



# Toolik Environmental Data Center Update

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Toolik Field Station

Institute of Arctic Biology, UAF

# Staff Update

- EDC manager Dr. Brie Van Dam left in April 2018
- We re-examined and re-organized the position description for Environmental Data Center Manager
- The new Spatial and Environmental Data Center Manager position will oversee both EDC and GIS personnel
  - Promote collaboration and synergy among GIS and EDC
  - Lead in developing data products that use expertise from both GIS and EDC
  - Interact closely with Maintenance/Science Support
  - Integrate overall science services
- UAF HR process is long, but we are in the final stages of a search, and we hope SEDC Manager will start this spring

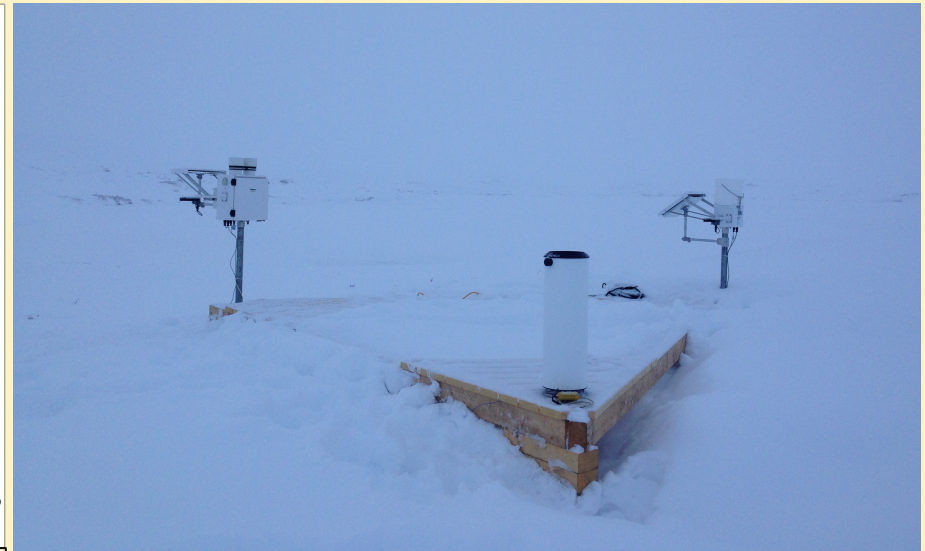
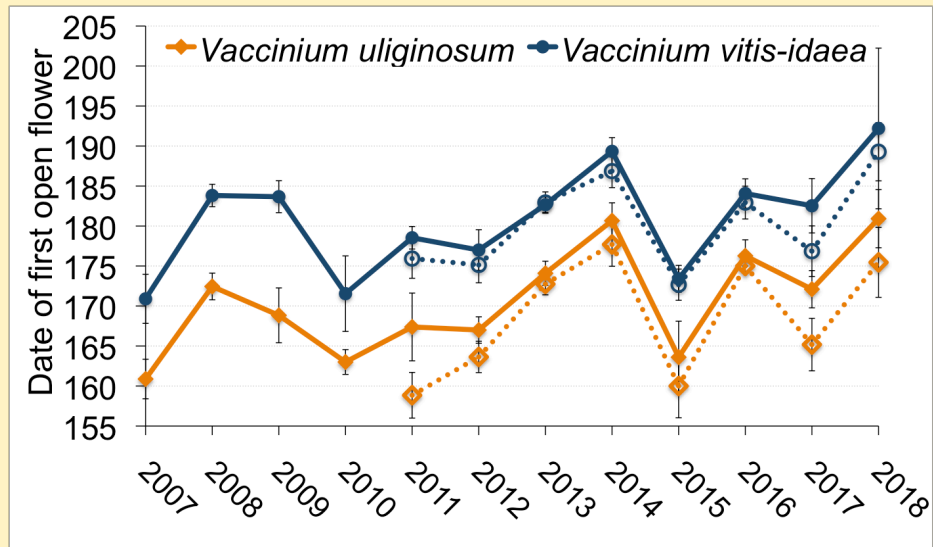
# Activities

- While going through the process of redefining position and searching, our goal was to maintain EDC activities as usual
  - Thanks to Seth Beaudreault and Jade Lawrence, for keeping biotic measurements and services going
  - Thanks to Jorge Noguera for managing common-use equipment
  - Thanks to Colin Edgar for maintaining the meteorological station and measurements
  - Thanks to Jeb Timm for maintaining atmospheric sampling
  - Also thanks to Brie for limited snow measurements this winter and serving on search committee

