

# D4.2 Polarpedia Documentation with an alphabetical list of Arctic glossary and a list of educational resources

Report

*(Public)*

**Project Acronym: EDU-ARCTIC**

**Project Title:**

“Edu-Arctic – Innovative educational program attracting young people to natural sciences and polar research”

**NUMBER — 710240 — EDU-ARCTIC**

## Document information summary

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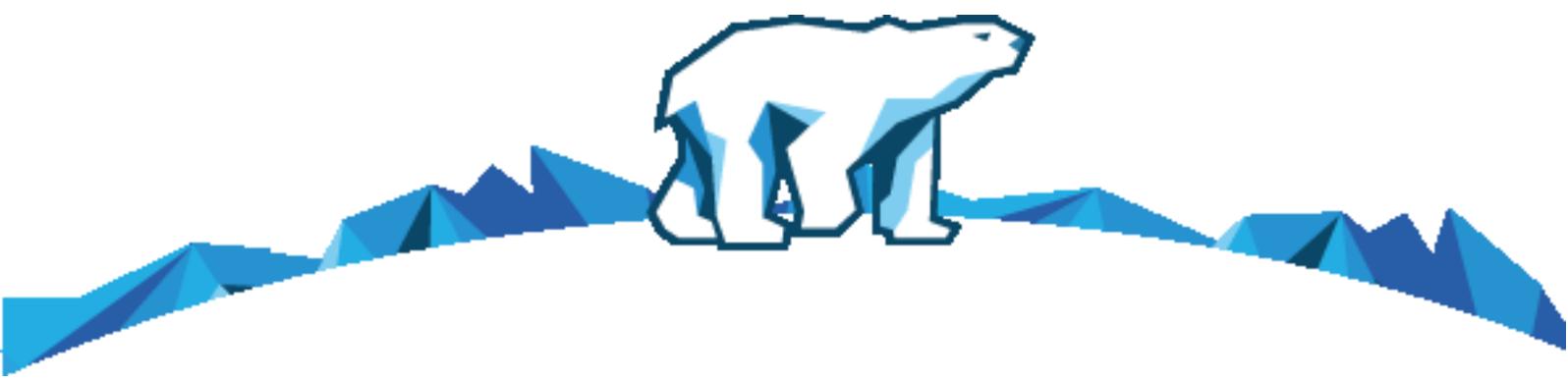


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## Executive summary

The report is Deliverable D4.2 Polarpedia Documentation with an alphabetical list of Arctic glossary and a list of educational resources.

The report pertains to WP4 EDU-ARCTIC EDUCATIONAL PROGRAM.

The aim of the EDU-ARCTIC project is to encourage interest in science, technology, engineering and mathematics (STEM) education to secondary school students.

EDU-ARCTIC's Polarpedia is a free online, accessible to all without registration, Polar research-based encyclopaedia. It is dedicated to educators, schools and students, across Europe and beyond on various issues related to the diverse Arctic environment and societies.

Polarpedia is a component of EDU-ARCTIC's educational program, providing an extensive knowledge base and education support tools on the Arctic region with a direct link to the EDU-ARCTIC online lessons. It provides teachers and students with an educational support that can facilitate their work on scientific issues and expressions in English.

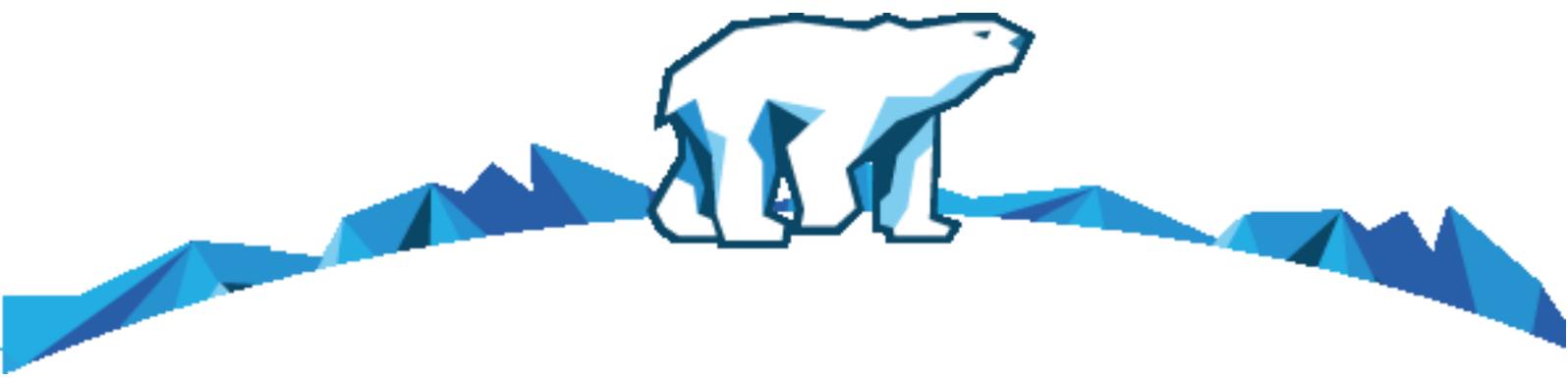
Currently 486 term entries are available in English, which is the projects principal language. Many of the entries have been translated into as many as 16 other national European languages, due to high external interest and support of educators, whereas only five languages where initially planned for.

The report includes documentation of the Polarpedia, including: the terms currently available in English in alphabetical order; number of translations in other languages; list of educational resources in forms of Games and Quizzes; analytics and analysis of Polarpedia users and technical parameters.

Analytics indicate that the number of users is constantly increasing. Search is the most common way of finding the program and its individual terms. The users have visited from almost all the countries of the world with Albania, Poland, Bulgaria and the USA topping the list.

As the analysis of the analytics strongly indicate the importance of increased internal references and optimization of search, to increase the page visits and extend the time spent per users, modifications are being implemented to aid the users in better understanding the scope of the Polarpedia, identifying related terms to their search as well as pointing to the terms of highest user interest.

Polarpedia can be accessed on the [Edu-Arctic.eu](http://Edu-Arctic.eu) main website or directly via [polarpedia.eu](http://polarpedia.eu)



## General information and objectives

The objective of the EDU-ARCTIC project is to encourage interest in science, technology, engineering and mathematics (STEM) education to secondary school students.

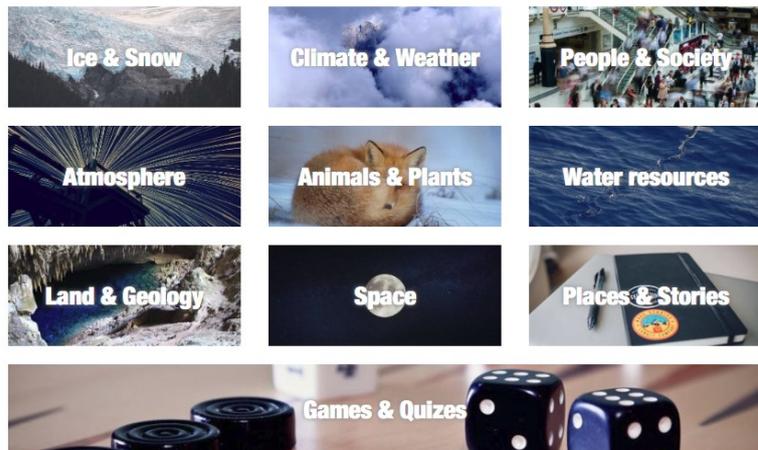
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Currently 486 terms in English, many of which have been translated into as many as 16 other national European languages due to high external interest of and support by educators, whereas only five languages were initially planned for in the project proposal.

