



Yamal and Gydan vegetation datasets

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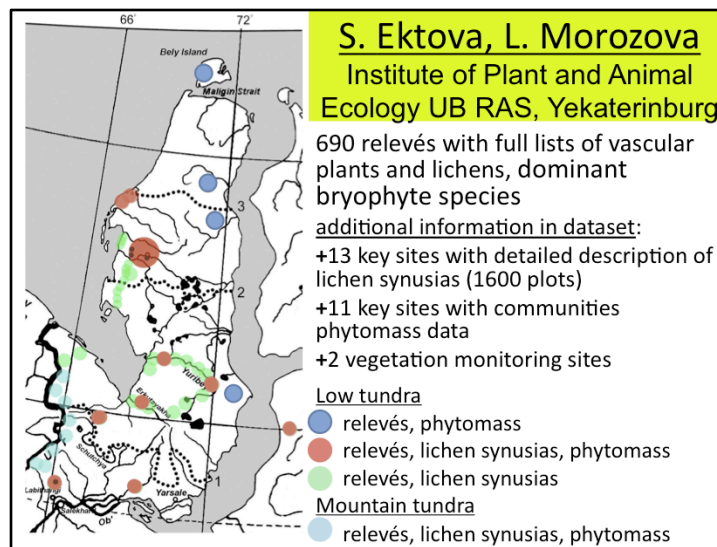
Vegetation datasets of Yamal and Gydan peninsulas

Datasets holders	Institutes	Groups	Nº of key sites / relevés	Area*
S. Ektova, L. Morozova	Institute of Plant and Animal Ecology UB RAS, Yekaterinburg	vascular plants, bryophytes**, lichens and phytomass data	≈690 relevés	PU, SY, MY, NY
K. Ermokhina	Earth Cryosphere Institute SB RAS, Moscow	vascular plants, bryophytes, lichens; environmental and phytomass data	≈600 relevés	PU, SY, MY, NY, G
D.A. Walker et al.	Institute of Arctic Biology, UAF, Alaska, USA	vascular plants, bryophytes, lichens and environmental data	79 relevés	SY, MY, NY, FJL

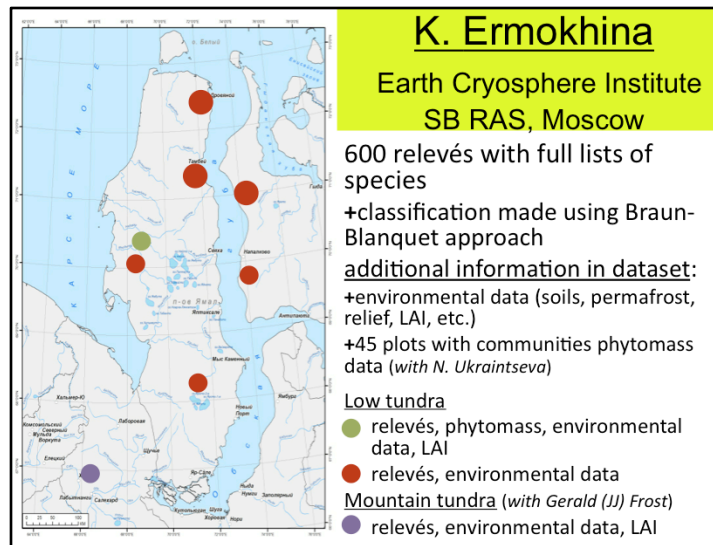
* PU – Polar Urals, SY – Sothern Yamal, MY – Middle Yamal, NY – Northen Yamal, G – Gadan, FJL – Franz Josef Land; ** – only dominant species

Other datasets: **S. Pristyazhnyuk** (disturbed habitats; mainly lichens and vascular plants), **M. Telyatnikov** (mainly vascular plants), **N. Andreyashkina** (mainly vascular plants), **M. Boch** (wetlands; mainly vascular plants and bryophytes), **S. Gribova** (mainly vascular plants and bryophytes), **L. Meltser** (mainly vascular plants)

