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Pre-ABOVE: Geobotanical and Impact Map Collection for Prudhoe Bay Oilfield, Alaska

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Data Set Version: V1

Summary

This data set provides a collection of maps of geocological characteristics of areas within the Beechey Point quadrangle near Prudhoe Bay on the North slope of Alaska: a geobotanical atlas of the Prudhoe Bay region, a land cover map of the Beechey Point quadrangle, and cumulative impact maps in the Prudhoe Bay Oilfield for ten dates from 1968 to 2010. The geobotanical atlas is based on aerial photographs and covers 145 square kilometers of the Prudhoe Bay Oilfield. The land cover map of the Beechey Point quadrangle was derived from the Landsat multispectral scanner, aerial photography, and other field and cartographic methods. The cumulative impact maps of the Prudhoe Bay Oilfield show historical infrastructure and natural changes digitized from aerial photos taken in each successive analysis year (1968, 1970, 1972, 1973, 1977, 1979, 1983, 1990, 2001, and 2010). Nine geocological attributes are included: dominant vegetation, secondary vegetation, tertiary vegetation, percentage open water, landform, dominant surface form, secondary surface form, dominant soil, and secondary soil. These data document environmental changes in an Arctic region that is affected by both climate change and rapid industrial development.

There are four compressed shapefiles (*.zip) and one geotiff (*.tif) in this data set. The geobotanical atlas of the Prudhoe Bay Region (Walker et al. 1980) is provided as a companion file in .pdf format. The shapefile data are also provided as companion files in .kmz format for viewing in Google Earth.