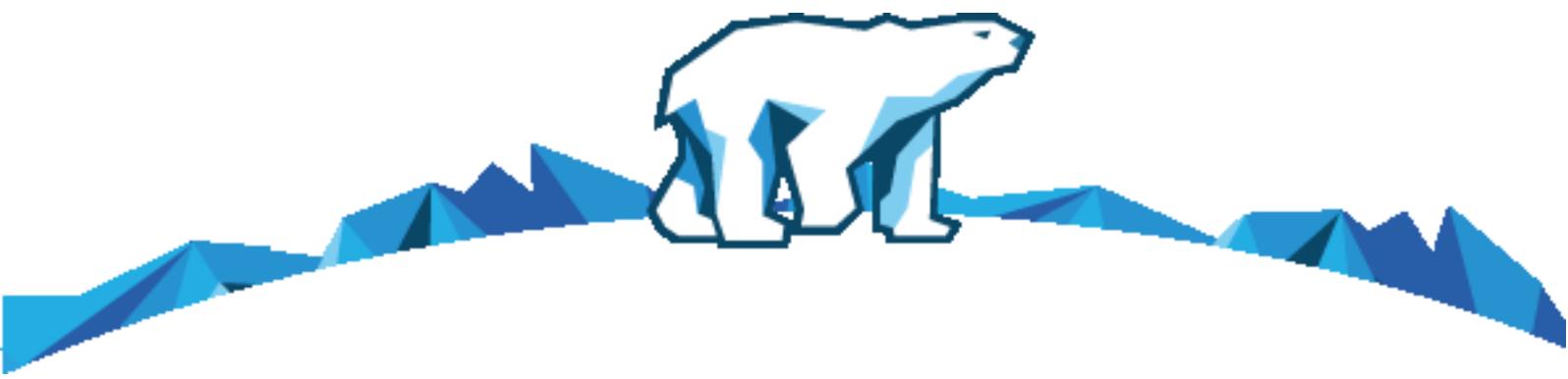
Polarpedia terms are individual entries that contain text, written by scientist and professionals based on Polar research, on various Arctic issues relevant for educators and students. Further information include: photos; graphics; animations or videos. The Polarpedia is divided into ten categories:

- Ice & Snow
- Climate & Weather
- Plants & Animals
- Land & Geology
- Atmosphere
- Water resources
- Space
- People & Society
- Places & Stories
- Games and Quizzes



The main activities within the project task have been:

- Identification of key elements and phenomena;
- Preparation of full description of chosen expressions;
- Creation of multimedia materials representing them;
- Translation;
- Ongoing development and supplementing.



The Polarpedia terms are composed as support to the EDU-ARCTIC's online lessons. A direct link is made between lessons and applicable terms. Such resource bases joined together offer significant help for teachers and have helped them to be active players during on-line lessons transmissions. Teachers have been, and will continue to be, able to prepare themselves and students in advance of lessons by providing vocabulary and knowledge that is connected to the subject of a lesson. It has been and will be very helpful, considering the fact that scientific language is often perceived to be rather hermetic and many terms difficult, not least to non-English speakers. It is therefore useful to have Polarpedia terms with explanations of certain phenomena and processes at one's disposal, in multiple languages.

An additional part of Polarpedia, Games & Quizzes, contains a collection of educational resources for teachers and students in the form of online games, quizzes, worksheets, experiments or teamwork proposals.

**POLARPEDIA**

Contact    

 **EDU-ARCTIC**

About Polarpedia All Articles Categories Program Search for...



**Ice & Snow** **Climate & Weather** **People & Society**

**Atmosphere** **Animals & Plants** **Water resources**

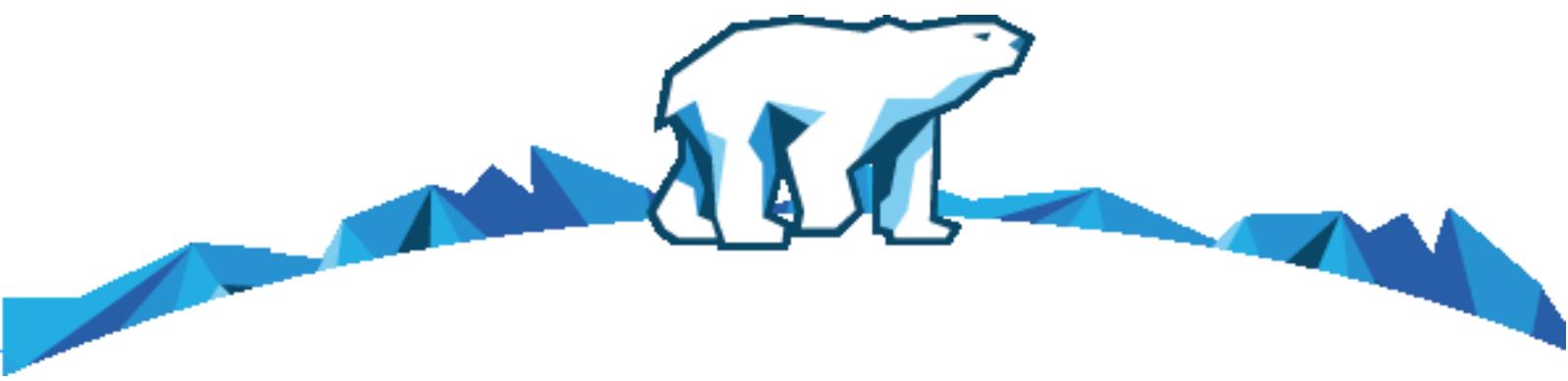
**Land & Geology** **Space** **Places & Stories**

**Games & Quizzes**

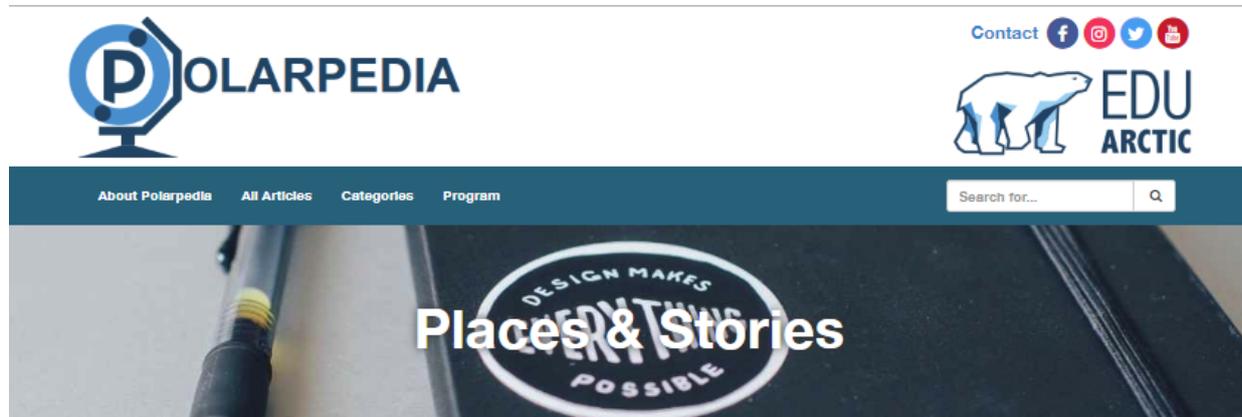
**Newest term**

- Sustainable energy
- Polaris (North Star)
- Kinetic energy
- Potential energy
- Non-renewable energy
- Okta scale
- Carbon capture and storage
- Biodiversity
- Ice shelf
- Ice sheet
- Renewable energy
- Emission scenarios
- Downscaling
- General Circulation Models
- Svalbard
- Krill
- Glaucous gull
- Governor of Svalbard
- Faroe Islands
- Orogeny

Polarpedia terms are created by EDU-ARCTIC Consortium, which holds responsibility for quality of translations in following languages: Polish, French, Danish, Norwegian, German, Russian, Italian, unless indicated otherwise. If you see an error - please contact us: [edukacja@igf.edu.pl](mailto:edukacja@igf.edu.pl)



**Example of a category:** Places and stories. Terms available in English are visible in alphabetical order. National flags indicate translations available within the category.



