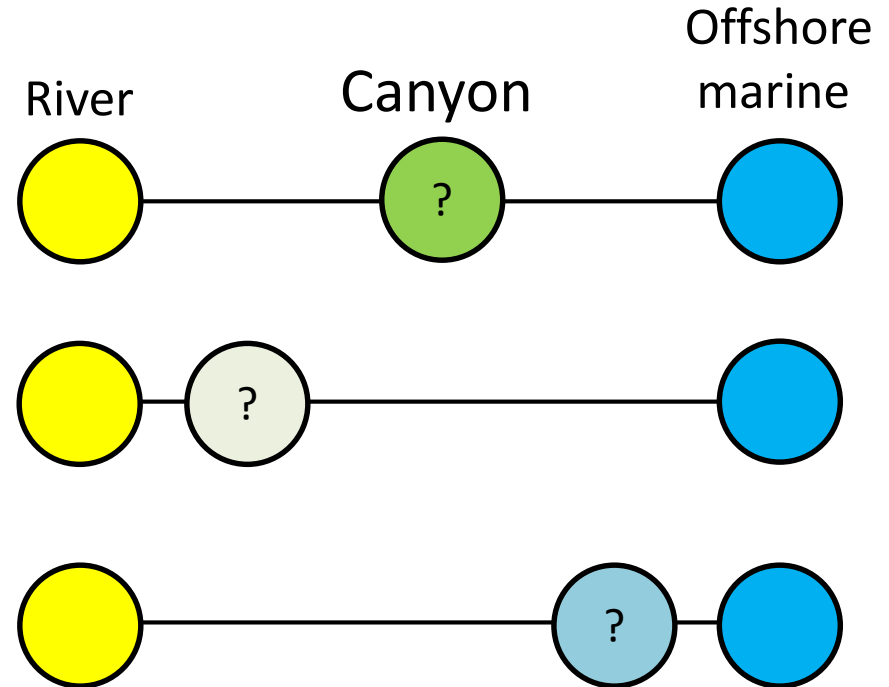
Ki uta ki tai: mountains to the sea

But does this connectivity extend beyond the coast and into the much larger deep ocean?