# EDC Mission

- I. Collect and manage baseline environmental data
- II. Maintain suite of common use lab and field equipment
- III. Fieldwork assistance
- IV. Outreach
  - Make EDC data available to the public
  - Collaborate to provide project metadata for current and historic projects at Toolik Field Station
  - Archive EDC data with the Arctic Data Center

# I. Baseline Environmental Data



## *Biotic Monitoring*

- Vegetation phenology
- Vegetation images
- NDVI
- Avian point counts
- Bird arrivals/departures
- Naturalist's Journal

## *Abiotic Monitoring*

- Meteorological variables
- Atmospheric monitoring:  
NADP NTN & MDN (AK 96)
- AMoN, IMPROVE (with BLM)
- Snow cover, depth, density
- Ice-on/Ice-off

# Herbarium

- TFS photographic vascular plant guide is nearly complete
  - ~ 130 species
- Looking into publication with University of Alaska Press
- Will be available as pdf by summer
- ~100 more live photos for virtual herbarium



## Color Guide: White



*Cassiope tetragona*



*Rhododendrontomentosum*



*Vaccinium vitis-idaea*



*Anticlea elegans*



*Tofieldia pusilla*



*Epilobium palustre*



*Castilleja caudata*



*Castilleja hyperborea*



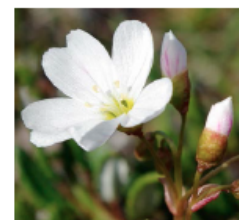
*Pedicularis capitata*



*Anthoxanthum monticola*



*Bistorta vivipara*



*Montia bostockii*

# Bird and Mammal Guides

Online TFS bird and mammal guides updated to include yearly abundance or presence/absence data and high quality photographs

https://toolik.alaska.edu/edc/biotic\_monitoring/bird\_guide.php

x Support Plug-in FAQ Open Letter - Intellig...

ABOUT EDC ABIOTIC MONITORING BIOTIC MONITORING JOURNAL EQUIPMENT CONTACT US

Ring-necked Duck  
Snow Goose  
Spectacled Eider  
Surf Scoter  
Tundra Swan  
White-winged Scoter  
Ptarmigan  
Rock Ptarmigan  
Willow Ptarmigan  
Loons and Grebes  
Common Loon  
Horned Grebe  
Pacific Loon  
Red-necked Grebe  
Red-throated Loon  
Yellow-billed Loon  
Hawks and Eagles  
Bald Eagle  
Golden Eagle  
Northern Harrier  
Osprey  
Red-tailed Hawk  
Rough-legged Hawk  
Sharp-shinned Hawk  
Cranes  
Sandhill Crane  
Shorebirds  
American Golden Plover  
Baird's Sandpiper  
Bar-tailed Godwit  
Black-bellied Plover  
Buff-breasted Sandpiper  
Hudsonian Godwit  
Killdeer  
Least Sandpiper  
Lesser Yellowlegs  
Long-billed Dowitcher

## Yellow-billed Loon (*Gavia adamsii*)

Adult with chick, mid September. Photo credit: ©2018 Seth Beaudreault

The Yellow-billed Loon is an arctic tundra lake specialist and Toolik Lake is its prime habitat. A pair has raised one or two chicks a year here for many years.

Yellow-billed Loon distribution in North America  
(Click map to enlarge)

Map provided by:  
Birds of North America Online

Sounds of the Yellow-billed Loon  
Song  
Andrew Spencer  
<http://www.xeno-canto.org/185362>

