

# MOSAIC

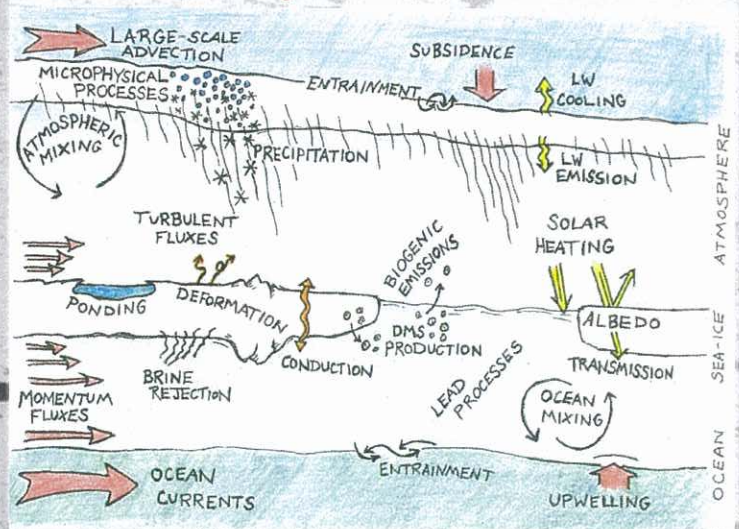
## Multidisciplinary Drifting Observatory for the Study of Arctic Climate

Multi-year, detailed, and comprehensive measurements, extending from the ocean through the sea-ice and into the atmosphere, are needed in the central Arctic Basin to provide a process-level understanding of the central Arctic climate system that will contribute towards improved modeling of Arctic climate and weather, and prediction of Arctic sea-ice concentrations.

### Science Themes

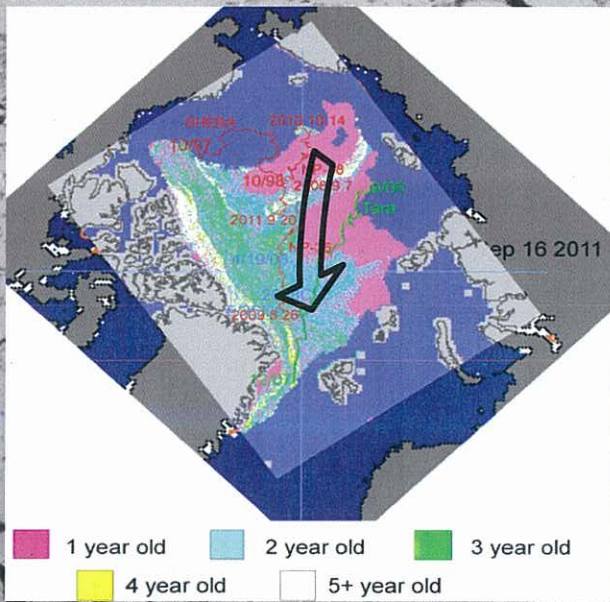
- Sea-ice mass and energy budgets and motion: Why is the ice pack decreasing?
- Heat and momentum transfer through atmospheric and oceanic boundary layers
- Gas and aerosol production and exchange
- Relative roles of large-scale transport versus local processes
- Relative contributions of atmosphere and ocean to sea-ice energy budget
- Processes in a first-year versus a multi-year sea-ice environment
- Processes that represent the largest limitations to current process, regional, and global modeling abilities

### Arctic System Processes



### Implementation Considerations

- Strong international cooperation/coordination
- Multi-year, manned station (icebreaker) drifting with the Arctic ice pack
- Complementary, comprehensive, and coordinated suites of instruments for ocean, sea-ice, and atmosphere measurements
- Distributed supporting observations from ships, aircraft, UAS, land stations, satellites.
- Attempt 2 year drift track from Siberia-Alaska sector towards Fram Strait starting 2016-2017
- Regional model efforts for planning ice trajectories, assimilation of routine observations, and utilizing observational data as a testbed for parameterization evaluation and development



A drifting research station to study atmosphere-ocean-sea-ice processes in the Central Arctic icepack

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