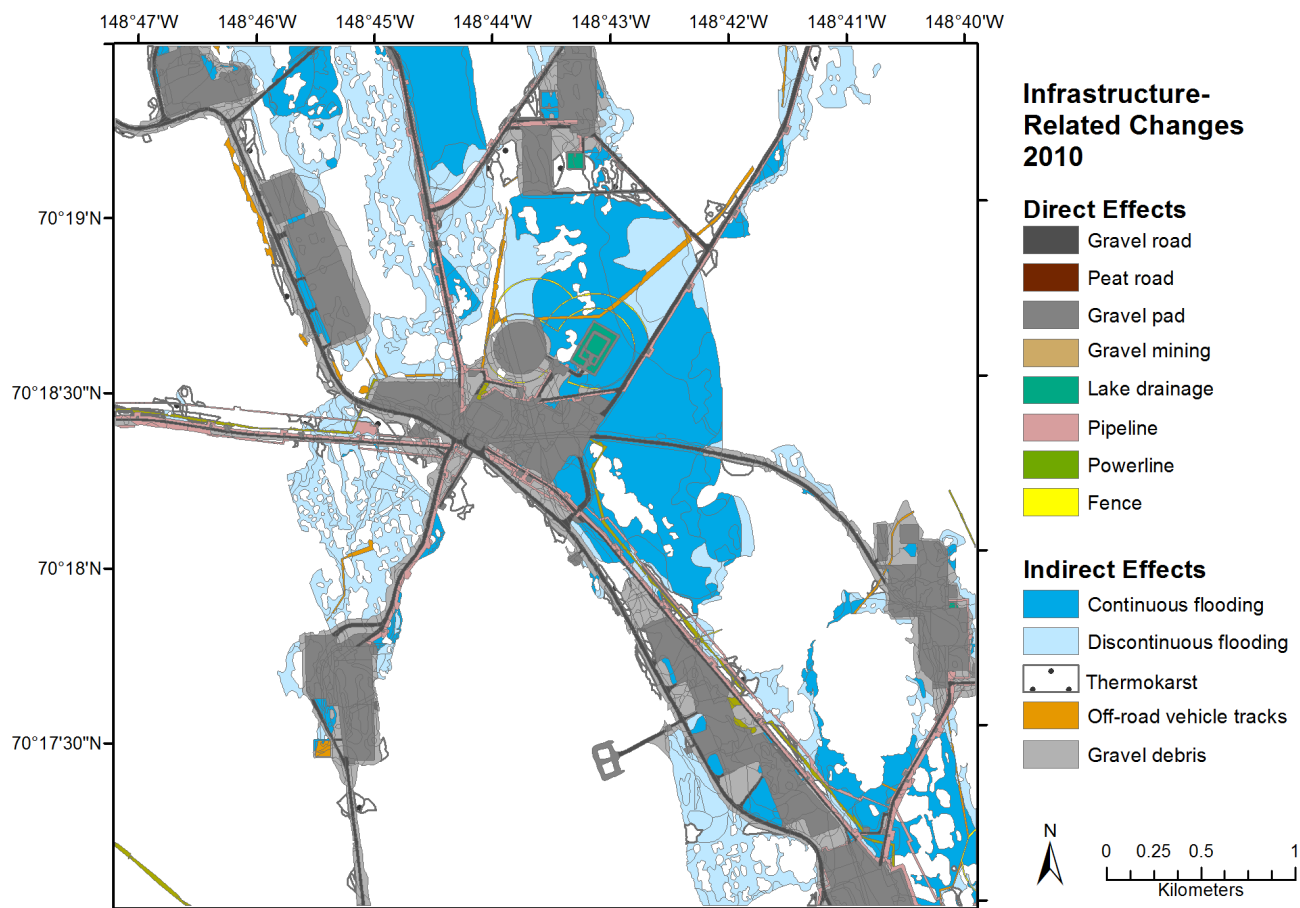


Figure 1: Cumulative impact map of infrastructure related disturbances from 2010 for Prudhoe Bay Oilfield site A.

Citation

Walker, D.A., M.K. Reynolds, K. Everett, P.J. Webber, J. Brown, W. Acevedo, K.J. Ambrosius, M. Kanevskiy, Y. Shur, G. Kofinas, and V.E. Romanovsky. 2017. Pre-ABOVE: Geobotanical and Impact Map Collection for Prudhoe Bay Oilfield, Alaska. ORNL DAAC, Oak Ridge, Tennessee, USA. <https://doi.org/10.3334/ORNLDAAC/1387>

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1. Data Set Overview

This data set provides a collection of maps of geocological characteristics of areas within the Beechey Point quadrangle near Prudhoe Bay on the North Slope of Alaska: a geobotanical atlas of the Prudhoe Bay region, a land cover map of the Beechey Point quadrangle, and cumulative impact maps in the Prudhoe Bay Oilfield for ten dates from 1968 to 2010. The geobotanical atlas is based on aerial photographs and covers 145 square kilometers of the Prudhoe Bay Oilfield. The land cover map of the Beechey Point quadrangle was derived from the Landsat multispectral scanner, aerial photography, and other field and cartographic methods. The cumulative impact maps of the Prudhoe Bay Oilfield show historical infrastructure and natural changes digitized

from aerial photos taken in each successive analysis year (1968, 1970, 1972, 1973, 1977, 1979, 1983, 1990, 2001, and 2010). Nine geocological attributes are included: dominant vegetation, secondary vegetation, tertiary vegetation, percentage open water, landform, dominant surface form, secondary surface form, dominant soil, and secondary soil. These data document environmental changes in an Arctic region that is affected by both climate change and rapid industrial development.

Project: Arctic-Boreal Vulnerability Experiment

The **Arctic-Boreal Vulnerability Experiment (ABOVE)** is a NASA Terrestrial Ecology Program field campaign taking place in Alaska and western Canada between 2016 and 2021. Climate change in the Arctic and Boreal region is unfolding faster than anywhere else on Earth. ABOVE seeks a better understanding of the vulnerability and resilience of ecosystems and society to this changing environment.

Related Data Sets:

Liu, L., K. Schaefer, A. Chen, A. Gusmeroli, E. Jafarov, S. Panda, A. Parsekian, T. Schaefer, H. A. Zebker, T. Zhang. 2015. Pre-ABOVE: Remotely Sensed Active Layer Thickness, Prudhoe Bay, Alaska, 1992-2000. ORNL DAAC, Oak Ridge National Laboratory Distributed Active Archive Center, Oak Ridge, Tennessee, USA. <https://dx.doi.org/10.3334/ORNLDAAC/1267>

Walker, D.A. 2016. Pre-ABOVE: Arctic Vegetation Plots at Prudhoe Bay, Alaska, 1973-1980. ORNL DAAC, Oak Ridge, Tennessee, USA. <https://dx.doi.org/10.3334/ORNLDAAC/1360>

Raynolds, M.K., A.L. Breen, and D.A. Walker. 2017. Pre-ABOVE: Land Cover and Ecosystem Map Collection for Northern Alaska. ORNL DAAC, Oak Ridge, Tennessee, USA. <https://dx.doi.org/10.3334/ORNLDAAC/1359>

Acknowledgements:

These data were obtained from the Alaska Arctic Geoecological Atlas (<http://agc.portal.gina.alaska.edu>), which provides access to existing Arctic vegetation plot and map data in support of the ABOVE campaign.

2. Data Characteristics

Spatial Coverage: Area surrounding the Prudhoe Bay Oilfield, North Slope, Alaska

ABOVE Site Designation:

Domain: ABOVE region

State/territory: Alaska

Grid cell: Ahh1Avv0

Spatial Resolution: ~50-m for the Beechey Point land cover

Temporal Coverage: 19490101 - 20100731

Temporal Resolution: Roughly decadal

Study Area: (all latitudes and longitudes given in decimal degrees)

Site	Westernmost Longitude	Easternmost Longitude	Northernmost Latitude	Southernmost Latitude
Prudhoe Bay Oilfield, North Slope, Alaska	-150.1675	-146.9737	71.0271	69.9702

Data File Information

There are four compressed shapefiles (*.zip), one geotiff (.tif), and a PDF in this data set. The shapefile data are also provided as companion files in .kmz format for viewing in Google Earth.

Table 1. File names and descriptions

File Name	Description
prudhoe_a_geobotanical.zip	Cumulative impact maps for Prudhoe Bay Oilfield location A
prudhoe_b_geobotanical.zip	Cumulative impact maps for Prudhoe Bay Oilfield location B
prudhoe_c_geobotanical.zip	Cumulative impact maps for Prudhoe Bay Oilfield location C
beecheypoint_landcover.tif	Beechey Point land cover classification map
geobotanical_atlas_boundary.zip	Boundary of the Geobotanical Atlas of Prudhoe Bay

Companion Files	
prudhoe_a_geobotanical.kmz	Google Earth KMZ companion for prudhoe_a_geobotanical.kmz
prudhoe_b_geobotanical.kmz	Google Earth KMZ companion for prudhoe_b_geobotanical.kmz
prudhoe_c_geobotanical.kmz	Google Earth KMZ companion for prudhoe_c_geobotanical.kmz
geobotanical_atlas_boundary.kmz	Google Earth KMZ companion for the Geobotanical Atlas of Prudhoe Bay boundary
geobotanical_atlas.pdf	Geobotanical Atlas of Prudhoe Bay (Walker et al. 1980)
prudhoe_geobotanical_images.zip	Maps in PNG format depicting data from the spatial data files

Prudhoe Bay Oilfield Cumulative Impact Maps

The cumulative impact maps for Prudhoe Bay are provided as shapefiles (*prudhoe_[a,b,c]_geobotanical*). Attribute definitions for the shapefiles are listed in Table 2, attribute code descriptions are listed in Tables 3-9, and spatial metadata for the shapefile are listed below:

NAD_1983_StatePlane_Alaska_4_FIPS_5004_Feet
WKID: 102634 Authority: ESRI

Projection: Transverse_Mercator
False_Easting: 1640416.666666667
False_Northing: 0.0
Central_Meridian: -150.0
Scale_Factor: 0.9999
Latitude_Of_Origin: 54.0
Linear Unit: Foot_US (0.3048006096012192)

Table 2. Shapefile attributes

NOTE: Cumulative impact disturbance and surface feature codes are described in Tables 3-9 below. Each shapefile is zipped with 6-7 thematic layers that provide symbologies for the shapefile data content.

