Snapshots of Arctic Sea Ice Thickness 1991 - 2009

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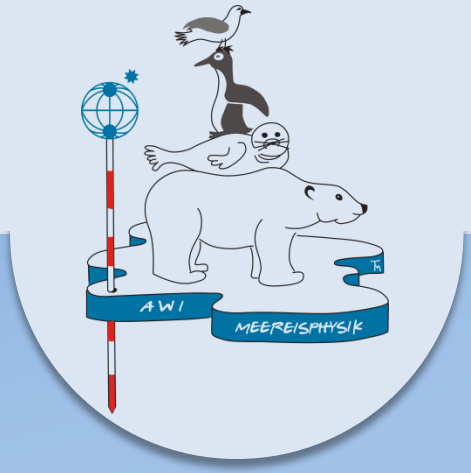
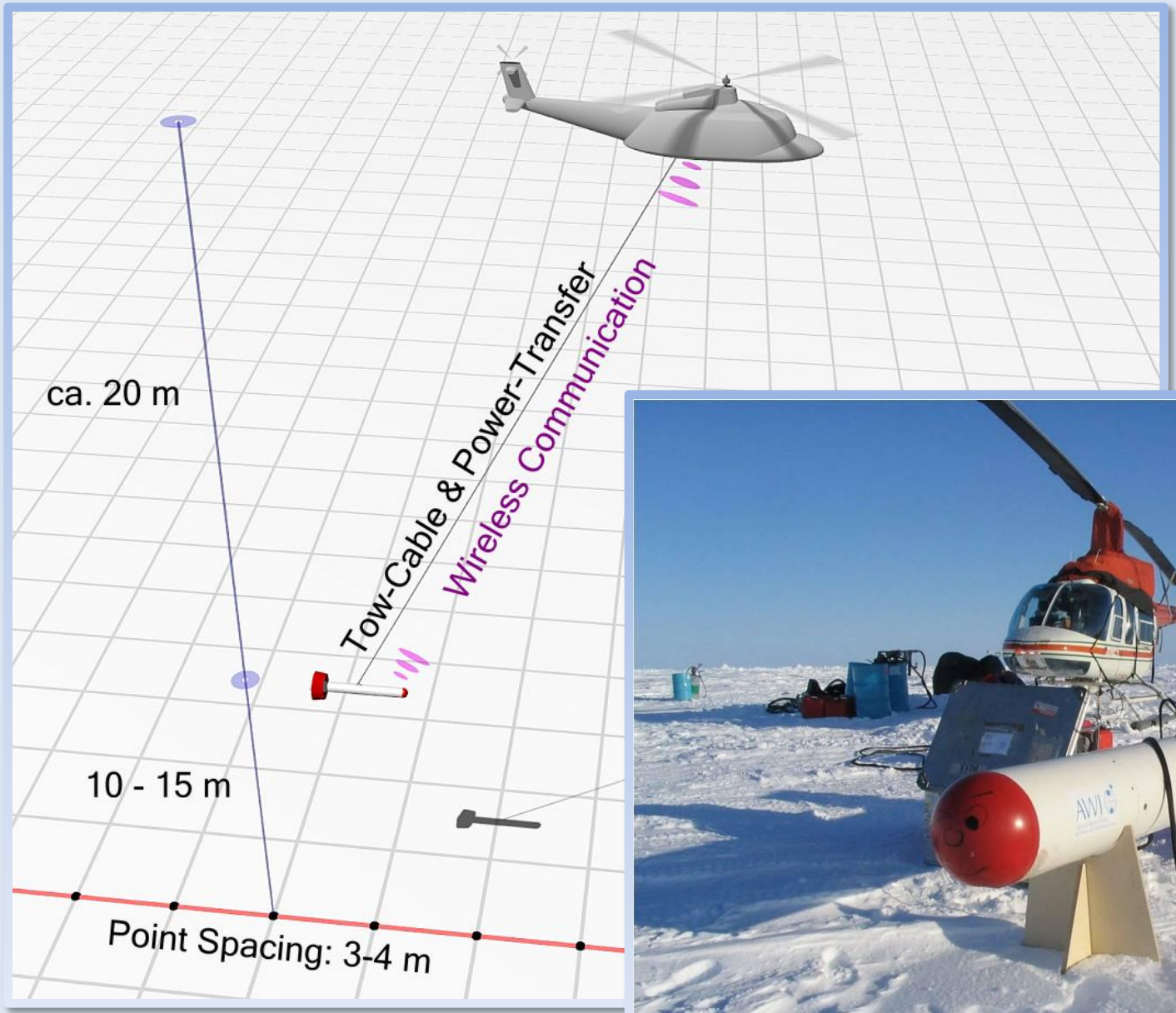
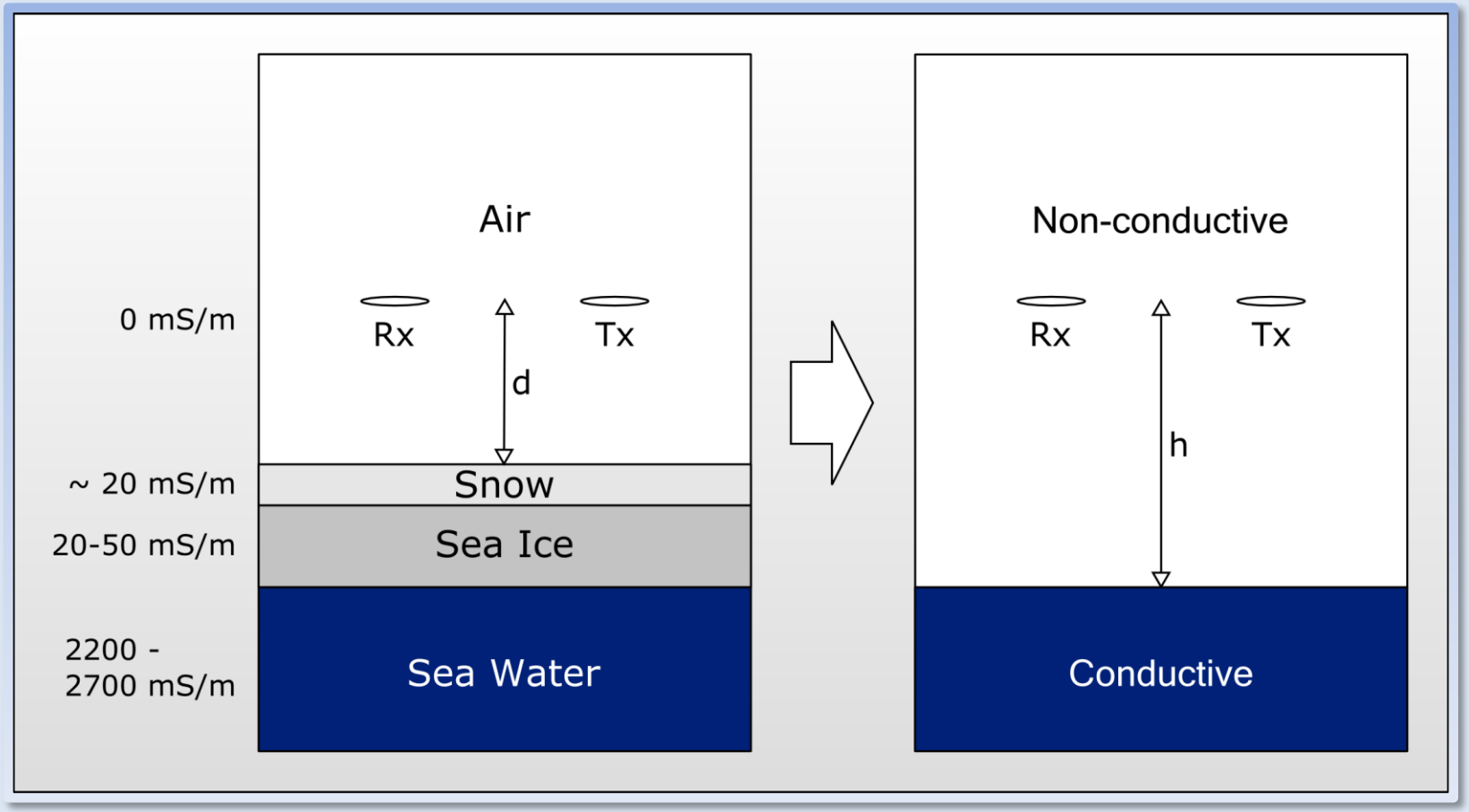


