

Photographs of the sea ice surface taken at albedo measurement sites during the CONTRASTS campaign in the Central Arctic Ocean and Fram Strait

Data abstract:

Photos of the sea ice surface were taken coincident with albedo measurement sites during the CONTRASTS expedition. During July – August 2025, repeat visits were made to sea ice floes representative of first-year, deformed first-year, and multi-year sea ice. Four types of albedo collections were made: (1) every 5 meters along “transects” 65-200 meters in length often colocated with other field measurements, (2) at specific “library” sites of sea ice conditions of interest, (3) at “experiment” sites where the surface was manually manipulated, and (4) at “colocated” sites coordinated with other field measurement collections. Transects were established along representative surface conditions of the floe, including melt ponds, bare sea ice, snow-covered sea ice, and local topography (e.g., rafted ice), taking into account co-location with other measurements and logistical feasibility.

Data contents:

This dataset consists of .jpg files of albedo measurement sites. The naming structure is contrasts-\$DATE-r\$FV-\$SITE-\$POS-\$REP-\$PHOTOTYPE

- \$DATE: date formatted as YYYYMMDD
- \$FV: floe and visit, i.e. 1b for the second visit to floe 1 and 3d for the fourth visit to floe 3. This matches CONTRASTS conventions, where floe 1 was first-year ice, floe 2 was deformed ice, and floe 3 was multi-year ice. See the maps below for visualization.
- \$SITE: name of measurement site or type of measurements.
 - For transects, this is formatted as R\$F_nameTransect where \$F is the floe number. Transects are marked on the floe maps provided below.
 - Other sites are named with the surface type and measurement collection mode (colocated, experiment, or library).
- \$POS: position of measurement, matching position name in albedo data files. If the position is a numerical value, three digits are used.
- \$REP: repetition count, starting at 1.
- \$PHOTOTYPE: ‘oblique’ or ‘fisheye’.

Field collection

Two kinds of photos were collected. Oblique photos were taken using a handheld camera capturing the measurement position, using various cameras over the course of

the expedition. Fisheye photos were taken using a remotely-triggered camera mounted on the spectral albedo wand and capture the footprint of albedo measurements. The fisheye photos were collected with a GoPro HERO13 Black equipped with a Max Lens Mod 2.0 (177° field of view). The camera was set to record the full frame, hence the images contain the black corners surrounding the lens opening. All fisheye photos were taken with the same white balance (the GoPro's "Native"), high sharpness, no exposure value compensation, the camera's "Natural" color setting, and ISO 400. The camera's default automatic shutter was used to handle varying light conditions.

Individuals associated with the data:

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Funding information:

Nora Greenwood was supported by the National Science Foundation Graduate Research Fellowship program, award DGE-2140004. Melinda Webster was supported by the National Science Foundation's Arctic System Science program OPP-2325430 and Office of Naval Research award N00014-23-1-2484. Bonnie Light was supported by the National Science Foundation's Arctic System Science program, award OPP-2143547. Don Perovich and Savannah Byron were supported by the Irving Institute, Seed Grant Program, Dartmouth College. David Clemens-Sewall was supported by the National Science Foundation's Arctic System Science program, award OPP-2138787.

These data were produced as part of the international Polarstern CONTRASTS expedition (also named PS149, ArcWatch-3). We thank all persons involved in the expedition of the research vessel Polarstern during CONTRASTS in 2025 (AWI_PS149_00).

Appendix:

Figure 1: Example fisheye (left) and oblique (right) photographs of the sea ice surface. Both photos were taken at the 65m mark of R2_opticsTransect on July 30, 2025.

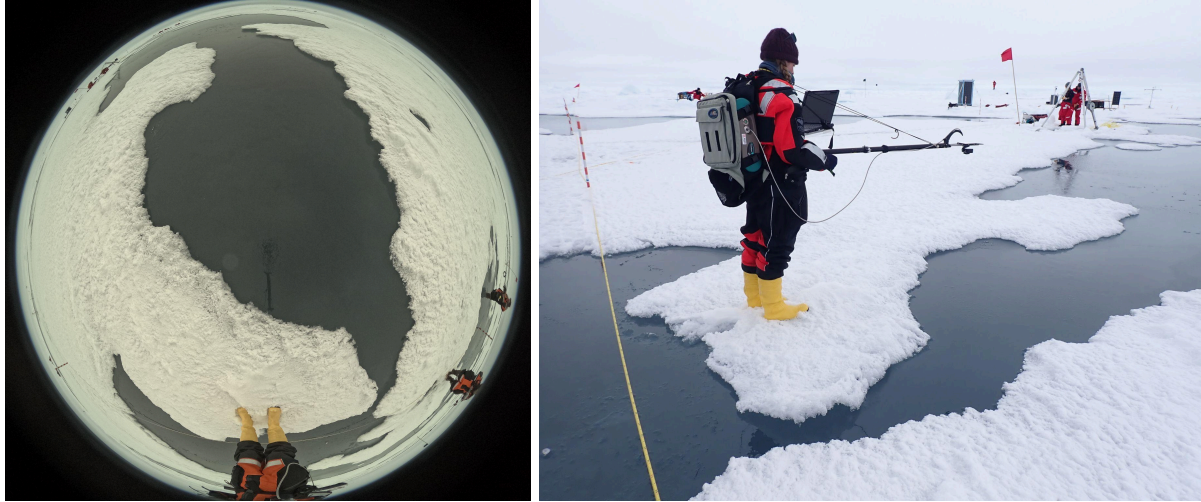


Table 1: List of transects measured on each floe and visit.

	Floe 1	Floe 2	Floe 3
Visit a	R1_mainATransect	R2_mainTransect R2_opticsTransect R2_raftedIceTransect	R3_mainTransect R3_opticsTransect
Visit b	R1_mainBTransect R1_opticsBTransect	R2_mainTransect R2_opticsTransect R2_raftedIceTransect	R3_mainTransect R3_opticsTransect
Visit c	R1_mainCTransect R1_opticsBTransect	R2_raftedIceTransect R2_tTransect	R3_mainTransect R3_opticsTransect
Visit d		R2_raftedIceTransect R2_tTransect	R3_mainTransect R3_opticsTransect

Figure 2: Locations of albedo measurements during floe 1 visit a. Transects are marked with a dot at the beginning and an arrow pointing towards the end. Surveys are marked with dotted lines, with arrows to indicate direction. Point measurements are marked with dots. Drone image provided by Torben Blei.

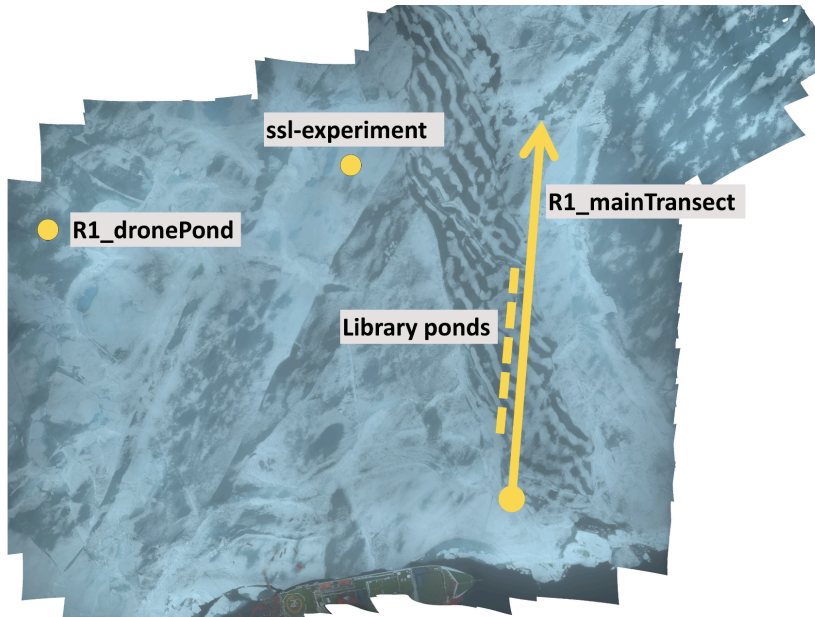


Figure 3: Locations of albedo measurements during floe 1 visit b. Transects are marked with a dot at the beginning and an arrow pointing towards the end. Surveys are marked with dotted lines, with arrows to indicate direction. Point measurements are marked with dots. Drone image provided by Torben Blei.

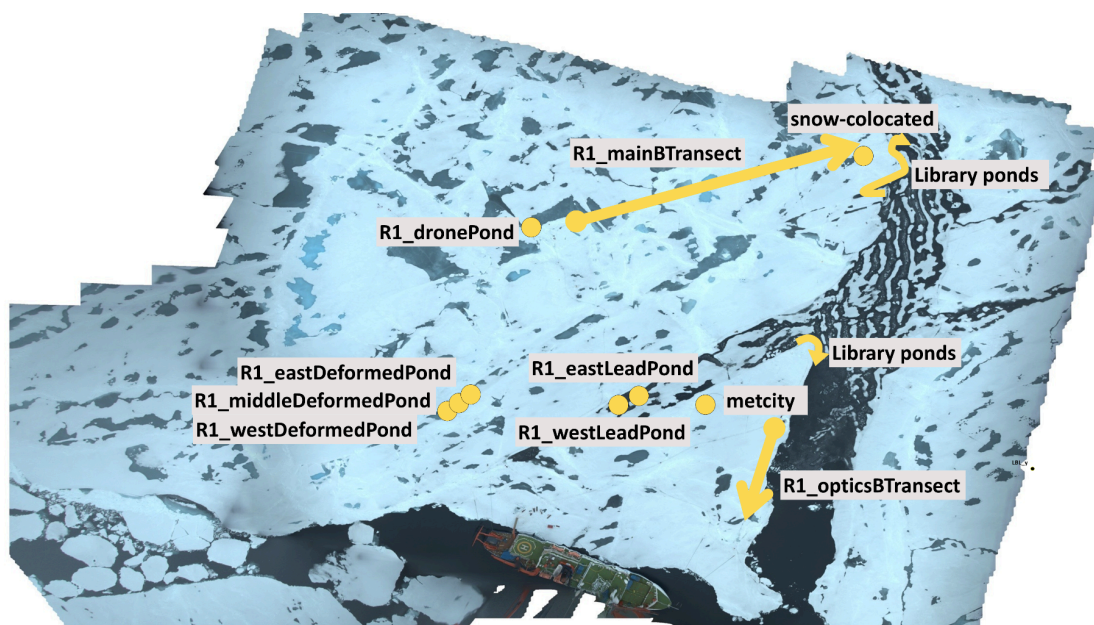


Figure 4: Locations of albedo measurements during floe 1 visit c. Transects are marked with a dot at the beginning and an arrow pointing towards the end. Surveys are marked with dotted lines, with arrows to indicate direction. Point measurements are marked with dots. Drone image provided by Torben Blei.