Attribute	Description
FID	Shapefile feature ID
MAP*_ID	Cumulative impact map codes
SQNUM	Internal map code
VEG1_49	1949 primary vegetation cover
VEG2_49	1949 secondary vegetation cover
VEG3_49	1949 tertiary vegetation cover
H2O_49	1949 percent water cover
LANDFORM_4	1949 landform
SURFORM1_4	1949 primary surface form
SURFORM2_4	1949 secondary surface form (if >30% cover)
SOIL1_49	1949 primary soils
SOIL2_49	1949 secondary soils
NATDIS_68	1968 natural disturbance
NATDIS_77	1977 natural disturbance
NATDIS_83	1983 natural disturbance
HUMANDIS1_	1970 primary human disturbance
HUMANDIS2_	1970 secondary human disturbance
HUMANDIS3_	1970 tertiary human disturbance
HUMANDIS11	1972 primary human disturbance

HUMANDIS21	1972 secondary human disturbance
HUMANDIS31	1972 tertiary human disturbance
HUMANDIS_1	1973 primary human disturbance
HUMANDIS_2	1973 secondary human disturbance
HUMANDIS_3	1973 tertiary human disturbance
HUMANDIS_4	1977 primary human disturbance
HUMANDIS_5	1977 secondary human disturbance
HUMANDIS_6	1977 tertiary human disturbance
HUMANDIS_7	1979 primary human disturbance
HUMANDIS_8	1979 secondary human disturbance
HUMANDIS_9	1979 tertiary human disturbance
HUMANDI_10	1983 primary human disturbance
HUMANDI_11	1983 secondary human disturbance
HUMANDI_12	1983 tertiary human disturbance
ND678	Natural disturbance codes for 1968, 1977, and 1983 merged to one shapefile
HD123_70	1970 primary, secondary, and tertiary human disturbance
HD123_72	1972 primary, secondary, and tertiary human disturbance
HD123_73	1973 primary, secondary, and tertiary human disturbance
HD123_77	1977 primary, secondary, and tertiary human disturbance
HD123_79	1979 primary, secondary, and tertiary human disturbance
HD123_83	1983 primary, secondary, and tertiary human disturbance
ALL	All cumulative impact codes merged to one shapefile attribute
NATDIS_90	1990 natural disturbance
NATDIS_01	2001 natural disturbance
NATDIS_10	2010 natural disturbance
HUMANDI_13	1990 primary human disturbance
HUMANDI_14	1990 secondary human disturbance
HUMANDI_15	1990 tertiary human disturbance
HUMANDI_16	2001 primary human disturbance
HUMANDI_17	2001 secondary human disturbance
HUMANDI_18	2001 tertiary human disturbance
HUMANDI_19	2010 primary human disturbance
HUMANDI_20	2010 secondary human disturbance
HUMANDI_21	2010 tertiary human disturbance
Shape_Area	Polygon area