EM-Bird


ca. 20 m
Tow-Cable & Power-Transfer
Wireless Communication
10 - 15 m
Point Spacing: 3-4 m

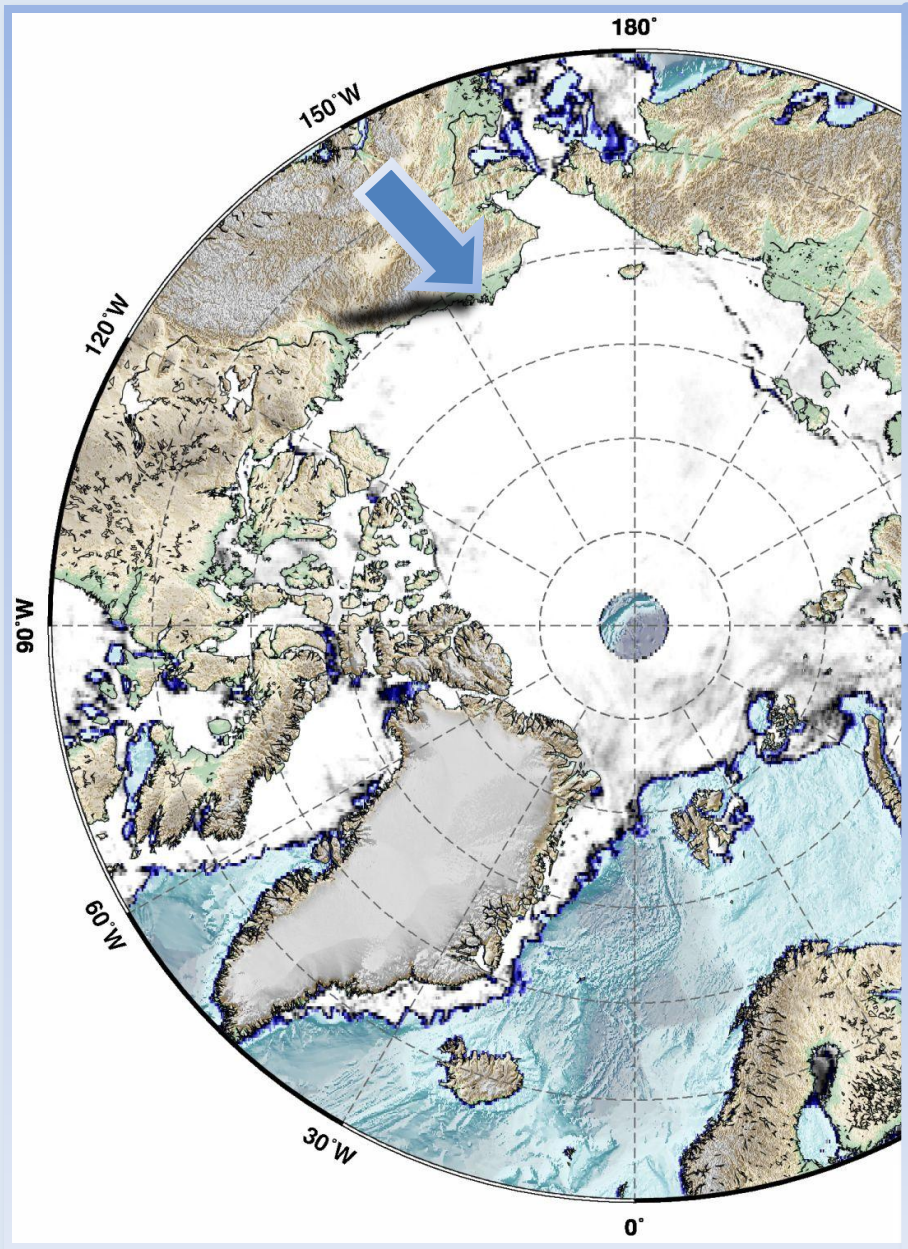
Electromagnetic Induction on Sea Ice

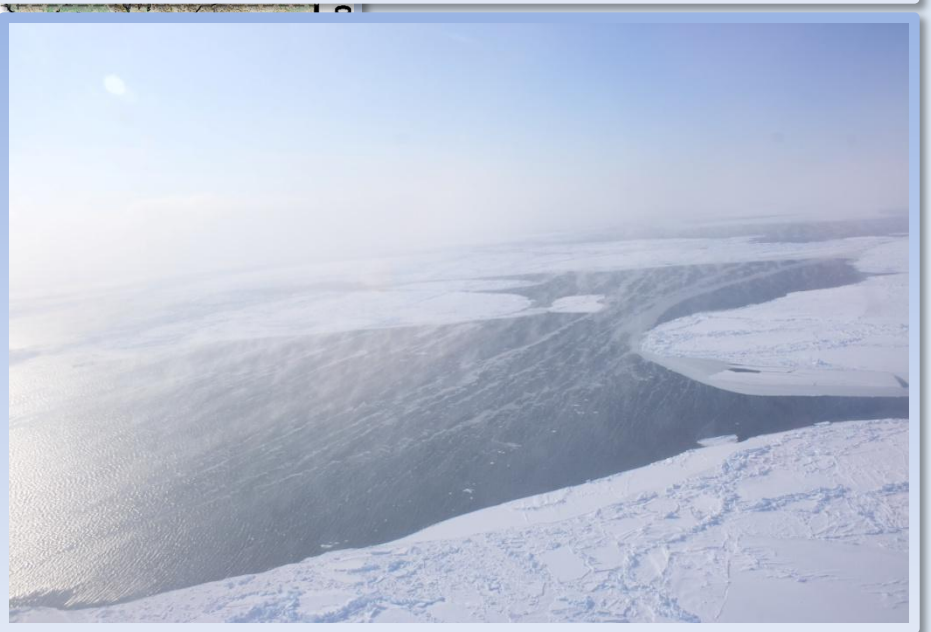


Tx Transmitter
Rx Receiver