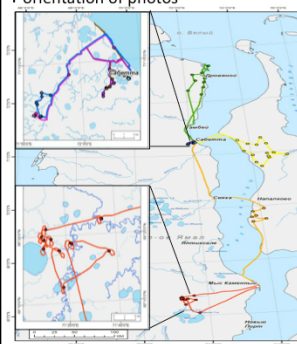
There is a number of available Yamal and Gydan vegetation databases owned by several RAS institutes. The most important of them are listed in the table. In the different parts of the Yamal peninsula also worked following botanists: Sergey Pristyazhnyuk (disturbed habitats; mainly lichens and vascular plants), Mikhail Telyatnikov (mainly vascular plants), Nelly Andreyashkina (mainly vascular plants), Marina Boch (wetlands; mainly vascular plants and bryophytes), Sarah Gribova (mainly vascular plants and bryophytes), Liya Meltser (mainly vascular plants). All these datasets are of landscape levels and each of them is focused mainly on particular group of organisms (vascular plants, bryophytes or lichen). Datasets may also include information on different ecotope parameters, productivity of communities and etc.



Svetlana Ektova and Lyudmila Morozova of Institute of Plant and Animal Ecology UB RAS (Yekaterinburg) hold one of the biggest datasets of vegetation relevés. Total number of relevés is more than 690. Research was carried out on Polar Urals, South, Middle and North Yamal in 1990-2012. Relevés include full lists of vascular plants and lichens and dominant bryophyte species. The dataset include additional information on 13 key sites with detailed description of lichen synusias (1600 plots), 11 key sites with communities phytomass data and information on 2 vegetation monitoring sites. The relevés have coordinates and some description of the ecotopes (but not very detailed). The research is mostly focused on lichens and the effect of reindeer overgrazing on vegetation.

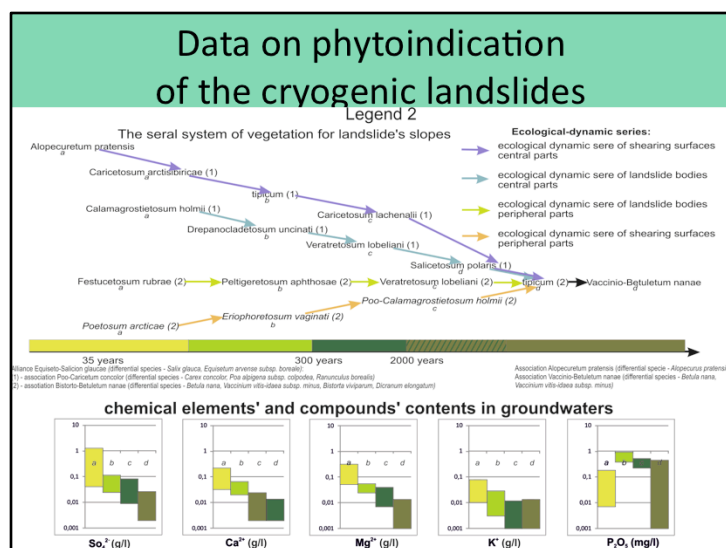


Ksenia Ermokhina of Earth Cryosphere Institute SB RAS (Moscow) holds the dataset of more than 600 relevés with full lists of species (vascular plants, lichens and bryophytes). The additional information in dataset include GPS coordinates, projective cover of species and height of trees and shrubs (when applicable), environmental data (data on soils, permafrost, relief, exogenous processes, etc.) and information on 45 plots with communities phytomass data and about 200 plots with LAI data. The research was carried out in 2002-2012 on Polar Urals, South, Middle and North Yamal, and Gydan peninsula.

Set of photos K. Ermokhina, A. Mikheeva	Classification (Braun-Blanquet) K. Ermokhina
<p>4607 photos taken of helicopter in ARCGIS project</p> <p>+ GPS coordinates</p> <p>+ orientation of photos</p> 	<p>333 relevés of 2 key sites are involved</p> <ul style="list-style-type: none"> • Alliance Luzulo–Festucion rubrae <i>as. Rumicetum graminifolius</i> (2 subas., 2 var.) and <i>as. Salicetum nummulariae</i> (7 subas., 2 var.) lichen polygonal tundra; subhorizontal plains of marine terraces covered by sand deposits • Alliance Equiseto–Salicion glaucae <i>as. Poo–Caricetum concolor</i> (7 subas.) and <i>as. Bistorto–Betulion nanae</i> (7 subas.) dwarf birch–willow tundra; clay marine terrace slopes affected by cryogenic landslides • <i>as. Vaccinio–Betuletum nanae</i> dwarf birch tundra; clay marine terrace slopes and subhorizontal plains • <i>as. Luzulo–Polytrichetum juniperinum</i> grass-moss tundra; snow patches on marine terrace slopes • <i>as. Alopecuretum pratensis</i> forb-grass meadows; shearing surfaces of young cryogenic landslides

In addition to the relevés dataset there is set of 4607 photos taken of helicopter, which is hold by Ksenia Ermokhina and Anna Mikheeva of Lomonosov Moscow State University. All photos are attributed with GPS coordinates and orientation data in ARCGIS project file.

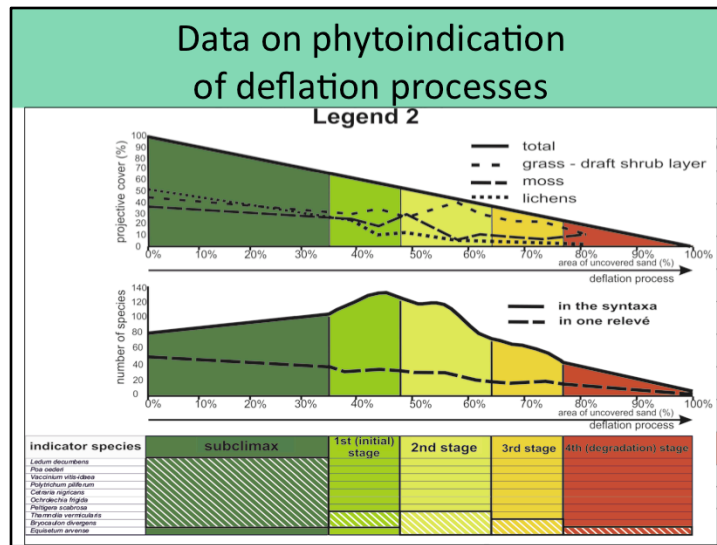
Also the classification of 333 relevés was carried out using Braun-Blanquet approach. Two alliances, each integrating two associations, and three independent associations were identified. All of them are new. Communities of Equiseto-Salicion glaucae alliance are typical for the areas disturbed by the cryogenic landslides in different extent and periods of time. Alliance Luzulo–Festucion rubrae occupies lichen polygonal tundra on subhorizontal plains of marine terraces covered by sand deposits. Association Vaccinio–Betuletum nanae represents sublimax dwarf birch tundra on clay marine terrace slopes and subhorizontal plains. Communities of Luzulo–Polytrichetum juniperinum association are grass-moss tundra of snow patches on marine terrace slopes.



Also Ksenia Ermokhina carried out the research on phytoindication of exogenous processes, mainly focused on cryogenic landslides and deflation.

The main steps in phytoindication of landslide disturbances in the Middle Yamal are:

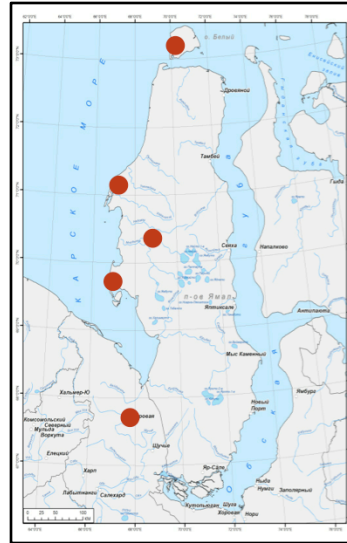
- classification of vegetation using Braun-Blanquet approach;
- construction of seral system of vegetation for landslide slopes of marine terraces **(CLICK)**
- construction of ecological-dynamic series of vegetation in connection to the change of salt content in groundwaters **(CLICK)**
- research on dynamics of vegetation phytomass in constructed series **(CLICK)**
- estimation of the vegetation indicators set associated with the cryogenic landslide age, the type of the formed landslide structure, the mineralization level and the geochemical composition of groundwaters **(CLICK)**
- research on vegetation cover structure and distribution of NDVI **(CLICK)**
- creating of the Phytoindication map of landslide process, which covers about 4000 km² of the west part of Middle Yamal **(CLICK)**
- the map is followed with extended legend, the first part of it is a matrix which shows the main phytoindication interrelations **(CLICK)**
- the second part gives some additional information on seral system of vegetation and geochemical composition of



The research on phytoindication of deflation was carried out by almost the same scheme.

The first step was the classification of vegetation using Braun-Blanquet approach, after that the ecological-dynamic sere was constructed **(CLICK)**

- as the process of deflation is more “simple” than the landslide’s, the indicator species are typical for every stage of deflation **(CLICK)**
- research on vegetation cover structure **(CLICK)**
- and distribution of NDVI was carried out **(CLICK)**
- the Phytoindication map of deflation process was created, it covers the same area of 4000 km² of the west part of Middle Yamal **(CLICK)**
- the map is followed with extended legend, the first part of it is matrix type and shows the main phytoindication interrelations **(CLICK)**
- the second gives some additional information on ecological-dynamic sere of vegetation, projective cover, number of species and contains the list of indicator species



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79 relevés with full lists of
species

additional information in
dataset:

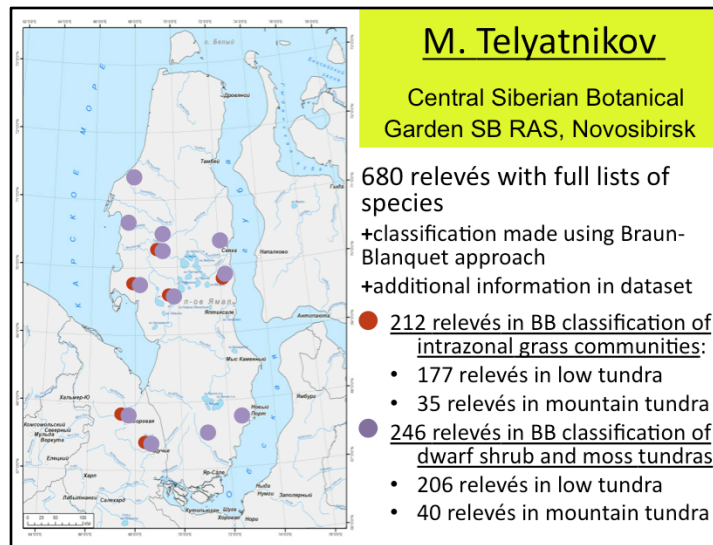
+environmental data (soils,
permafrost, relief, LAI, etc.)

Low tundra

- relevés, phytomass,
environmental data
- relevés, environmental data

Mountain tundra

- relevés, environmental data



Mikhail Telyatnikov of Central Siberian Botanical Garden SB RAS (Novosibirsk) holds the dataset of 680 relevés with full lists of species (vascular plants, lichens and bryophytes). The research was carried out on Polar Urals, South, Middle and North Yamal in 1987-1995. The additional information in dataset include GPS coordinates, projective cover of species, height of trees and shrubs (when applicable) and characteristics of the relief and soils.

