

Norwegian Young Sea ICE cruise 2015



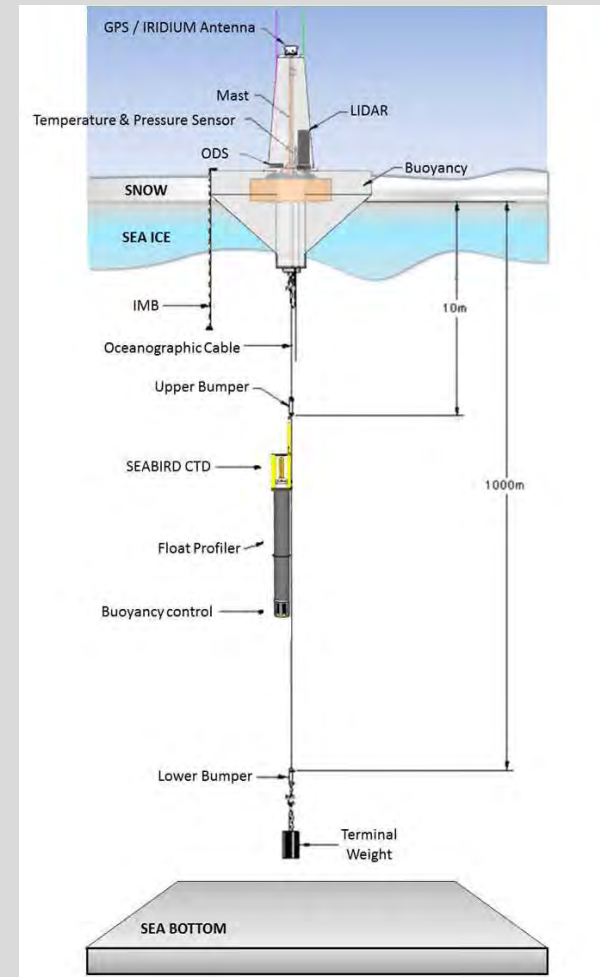
N-ICE2015

- Primary objective:
 - To understand the effects of the new thin, first year, sea ice regime in the Arctic on energy flux, ice dynamics and the ice associated ecosystem, and local and global climate.

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Collaboration

- ICE-ARC (BAS, EU) (IMB buoys, airplane campaign)
- NTNU – AMOS, SamCOT (ROV, UAV, sensor development)
- University of Bergen (UIB) (Deep ocean turbulence)
- iAOOS (Autonomous buoys , CTD, ice parameters and LIDAR)
- AWI (Radiosonde receiving eq. PhD)
- KOPRI (Radiosonde receiving eq.)
- AARI (UAV upper atmosphere measurements and high resolution images of sea ice.)
- FMI (Digitizing radar to measure with high resolution ice movement and deformations, IMB buoys, ice tress buoy)
- NORUT - CICC13 (UAV campaign)

