



CLIM Program Transition Workshop

May 14-16, 2018

Lecture: *Overview of Sea-Ice Modeling and Statistical Challenges*

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Abstract:

Accurate quantification and simulation of the relative contributions of the thermodynamics and dynamics to the ice thickness distribution are crucial for understanding the behavior and the vulnerability of the polar ice cover in a warming climate. To improve our understanding and projection of the future behavior of the Arctic sea-ice system a constitutive model has been developed that is based on elasticity combined with a cohesive crack law that predicts the initiation, orientation and opening of leads.

Simulations of the Arctic show deformation, motion, lead openings, effective thickness, and ice compactness. Corresponding satellite observations can be used to validate and calibrate the model. The challenges associated with developing metrics for validation and calibration will be described. The additional challenges when cracks are present will also be discussed.