Classification of intrazonal grass communities

S. Pristyazhnyuk, M. Telyatnikov

Class *Thlaspietea rotundifolii* Br.-Bl. 1948

Order *Androsacetalia alpinae*
Br.-Bl. ap. Br.-Bl. et Jenny 1926

Alliance *Oxytropido sordidae*–
Tanacetion bipinnati all. nova
hoc loco

As. *Cerastio maximi*–*Salicetum*
nummulariae ass. nova hoc loco

As. *Antennario lanatae*–
Arctoetum alpinae ass. nova hoc
loco

As. *Diantho repentis*–
Festucetum ovinae ass. nova
hoc loco

Class *Mulgedio*–*Aconitetea* Hadac et Klika 1944

Order *Schulzio crinitae*–
Aquilegietalia glandulosae
Ermakov et al. 2000

Alliance *Polemonio acutifl ori*–
Veratrion lobeliani all. nova hoc
loco

As. *Polemonio acutifl ori*–
Veratretum lobeliani acc. nova
hoc loco

Subas. *typicum* subass. nova
hoc loco

Subas. *artemisietosum tilesii*
subass. nova hoc loco

Slide presents Braun-Blanquet classification of intrazonal grass communities made by Mikhail Telyatnikov and Sergey Pristyazhnyuk. 212 relevés of the dataset were involved. This part of the research was published in 2012 in russian.

Intrazonal grass vegetation of the research territory is presented by two groups of plant communities. Communities of short-grass cryophitic meadows are presented by three new associations (*Cerastio maximi*–*Salicetum nummulariae* ass. nova hoc loco, *Antennario lanatae*–*Arctoetum alpinae* ass. nova hoc loco and *Diantho repentis*–*Festucetum ovinae* ass. nova hoc loco) which belongs to new alliance *Oxytropido sordidae*–*Tanacetion bipinnati* all. nova hoc loco.

Subarctic meadows are presented by one new association (*Polemonio acutiflori*–*Veratretum lobeliani* acc. nova hoc loco) which is included in new alliance *Polemonio acutiflori*–*Veratrion lobeliani* all. nova hoc loco.

Classification of dwarf shrub and moss tundras

S. Pristyazhnyuk, M. Telyatnikov

Class Loiseleurio-Vaccinietea Eggler 1952

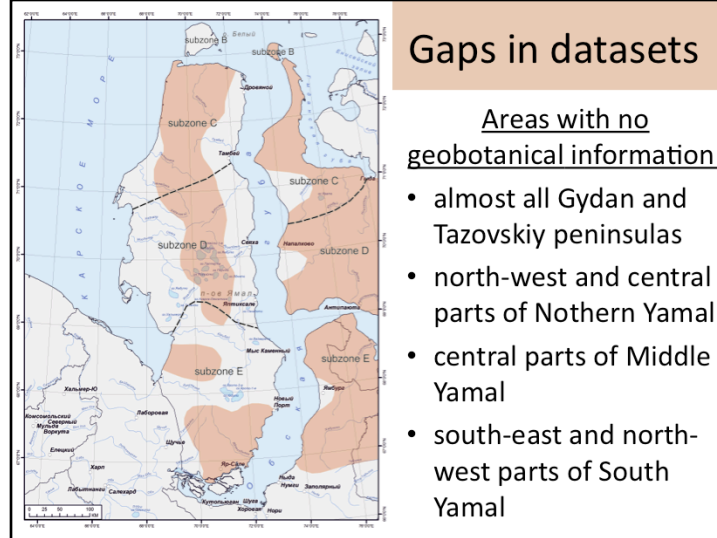
Order Rhododendro-Vaccinietalia Br.-Bl. in Br.-Bl. et Jenny 1926