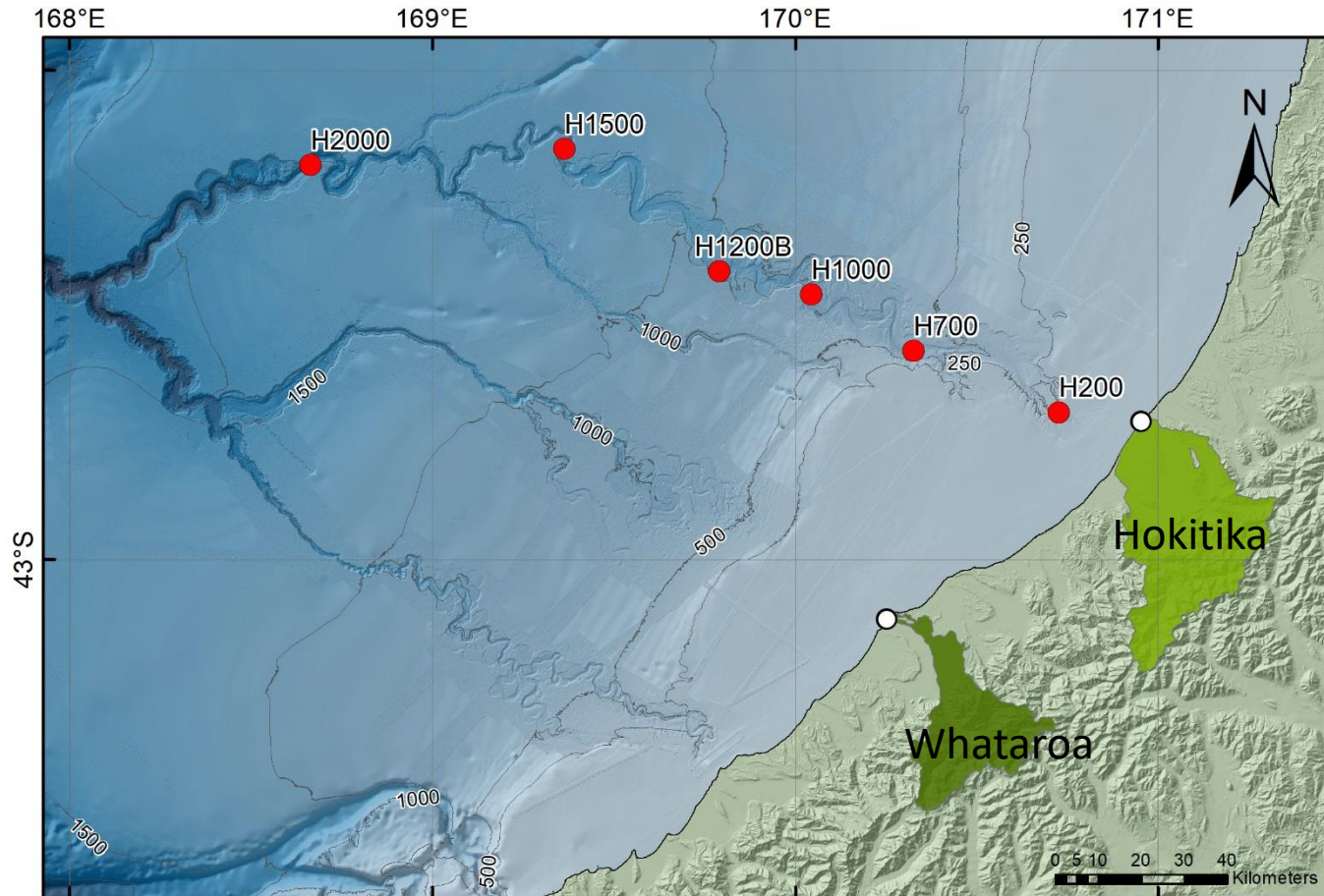


Tracing organic matter: our approach

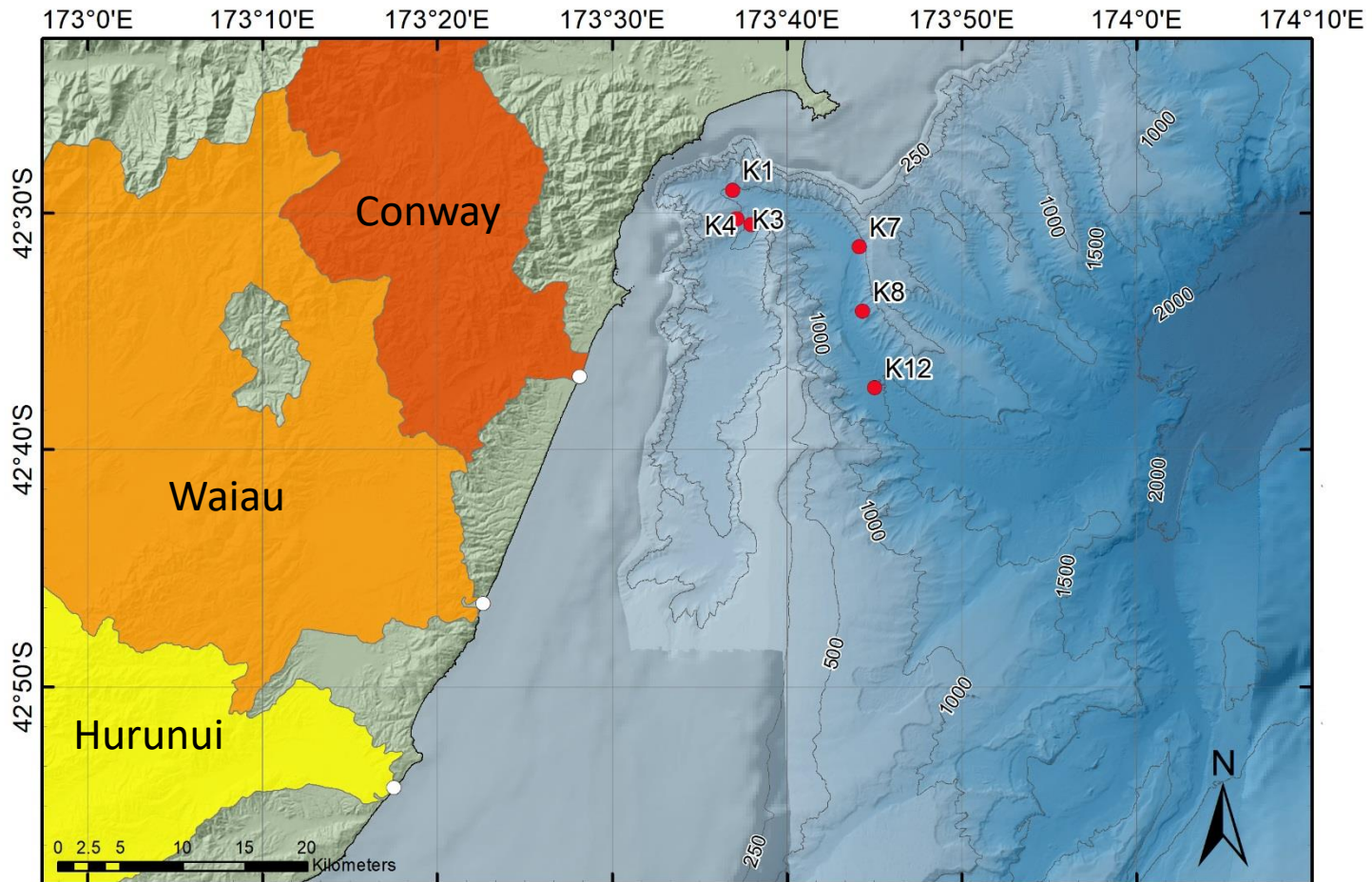
- We used chemical tracers to study origins of organic matter in canyon sediments
- We analysed sediments from riverbeds, marine offshore locations, and our two study canyons