A B C D E F G I K L N O R S T U V Z

A

- Amphibious vehicle
- AMUPS - Adam Mickiewicz University Polar Station
- Antarctic
- Antarctica
- Arctic
- Arctic Station

B

- Barentsburg
- Barrow Arctic Research Center and Barrow Environmental Observatory (currently Utqlegvik)
- Belgian Antarctic Expedition
- Birds' guano is cooling the Arctic
- Black skin of a polar bear
- Bruce Gordon and his pet polar bear

C

- Calypso Station
- Carrington event
- CEN Ward Hunt Island Research Station
- Conquest of the South Pole – Amundsen-Scott 1911-1913

D

- Discovery of Greenland
- Dying is illegal in Longyearbyen

E

- EGRIP Flair Station

F

- Faroe Islands
- Flashline Mars Arctic Research Station
- Fridtjof Nansen Arctic Fram's expedition

G

- Greenland
- Greenland Institute of Natural Resources

I

- Iceland
- Igloolik research station
- Inuit throat singing

K

- KAFFYØYRA – Polar Station of Nicolaus Copernicus University in Toruń
- Kautokelno revolt

L

- Læstadianism
- Longyearbyen

N

- North-East Science Station
- Ny-Ålesund

O

R

- Research Station Samoylov Island

S

- Sermilik Research Station
- Siberia
- Siberian people
- Summit Station

T

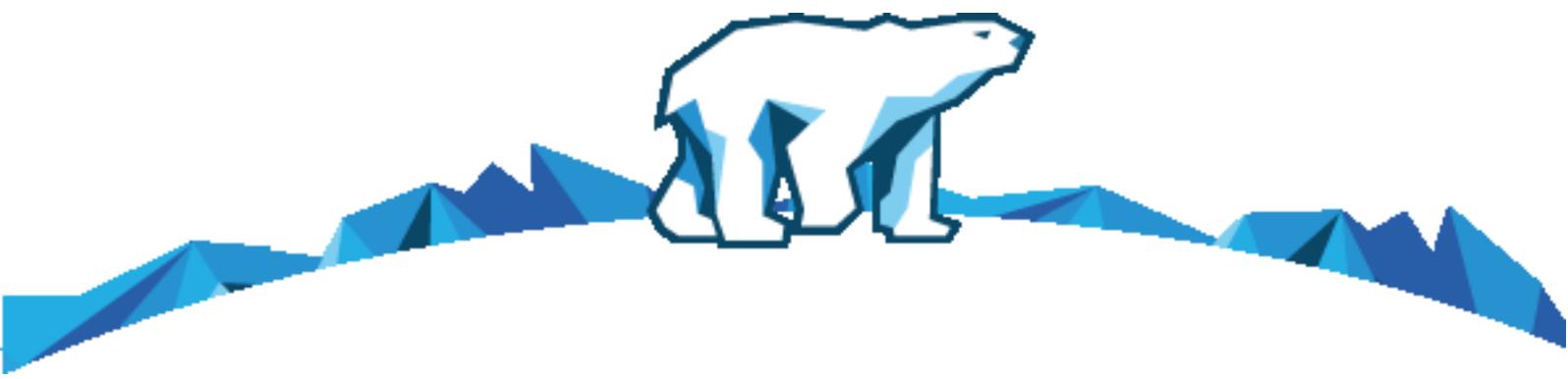
- The Chokurdakh Scientific Tundra Station
- The origins of LIFE on Earth
- The Stanisław Siedlecki Polish Polar Station in Hornsund
- The Willem Barents Biological Station
- Toolik Field Station

U

- Ullium Research Station

Z

- Zackenberg Station



## Information Terms and national versions

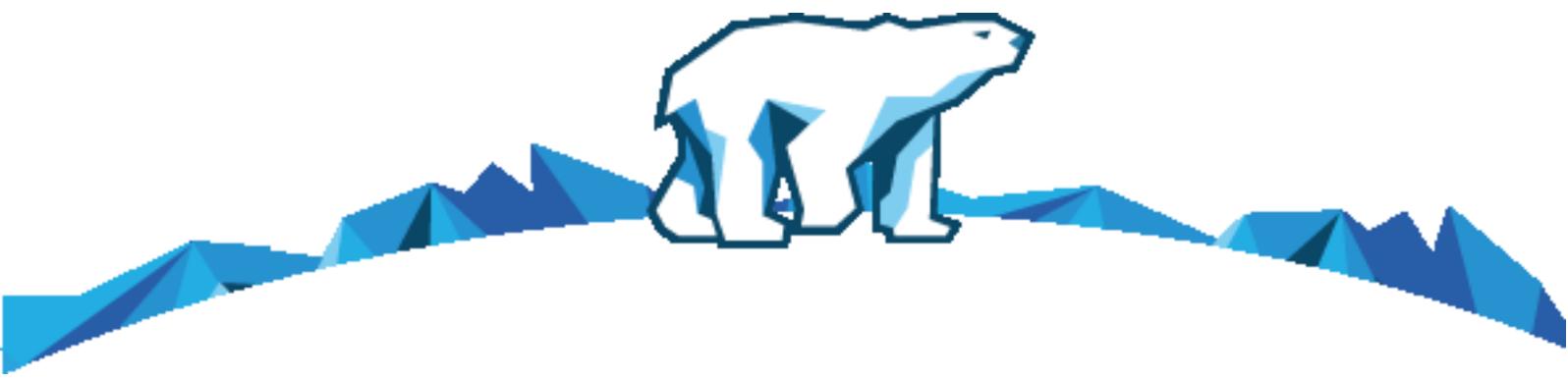
Polarpedia's principal language is English. Many terms have been translated into other European languages, currently 16.

See list of languages and number of current translations (as per 15<sup>th</sup> July 2019) available below.

Language	Number of terms
Polish	486
Norwegian	460
Danish	436
French	110
German	15
Romanian	123
Italian	198
Greek	133
Bulgarian	228
Russian	359
Albanian	446
Serbian	7
Croatian	31
Macedonian	88
Icelandic	90
<b>Spanish</b>	37

Consortium members as well as teachers and scientists from countries such as Greek, Albania, Bulgaria, Iceland and more have provided the Polarpedia with the additional translation of terms, in-kind.

Other languages are being prepared and likely to be entered in the near future, even though the EDU-ARCTIC project is coming to an official end the program has been developed as a standalone and the partner's intent to seek funding to support the existence of the Polarpedia component.



Languages available for each term are presented with a national flag of the country both in the overview category view as well as under the individual term entry.



Terms that are related to available Online lessons are marked with the EDU-ARCTIC hat.



Links to related Online lessons also directly available under the term (marked with red box on photo).

**POLARPEDIA**

Contact

**EDU ARCTIC**

About Polarpedia All Articles Categories Program Search for...

Other languages: English Polski Français Norsk Dansk Ελληνικά Български Русский Shqip Íslenska

## Polar bear

**Description**

Polar bear (*Ursus maritimus*) lives in the Arctic beyond the Arctic Circle in Canada, Alaska, Greenland, Russia, and in the areas covered by sea ice around the North Pole. It does not hibernate during winter, and stays in areas with sea ice, which helps him to move from one place to another and hunting for seals, mainly ringed and bearded. During the summer, when areas of the Arctic ice are shrinking, stays in the coastal zone. Males can weigh up to 700 kg, females are an a half lighter, and weigh up to 350 kg.