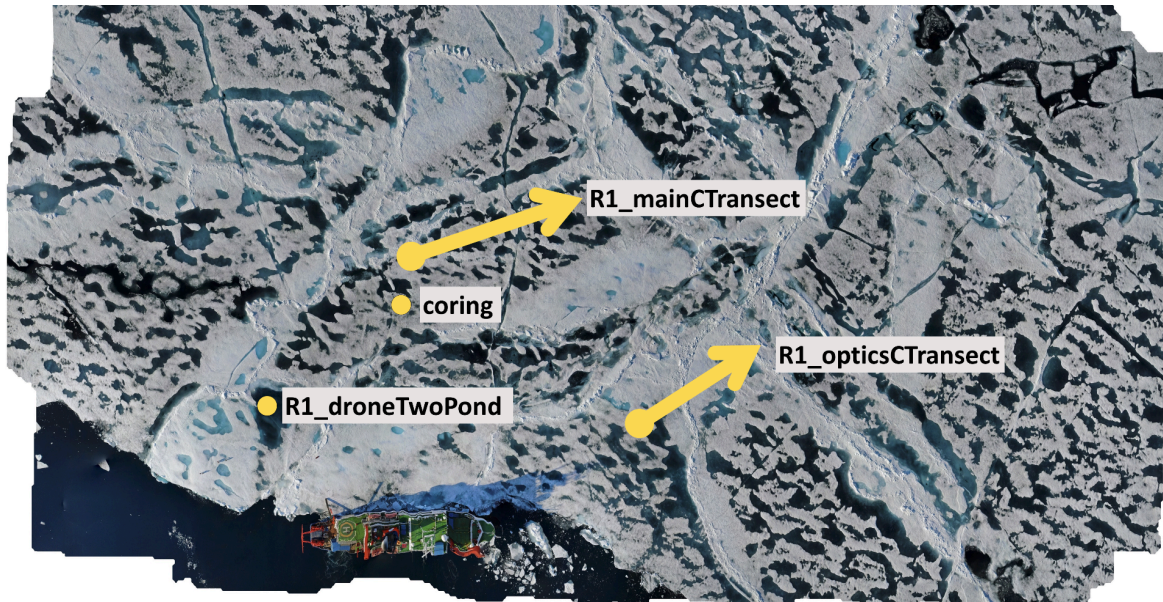


Figure 5: Locations of albedo measurements during floe 2 visit a. Transects are marked with a dot at the beginning and an arrow pointing towards the end. Surveys are marked with dotted lines, with arrows to indicate direction. Point measurements are marked with dots. Drone image provided by Torben Blei.

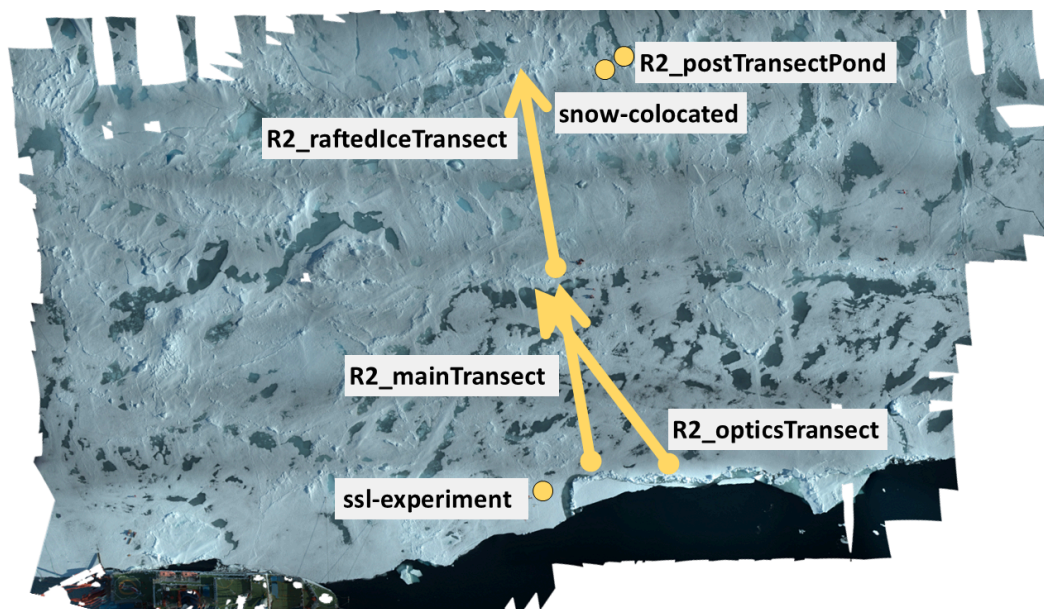


Figure 6: Locations of albedo measurements during floe 2 visit b. Transects are marked with a dot at the beginning and an arrow pointing towards the end. Surveys are marked with dotted lines, with arrows to indicate direction. Point measurements are marked with dots. Drone image provided by Torben Blei.