Table 3. Landforms map codes

Name	Code(s)	Color	Description

Drained thaw-lake basin	1, 25	Olive green	Distinct drained thaw-lake basin, includes islands within lakes and partially drained lake basins (code 25)
Primary surface	4	Sandy yellow	Residual surfaces unaffected by thaw-lake or river processes; may include some very old indistinct thaw-lake basins.
Pingo	11	Red	Small hills usually in drained thaw-lake basins. All the pingos in the mapped areas are closed system pingos, which are formed by hydrostatic forces that occur as the unfrozen sediments beneath the previous lake are refrozen after lake drainage. Within the map area, pingo dimensions are usually several tens of meters in diameter and up to 15 m high.
Active floodplain	12	Light sandy rose	Very active areas of floodplains with little vegetation
Stabilized floodplain	13, 15, 20	Dark sandy rose	Areas adjacent to the very active floodplain that are vegetated but regularly flooded by spring and/or summer flood events. Also includes ancient floodplains with well-defined terraces, oxbow lakes and cut off stream channels, and drainages of smaller streams (code 15). The map unit also includes small areas of bluffs (code 20) along the Putuligayuk River on Map B.
Sand dunes	16	Dark yellow	Sand dunes (both active and stabilized dunes)
Lake or pond	51	Bright blue	Lake or pond
River or stream	52	Dark blue	River or stream

Table 4. Dominant surface forms map codes

Name	Code(s)	Color	Description
High-center polygons, center-trough relief > 0.5 m	1	Orange	High-centered ice-wedge polygons have an elevated central portion to the polygon and troughs that are relatively low and a few meters wide. Formed by thawing of the ice wedges and subsidence of the trough surface. High-centered polygons with > 0.5 m of relief occur in areas with relatively steep hydrological gradients such as along lake margins and stream terraces and some pingos. The unit usually forms a narrow band a few meters wide along the margin of streams and shoreline of former thaw lakes.
High-center polygons, center-trough relief < 0.5 m	2, 11	Yellow orange	High-centered polygons with < 0.5 m relief occur in flatter, usually well-drained terrain, where there has been some subsidence of the ice-wedge polygon troughs. The centers may be nearly flat, and in some situations, particularly well-drained situations near streams and drained thaw-lake margins, a secondary pattern of small nonsorted polygons is common (code 11).
Mixed high- and low-centered polygons	5	Dark brown	Complex patterns consisting of both high- and low-centered polygons. Usually this unit occupies relatively small areas and represents incomplete topographic adjustment to a recently decreased base level, for example the drainage of a thaw lake or the relatively recent headward extension of a tributary drainage.
Low-centered polygons, center-rim relief > 0.5 m	3	Blue green	Low-centered ice-wedge polygons have a low central basin, an elevated rim around the basin, and low troughs that overlie the ice wedges and separate a polygon from adjacent polygons. Low-centered polygons with greater than 0.5 m of relief between polygon centers and rims are common in sandier portions of the oilfield and in the river deltas. Most of the polygon centers have standing water with aquatic vegetation.
Low-centered polygons, center-rim relief < 0.5 m	4	Light blue green	Low-centered polygons with less than 0.5 m of relief between polygon centers and rims with polygon diameters of approximately 10-15 m.
Irregular pattern	7	Light blue	Irregular or weakly developed patterned-ground features occur mostly in wet drained lake basins. The raised features may consist of weakly developed strangmoor, aligned hummocks, and/or disjunct polygon rims that are visible on aerial photographs at 1:6,000-scale.

Featureless	10	Medium yellow	Featureless or with patterned-ground occupying less than 20% of surface.
Non-sorted circles	6	Light gray	patterned-ground form that is usually circular or elliptical in form, characteristically barren or partially vegetated in the central portion of the circle and surrounded by vegetation in the margins. Most nonsorted circles in the Prudhoe Bay region are 1-2 m in diameter, flat to slightly domed in the center, with center-center spacing of 2.5 to 4 meters. Other terms include frost scars, frost boils, mud boils, mud circles, and spotted tundra.
Thermokarst pits	14	Blue dots over other pattern	Small ponds, generally circular in form, a few meters in diameter and often over 70 cm deep. Thermokarst pits form at the junction of ice-wedges, where there has been thawing and subsidence of the ice wedge. With further thawing of the ice-wedge, the ponds can deepen and enlarge and extend along the length of the ice wedge. These features were mapped on the 1973 1:6000 black and white aerial photographs wherever the density of pits was greater than 4 pits per 1-cm circle. Most of the pits were also visible on the 1949 1:24,000-scale BAR photographs. The features were most often mapped as secondary surface forms in conjunction with other patterned-ground features.
Pingo	9	Red	Small ice-cored mound
Floodplain surface forms	13, 8, 16	Dark gray	Active floodplain features including channels, river bar and river bank deposits and erosion features. The map unit also includes small areas of hummock terrain (code 8), and actively eroding banks (code 16) along the Putuligayuk River on Map B.
Water	21	Dark blue	Water