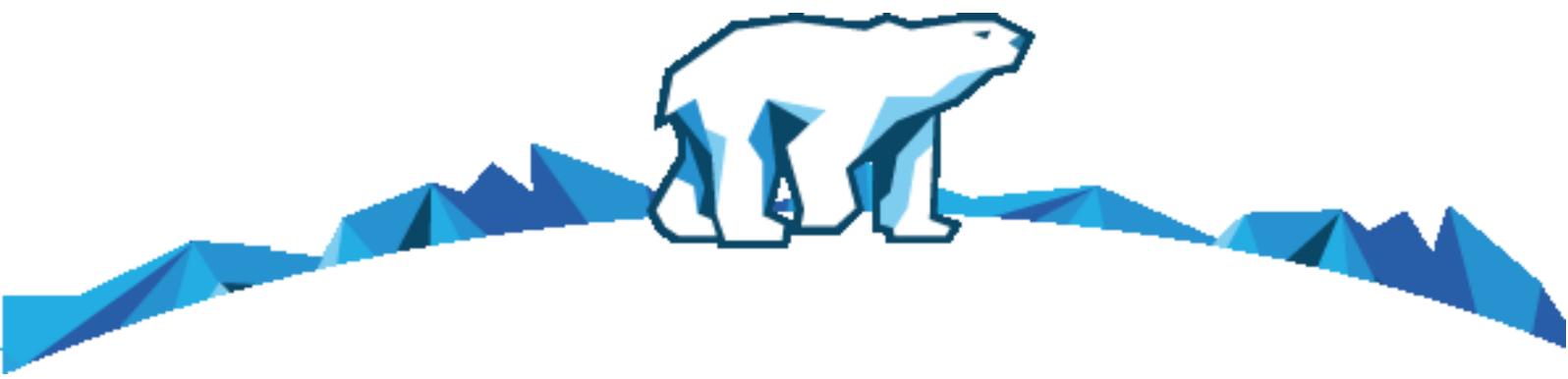
After the mating season in April and May, the cubs are born in a snow den in December and January. In the spring they leave the shelter, and stay with their mother for approx. 2 years.

**Contents [hide]**

- 1 Description
- 2 Bear family
- 3 Ways of adaptation to Arctic climate
- 4 Threats and protection
- 5 Interesting facts

**Related resources:**

- EDU-ARCTIC webinar: Polar bear-king of the Arctic
- Read more on polar bear from Norwegian Polar Institute



Languages available for each term are presented with a national flag of the country under the individual term entry for the benefit of the user (marked with red box on photo).

Animals and plants now have a newly added information window with uniform detailed pieces characterizing information which increases the searchability of the term (marked with red box on photo).



[Contact](#)





[About Polarpedia](#)
[All Articles](#)
[Categories](#)
[Program](#)



Search for...

**Other languages:**

 English
  Polski
  Français
  Norsk
  Dansk
  Ελληνικά
  Български
  Русский
  Shqip
  Íslenska

## Polar bear

### Description

**Polar bear (*Ursus maritimus*)** lives in the Arctic beyond the Arctic Circle in Canada, Alaska, Greenland, Russia, and in the areas covered by sea ice around the North Pole. It does not hibernate during winter, and stays in areas with sea ice, which helps him to move from one place to another and hunting for seals, mainly ringed and bearded. During the summer, when areas of the Arctic ice are shrinking, stays in the coastal zone. Males can weigh up to 700 kg, females are an half lighter, and weigh up to 350 kg.

After the mating season in April and May, the cubs are born in a snow den in December and January. In the spring they leave the shelter, and stay with their mother for approx. 2 years.

### Bear family

It includes, among others, mainly carnivorous polar bear, herbivorous giant panda and the brown bear, which eats meat as well as plant food. Evolutionary lineages of a polar and brown bears separated 5000,000 years ago, when the climate started to cool again, and the population of brown bears remain in areas further north.

### Ways of adaptation to Arctic climate

Arctic climate with long and cold winters and the phenomenon of the polar night forced polar bears to evolve special features that help them to survive. Great sense of smell and long neck with narrow head make them easier to hunt for seals hidden under the ice. Wide paws covered with fur and claws curved in a special way help them not to sink in the snow, or slip on the ice. Fat reserves help them when fasting for several months due to not enough food, and the lack of sea ice that prevents from [seal hunting](#).

### Threats and protection

Pollution, hunting, human economic activities (eg. oil exploration), as well as the progressive melting of sea ice in [the Arctic](#) are

**Contents** [\[hide\]](#)

- [1 Description](#)
- [2 Bear family](#)
- [3 Ways of adaptation to Arctic climate](#)
- [4 Threats and protection](#)
- [5 Interesting facts](#)



**Related resources:**

- EDU-ARCTIC webinar: Polar bear-king of the Arctic
- Read more on polar bear from Norwegian Polar Institute

**Information:**

**Name:** Polar bear  
**Latin name:** *Ursus maritimus*  
**Family:** *Ursidae*  
**Distribution:** Alaska, Siberia, Canada and Greenland  
**Habitat:** The Arctic  
**Size:** 2.2-2.4 m  
**Weight:** Males can weigh up to 700 kg, females can weigh up to 350 kg.  
**Number of young:** 1 to 3 cubs  
**Lifespan:** 25 to 30 years  
**Diet:** Carnivore



Many of the terms have multimedia material such as videos and images as well as links to related material of interest and benefit to the user.



[Contact](#)







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**Other languages:**

 English
  Polski
  Norsk
  Dansk
  Română
  Italiano
  Български
  Русский
  Shqip
  македонски јазик
  íslenska

## Gákti

Traditional Sami clothing, in the past made from reindeer leather and sinews, nowadays more commonly made from wool, cotton, or silk.

The traditional Sami costume is characterized by a dominant color adorned with contrast colored bands, plaits, embroidery, and often a high collar. Traditional gákti are most commonly in variations of red, blue, green, white, medium-brown tanned leather, or reindeer fur. The main part of the costume consists of a pullover, which is basically the same for men and women, the mens' version is a bit shorter hangs about mid thigh, while the womens' hangs to the knee or mid calf, depending on the local variation. Women's gákti typically consist of a dress, a fringed shawl and boots/shoes made of reindeer fur or leather, beautifully decorated silver jewellery. The boots typically have pointed or curled toes.

Gákts differ from community to community, for example, in southern parts of Sápmi is longer than the one in the north of the region.

The colours, patterns and the jewellery of the gákti are indicative of where a person is from, whether the person is single or married, and sometimes even a specific family. The shape of buttons on belt tells if the person is married or not. Square buttons mean that the person is married. Single people wear belt with round buttons.

They are worn both in ceremonial contexts and while working, especially when herding reindeer.

Photo: NN – norden.org



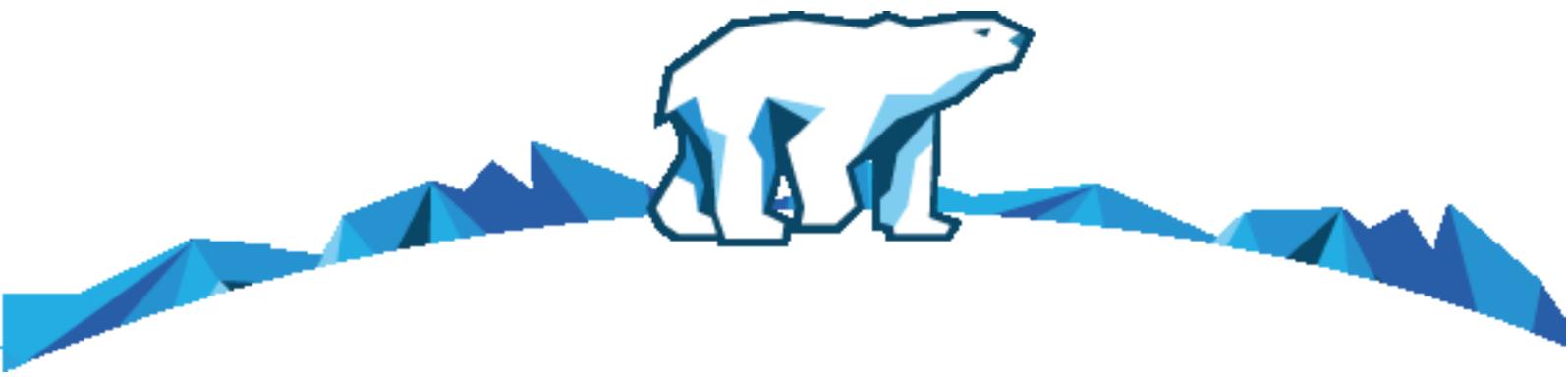
**Sami People Documentary**

Traditional costume called Gákti (or kolt) is worn in weddings, funerals, religious festivals, but also worn while everyday work. People use leather, sinews, and wool, which are the most common material used, in order to make a gákti but it's often made with silk and velvet.

**Related resources:**

- [Sami people documentary](#)
- [EDU-ARCTIC: Saami: the Reindeer People](#)

**Categories:** [All Articles](#), [People & Society](#)



## Alphabetical list of terms

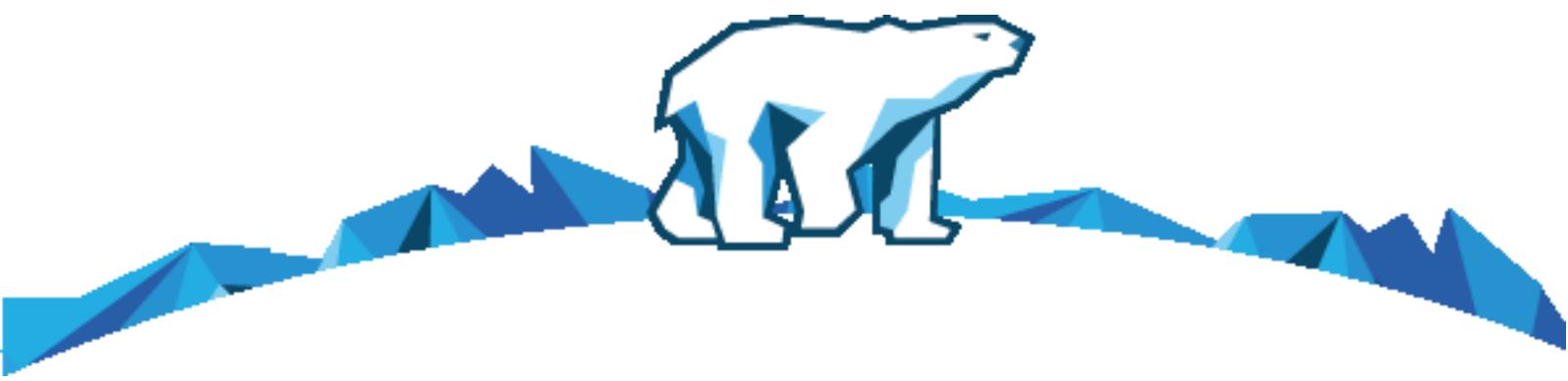
Polarpedia currently contains 486 individual terms in English (as of 15 July 2019). The full list of the terms, in alphabetical order, is the following:

### A) 41 terms

Abiotic environment	Antarctic
Ablation	Antarctic Treaty
Ablation stakes	Antarctica
Ablation zone	Anticorona
Academic writing	Apex predator
Accumulation	Archea
Acicular ice	Arctic wolf
Active layer	Arctic
Ada Lovelace	Arctic amplification
Alaska pollock	Arctic charr
Alass	Arctic Council
Albedo	Arctic fox
Alveolus	Arctic haze
AMAP	Arctic skua
Amphibious vehicle	Arctic station
AMUPS - Adam Mickiewicz University Polar Station	Arctic tern
Anadromous fish	Arctic tree line
Arctic tundra	Aurora (Northern/Southern Lights, Polar lights)
Asthenosphere	Auroral oval
Astronomical polar night	Autumn colouring
Astronomical twilight	

### B) 36 terms

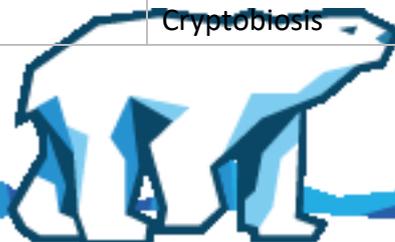
Baleen	Biomass energy
Banded iron formation	Biome
Barentsburg	Biomining
Barnacle goose	Biotic environment



Barrow Arctic Research Center and Barrow Environmental Observatory (currently Utqiagvik)	Birds' guano is cooling the Arctic
Batagaika crater	Black carbon
Bearded seal	Black hole
Belgian Antarctic Expedition	Black skin of a polar bear
Beluga whale	Blubber
Benthic algae	Blue whale
Benthic fish and animals	Boreal forest(taiga)
Bern Convention	Bottlenosed whale
Bioaccumulation	Braided stream
Biodilution	Brinicle
Biodiversity	Brown bear
Bioremediation	Bruce Gordon and his pet polar bear
Biological clocks	Buryats
Biomagnification	Buryats cuisine

**C) 37 terms**

Calving	Conquest of the South Pole – Amundsen-Scott 1911-1913
Calypso Station	Continental shelf
Capelin	Continuity
Carrington event	Convergent Plate Boundary
Carbon capture and storage	Coriolis effect
Catadromous fish	Corona
CATCHMENT	Coronal holes
CEN Ward Hunt Island Research Station	Coronal mass ejections
Chukchi	Corridor
Circadian rhythm	Cross-cutting relationships
Cirque	Crustaceans
Citizen science	Cryoconite
Civil polar night	Cryolite
Civil twilight	Cryopeg
Climate	Cryosphere
Climate lag	Cryoturbation
Cod	Cryptobiosis



Common eider	Cryptochromes
Confusion effect	

**D) 21 terms**

Declining Ocean Basin	Discovery of Greenland
Decomposer	Dispersal
Delayed implantation	Diurnal vertical migration
Depth Of Zero Annual Amplitude (ZAA)	Divergent Plate Boundary
Diagenesis	DNA
Diamictite	Dolphins
Diapause	Dorset culture
Diatomaceous earth	Downscaling
Diatoms	Drake equation
Dike	Dying is illegal in Longyearbyen
DISCHARGE	

**E) 12 terms**

Earth's outer core	Ernest Shackleton 1874-1922
Eccentricity	Erosion
EGRIP Field Station	Esker
Embryonic Ocean Basin	Evenks
Emission scenarios	Event horizon
Equilibrium line altitude (ELA)	Evolution

**F) 22 terms**

Faroe islands	Fractals
Fast Radio Bursts	Freezing index
Fermi paradox	Freezing point depression
Fibonacci sequence	Fridtjof Nansen
Firn	FRIDTJOF NANSEN Arctic FRAM's expedition
Fjord	Frost Cracking
Flashline Mars Research Arctic Station	Frost flowers
Floating method	Frost quake



Food chain	Frost smoke
Food web	Fulmar
Fossil	Fungi - Mushroom

**G) 37 terms**

Gakti	Glaciospeleologist
General Circulation Models	Glaucous gull
Genetic composition	Global Seed Vault
Geoengineering	Governor of Svalbard
Geological Timescale	Grasshopper effect
Geologist and geomorphologist	Greenhouse effect
Geomagnetic storm	Greenhouse gas
Geostationary orbit	Greenland
Geothermal energy	Greenland Institute of Natural Resources
Geyser	Greenland shark
Glacial abrasion	Greenlandic language
Glacial earthquakes	Grounding line
Glacial karst	Growler
Glacial striations and scratches	Grumantbyen
Glaciation	Gulf-stream
Glacier	Gumpi
Glacier mass balance	Gyre
Glacier mill	Gyrfalcon
Glaciologist	

**H) 19 terms**

Habitat	<b>Higher plants</b>
Haddock	Hindcasting
Hadley cell	Home range
Halibut	Horizontal gene transfer
Hanging valley	Horizontality
Harbor porpoise	Humpback whale
Hatching	Hydrology
Herring	Hydropower
Hiatus	Hydrosphere



Hibernation	
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**I) 23 terms**

Ice	Igloo
Ice age	Igloolik research station
Ice blink	Indicator species
Ice core	Indigenous people
Ice marginal valley	Interglacial age
Ice sheet	Inuit throat singing
Ice shelf	Inuit languages
Ice storm	Invasive species
Iceberg	Invertebrate
Icefall	Ionosphere
Iceland	Isohyse

