Interdisciplinary Research for Arctic Coastal Environments

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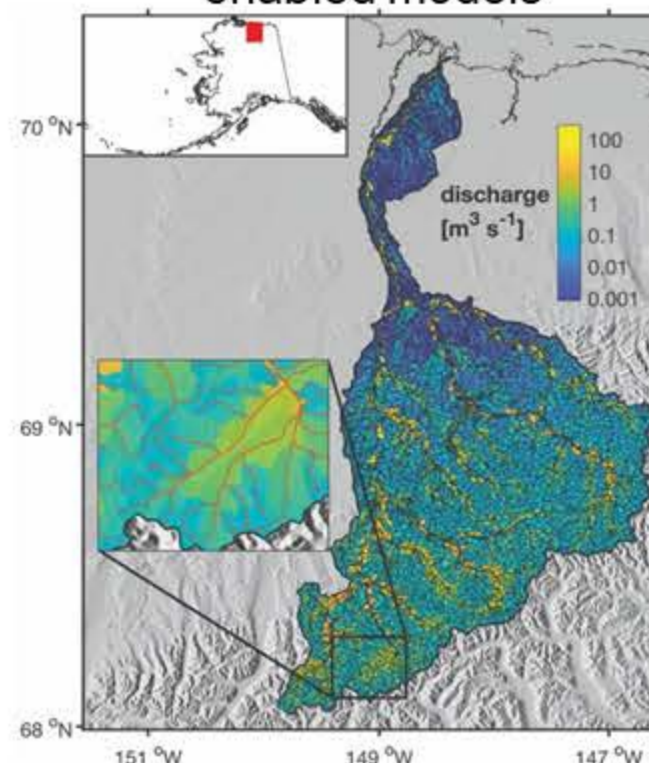U.S. DEPARTMENT OF **ENERGY** | Office of Science

InteRFACE Overview

InteRFACE is a multi-institution projected funded by the Earth System Modeling and Data management programs in the Earth & Environmental Systems Sciences Division in DOE's BER program. The project team works to advance and use modeling capabilities to identify trajectories of change in Arctic coastal regions. Based on the recognition that coasts bridge the intersection between land and ocean, and are a locus of human activities, InteRFACE integrates research on coastal processes and ecosystems, upstream watersheds, sea ice and ocean dynamics, and human activity.
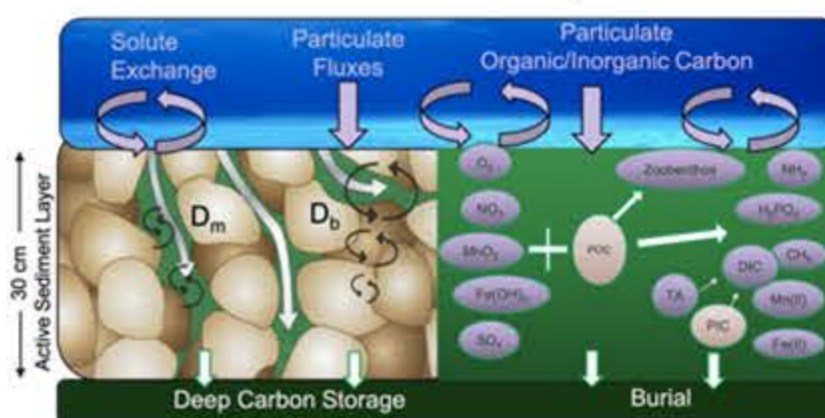
Coastal Erosion

Watershed scale modeling of permafrost enabled models

discharge [$m^3 s^{-1}$]

Coupled and rapidly shifting seasonal dynamics are critical capturing coastal feedbacks in the Arctic

InteRFACE Science

InteRFACE science spans sponsor program areas and integrates work along five overarching science themes for earth system modeling and four focus areas for the MultiSector Dynamics research. InteRFACE also supports the establishment of the Arctic Data Collaborative (ARDAC) and has identified and curated previously unarchived datasets in support of hydrological modeling.

Earth System Science Themes:
Coastal change
Permafrost hydrology
Ocean dynamics
Sea ice
Marine biogeochemistry

MultiSector Dynamics focus areas:
Transportation
Energy resources
Communities
Marine natural resources

