Operations & Challenges of Ice Exercise 2018 (ICEX-18)

USN USCG NOAA

LT Emily Motz, USN
Science Dept. Head, U.S. National Ice Center
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Exercise Overview

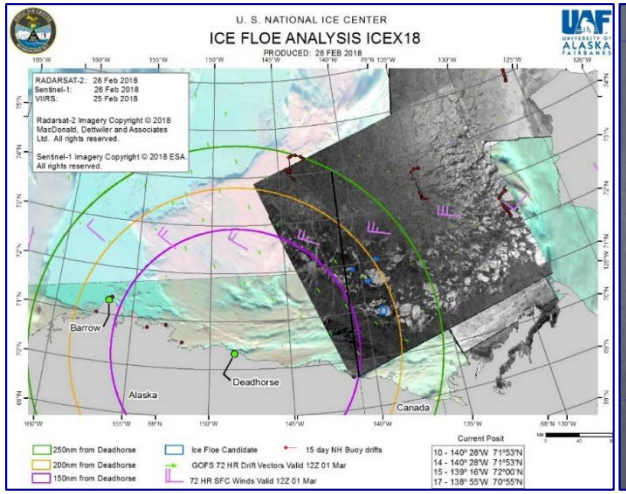
ICEX-18 Strategic Objectives

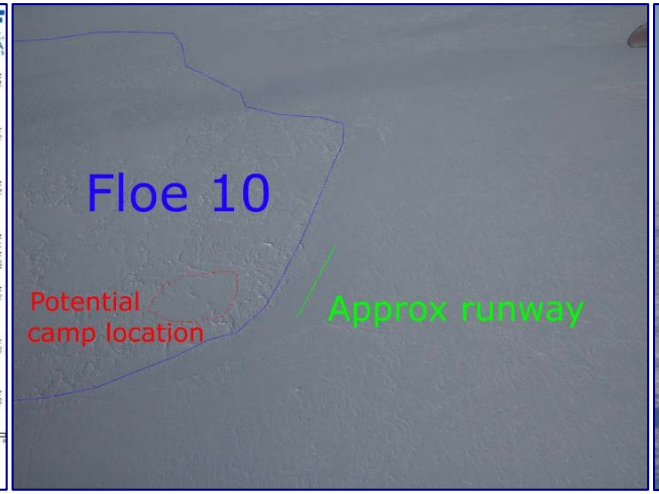
- **Submarine Force Readiness**
  - *Assured access and combat credibility by sustaining submarine readiness in the Arctic*
  - *Return of the UK to the Arctic (11 year absence)*
- **Arctic Engagement**
  - *Enhance coordination of national efforts in the Arctic*
  - *Support U.S. military and allied Arctic training requirements*

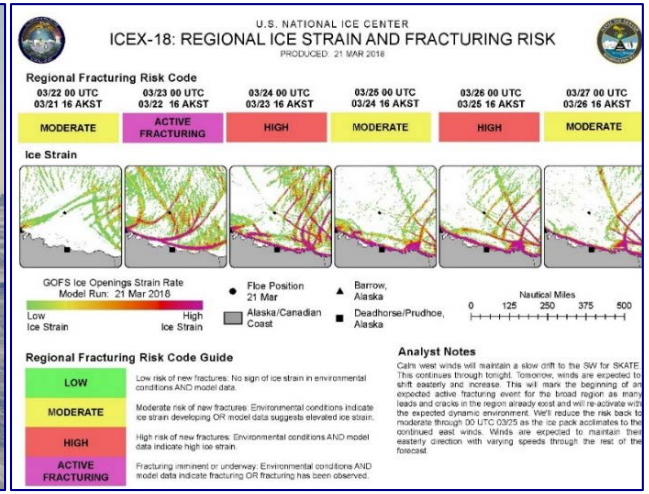
ICEX-18 Commander's Intent

- **Execute 14 days US/UK Submarine Tactical Development Exercise (TACDEVEX)**
  - *Conduct Exercise Torpedo Firings (TORPEX)*
  - *Conduct US/UK Submarine TACDEV*
- **Conduct Distinguished Visitor Strategic Engagements**
- **Pioneer Arctic Beaufort Sea Ice and Establish Drifting U.S. Navy Ice Camp**

Ice Camp Site Selection & Monitoring







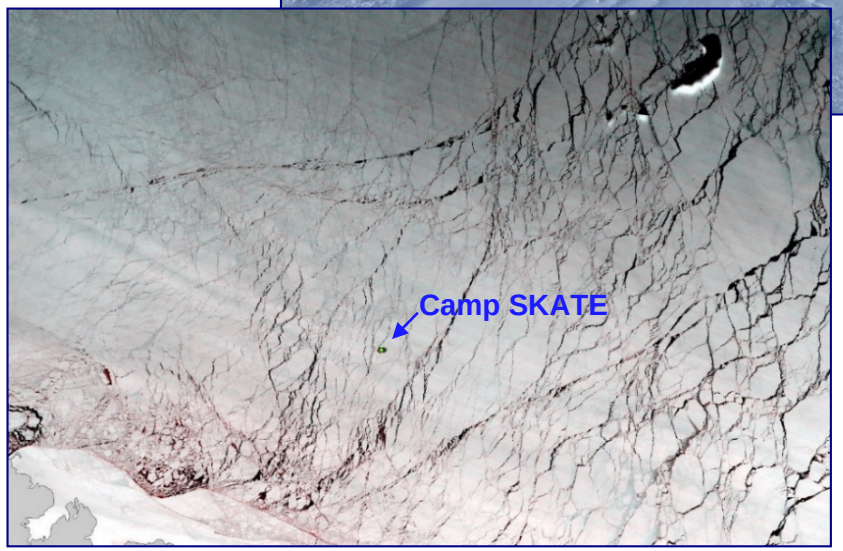
- **NAVICE/UAF began tracking multi-year ice floes in mid-Jan**
- **Aerial reconnaissance for visual observations and GPS beacon tagging in late-Feb**
- **Pioneering flights for ice core measurements & EM surveys**
- **Regional Ice Fracturing Risk Assessment**

<u>Ice floe criteria</u>: multi-year ice for camp operations co-located next to first-year ice for flight operations, 150-250NM range from Prudhoe Bay and west of 144°W

Ice Camp Site Selection & Monitoring Challenges

- **Goal #1: Measure snow and ice thickness <u>before</u> landing aircraft**
  - **Airborne or undersea sensor**

- **Goal #2: Predict risk of fracturing on a micro-scale, individual floe level**
  - **CRREL demonstrated ice stress and breakup monitoring system at Camp SKATE**
  - **Automate ice stress monitoring and give early warning of fracturing**
  - **Extend ice stress monitoring to site selection phase**



Equipment & Communications Challenges

- **Goal #1: Cold-resilient equipment**
  - Frost accumulation effected weather sensors
  - Blowing snow effected heaters
  - Condensation effected large Air-Beam shelters

- **Goal #2: Low cost, secure communications designed for cold weather & high latitude**
  - Iridium handheld phones antenna v. battery
  - Fixed antennas not designed for high latitude & drifting platform
  - Iridium Pilot is reliable, but slow and expensive

Questions & Comments

Command Duty Officer
nic.cdo@noaa.gov
nic.cdo@navy.smil.mil

Watch floor: (301) 817-3975
Cell phone: (301) 943-6077

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