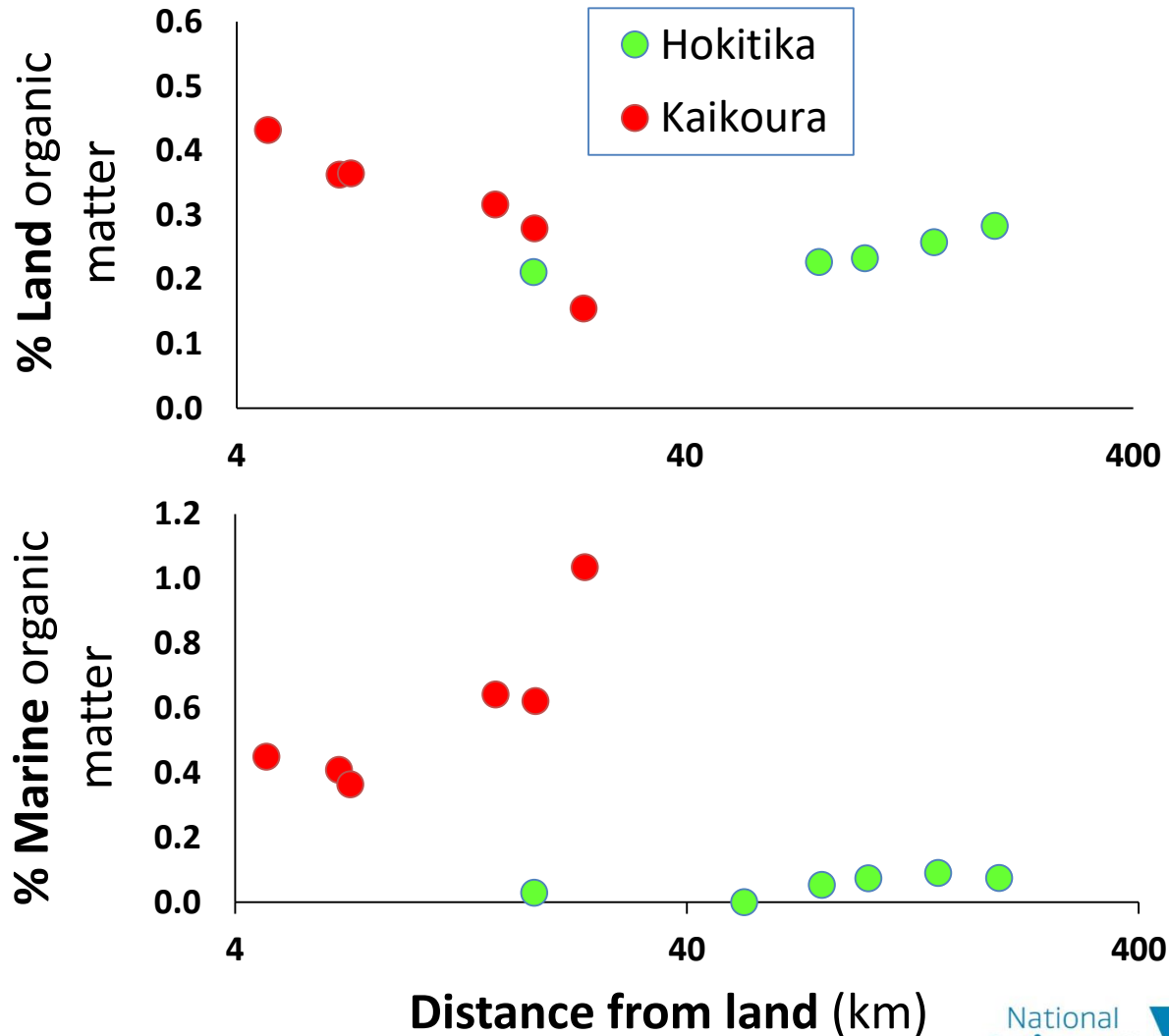
Hokitika Canyon (west coast)



