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Tracing Climate-Driven Changes in Arctic Ocean Chemistry using Radioactive Isotopes

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Tracing climate-driven changes in Arctic Ocean chemistry using radioactive isotopes

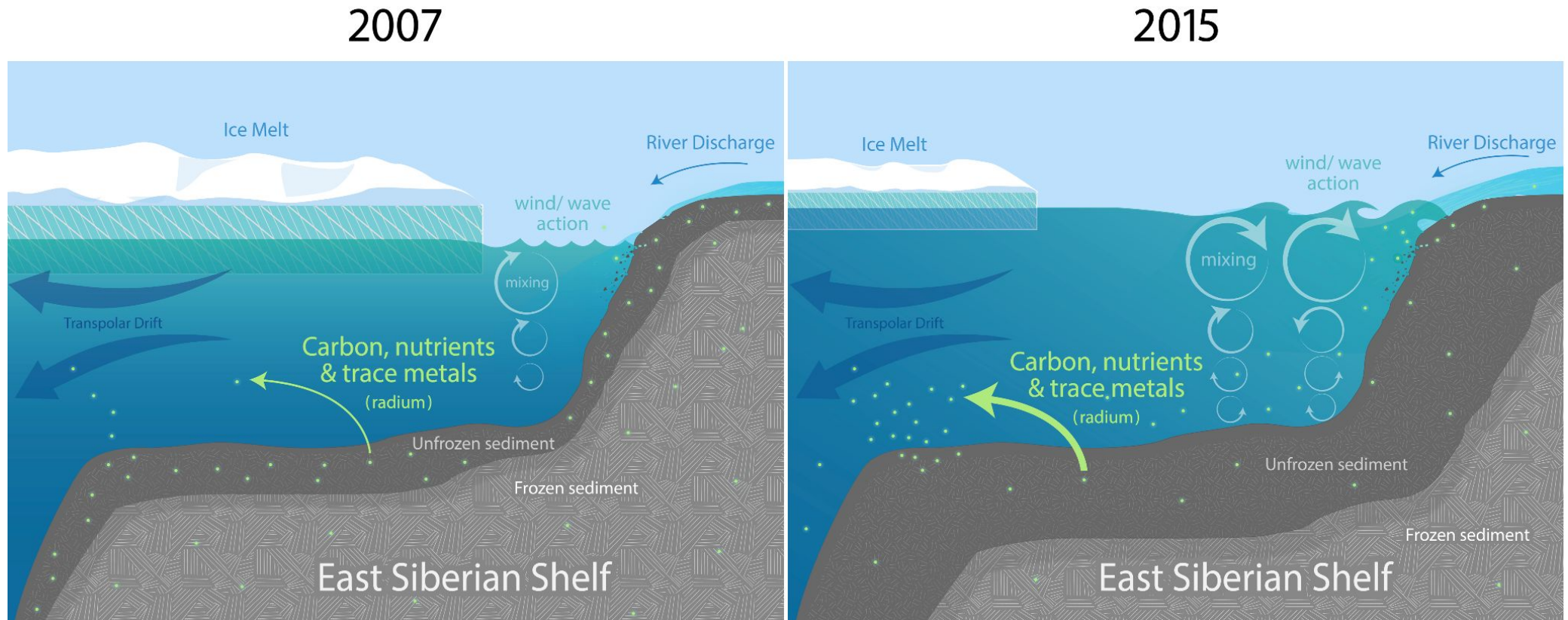
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Climate change is shifting Arctic Ocean chemistry

Radium is produced through the decay of thorium isotopes in sediments, and is soluble in seawater. Continental shelves therefore act as a source of radium to the ocean.

Climate change may increase the release of radium (**and other shelf-derived materials**) from shelf sediments into the overlying seawater.



The Arctic Radium Isotope Observing Network (ARION) will monitor changing Arctic Ocean chemistry

ARION aims to elucidate the seasonal & interannual variability in radium to evaluate its utility as a tracer climate-driven changes in Arctic Ocean chemistry.

Moored Radium In-situ Samplers (MoRIS) will generate a seasonal time series of radium measurements.

Water sampling in the Laptev & East Siberian Seas will be conducted every two years to create an interannual time series.



Preliminary results confirm high radium levels in Eastern Arctic Seas

The path of ice (red lines) indicates that high-radium waters sampled in 2015 (triangles) originated from the East Siberian Sea.

Fall 2018 & 2021 measurements from East Siberian Sea (circles & diamonds) confirm that high radium levels in this area match those previously observed in the central Arctic.

Has there been a change in the last couple years?
Not sure yet!

To learn more about ARION, scan the QR code to visit our website:

