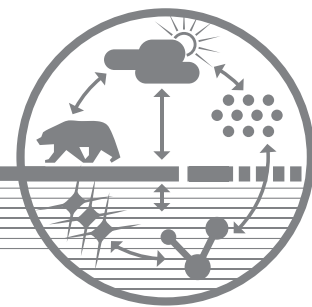


MOSAIC

International
Arctic Drift
Expedition

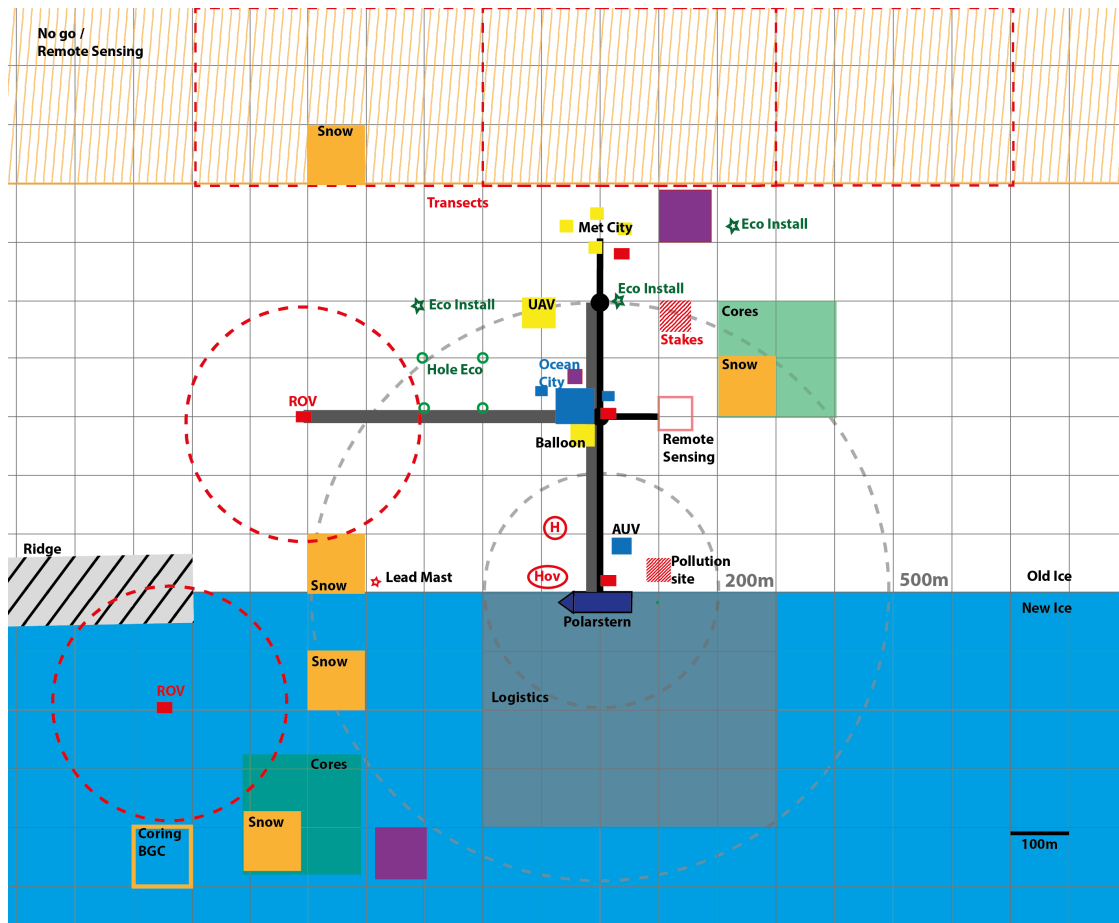


Floe Navigation System

M. Nicolaus

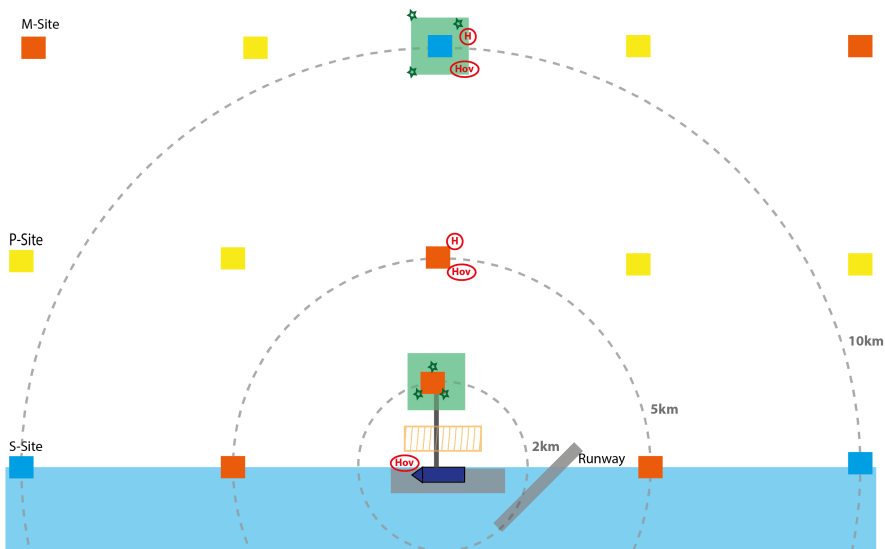
The main floe

- Restricted areas
- Huts and installations
- Power and network
- Ice conditions



Close distributed network

- Additional sites in vicinity (<10km)



Floe Navigation System

- Requirements (science)

- Orientation and navigation in fixed coordinate system
- (relative) Position of installations and sites
- Registration of measurements and samples
=> Link to D-SHIP data base