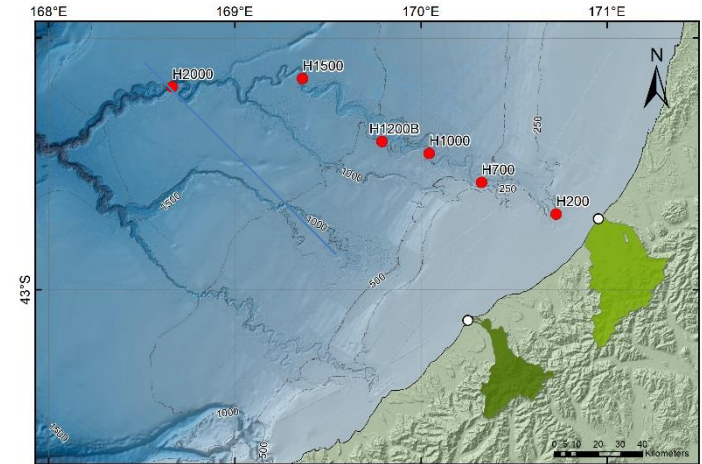
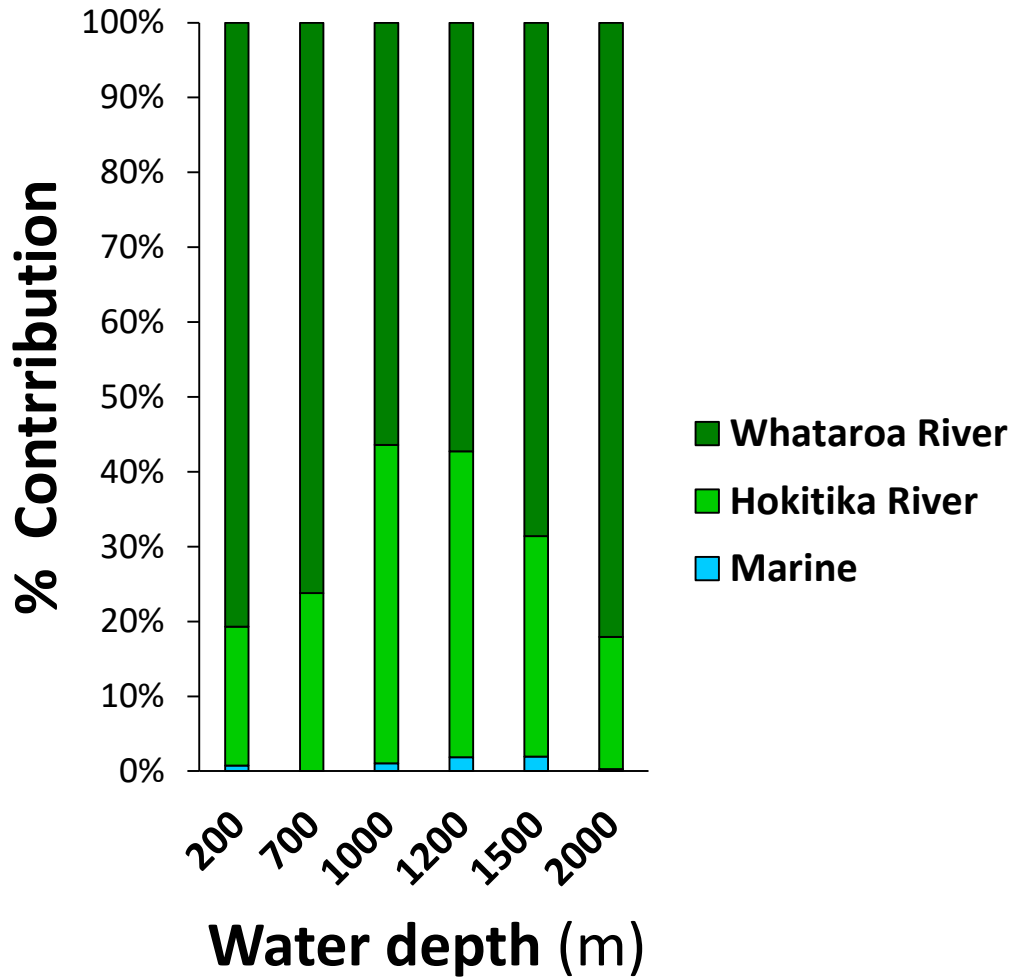
Kaikoura Canyon (east coast)