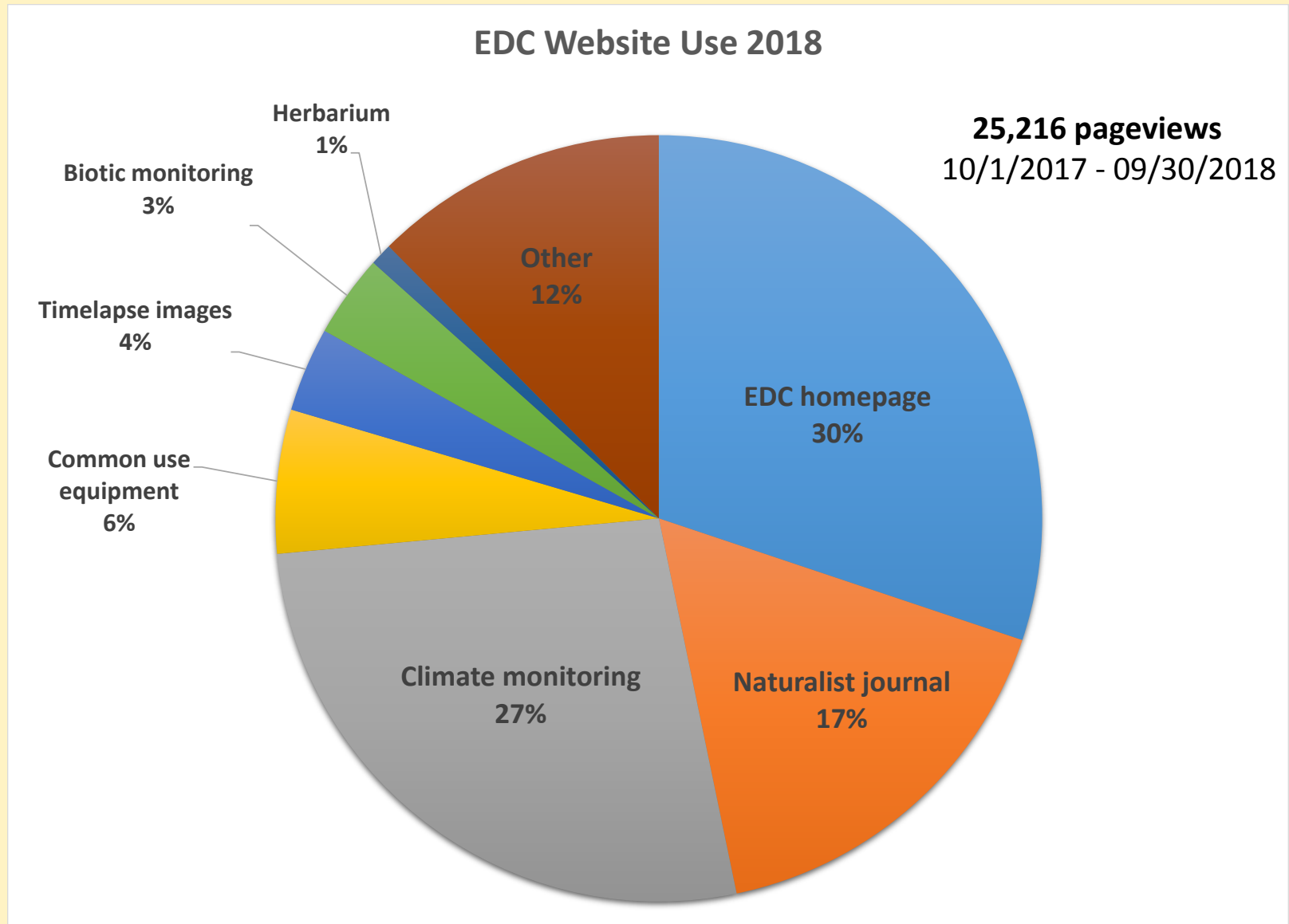
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Toolik Sightings for Yellow-billed Loon  
first seen last seen

Year	First Seen	Last Seen
2007	May	Oct
2008	May	Oct
2009	May	Oct
2010	May	Oct
2011	May	Oct
2012	May	Oct
2013	May	Oct
2014	May	Oct
2015	May	Oct
2016	May	Oct
2017	May	Oct
2018	May	Oct

If you use data from this page, please cite the data according to the following format:  
Environmental Data Center Team. Year of data retrieval. Toolik bird monitoring program. Toolik Field Station, Institute of Arctic Biology, University of Alaska Fairbanks, Fairbanks, AK 99775. [http://toolik.alaska.edu/edc/biotic\\_monitoring/bird\\_guide.php](http://toolik.alaska.edu/edc/biotic_monitoring/bird_guide.php)

# EDC Website use



# EDC data archival

- Meteorological data back to 1988 and biotic data sets archived with Arctic Data Center
- We are working on getting the rest of the EDC data and the GIS data products archived also
  - Thanks to Randy, Colin and Rowan (student assistant) for getting files and metadata in shape



Search ?

