

# Weather Scale Ice Predictability

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# Ice Edge

- Hibler + Walsh, 1982 –
  - Dynamics only – low
  - Thermo only – 0.46
  - Thermo + Dynamics – 0.56

# Ice Edge

- Chapman and Walsh 1991
  - Weeks for ice edge, purely statistical
  - Little unexplained variance
  - (see also Gloersen, annual cycle variance)

# Ice Thickness Distribution

- Grumbine, 1994 J. Glaciology
  - $\partial g / \partial t + \partial f g / \partial h = \text{div}(Ug) + \text{ridging}$
  - Growth of perturbation
  - Harmonic weighting vs. thicknesses

# Walsh v. Grumbine 1998

- Skill of day 10 integrated drift due to 5 day
  - Integral vs. differential skill/predictability
  - Best at day 6 may not be at week 6 ...
  - But integral skill still meaningful (polar bears, ...)
- Forecaster figure(s) of merit (0.60 AC)

# Predictability

- Better than null forecaster
- Perturbation growth time
- Time to error saturation
- Autocorrelation time (... CLIPER)
- $\text{sd}(\text{Forecast} - \text{Observed})$  vs.  $\text{sd}(\text{natural})$
- $\text{sd}(\text{Forecast} - \text{Observed})$  vs.  $\text{sd}(\text{null} - \text{observed})$