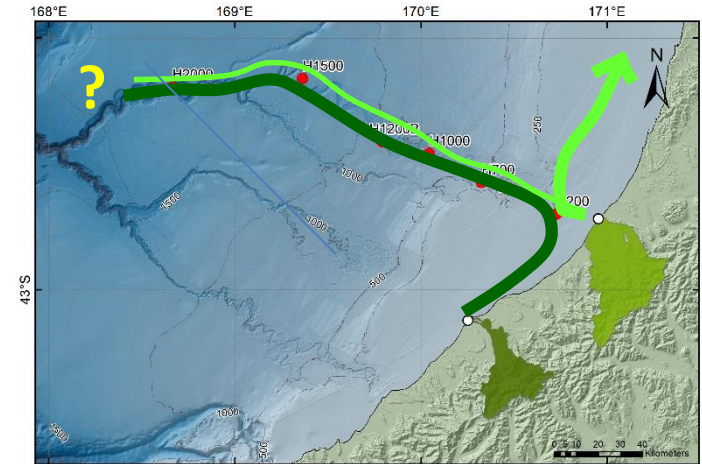
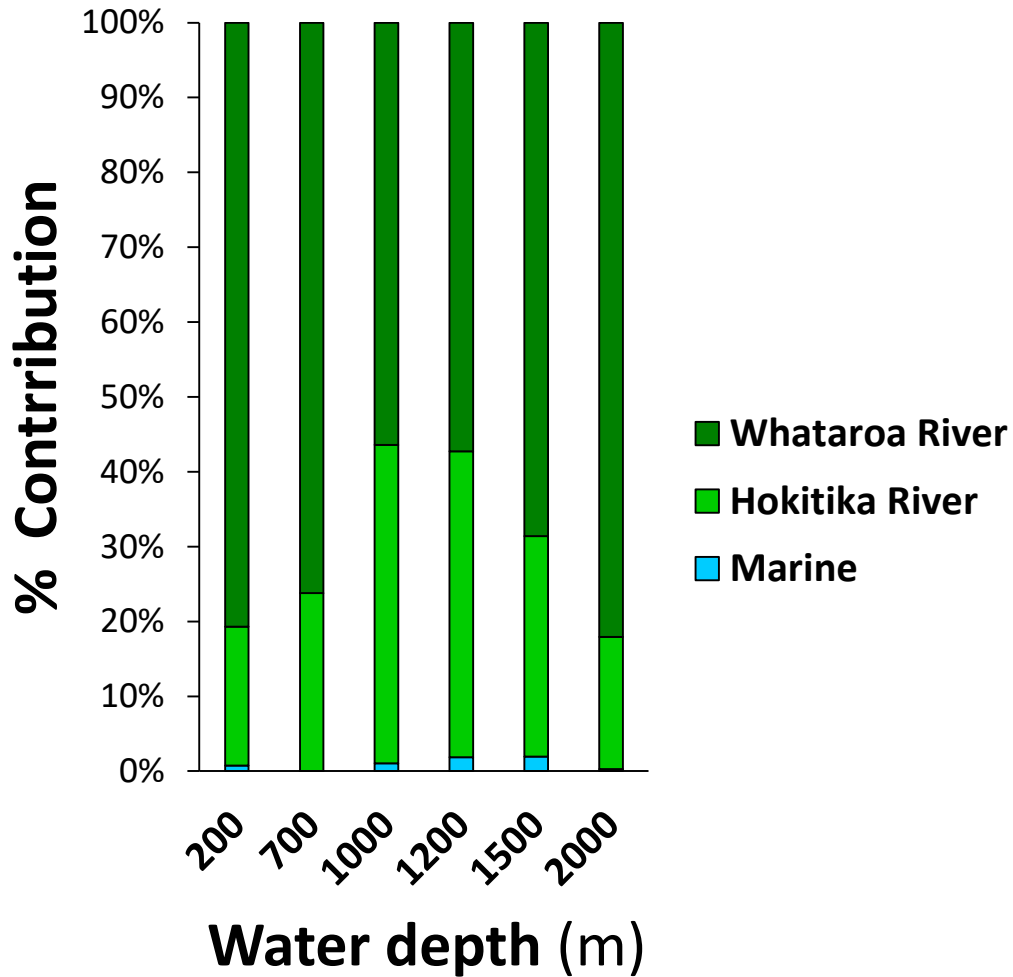
Do the canyons differ?