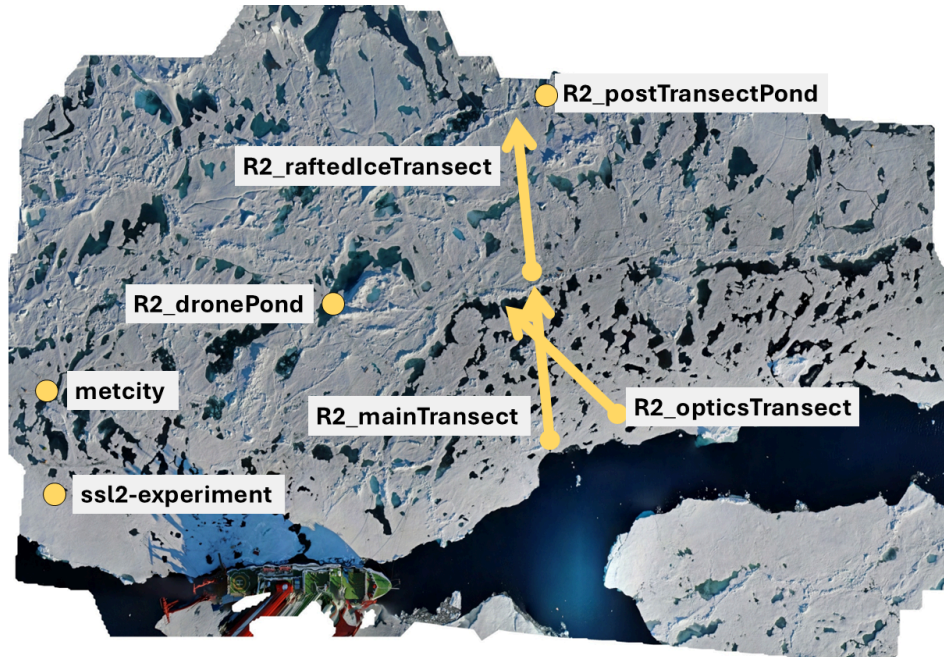


Figure 7: Locations of albedo measurements during floe 2 visit c. Transects are marked with a dot at the beginning and an arrow pointing towards the end. Surveys are marked with dotted lines, with arrows to indicate direction. Point measurements are marked with dots. Drone image provided by Torben Blei.

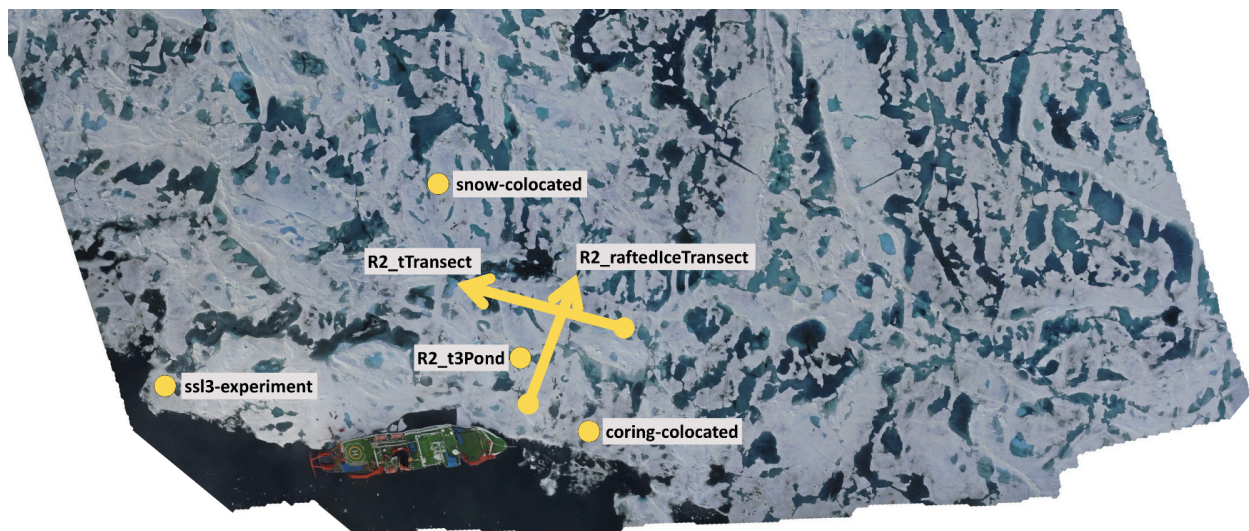


Figure 8: Locations of albedo measurements during floe 2 visit d. Transects are marked with a dot at the beginning and an arrow pointing towards the end. Surveys are marked with dotted lines, with arrows to indicate direction. Point measurements are marked with dots. Drone image provided by Torben Blei.