Table 5. Dominant vegetation map codes

Name	Code(s)	Color	Description (See Walker et al., 2014: Table 4.2 for species listings)
Dry tundra	62, 63, 64	Pink	Vegetation occurring on drier (xeric and xeromesic) tundra habitats
Moist tundra	41, 42, 48	Light yellow	Vegetation occurring in moist (mesic to hygromesic) tundra habitats
Wet tundra	21	Light blue	Vegetation occurring in wet (hygric) tundra habitats generally without standing water or with shallow (<10 cm) water
Aquatic marsh	2, 3, 5	Light bluish green	Emergent vegetation occurring in aquatic habitats with standing water
Barren	64, 81, 83, 99	Gray	Vegetation on predominantly barren habitats with sparse vascular-plant cover
Water	1	Dark blue	Unvegetated water

Table 6. Soil map codes

Name	Code(s)	Color	Description (See Walker et al., 2014: Table 4.2 for more detailed soil descriptions)
Soils of dry tundra	1	Red	Cold, well-drained, base-rich mineral soil with a dark, humus-rich surface horizon (mollic epipedon); calcium carbonate deposits occur on the underside of gravel fragments and free carbonate precipitates throughout the mollic epipedon; little evidence of cryoturbation; a deep active layer exceeding 1 m; mainly on pingos, but also some well-drained sites on terraces along streams and rivers.
Soils of moist tundra	2	Orange	Cold, moderately-drained soil complex, with a dark, base-rich, humus-rich mineral surface horizon (mollic epipedon) or a thick well-decomposed organic surface horizon (histic epipedon); the mineral horizon usually shows some mottling; underlain by permafrost within 1 m of the surface; usually associated with moderately well-drained areas between thaw lakes, river terraces, and stabilized dune features. Considerable cryoturbation may be present due to the presence of either non-sorted circles and/or small non-sorted polygons.
Soils of wet tundra	3, 8	Brown	Cold, wet soil complex. Most soils have thick organic surface horizons of varying degrees of decomposition that overlie wet, silty to loamy, base-rich, gleyed mineral horizons; the depth of summer thaw is generally < 50 cm; occurs in drained lake basins with either featureless or irregular patterned ground.

Wet patterned-ground soil association	4	Tan	Cold, wet association of soils occurring in areas of wet patterned-ground, mainly low-centered polygon complexes.
Non-sorted circle soil association	5	Light gray	Cold, wet association of soils occurring in areas of non-sorted circles.
Soils along stream and river channels	10, 6	Dark gray	Well-drained, gravelly or sandy alluvial soil with little horizon development. The unit includes the gravel channels with no soils in the active floodplains of the rivers and streams and more stable river bars that may have some soil development.
Sand dune soils or other soil covered by layer of aeolian sand	7, 9	Yellow	Well-drained sand-dune soil, underlain by permafrost at considerable depth. Includes soils covered by a thin layer of wind-blown sand.
Water	21	Blue	Water

Table 7. Percent water cover map codes

Code	Color	Percent cover
1	Gray-blue	0 - 5%
2	Light blue	5 - 30%
3	Turquoise	30 - 60%
4	Medium blue	60 - 90%
5	Blue	90 - 100%

Table 8. Infrastructure-related change/impact map codes

Code	Description
1	Gravel road or pipeline construction road
2	Peat road
3	Gravel pad
4	Continuous flooding, > 75% open water
5	Discontinuous flooding, < 75% open water
6	Infrastructure-related thermokarst
7	Vehicle tracks - deeply rutted and/or with thermokarst
8	Vehicle tracks - not deeply rutted
9	Winter road
10	Gravel and construction debris, > 75% cover
11	Gravel and construction debris, < 75% cover
12	Heavy dust or dust-killed tundra
13	Excavations of river gravel or other gravel sources, or construction-related excavations
14	Barren tundra caused by oil spills, burns, blading, etc.

