

## **LAND-OCEAN-BASIN INTERACTIONS; WHAT ARE THE ISSUES?**

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All shelves appear so dissimilar as to make it impossible to use any one as a proxy for another especially in the context of change. The Chukchi and Barents stand out as "flow through" shelves with high productivity sustained by waters from the Pacific and Atlantic, respectively, whereas the Archipelago is a "reverse flow through" shelf. With the exception of the Mackenzie Shelf, relatively little net inorganic sediment supply is available to arctic shelves implying that burial fluxes are small. Slopes may provide some burial, but if we are to interrogate sediments for records of recent change we will have to seek dynamic geochemical markers rather than the traditional "trend with depth in sediments". It is probable that denitrification removes more nitrogen from the shelves than rivers supply, something that seems relatively straightforward to establish. Of all the processes that nourish arctic shelves, shelf-edge exchange appears to be the most important. Whereas this process is likely to be very sensitive to climate change, especially as it affects ice cover, it is presently not sufficiently constrained to be able to detect even a large change. We need desperately to develop tools to measure this exchange and among these tools, biomarkers appear to hold an unrealized potential.