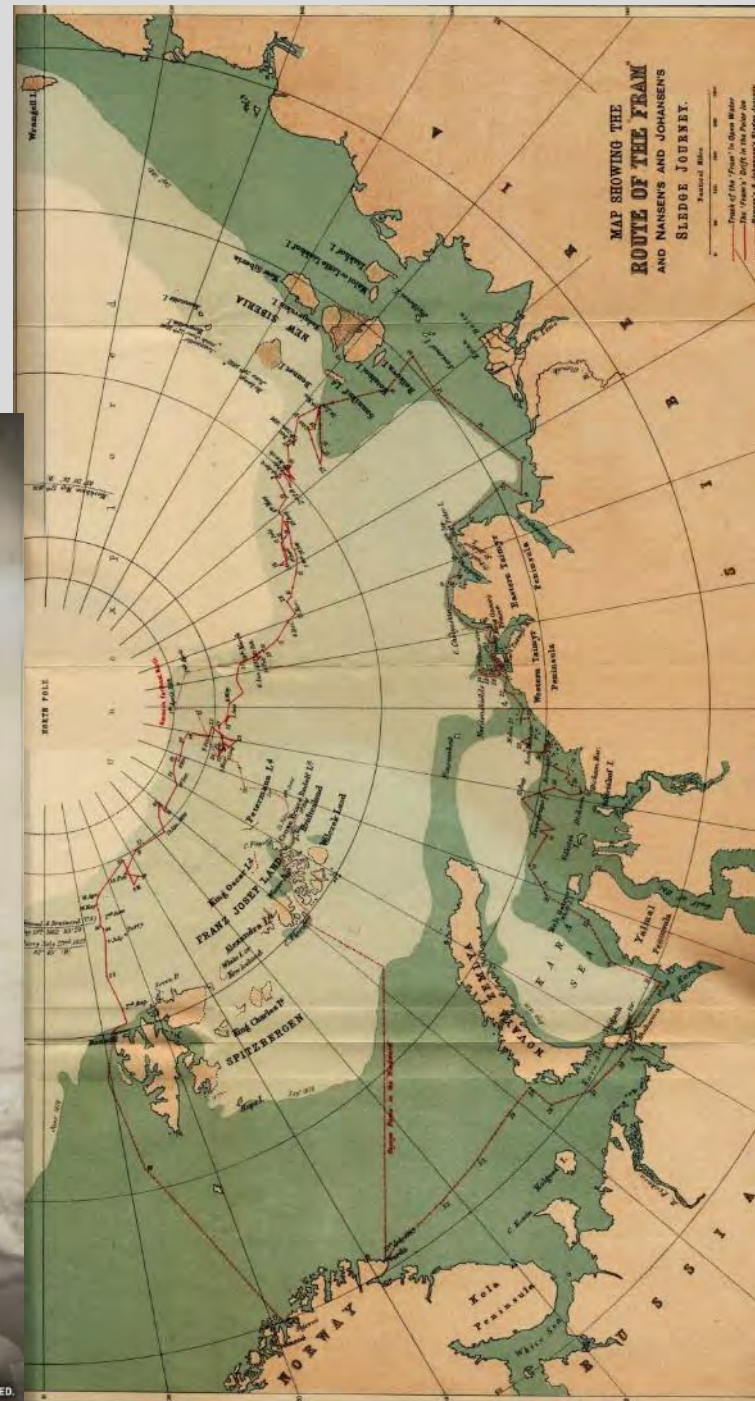




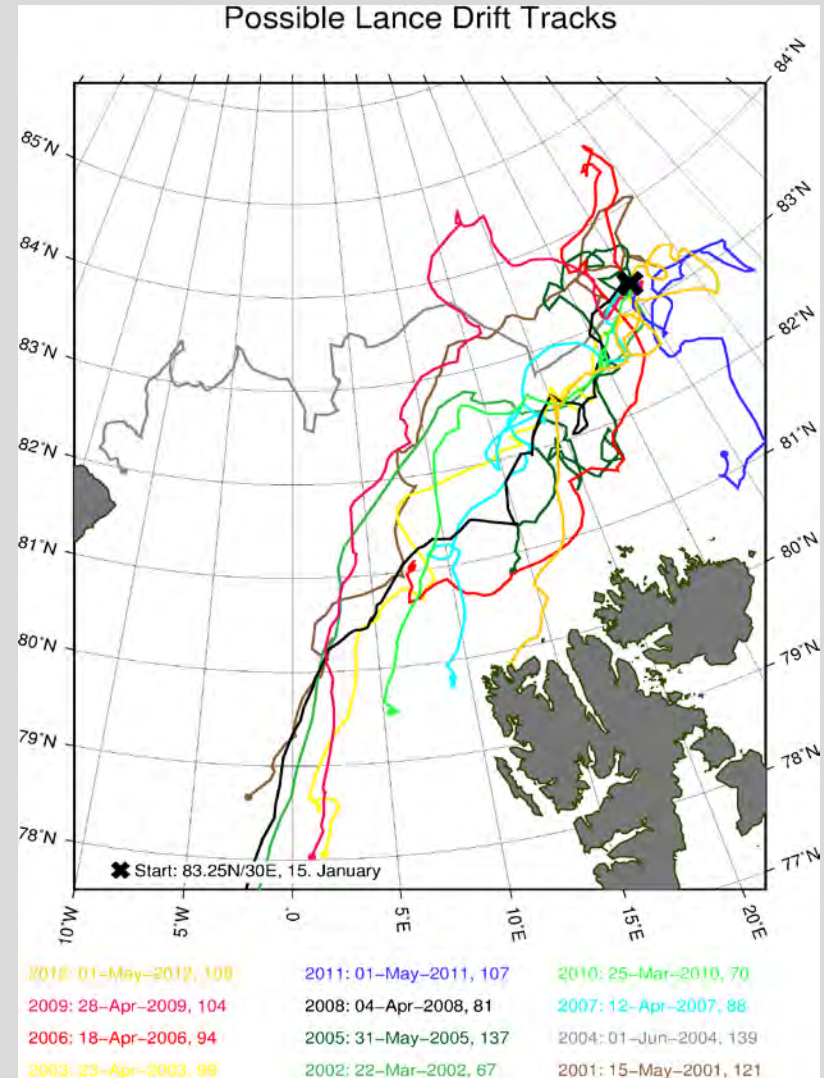
Nansen and the exploration of the north



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N-ICE2015: drift trajectories