Figure 9: Locations of albedo measurements during floe 3 visit a. Transects are marked with a dot at the beginning and an arrow pointing towards the end. Surveys are marked with dotted lines, with arrows to indicate direction. Point measurements are marked with dots. Drone image provided by Torben Blei.

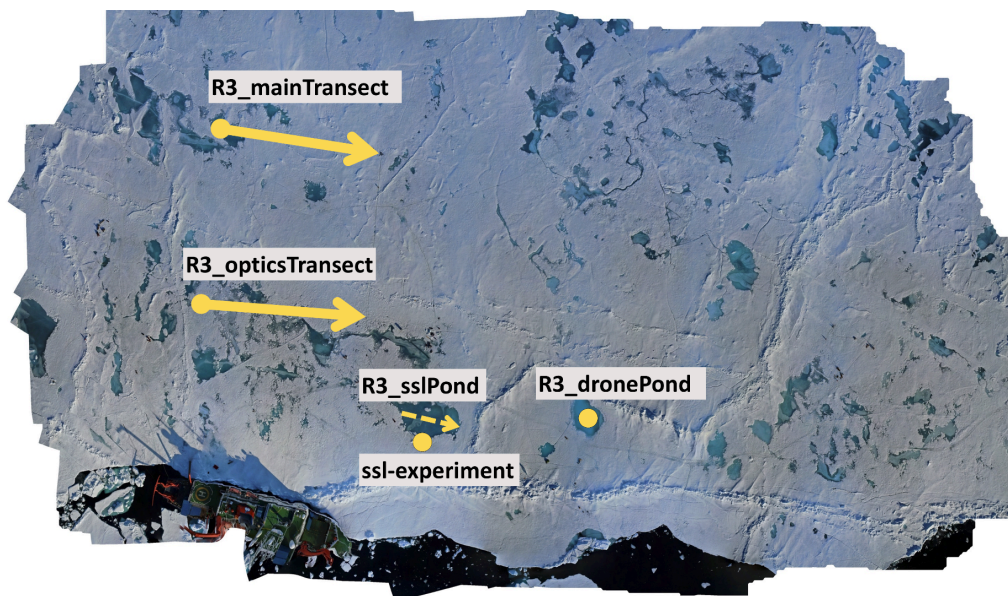


Figure 10: Locations of albedo measurements during floe 3 visit b. Transects are marked with a dot at the beginning and an arrow pointing towards the end. Surveys are marked with dotted lines, with arrows to indicate direction. Point measurements are marked with dots. Drone image provided by Torben Blei.