Search phrase

Filter by:

Data attribute

Creator

Year

Identifier

Taxon

Location

## DATASETS 1 TO 25 OF 5,301

1 2 3 ... 213 Next

Sort by Most recent

Seth Beaudreault, Juliette Funck, Anja Kade, Adeline Murthy, Aart Nugteren, et al. 2019. **Plant phenology of species in dry heath tundra around Toolik Field Station, Alaska, 2011-2017**. Arctic Data Center. doi:10.18739/A2KK94B96.

8 52

Heather Kropp. 2018. **Siberian boreal forest energy balance (ViPER project), Cherskiy, Sakha Republic, Russia, 2016 - 2017**. Arctic Data Center. doi:10.18739/A2QB9V53K.

200 127

DETLEV HELMIG, Brendan Blanchard, and Daniel Obrist. 2018. **Soil, snow, and atmosphere exchanges of mercury in the interior Arctic tundra, Alaska**. Arctic Data Center. urn:uuid:9ae08ae7-f340-4c3e-8cd2-425154c2a435.

Seth Beaudreault, Jake Schas, and Rowan McPherson. 2019. **Breeding bird counts around Toolik Field Station, Alaska (2010-2017)**. Arctic Data Center. doi:10.18739/A2ZS2KC7W.

41 106

Colin Edgar, Jessie Cherry, Lily Cohen, Christie Hauptert, Anja Kade, et al. 2018. **Daily meteorological data from Toolik Field Station, Alaska (1988-2017)**. Arctic Data Center. doi:10.18739/A23J3911D.

Colin Edgar, Jessie Cherry, Lily Cohen, Christie Hauptert, Anja Kade, et al. 2018. **Meteorological data in five minute intervals from Toolik Field Station, Alaska (2009-2017)**. Arctic Data Center. doi:10.18739/A27940T54.

Colin Edgar, Jessie Cherry, Lily Cohen, Christie Hauptert, Anja Kade, et al. 2018. **Hourly meteorological data from Toolik Field Station, Alaska (1988-2017)**. Arctic Data Center. doi:10.18739/A2C24QN00.

Colin Edgar, Jessie Cherry, Lily Cohen, Christie Hauptert, Anja Kade, et al. 2018. **Meteorological data in three hour intervals from Toolik Field Station, Alaska (1988-2017)**. Arctic Data Center. doi:10.18739/A2GT5FF59.

Nicholas Schmerr. 2018. **Greenland firn aquifer impacts on ice sheet hydrology, near Helheim Glacier, Greenland, 2015-2016**. Arctic Data Center. doi:10.18739/A2RB6W22B.

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Sue Moore. 2018. **Marine Mammal Watch, Northern Bering Sea and Chukchi Sea, August-September, 2017**. Arctic Data Center. doi:10.18739/A2W08WG3R.

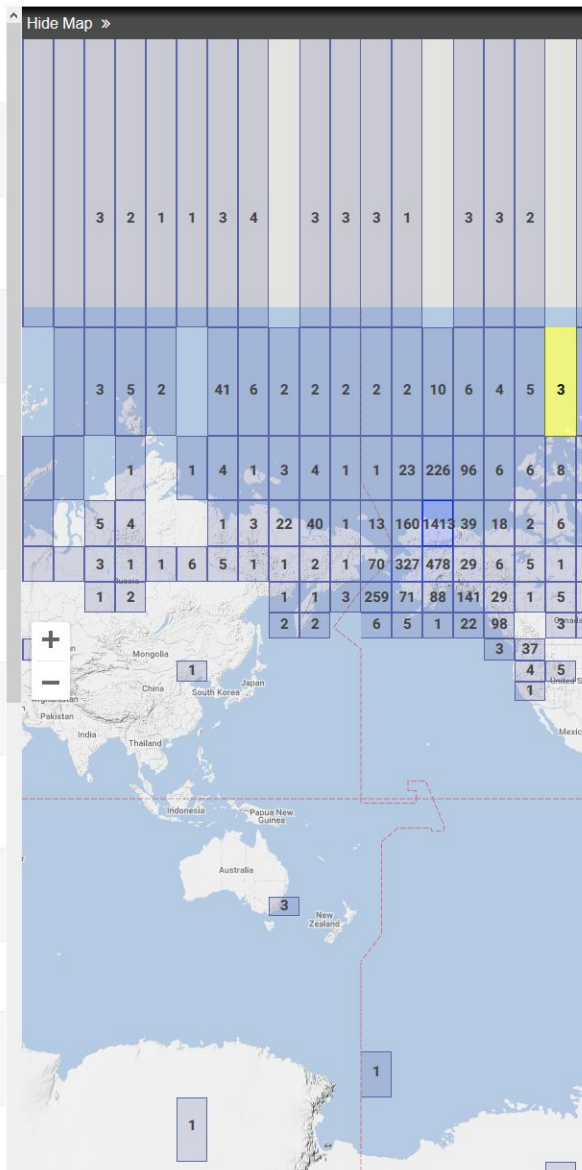
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Michael DeGrandpre. 2014. **Collaborative Research: An Arctic Ocean Sea Surface pCO2 and pH Observing Network**. Arctic Data Center. urn:uuid:17b7db09-d259-431d-9ae9-536b60101fbc.