15	Barren tundra caused by previous flooding or draining of lakes
16	Construction-induced eolian deposits
17	Pipeline
18	Powerline and associated trails
19	Fence and associated trails
20	Canal

Table 9. Non-infrastructure-related change/impact map codes

Code(s)	Description
2	New vegetation in lake
4	Partial revegetation of gravel
6, 64	Increase in thermokarst pits (and thermokarst of pingos)
61	Widening of thermokarst troughs
99	Deposition of river gravel
51	Erosion of lake shore
28, 52	Erosion of river shore (to gravel or water)
63	Erosion from surface flow, gullying
21	Decrease in vegetation in lake

Geobotanical Atlas of Prudhoe Bay

The boundary corresponding to the coverage area for the Geobotanical Atlas of Prudhoe Bay is provided as a shapefile (geobotanical_atlas_boundary.zip). The atlas is provided as a companion file in .pdf file format. Spatial metadata for the shapefile are listed below:

NAD_1927_UTM_Zone_6N
 WKID: 26706 Authority: EPSG
 Projection: Transverse_Mercator
 False_Easting: 500000.0
 False_Northing: 0.0
 Central_Meridian: -147.0
 Scale_Factor: 0.9996
 Latitude_Of_Origin: 0.0
 Linear Unit: Meter (1.0)

Beechey Point Quadrangle Land Cover Classification

The land cover map for the Beechey Point quadrangle is provided in GeoTIFF file format (*beecheypoint_landcover.tif*). Spatial metadata for the geotiff are provided below and land cover classification codes are listed in Table 10:

GCS_WGS_1984
 WKID: 4326 Authority: EPSG
 Angular Unit: Degree (0.0174532925199433)
 Prime Meridian: Greenwich (0.0)
 Datum: D_WGS_1984
 Spheroid: WGS_1984
 Semimajor Axis: 6378137.0
 Semiminor Axis: 6356752.314245179
 Inverse Flattening: 298.257223563

Table 10. Beechey Point land cover map (*beecheypoint_landcover.tif*) classification codes

Land cover category	Classification code(s)
---------------------	------------------------

Water	1,2,3,4,6,7,8,11,27,42,44,45,46
Wet herbaceous tundra	5,10,47,50
Moist or dry herbaceous shrub tundra	14,49,51
Moist herbaceous, mixed shrub tundra	17
Shrubland	16,18,19,20,21,22
Sparse vegetation	23,24,55,56
Barren	9,12,25,26,43,52,53,57
Ice	28-40
Background	41

3. Application and Derivation

These data document environmental changes in an Arctic region that is affected by both climate change and rapid industrial development. These data could be useful as a historical baseline for climate change studies in the local region or as model validation data. The cumulative impact maps may be used to examine changes in flora and fauna of the Prudhoe Bay region attributable to various types of human and natural disturbance.

4. Quality Assessment

No quality assessment or uncertainty estimates were included with this data set. Much of the data is derived from visual observation of historical aerial photography.

5. Data Acquisition, Materials, and Methods

Prudhoe Bay Oilfield

The Prudhoe Bay Oilfield (PBO) in northern Alaska was the first developed oilfield in the Arctic. It is an extremely important asset to the U.S. and the state of Alaska, containing 16% of U.S. proven reserves of oil and gas. In 2012, taxes on the oil from the Northern Alaska oilfields accounted for over 90% of the Alaska state budget. The PBO is located on the coast of the Beaufort Sea, halfway between the Canadian border and Point Barrow, a region that was remote and roadless prior to the discovery of oil in March 1968, and is still linked to the rest of the U.S. by a single 417-km road, the Dalton Highway. An extensive infrastructure network quickly followed the oil discovery, resulting in development within an approximately 2,600 km² area along a 150-km portion of coastal tundra, located mostly between the Sagavanirktok River on the east and the Colville River on the west.