**J) 4 terms**

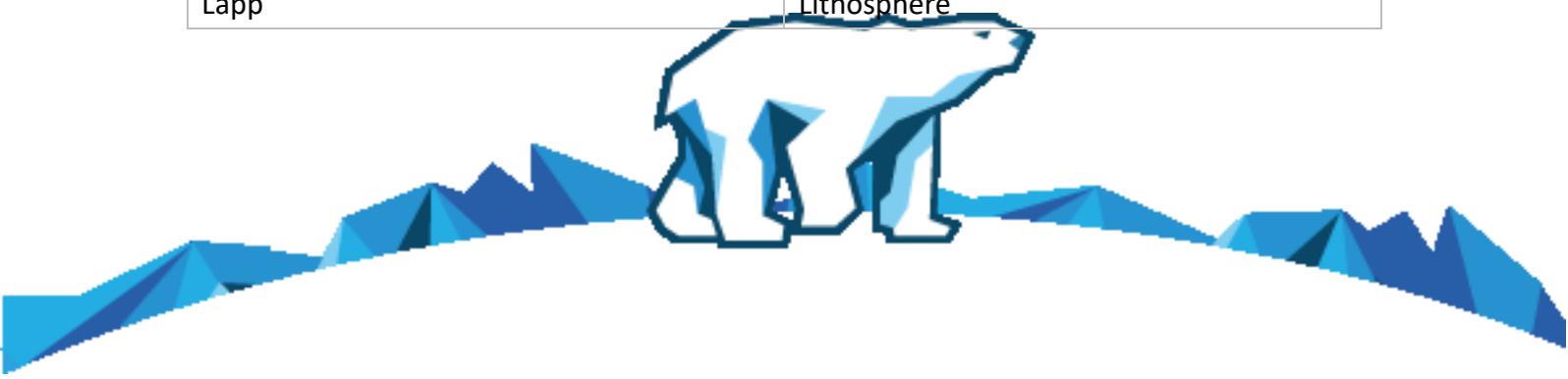
Jet stream	Jokulhlaup
John Franklin	Juvenile Ocean Basin

**K) 13 terms**

KAFFYØYRA – Polar Station of Nicolaus Copernicus University in Toruń	<b>Killer whale</b>
Kams	Kinetic energy
Kardashev scale	King crab
Karst phenomena	Kiviak
Karst spring	Krill
Kautokeino revolt	Kunik
Keystone species	

**L) 18 terms**

Laestadianism	Light pillars
Langhus	Lion's mane jellyfish
Lapp	Lithosphere



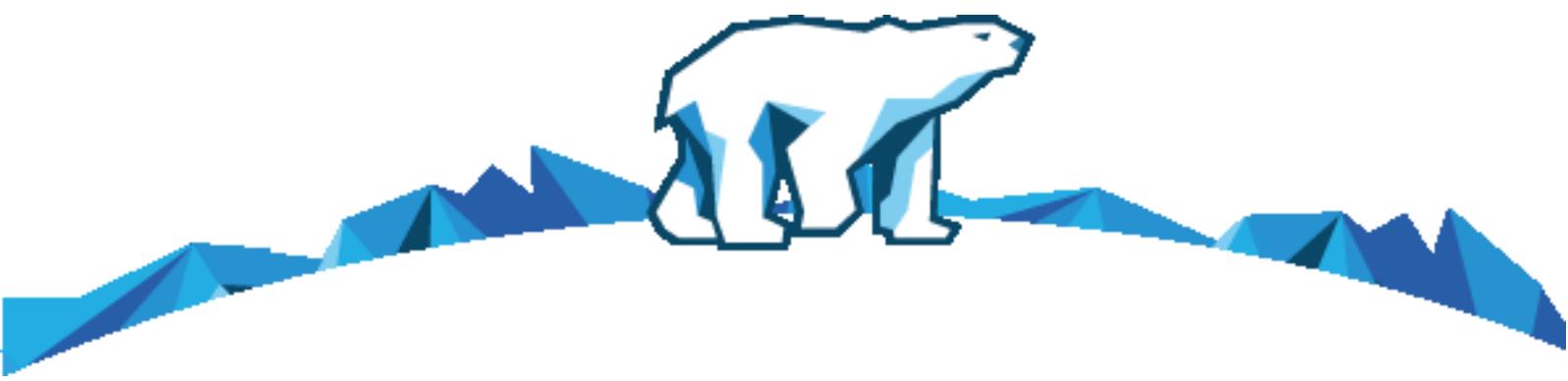
Lavvu	Little auk
Layers of Earth	Little auk - behaviour and natural habitat range
Lazarus taxon	Little auk: description, reproduction and individual development
Lichens	Little Ice Age
LiDAR	Living fossil
Life cycle of freshwater mussels	Longyearbyen

**M) 22 terms**

Mackerel	Microplastic
Magnetosphere	Midnight sun
Mass extinction	Migratory birds
Mattak	Milanković cycles
Mature Ocean Basin	MIMOSA
Medial moraine	Minke whale
Medieval Warm Period	Molecular clock
Membrane bioreactor	Moraine
Metamorphic rocks	Mpemba effect
Meteorologist	Muskox
Methanogens	Mycorrhiza

**N) 17 terms**

Naledies	Non-renewable energy
Narwhal	North Atlantic Oscillation
Natural selection and adaptation	North-East Science Station
Nautical polar night	Northwest passage
Nautical twilight	Novaya Zemlya effect
Nenets	Nunatak
NIBIO	Nutrients
Nilas	Ny-Alesund
Non-invasive sampling	



**O) 10 terms**

Obliquity	Orbital forcing
Ocean acidification	Organic compound
Ocean current	Ornithogenic soils
Okta scale	Orogeny
Operation Popeye	Orographic clouds

**P) 37 terms**

Pack ice	Polar air
Palsa	Polar bear
Parasitism	Polar explorer
PCR	Polar lows
Pearls from freshwater mussels	Polar night
Pelagic fish	Polar orbit
Permafrost	Polar stratospheric clouds
Permafrost Carbon Cycle	Polar syndromes
Perpetual frost climate	Polar vortex
Phenology	Polar willow
Philopatry	Polaris
Photoperiod	Potential energy
Photosynthesis	Precession
Physiological adaptations	Precipitation
Phytoplankton	Primary producer
Pile driving rig	Protolith
Pingo	Psychrophiles
Plankton bloom	Puffin
Plate tectonics	

**Q) 2 terms**

Qajaq	Quinzhee
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**R) 12 terms**

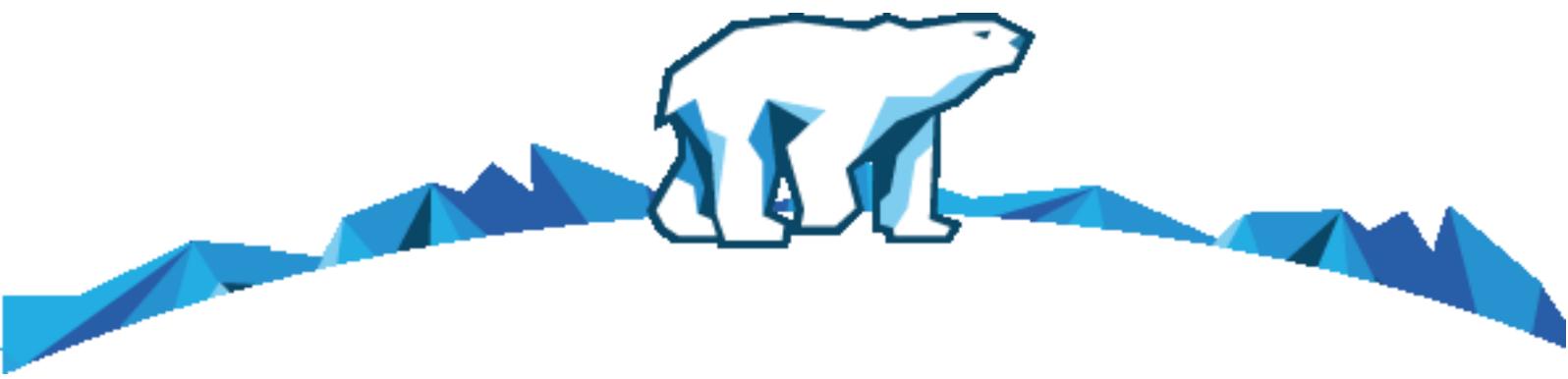
Radiocarbon dating	Reverse osmosis
Redfish/rockfish	RNA World hypothesis