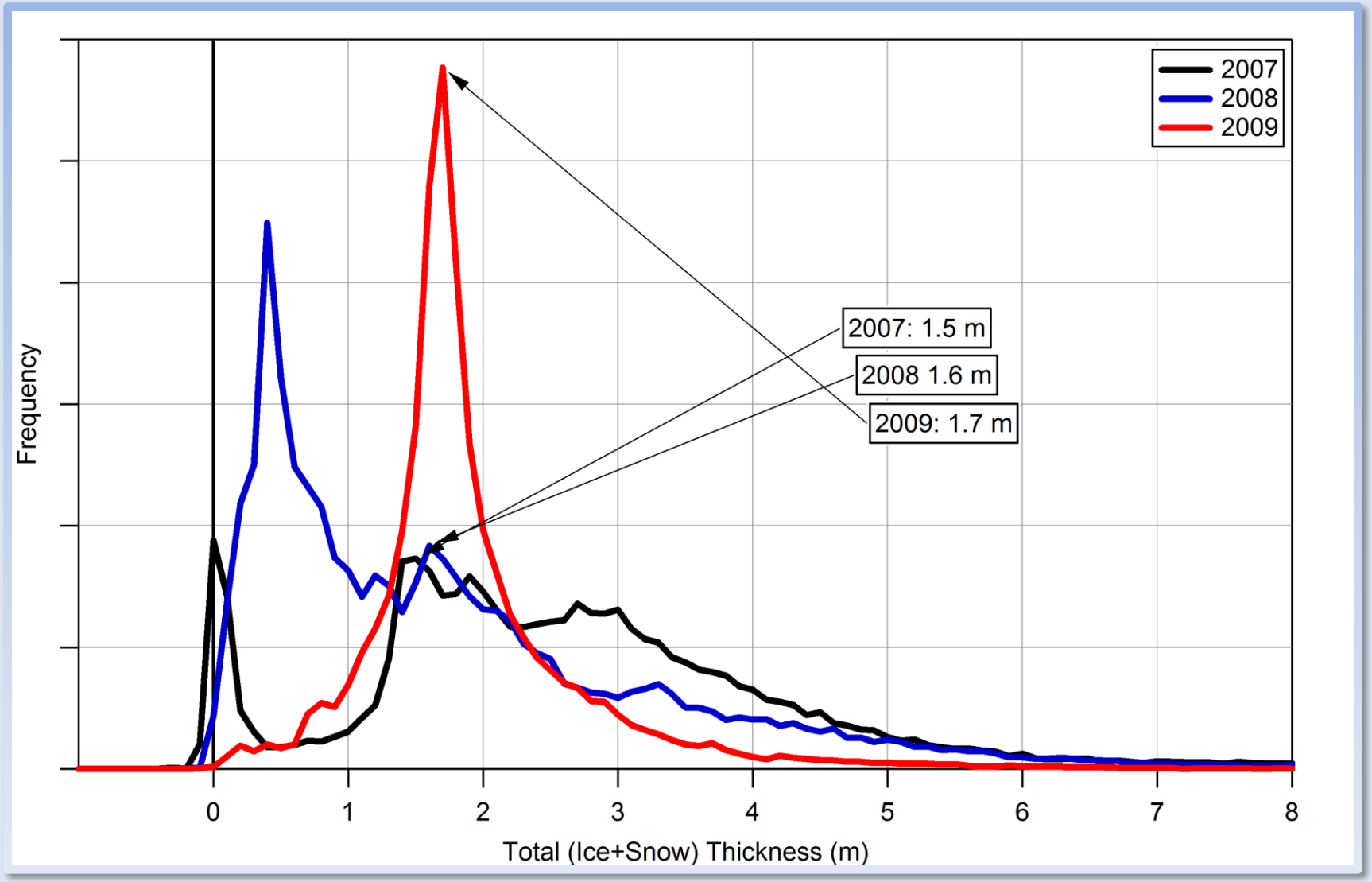

SPRING

Barrow, Alaska

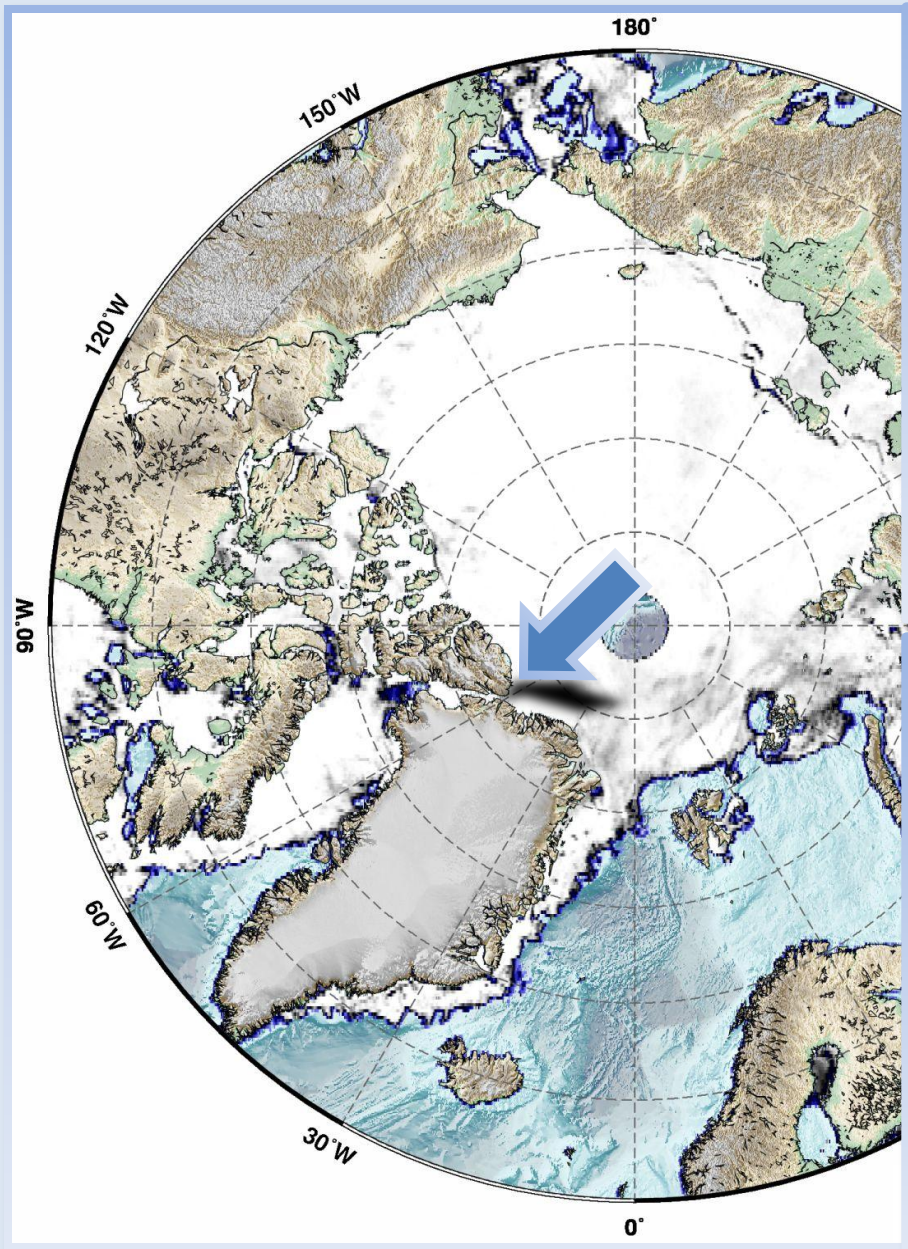




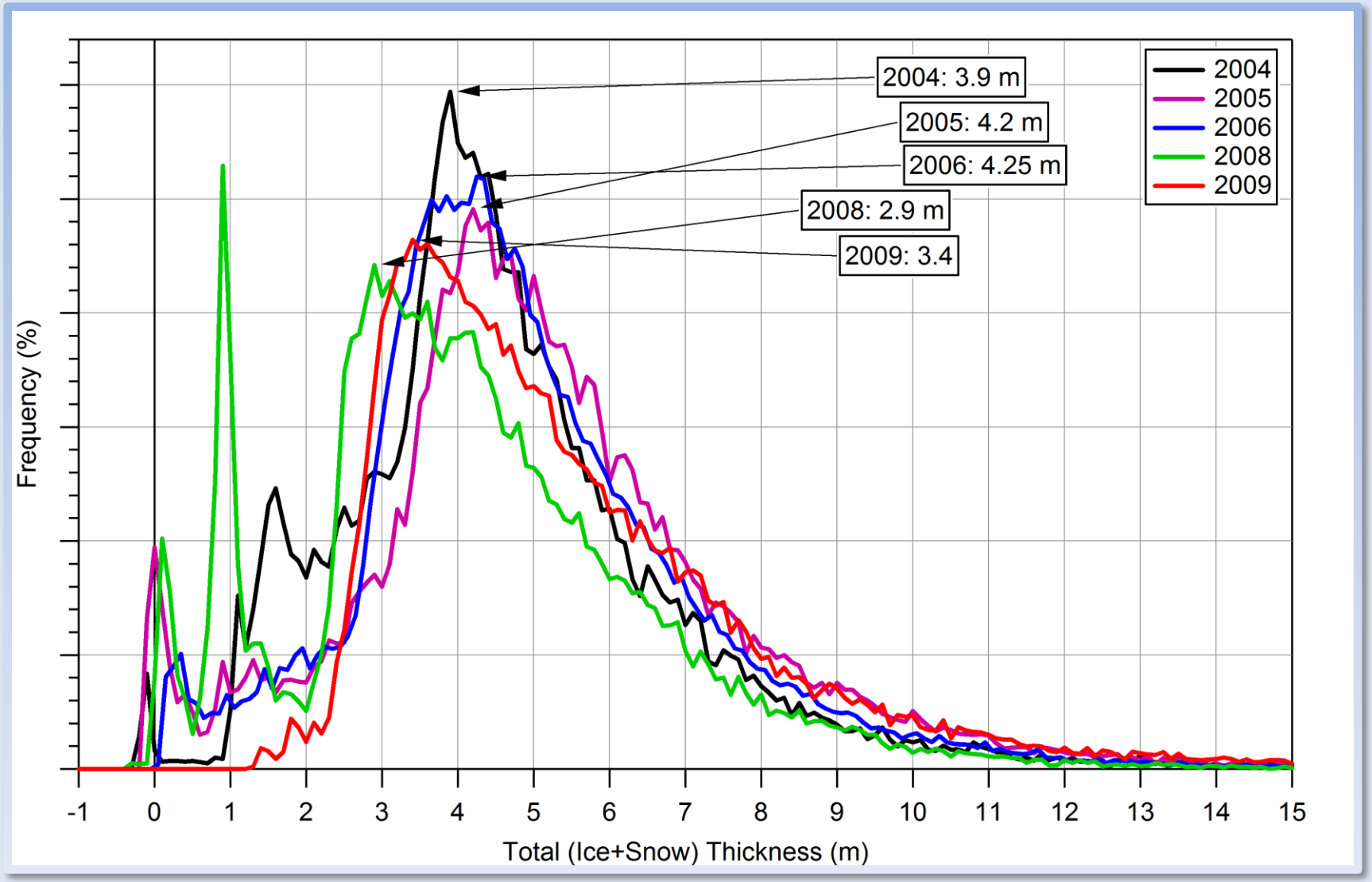
Ice Thickness in the Beaufort Sea



Canadian Forces Station Alert, Nunavut

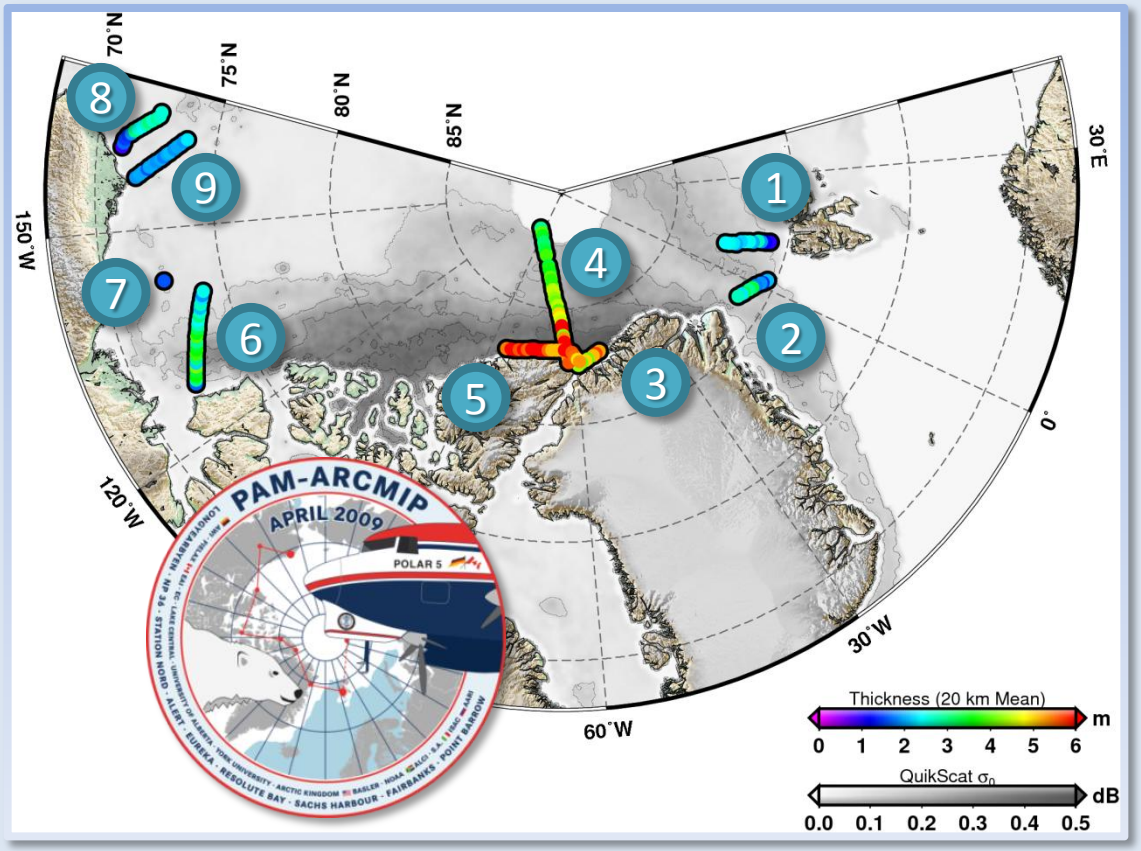