Prudhoe Bay Cumulative Impact Maps (Raynolds et al. 2014)

The data contained in the cumulative impact maps (*prudhoe_[a,b,c]_geobotanical*) for the Prudhoe Bay Oilfield were produced primarily from observation of aerial photography:

- Primary, secondary, and tertiary human disturbances for each observation interval (HUMANDIS*) were recorded based on interpretation of aerial photographs.
- Natural disturbances for each observation interval (NATDIS_*) were recorded based on interpretation of aerial photographs.
- Primary (SOIL1_49) and secondary (SOIL2_49) soils are based on interpretation of 1949 black-and-white aerial photographs.
- Landform (LANDFORM_49) is based on interpretation of 1949 black-and-white aerial photographs.
- Percent water cover (H2O_49) is based on interpretation of 1949 black-and-white aerial photographs.

Geobotanical Atlas of the Prudhoe Bay Region (Walker et al. 1980)

The geobotanical atlas of the Prudhoe Bay Region (Walker et al., 1980) covers most of the Prudhoe Bay Oilfield on the North Slope of Alaska that was under development in 1980, covering 145 km². The map synthesizes work done for the US Army Corps of Engineers CRREL, the International Biome Program, and the UNESCO MAB Project 6. The mapping was based on aerial photographs taken in 1973 at a scale of 1:6000. The maps are thus a static representation of a type of arctic tundra at a time when only relatively minor terrain disturbance had occurred. It can be used as a baseline against which further natural and human-induced changes to the landscape can be measured. A geocological approach was used in the mapping of landforms (12 units as well as linear mapping of steep embankments, undercut river banks, excavated areas and streams), soils (7 units) and land cover (29 natural vegetation units and 8 disturbed units).

Beechey Point Land Cover Classification (Walker & Acevedo 1987)

The land cover map (*beecheypoint_landcover.tif*) is a Landsat-derived land cover classification of the Beechey Point quadrangle (1:250,000 scale) with

descriptions of the major vegetation units. Eight Landsat-level units derived from the multispectral scanner data, eleven photo-interpreted units, and eight common vegetation complexes were described and illustrated. The region was divided into four landscape units: flat thaw-lake plains, gently rolling thaw-lake plains, hills, and flood plains. Area analysis of the quadrangle was done according to townships and nine small study areas. The mapping used a hierarchical tundra mapping classification approach. Area measurement data from geobotanical maps at eight study sites were compared with similar data from Landsat maps of the same sites. The results indicated that Landsat maps yielded area measurements corresponding to broad geobotanical categories. Please see Walker & Acevedo (1987) for additional information on the methods used to produce this land cover map.

6. Data Access

These data are available through the Oak Ridge National Laboratory (ORNL) Distributed Active Archive Center (DAAC).

[Pre-ABoVE: Geobotanical and Impact Map Collection for Prudhoe Bay Oilfield, Alaska](#)

Contact for Data Center Access Information:

- E-mail: uso@daac.ornl.gov
- Telephone: +1 (865) 241-3952

7. References

Raynolds M.K., Walker D.A., Ambrosius K.J., Brown J., Everett K.R., Kanevskiy M., Kofinas G.P., Romanovsky V.E., Shur Y. & Webber P.J. 2014. Cumulative geoeological effects of 62 years of infrastructure and climate change in ice-rich permafrost landscapes, Prudhoe Bay Oilfield, Alaska. *Global Change Biology* 20: 1211-1224.

Walker, D. A. and W. Acevedo. 1987. Vegetation and a Landsat-derived land cover map of the Beechey Point Quadrangle, Arctic Coastal Plain, Alaska. CRREL Report 87-5.



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