Polar research vessel Lance



Norwegian Polar Institute



R/V Lance

- Launched in 1978 as a combined fishing and sealing vessel for arctic waters.
- Acquired by the Norwegian Hydrographic Service in 1981, rebuilt as a hydrographic survey vessel also suitable for research and expeditions



- Acquired by the Norwegian Polar Institute in 1994



Ship data

- Length 60,8 meter
- Width 12,6 meter
- Displacement 2370 tons
- Crew 9-10
- Up to 30 scientists





US Dept of State Geographer
© 2015 Google
Image Landsat
Image IB/AO

Bildedato: 4/10/2013 89° 38.681' N 133° 53.309' V elevas

Icebreaker assistance from NoCGV Svalbard



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Super-site – WP1 & WP2 observations from ice

Main instrument setups on ice (not in scale)

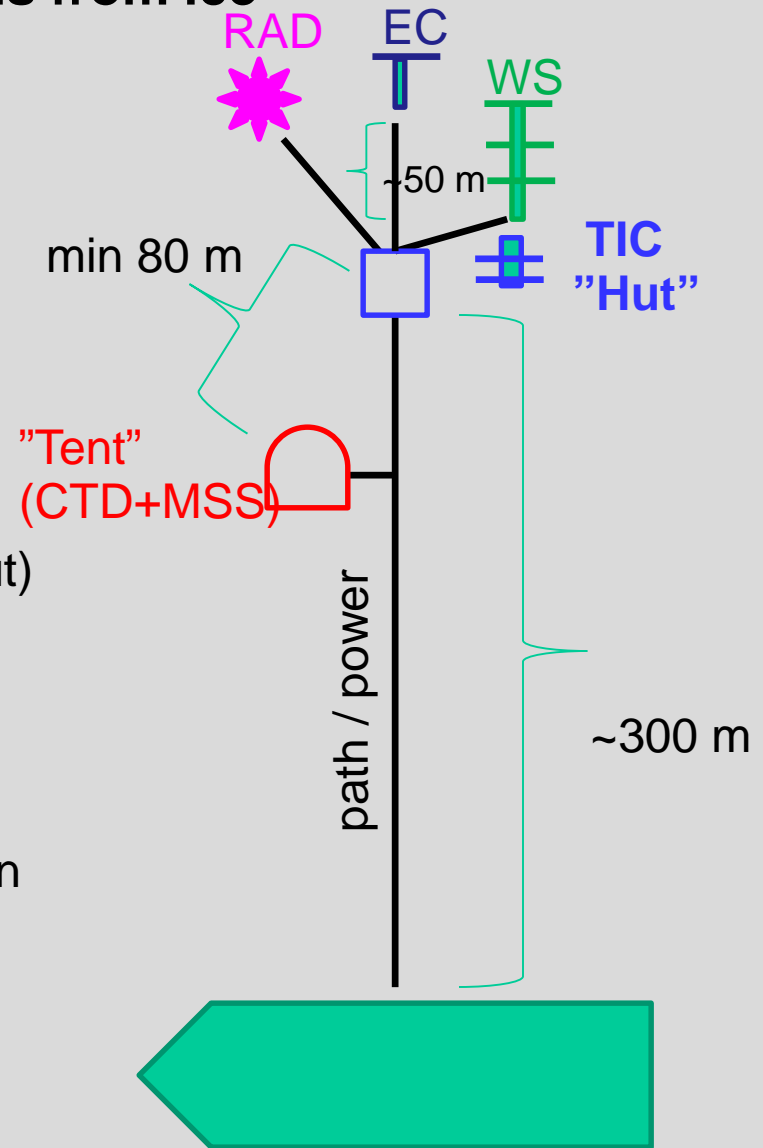
CTD/MSS tent

- MSS profiler with winch, logging (WP1)
- CTD & rosette/Niskin (WP1,2,5)
- a-sphere* (optics profiler, WP2)
- Winch(es) & Heater & power