Reindeer	Roche moutonnée
Relative age	Rock glacier
Renewable energy	Rock ptarmigan
Research Station Samoylov Island	Runes

### S) 53 terms

Saithe	Space weather
Salmon	Spawning
Sandur	Species translocation
Satellite	Sponges
Scavenger	Steam drilling
Sea floor spreading	Stratigraphy
Sea ice	Stratosphere
Sea Ice Extent (SIE) index	Stromatolites
Sea ice minimum	Suaasat
Seals	Subarctic
Sediments	Subsea permafrost
Seed bank	Sudden Stratospheric Warming
Sermilik Research Station	Summit Station
Sharks and skates	Sun dog
Shrimp	Supercontinent
Siberia	Superior mirage
Siberian people	Superposition
Sill	Supraglacial debris
Sled dogs	Surge
Smoltification	Sustainable energy
Snow blindness	Suturing
snow bunting	Svalbard
Snow cornice	Svalbard poppy
Snowy owl	Svalbard rock ptarmigan
Solar energy	Svalbard Treaty
Solar wind	Symbiosis
Space analogue	



**T) 24 terms**

Talik	Thermohaline circulation
Talus cones	Thermokarst
Tardigrades	Thermosphere
Temperature inversion	Toolik Field Station
Temperature profile (atmosphere)	Transform Plate Boundary
Terminal Ocean Basin	Tributary glacier
The Chokurdakh Scientific Tundra Station	Tropopause
The Ferrel cell	Troposphere
The origins of LIFE on Earth	Tsunami
The Polar Code	Tsunami Warning Systems
The Stanisław Siedlecki Polish Polar Station in Hornsund	Tundra climate
The Willem Barents Biological Station	Twilight

**U) 3 terms**

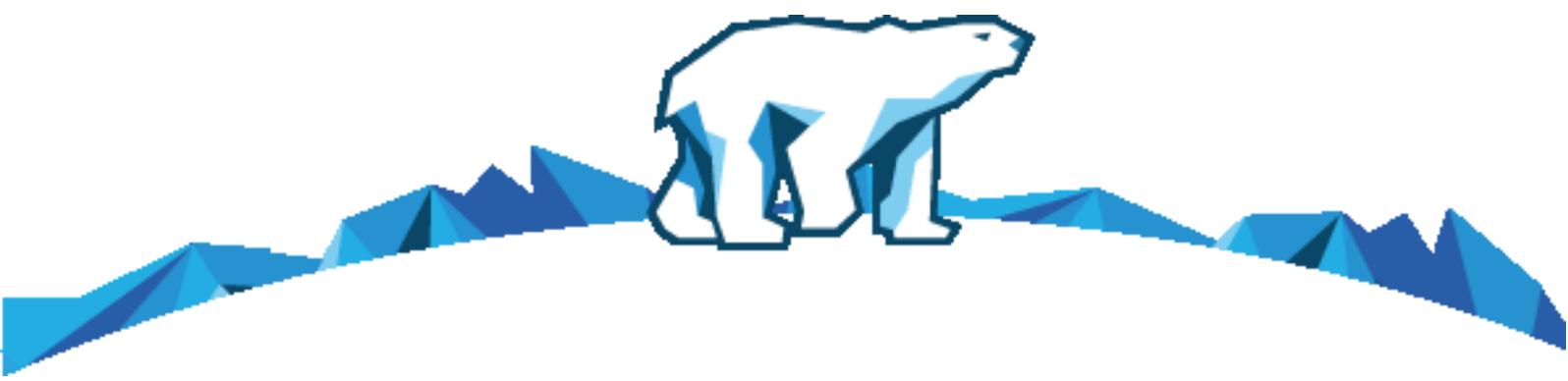
Umbrella species	U-shaped valley
Umiaq	

**V) 2 terms**

Villum Research Station	Volumetric method
-------------------------	-------------------

**W) 15 terms**

Walrus	Wildlife monitoring
Water sky	Wildlife problem individual
Watermelon snow	Wilson cycle
Weather	Wind power
Wildlife conflict and mitigation	Winter darkness
Wildlife forensic	Wolverine
Wildlife habituation	Worms
Wildlife management	



**Y) 3 terms**

Yakuts	Yoik
Yedoma	

**Z) 3 terms**

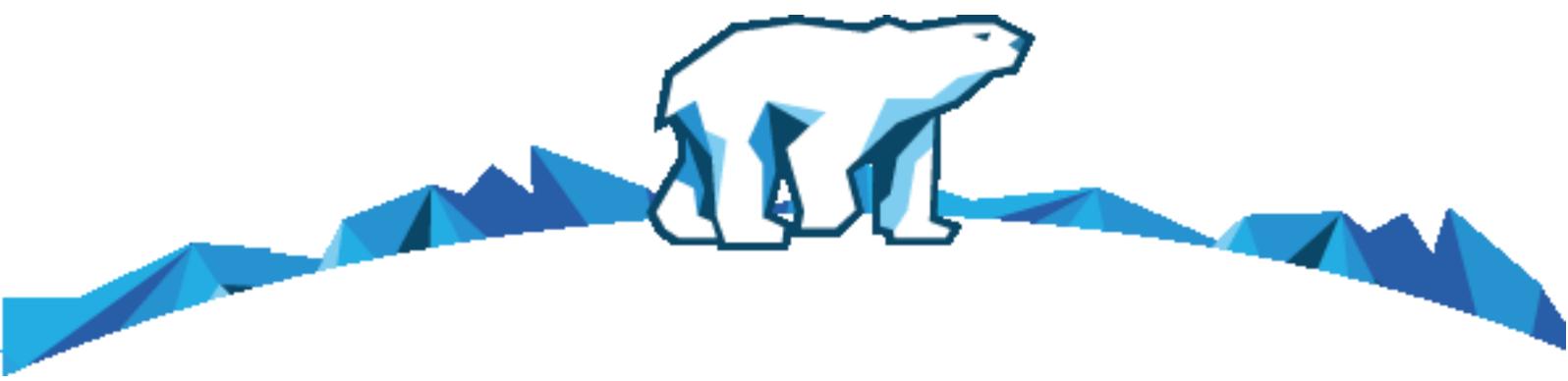
Zackenber Station	Zooplankton
Zero curtain effect	

**Educational resources - Games and quizzes**

An additional part of Polarpedia, Games & Quizzes, contains educational support resources for teachers and students in the form of online games, quizzes, worksheets, experiments or teamwork proposals and miscellanea.

The Games and Quizzes are available in five languages a part from English: Polish, Norwegian, Italian, Russian and Albanian.