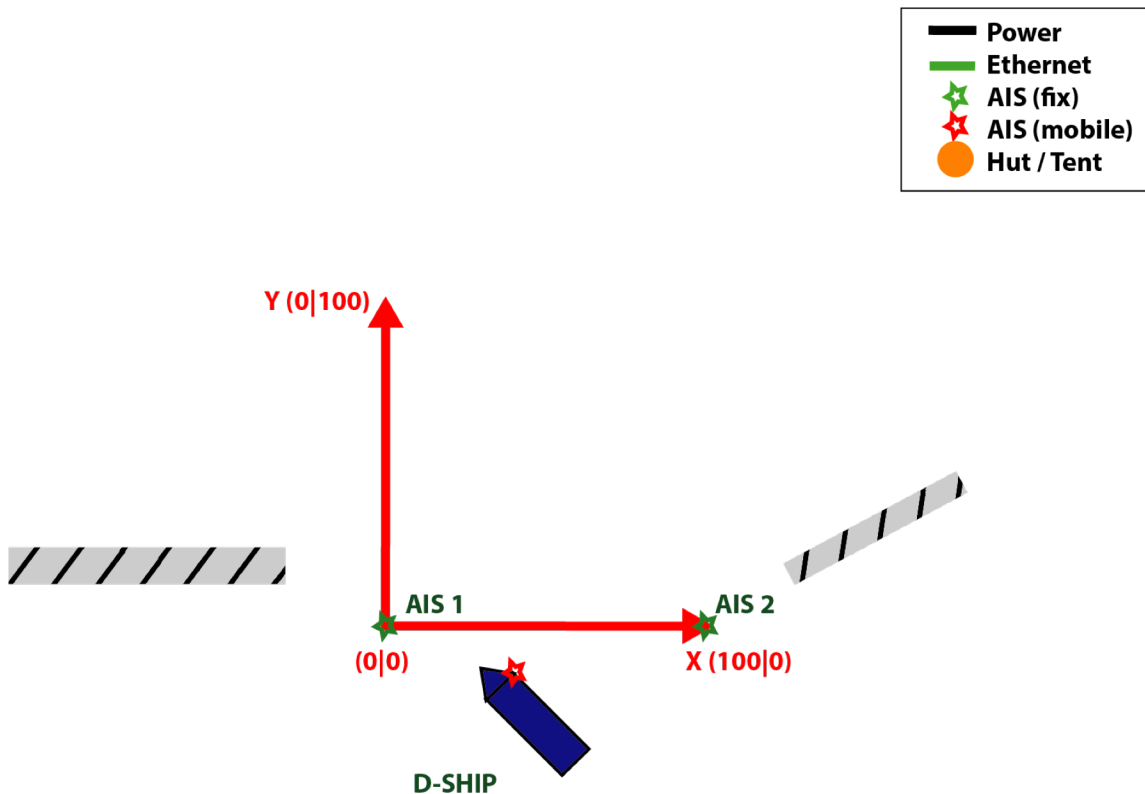
- Benefits

- Increasing safety
- Documentation of movements
- Easing documentation

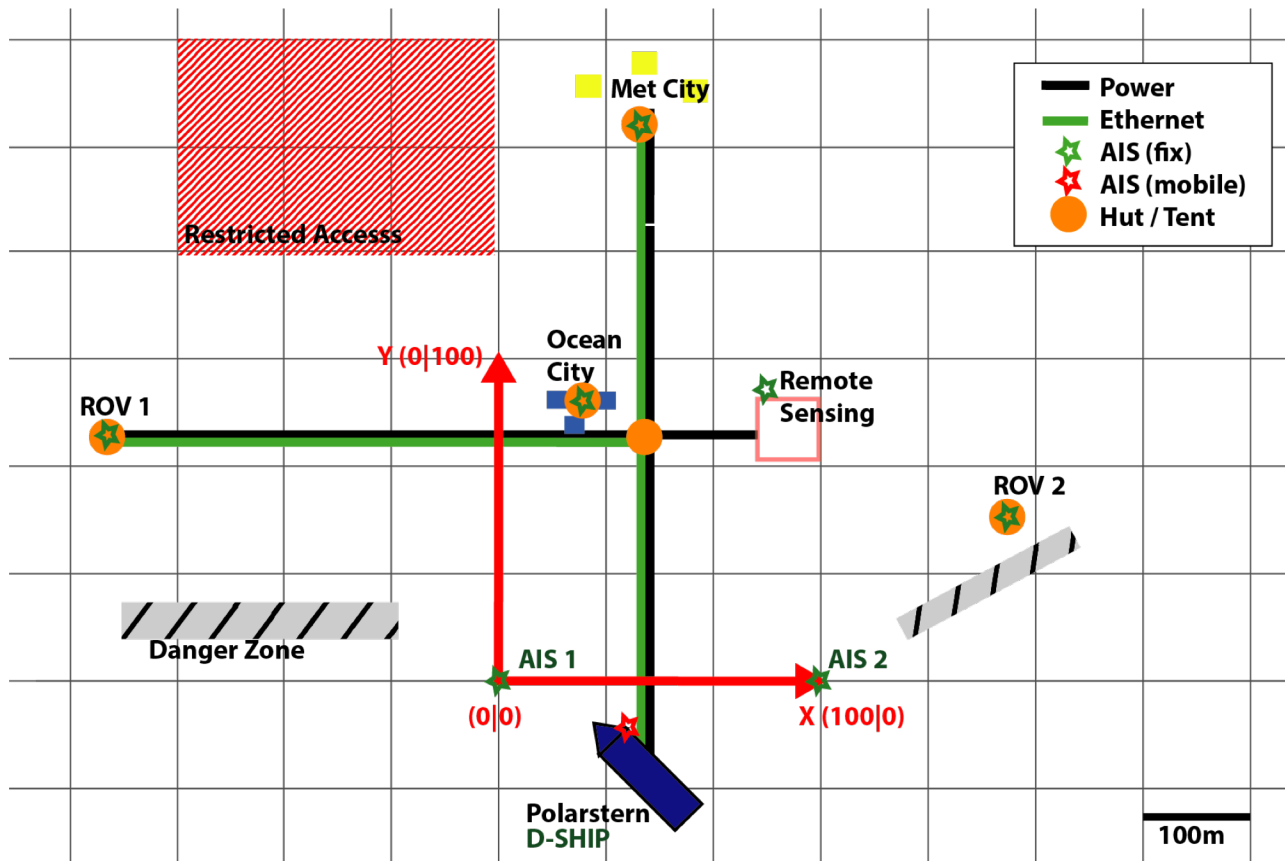
- Concept

- Based on AIS transponders
 - FIX stations on the ice
 - Mobile units
- Tablet devices with map view
- Main unit on board
- Independence of single units