TIC hut + vicinity (WP1)

- TIC - Turbulence cluster (loggers inside hut)
- ACDP(s)
- TS-string / profiler
- pCO₂-sensor (WP5)
- Heater & power

- WS** - Weather station 10 m mast & radiation
- EC** - Eddy covariance system 3 m mast – atmosphere (radiation+CO₂ flux)
- RAD** radiation (spectral and integrated SW/LW sensors – incident & reflected, transmitted SW)
- IMB? (WP3)





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Remote camp

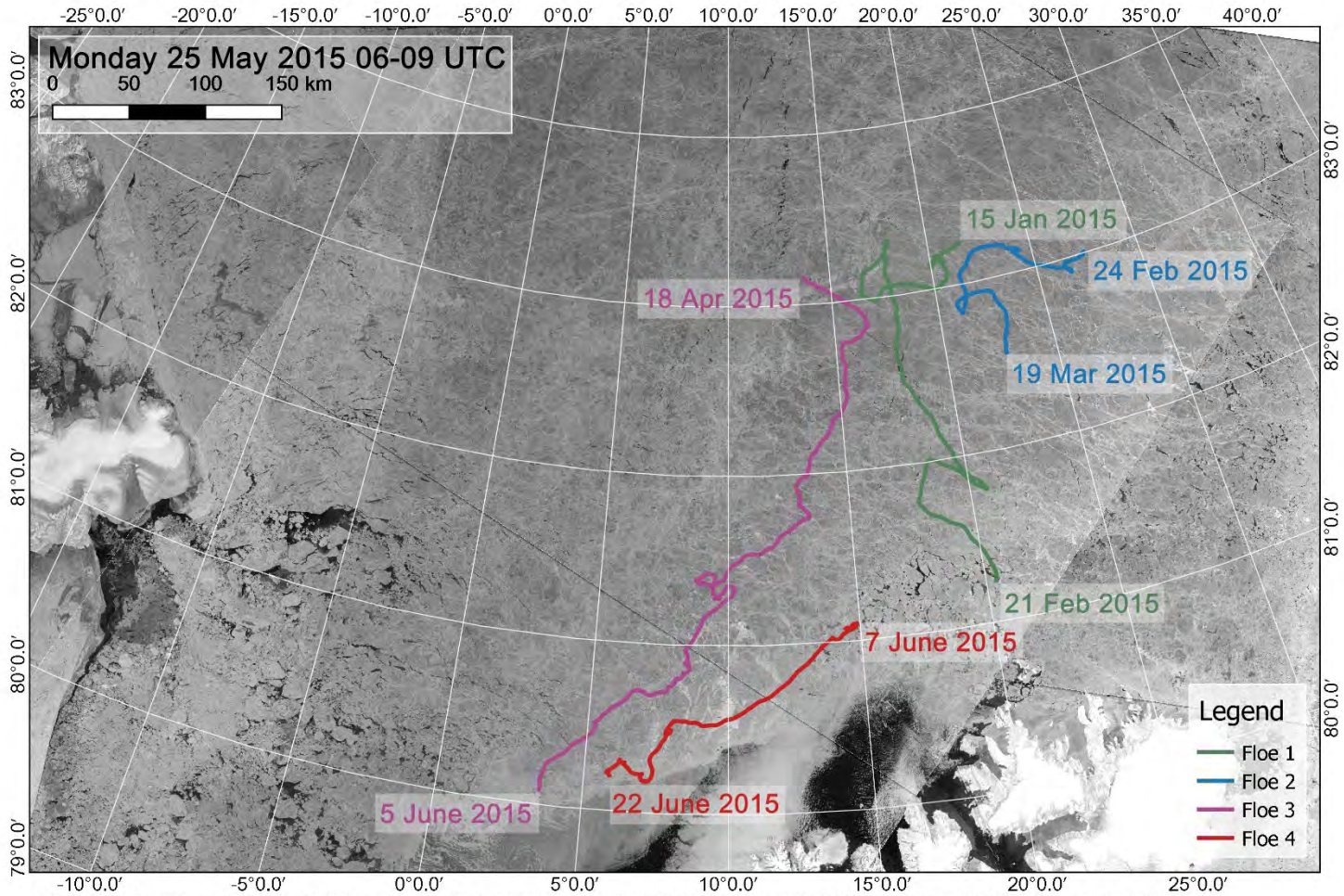


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Crew rotation using helicopters