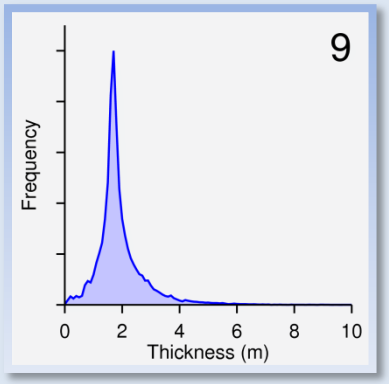
Ice Thickness in Lincoln Sea

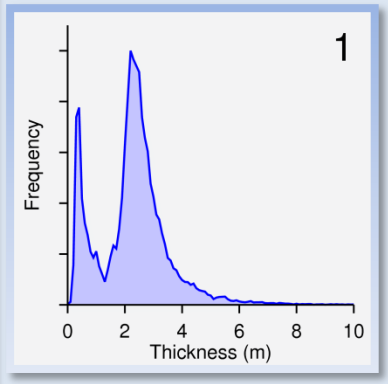


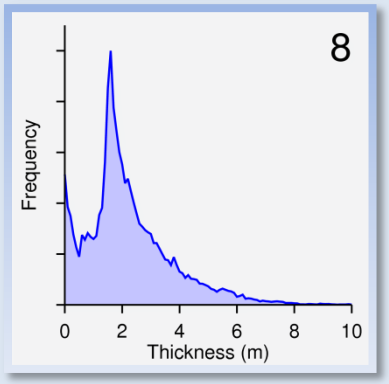
EM Bird on Polar 5 (DC-3 Turbo)

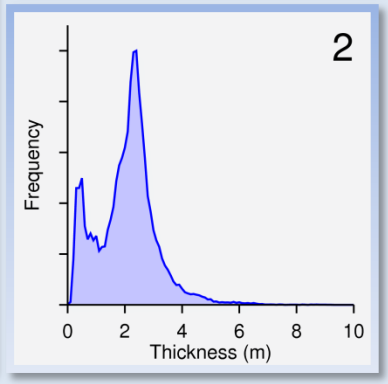
Thickness Fingerprints of Arctic Sea Ice Regimes