Alliance Loiseleurio-Diapension (Br.-Bl., Siss. et Vlieg. 1939) Daniels 1982

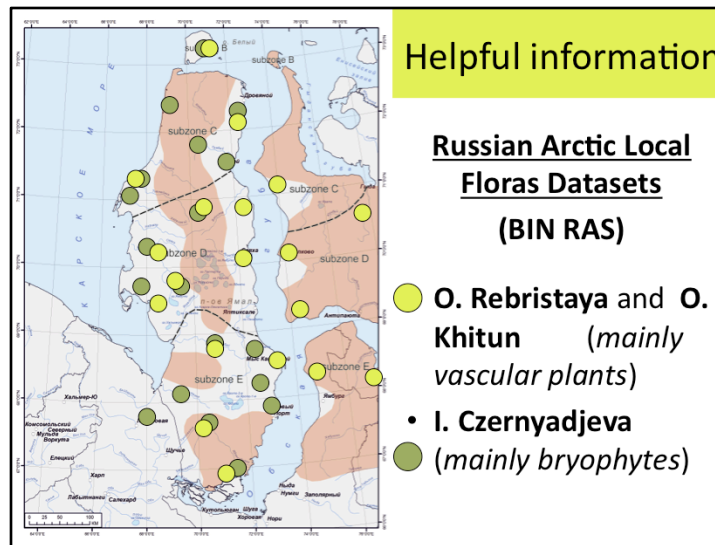
- As. Festuco ovinae – Dryadetum octopetalae ass. nova hoc loco
- As. Sphaerophoro fragilis – Arctagrostetum latifoliae ass. nova hoc loco
- As. Sphagno-eriphoretum vaginati Walker et al. 1994
- As. Tephrosero atropurpureae – Vaccinietum vitis-idaeae ass. nova hoc loco

Slide presents Braun-Blanquet classification of dwarf shrub and moss tundras made by Mikhail Telyatnikov and Sergey Pristyazhnyuk. 246 relevés of the dataset were involved. This part of the research was published in 2012 in russian.

The dwarf shrub and moss tundras of research territory are presented by 4 associations. They belong to the class Loiseleurio-Vaccinietea Eggler 1952. Three associations are described for the first time. In subarctic tundra of Yamal and east foothills of Polar Ural Mountains communities of associations Festuco ovinae – Dryadetum octopetalae ass nova hoc loco and Sphagno-eriphoretum vaginati Walker et al. 1994 are widespread. Communities of the first association occupy convex slopes of watersheds with good drainage. Communities of the second association occupy flat sites of watersheds. Sometimes they participate in formation of tundrovo-marsh complexes. Two other associations Sphaerophoro fragilis – Arctagrostetum latifoliae ass. nova hoc loco and Tephrosero atropurpureae – Vaccinietum vitis-idaeae ass. nova hoc loco are spreading only in subzone D of Yamal. Association Sphaerophoro fragilis – Arctagrostetum latifoliae occupy gently concave slopes of watersheds. Slopes have a moderate drainage. They are formed by sandy loams and sand. Association Tephrosero atropurpureae – Vaccinietum vitis-idaeae occupy gently convex parts of watersheds which are formed by loams.



As this slide shows, the areas without any geobotanical information in this sector of Arctic are rather vast and include almost all Gydan and Tazovskiy peninsulas, north-west and central parts of Northern Yamal, central parts of Middle Yamal and south-east and north-west parts of South Yamal.



Here we present the plots of Russian Arctic Local Floras Datasets, which are hold by Komarov Botanical Institute of RAS (Saint-Petersburg). We believe that this datasets include not only information on flora, but also on vegetation. The problem is that the dataset of accompanying relevés is not in the digital form, but anyway we hope that the necessary relevés will be reachable on a demand.

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Here are presented the main references. Unfortunately, not all the presented information is published yet, some data was obtained directly from the researches.