Drift paths

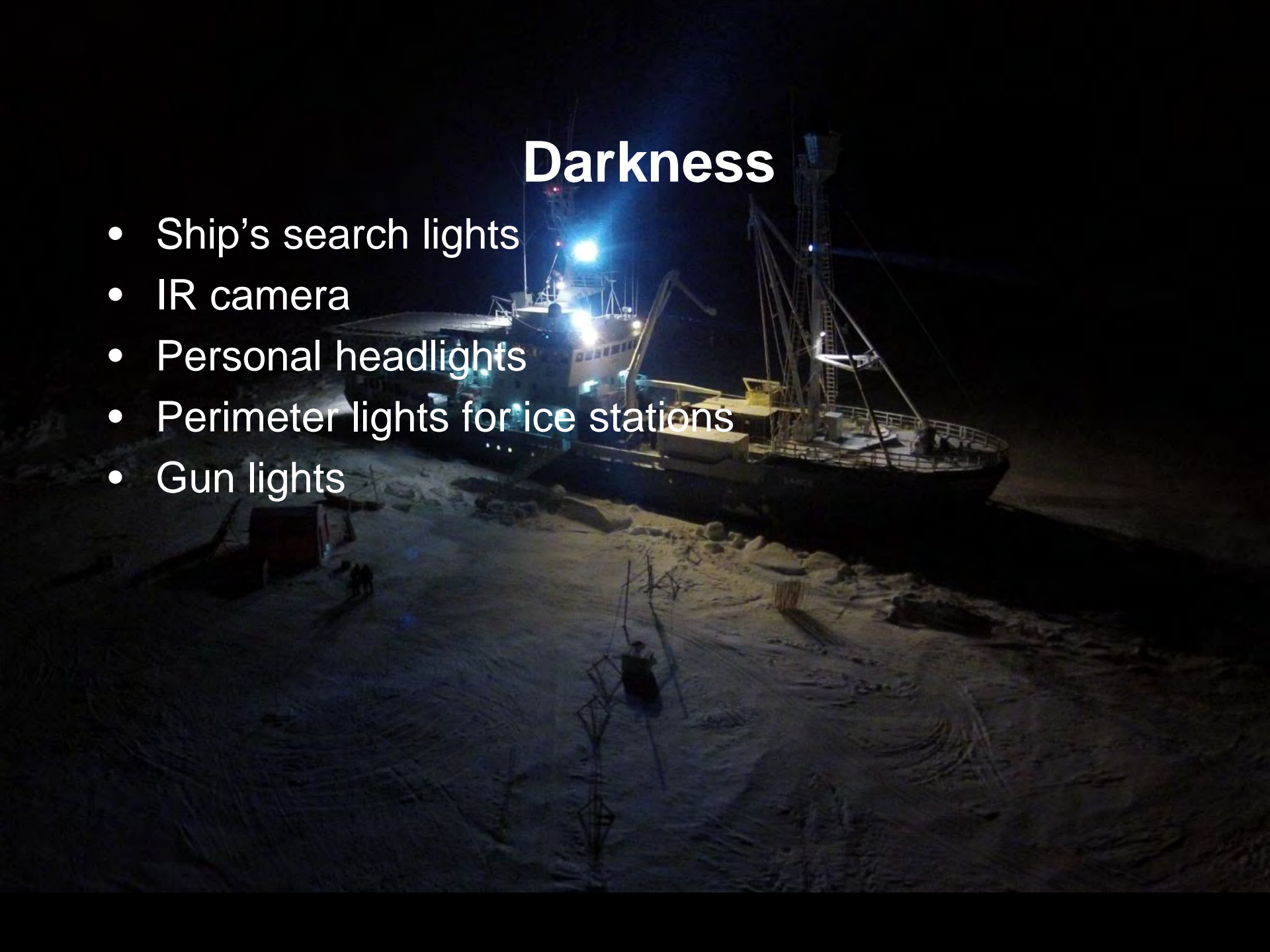


RADARSAT-2 images provided by NSC/KSAT under the Norwegian-Canadian RADARSAT agreement 2013 © MacDonald, Dettwiler and Associates.