513 1.6K

Michael DeGrandpre. 2016. **Ice-Tethered Profiler Biogeochemical Time-Series Data, Arctic Ocean, 2012-2014**. Arctic Data Center. doi:10.18739/A21R6N07K.

145 485



# Data use

- Meteorological data downloaded 211 times by 73 users from October 1, 2017 to September 30, 2018
- Avian point count data, NDVI data, phenology data downloaded 33 times
- Avian point count data downloaded 38 times from Arctic Data Center in the last month (!)
  - We are working on gaining the ability track data downloads from ADC, but it is not perfect yet
- EDC data used in at least 16 publications and 2 M.S. theses in 2017-18

## II. Common Use Equipment

Equipment	2018	2017	2016	2015	2014	2013
Muffle furnace	47	53	21	16	33	43
Shaker table	81	42	12	0	58	10
Centrifuge	8	0	0	0	0	0
Autoclave	24	23	19	15	15	15
Freeze drier	64	4	2	4	0	30
Leaf area meter (Licor)	0	0	9	1	0	7
Leaf area meter (WinFolia)	0	6	55	29	12	58
Balance	101	130	72	84	129	36
Hot stir plate	59	33	3	42	16	0
Compound microscope	0	6	35	6	0	9
Unitron stereoscope	8	19	35	15	27	61
Heerburgg stereoscope	16	9	11	0	11	16
Leica LED stereoscope	25	36	54	30	0	0
Zeiss Primostar microscope	0	5	15	5	0	0
Hydrolab water profiler	20	33	46	52	88	70
Unispec spectral analyzer	22	35	35	23	18	13
Flow tracker	1	1	13	46	26	10
Soil moisture probes	0	24	28	67	6	0
Soil temperature probes	0	31	35	11	0	0
Handheld weather meter	10	3	2	7	7	0
Dry incubator	96	0	20	0	0	38
Incubator baths (6 total)	106	424	309	572	551	363
<b>Total</b>	<b>688</b>	<b>917</b>	<b>831</b>	<b>1025</b>	<b>997</b>	<b>779</b>

# New common use equipment

- Few requests last year
  - New autoclave
  - Two-place high capacity balance for soils
- For this coming year
  - Van Doren or Niskin sampler
  - Small, cheap inflatable rafts
  - More carts
  - Set of soil sieves
  - Greenseeker handheld NDVI meter
  - Laser rangefinder for laying out plots, etc.
  - Printers for labs, EDC, shipping tent, staff office
  - New scanners

### III. Field work assistance

- Approximately 179 hours of field and lab assistance to 14 research groups (similar to last year)
- Remote access for 4 INTERACT projects
  - (precipitation & snow sampling for isotope analysis, twig collection for cambial growth timing, N<sub>2</sub>O and soil sampling, fungal spore collection)

## IV. Outreach

- Naturalist's journal on screens at the Arctic Interagency Visitor Center for the traveling public
- Photographic plant phenology guides made available to researchers (NEON used)
- Organized weekly seminar series
- Bird walks, naturalist tours for scientists and visitors (OLLI "Road Scholar" class, Arctic InterAgency Visitor Center staff, etc.)

# On-going projects

- Publish photographic guide to vascular plants in the TFS area
- Comparison of ITEX snapshot phenology results, EDC phenology results, and photographic phenology analysis (with Brie Van Dam)
- Continue adding specimens and live photographs to physical and virtual Herbarium
- Link to atmospheric monitoring data from EDC web page
- Looking forward to new data products when the SEDC manager is on board

# Questions?