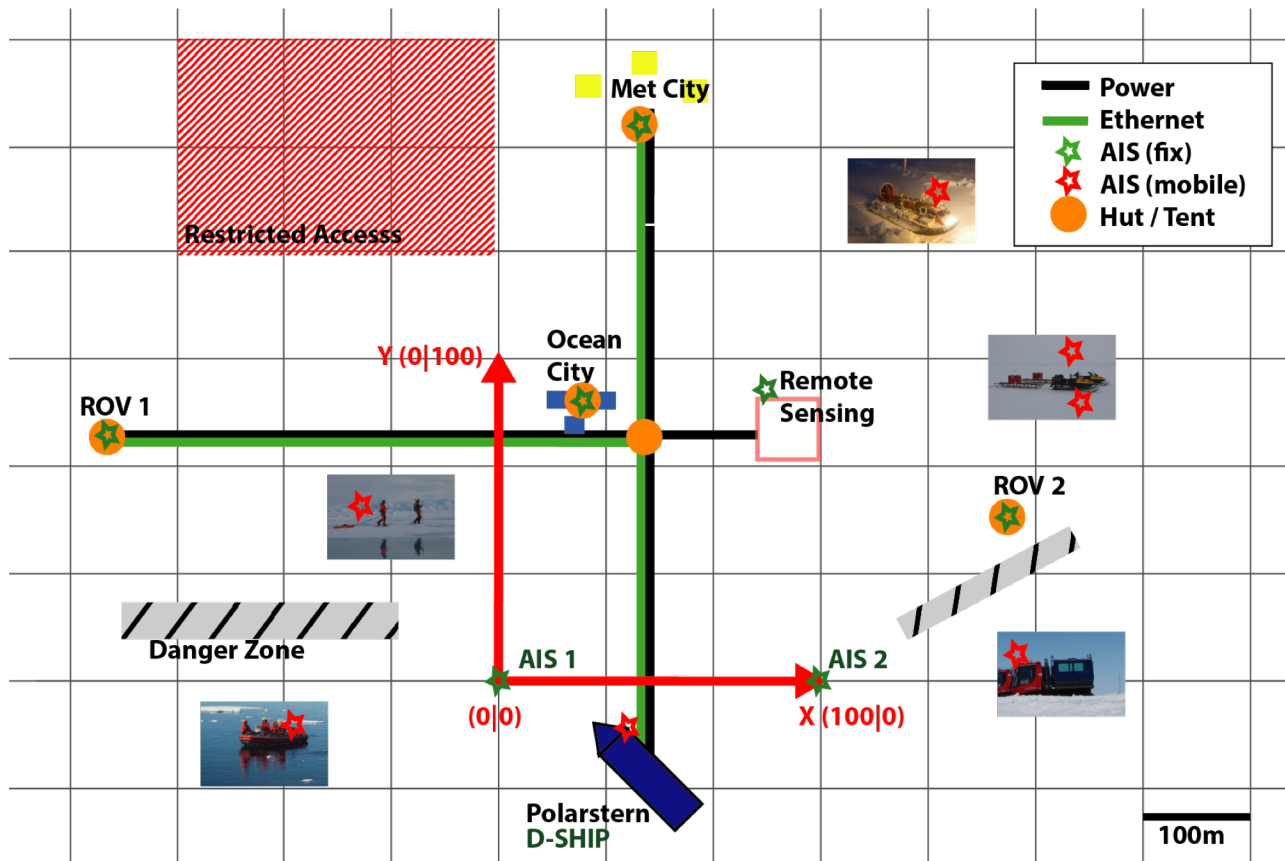
Floe Navi Concept - Setup



Floe Navi Concept – FIX stations



Floe Navi Concept - mobile units



Floe Navigation System

- Components

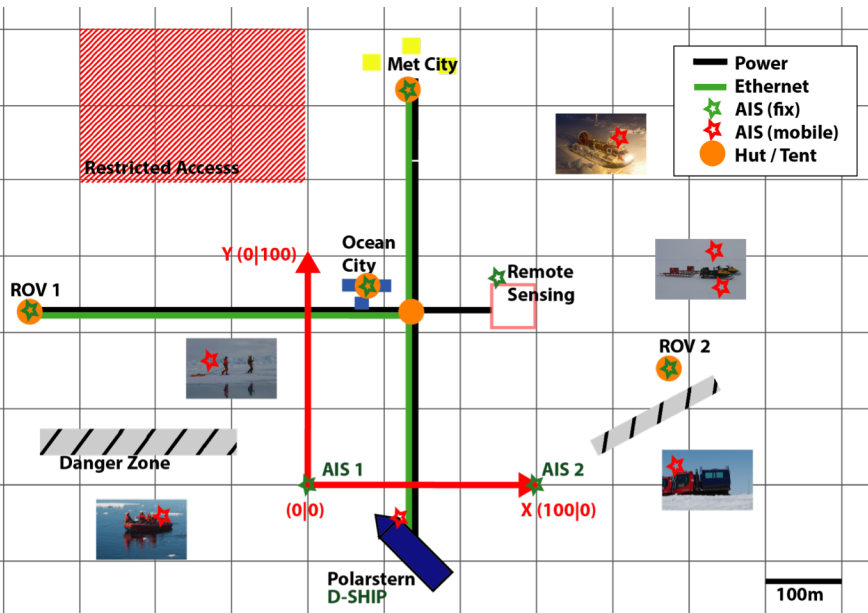
- Some 7 FIX stations
- Some 12 mobile stations
- Some spare AIS

- Accuracy 1-2 m

- Update rate 10s (interpolated)

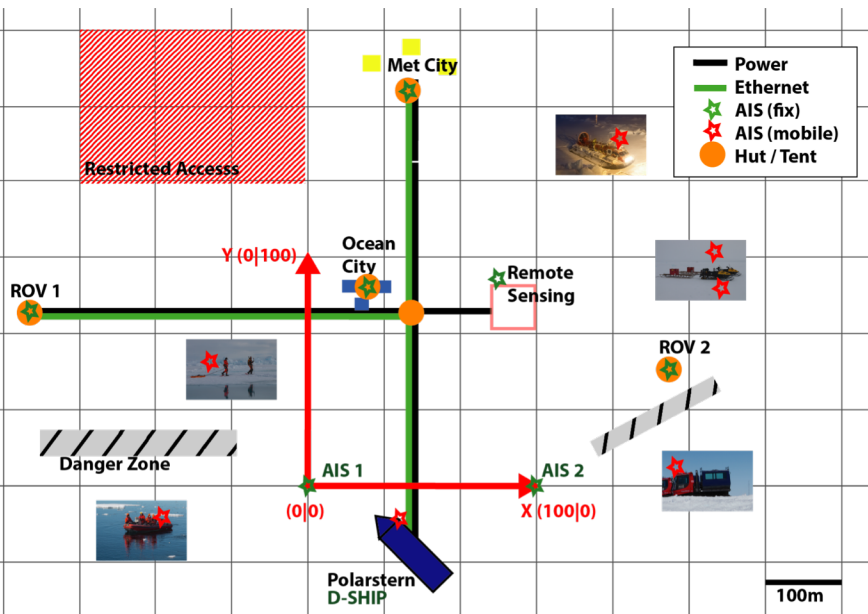
- Data base

- Waypoints
- Areas



Floe Navigation System - Functions

- User interface (GUI)
 - Show own position and all AIS positions
 - Navigation view (“go to”)
 - Display alarms
- Alarms / Checks
 - Movements of FIX stations (maintaining the coordinate system)
- Deployments
- Measurements and sampling
 - Device (linked to sensor web)
 - Action (from list)
 - Label (incl. bar codes)



Floe Navigation System - Operations

- Users

- All scientists
- Included in snow/ice training

- System administration

- Data person on board
- Regular synchronization on board