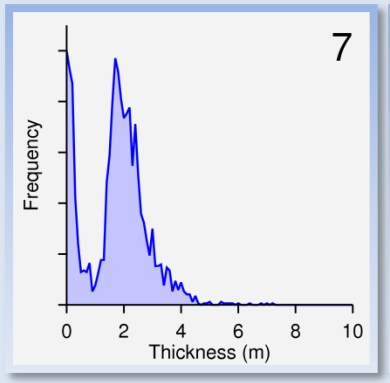


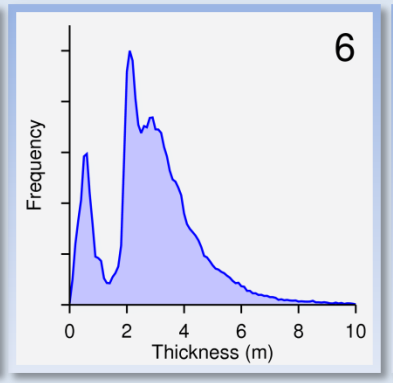


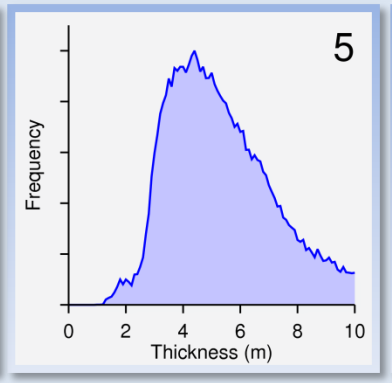


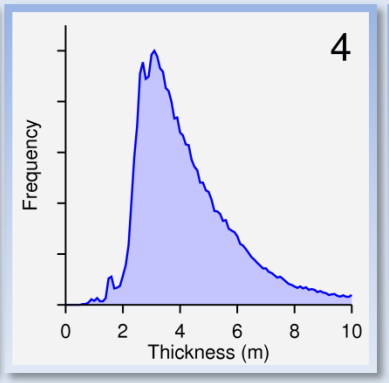


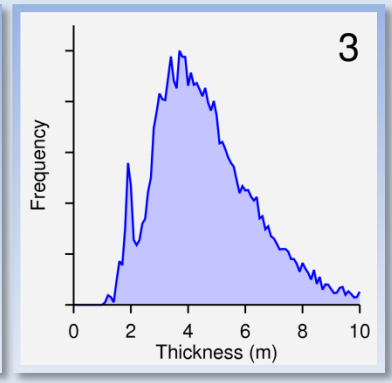








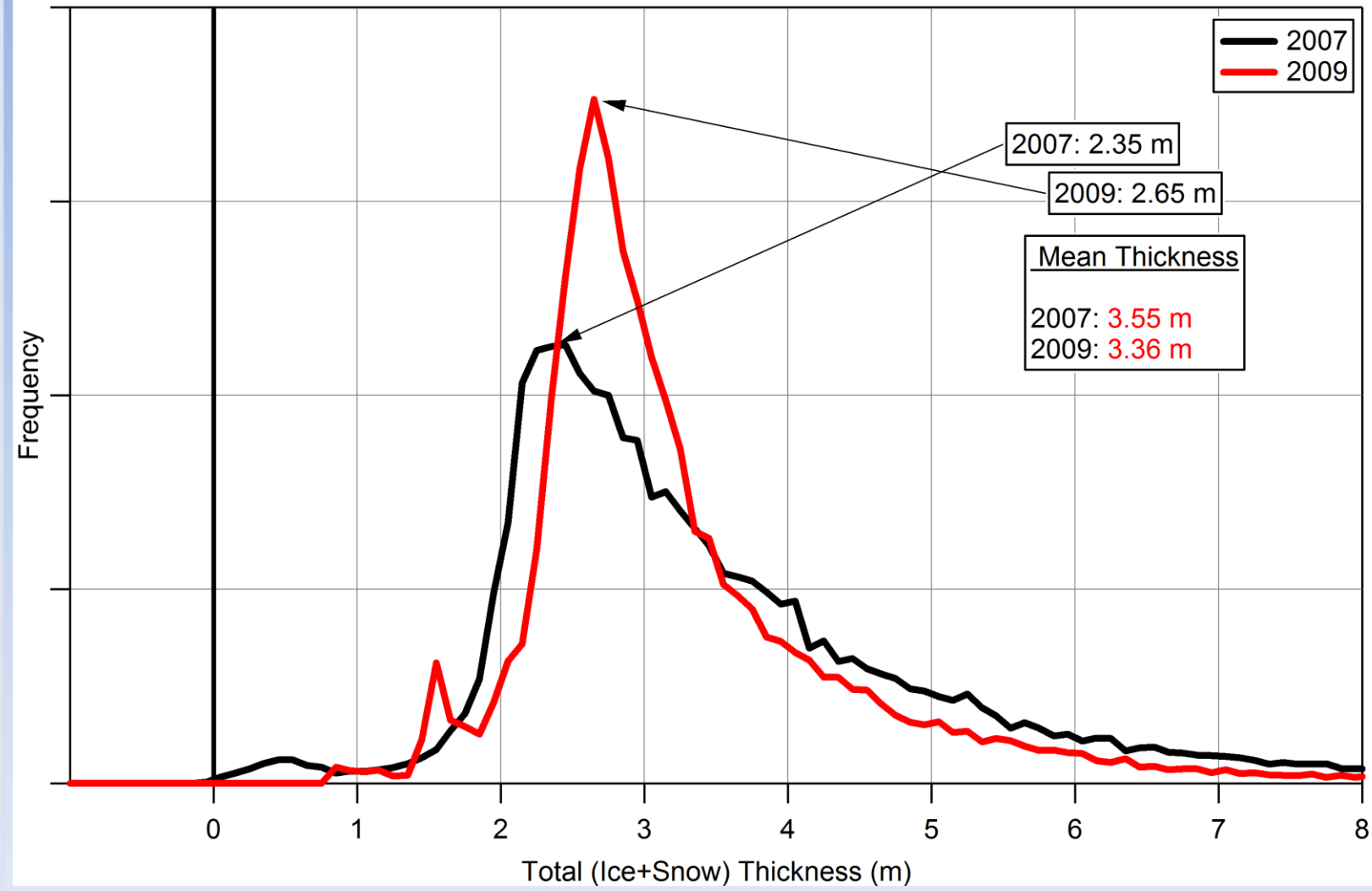




Central Arctic

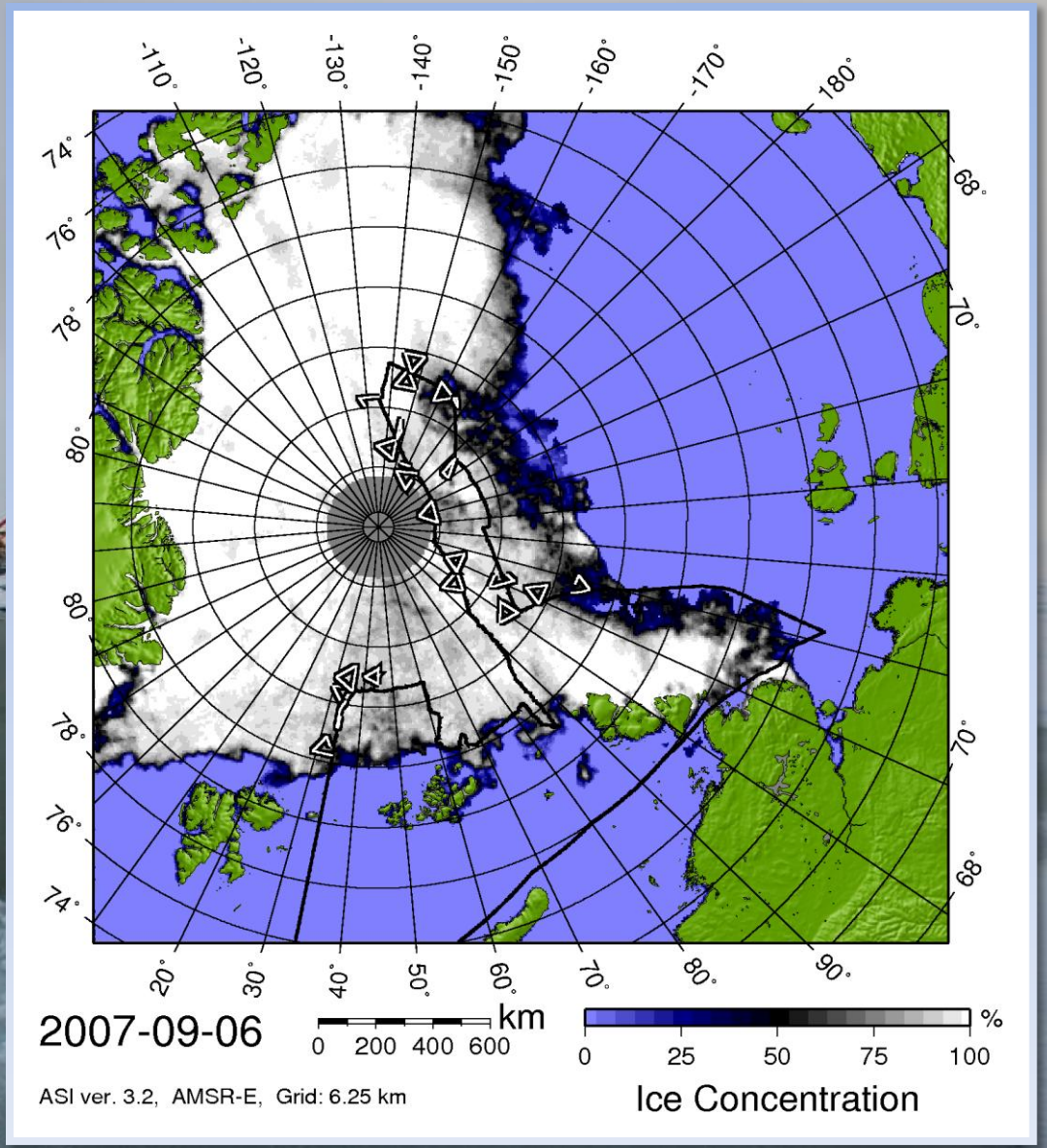
2007: Pole-Airship
2009: PAM-ARCMIP