Map created by the Norwegian Polar Institute / Max König

Darkness

- Ship's search lights
- IR camera
- Personal headlights
- Perimeter lights for ice stations
- Gun lights



Weather



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Temperature



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Ice conditions



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Ice conditions



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Ice conditions



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Ice conditions



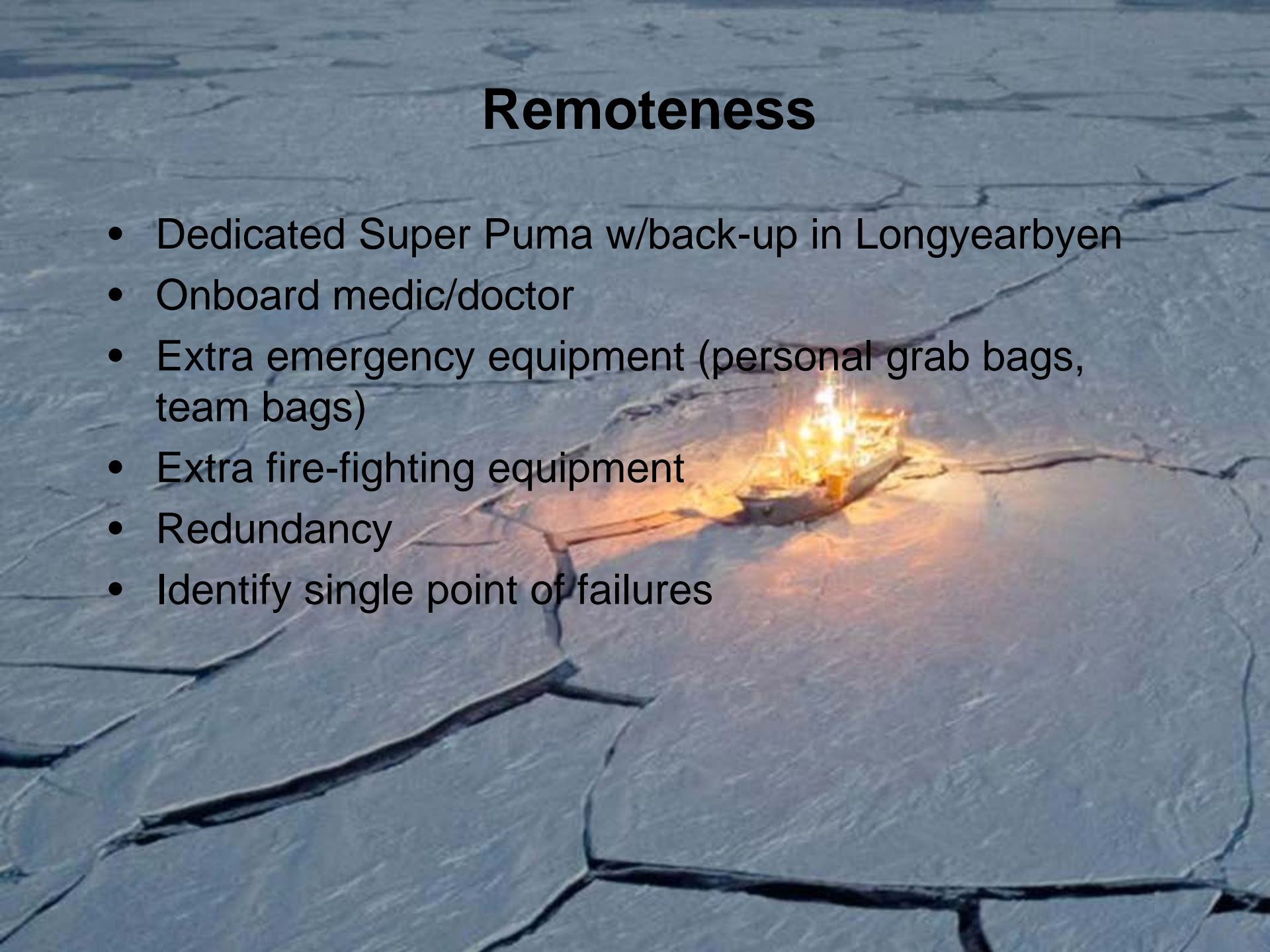
Polar bears



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Remoteness

- Dedicated Super Puma w/back-up in Longyearbyen
- Onboard medic/doctor
- Extra emergency equipment (personal grab bags, team bags)
- Extra fire-fighting equipment
- Redundancy
- Identify single point of failures



Questions?