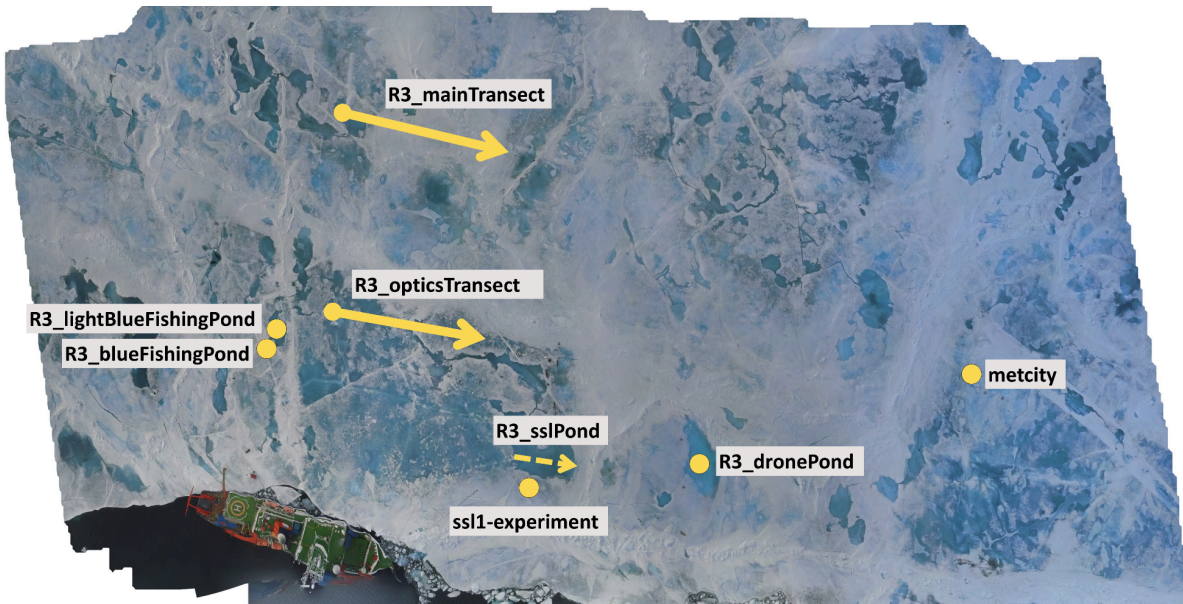


Figure 11: Locations of albedo measurements during floe 3 visit c. Transects are marked with a dot at the beginning and an arrow pointing towards the end. Surveys are marked with dotted lines, with arrows to indicate direction. Point measurements are marked with dots. Drone image provided by Torben Blei.

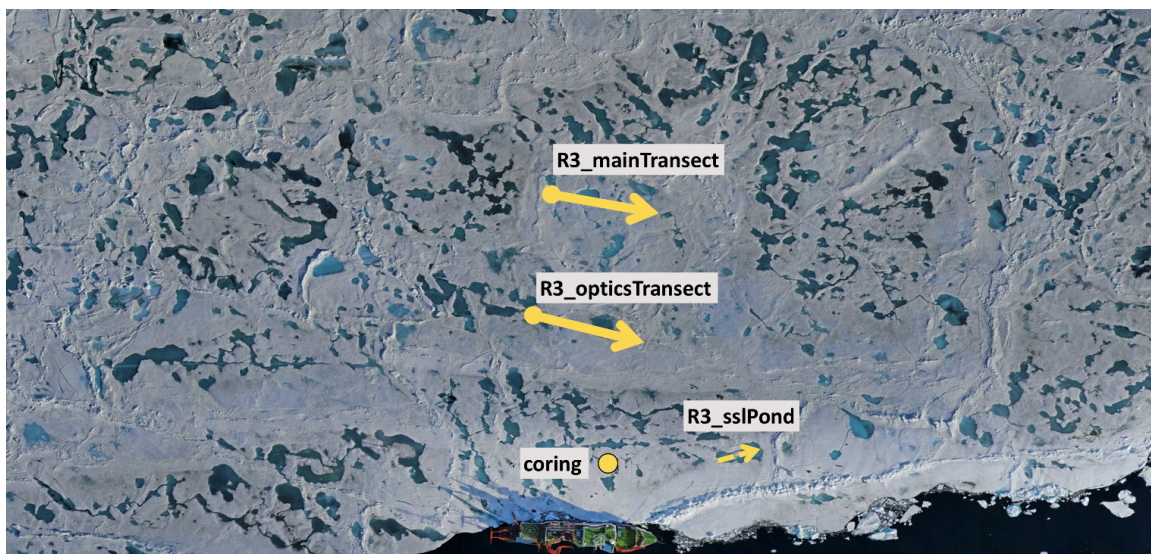


Figure 12: Locations of albedo measurements during floe 3 visit d. Transects are marked with a dot at the beginning and an arrow pointing towards the end. Surveys are marked with dotted lines, with arrows to indicate direction. Point measurements are marked with dots. Drone image provided by Torben Blei.