Transect: 88.3°N – 87.2°N

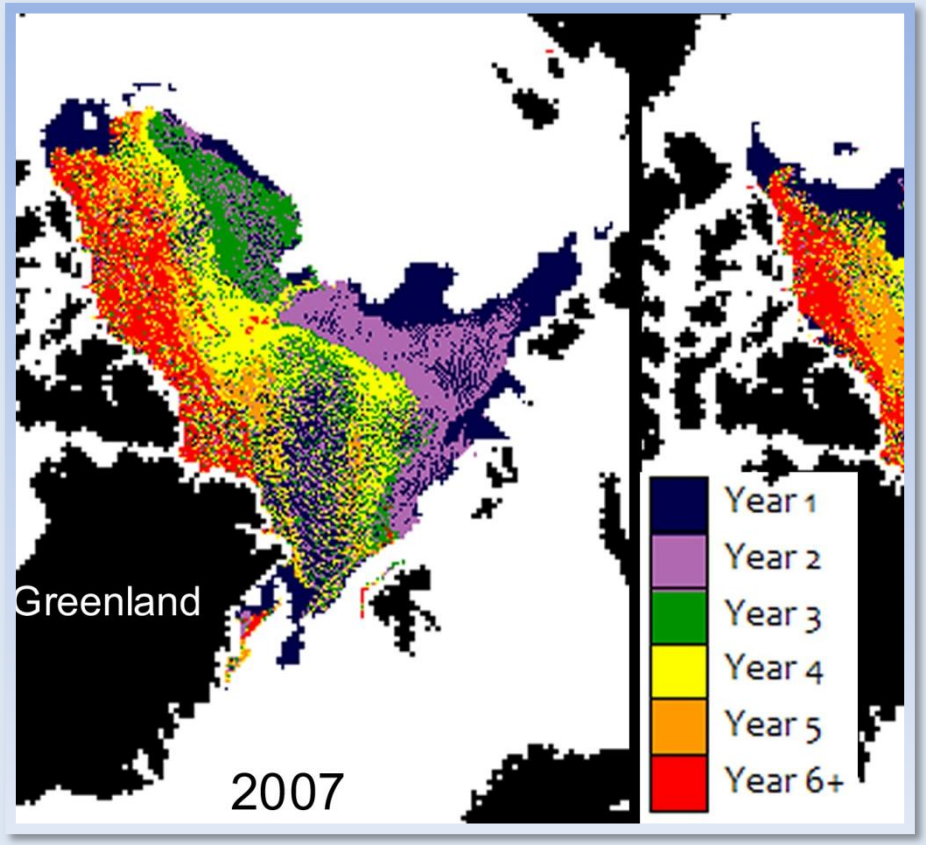


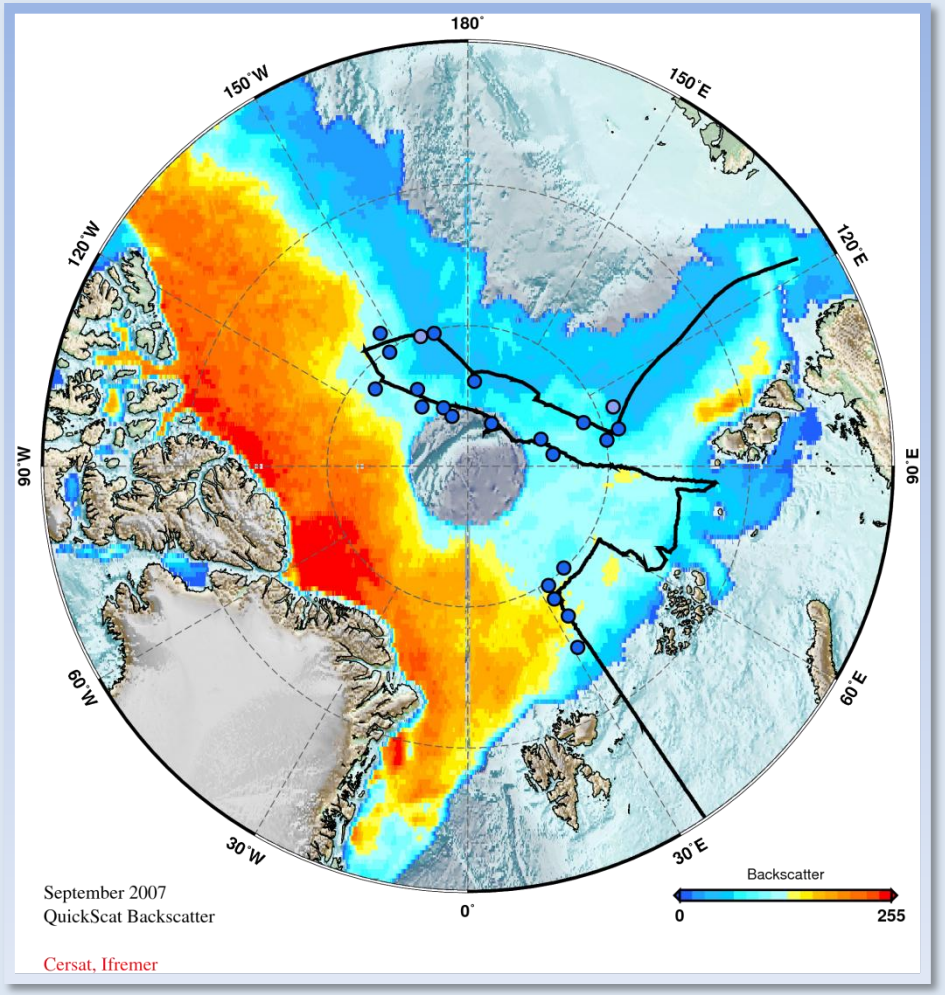

Summer

Thickness during Record Minimum 2007



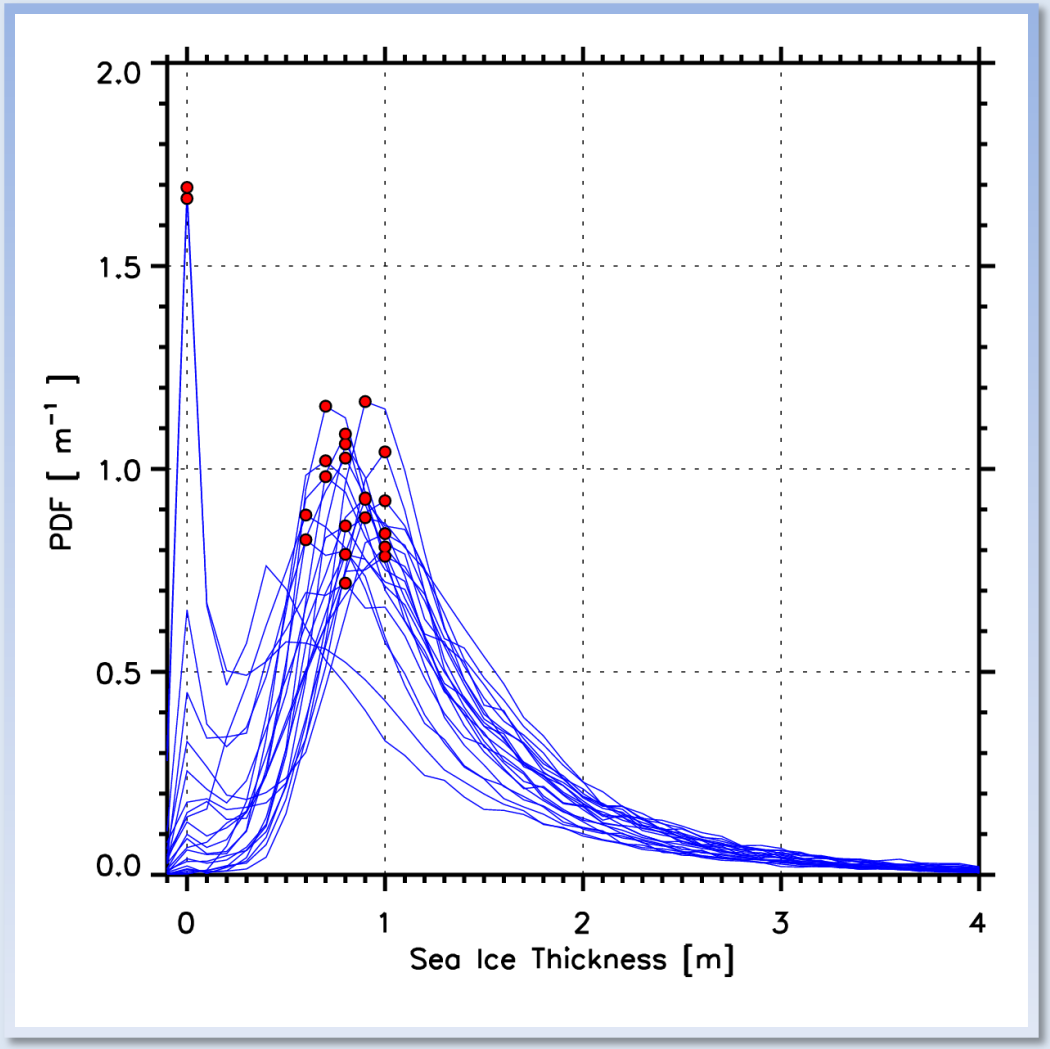
Sea Ice Conditions in 2007



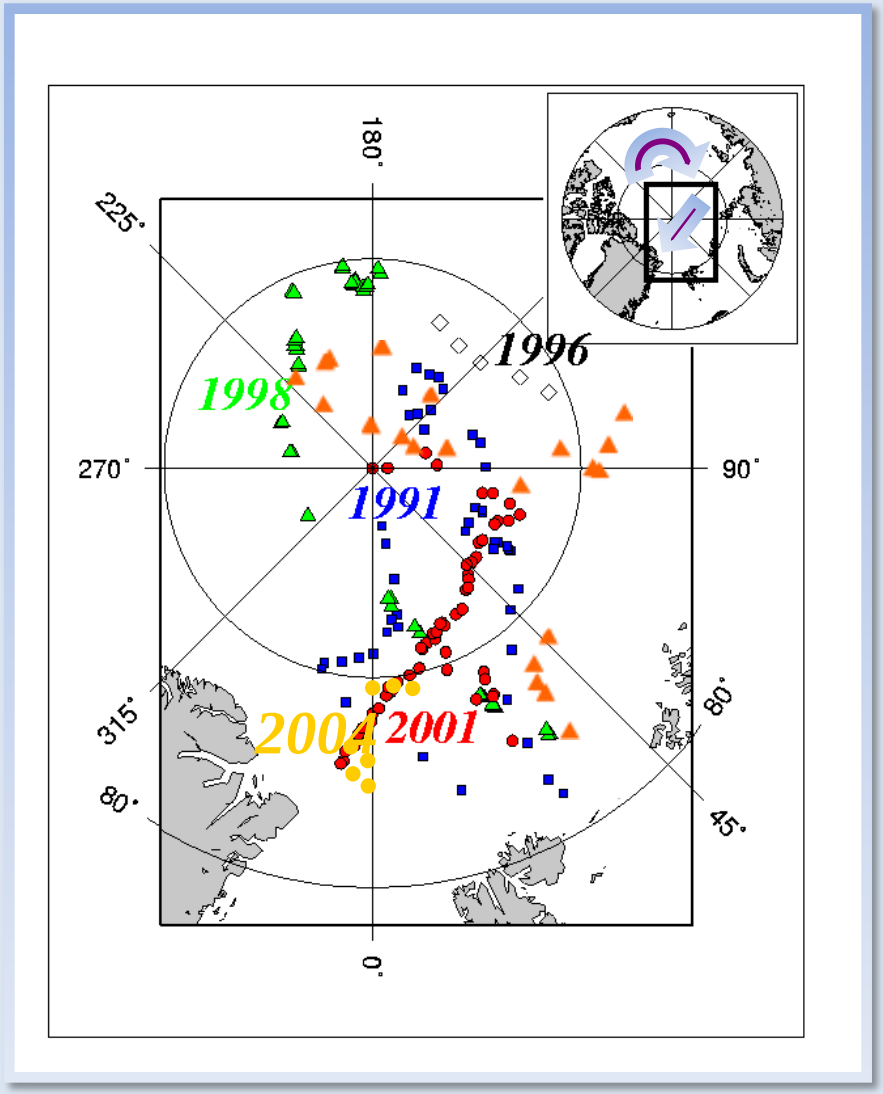


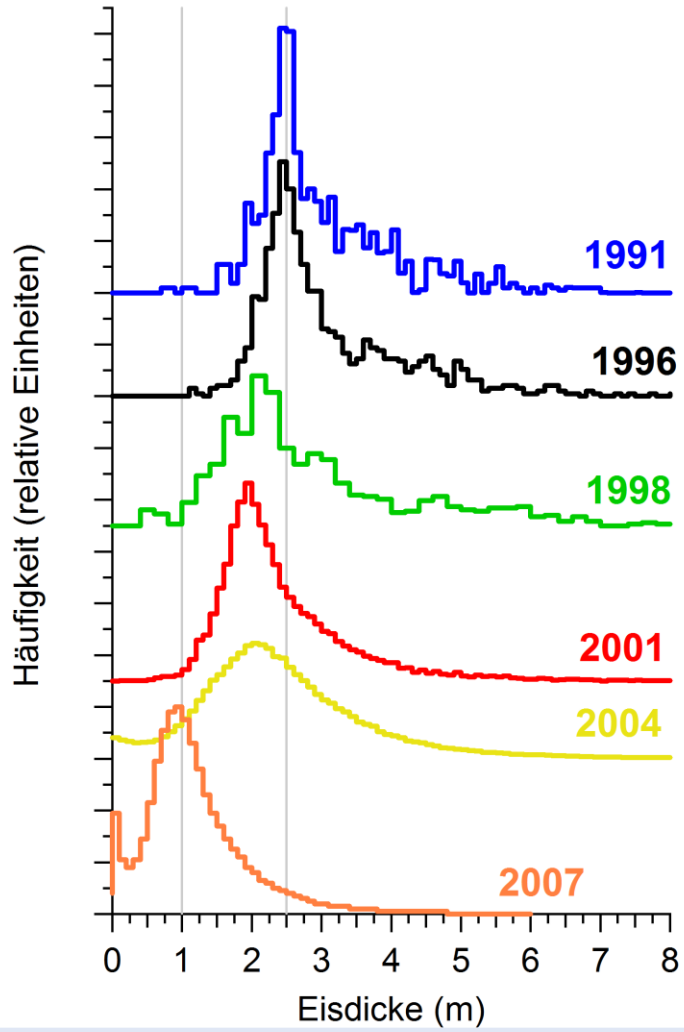
Thickness Distribution Variability

- 22 Flights with over 4000 km
- Modal Thickness ≤ 1 m
- Mean Thickness ~ 1.2 m
- No apparent second ice thickness class
- Uniform ice thickness distribution in Transpolardrift



Ice Thickness Transpolardrift: 1991 - 2007





Summary

- Spring Measurements
  - Marginal Seas (Beaufort Sea, Lincoln Sea)
    - Very variable, thicker ice in 2009 than 2008
  - Sea Ice Thinning in the central Arctic ?
    - Yes and No
- Summer Measurements
  - Reduction of modal thickness from 2 Meter to < 1 Meter
  - Very homogenous ice thickness distribution in the central Arctic
- More Systematic ice thickness measurements by aircraft utilization in the Arctic
  - Spring and Autumn campaign for the next 5 years in planning phase