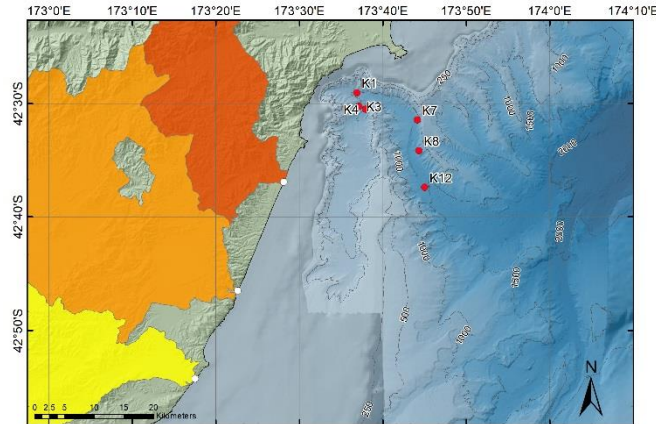
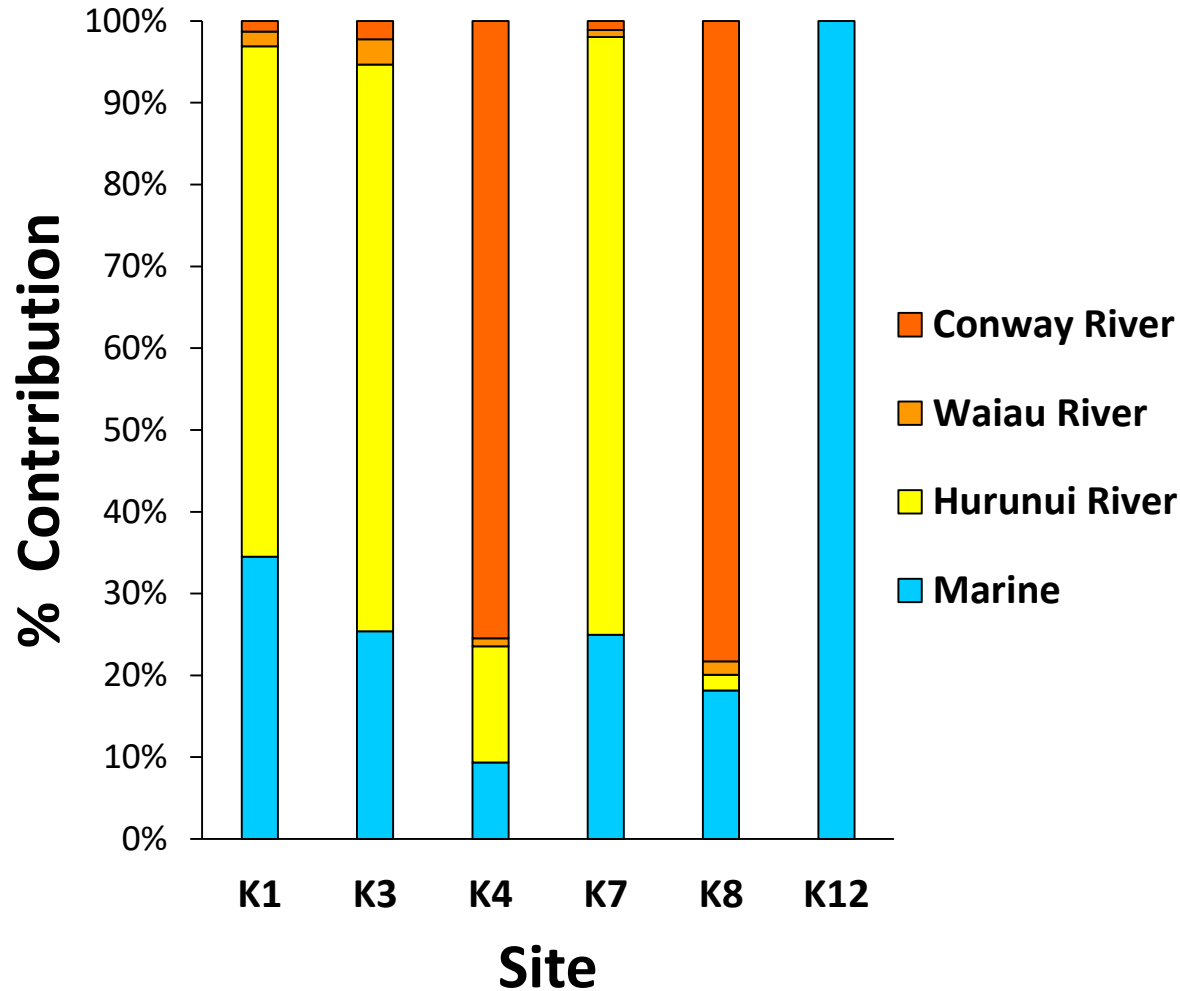
Hokitika Canyon