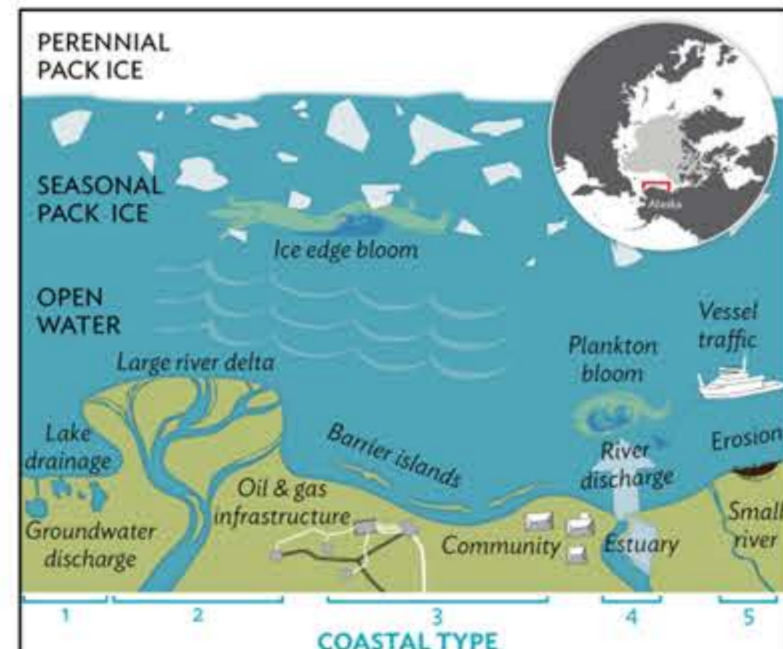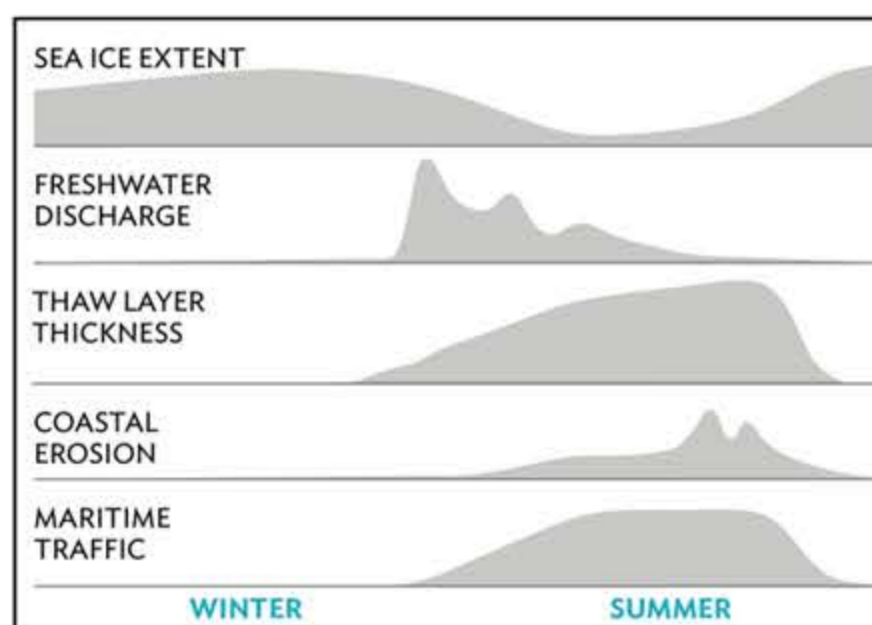**Discovery and curation of unique data resources for Arctic Science**

New Benthic BGC capabilities

Economics of Russian pipelines
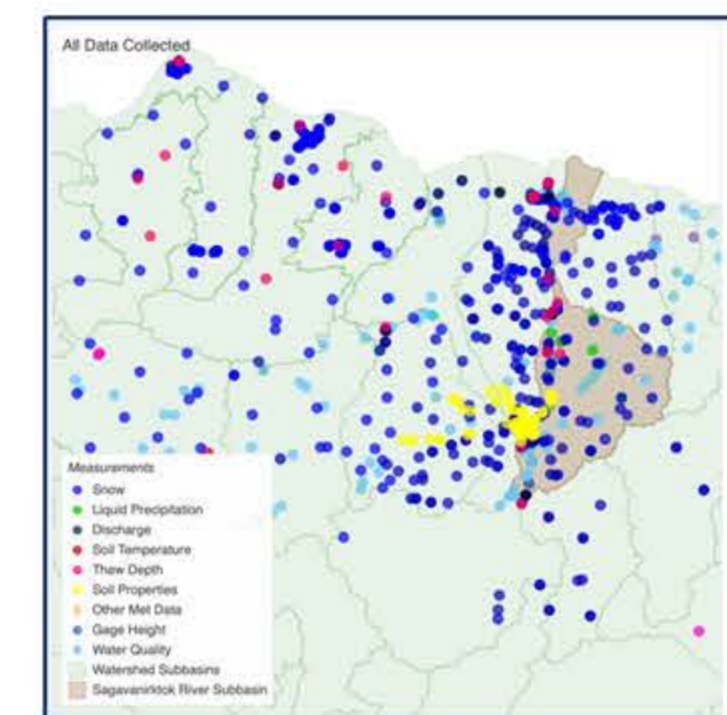

Landfast ice developments in E3SM

New wave modeling capabilities in E3SM

Modes of Transportation in the Arctic

Newly archived datasets

For highlights of published InteRFACE research:
https://climatemodeling.science.energy.gov/research-highlights?project=203902

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