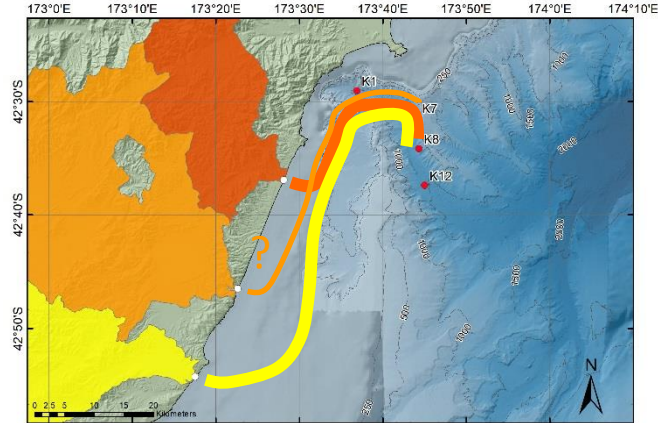
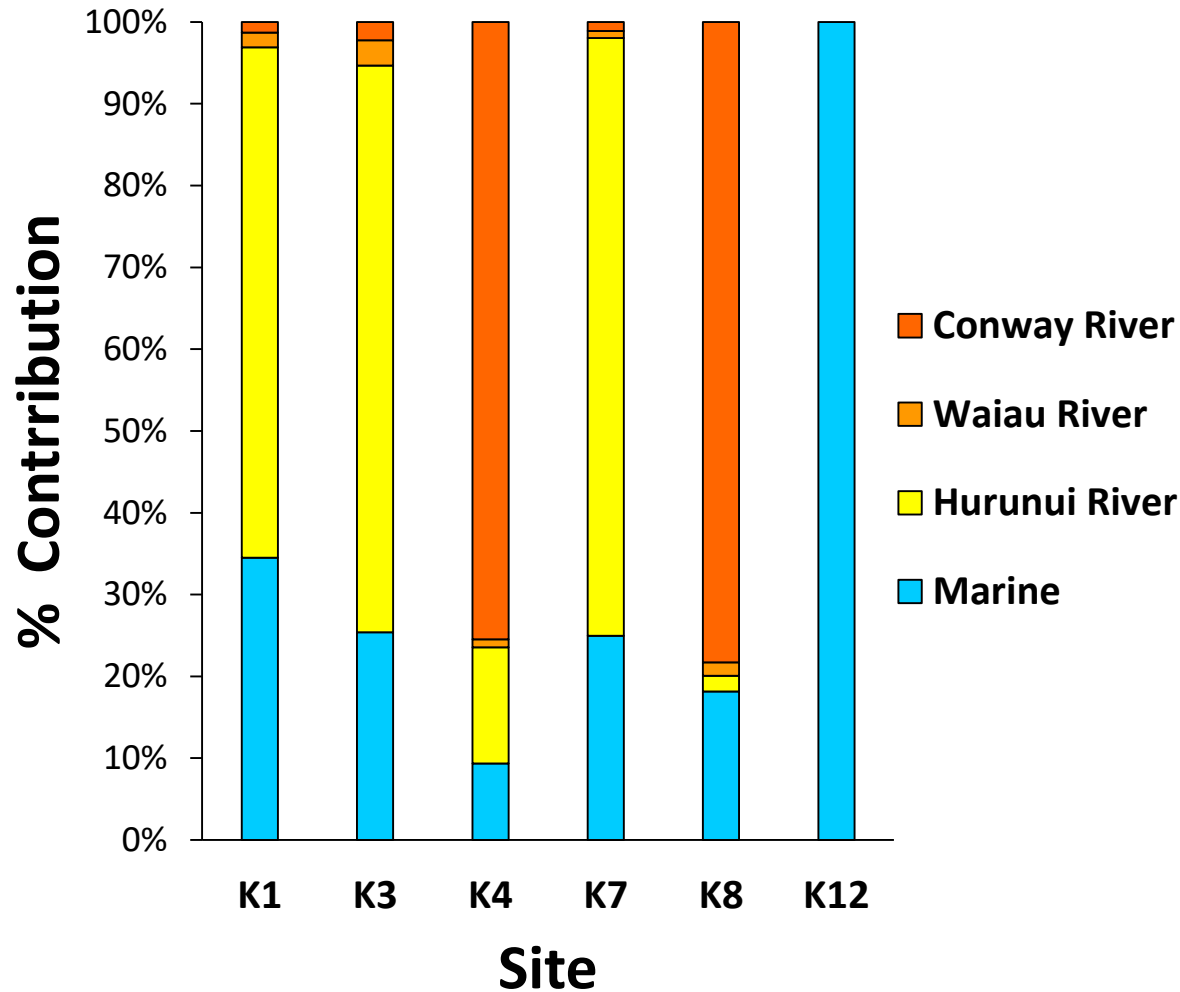
Hokitika Canyon



Kaikoura Canyon



Kaikoura Canyon



Conclusion

- The “terrestrial footprint” of New Zealand extends well beyond the coast into the deep ocean
- Changes in land use may impact the ecology of deep-sea ecosystems
- Once material reaches the deep sea, it has nowhere else to go → will either get used up or accumulate over time

What's next?

- **Can we identify which of New Zealand's 250-odd canyons provide a link to the deep ocean?**
- **Does land material contribute to deep-sea food webs?**
- How significant are canyons in terms of a carbon sink?
- Are pollutants (e.g., plastics, chemicals) also efficiently transported to the deep sea by canyons?

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