Languages	Online Games	Quizzes	Worksheet	Experiments	Teamwork	Miscellanea
English	47	24	24	7	5	14
Polish	7	5	6	1	1	2
Norwegian	1		4			
Italian		1				
Russian		1				
Albanian			3		1	





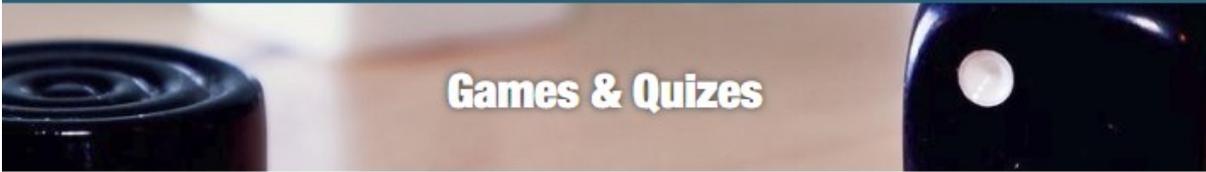
Contact    



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## Games & Quizzes

ALL









Online games



Quizzes



Worksheets



Experiments



Teamwork



Miscellanea



### Wheel of Fortune

Spin the wheel and check your knowledge. All the answers are POLARPEDIA terms. Can you guess all 8 of them? Each time you spin the wheel, you indicate a CONSONANT (s, r etc.) You gain points and that allows you to buy a VOWEL (a,e,u etc.). Check the clues and find the answer!

Categories: Games & Quizzes, Online games

PLAY



### POLAR SUDOKU

The objective is to fill a 4x4 grid with images of Arctic animals: ARCTIC TERN, NARWHAL, PUFFIN and MUSKOX in such a way that each column, each row, and each of the 2x2 grids that make up the larger 4x4 grid contains all of the images, and every image appears only once. This game can [...]

Categories: Quizzes  
Tags: biology

DOWNLOAD



### Biological clocks

This worksheet accompanies the webinar "Biological clocks in the Arctic". Related Polarpedia terms: biological clocks, circadian rhythm, hibernation, midnight sun, phenology, polar night, polar syndrome, winter darkness

Categories: Worksheets

DOWNLOAD



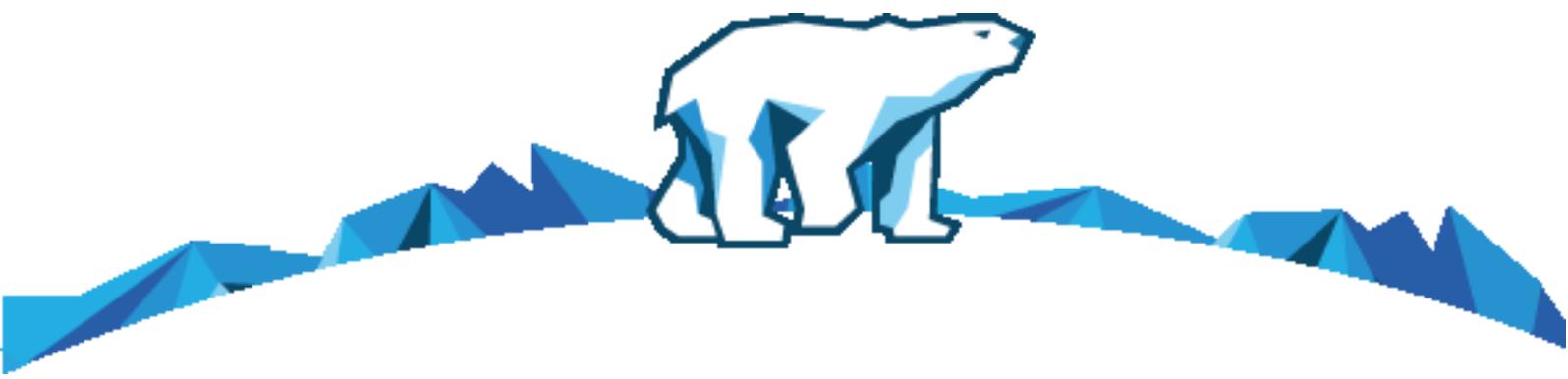
### MUSHROOMS IN NATURE – OUR HELPERS

Did you know there are mushrooms even in the Arctic? Use this worksheet to learn about the role of mushrooms in nature. It is possibly larger and more diverse than you are aware of. Relevant Polarpedia terms: fungi, decomposer, mycorrhiza, lichen, symbiosis

Categories: Worksheets

DOWNLOAD

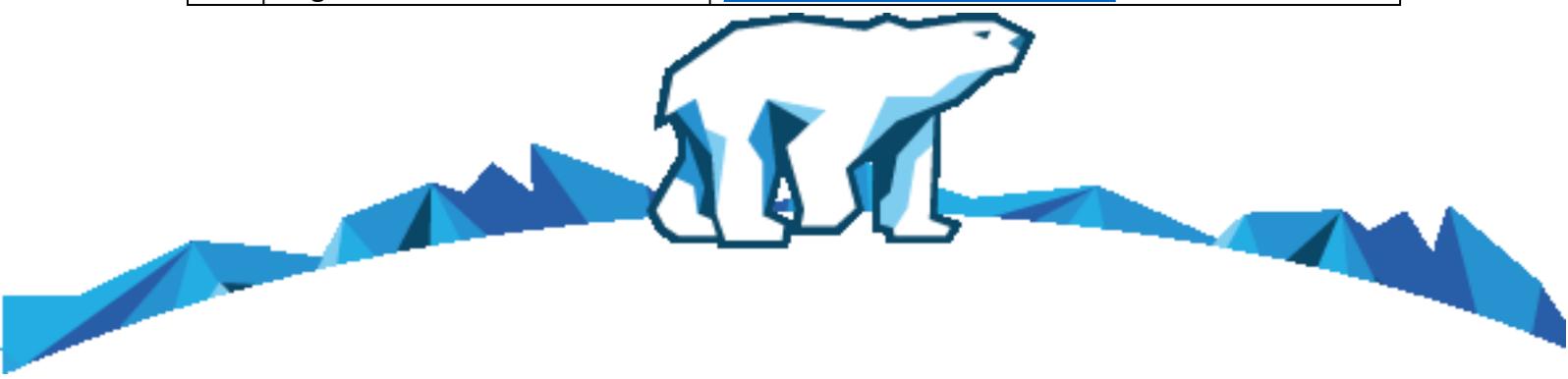
<https://polarpedia.eu/en/category/games-quizzes/>



Following is a full list of educational resources to support educators and students in English currently available in the Polarpedia.

### Online Games

No.	List of Online Games in English	Links
1	Wheel of Fortune	<a href="https://www.wisc-online.com/users/eduarctic/games/36282/wheel-of-fortune">https://www.wisc-online.com/users/eduarctic/games/36282/wheel-of-fortune</a>
2	Nerdy Crossword	<a href="https://www.wisc-online.com/users/eduarctic/games/26794/nerdy-crossword">https://www.wisc-online.com/users/eduarctic/games/26794/nerdy-crossword</a>
3	Memo – Flags of Arctic countries	<a href="https://www.educaplay.com/learning-resources/3826707-flags-of-arctic-countries.html">https://www.educaplay.com/learning-resources/3826707-flags-of-arctic-countries.html</a>
4	National emblems	<a href="https://www.educaplay.com/learning-resources/3826765-national-emblems.html">https://www.educaplay.com/learning-resources/3826765-national-emblems.html</a>
5	Memo – Spitsbergen	<a href="https://www.educaplay.com/learning-resources/3826778-obrazy-ze-spitsbergenu-d.html">https://www.educaplay.com/learning-resources/3826778-obrazy-ze-spitsbergenu-d.html</a>
6	National flags and emblems	<a href="https://www.educaplay.com/learning-resources/3828464-national-flags-and-emblems.html">https://www.educaplay.com/learning-resources/3828464-national-flags-and-emblems.html</a>
7	Buzz-in	<a href="https://www.wisc-online.com/users/eduarctic/games/26504/buzz-in">https://www.wisc-online.com/users/eduarctic/games/26504/buzz-in</a>
8	Icy Bingo	<a href="https://www.wisc-online.com/users/eduarctic/games/26494/icy-bingo">https://www.wisc-online.com/users/eduarctic/games/26494/icy-bingo</a>
9	Bee-an explorer	<a href="https://www.wisc-online.com/users/eduarctic/games/26422/bee-an-explorer">https://www.wisc-online.com/users/eduarctic/games/26422/bee-an-explorer</a>
10	Arctic TimeOut	<a href="https://www.wisc-online.com/users/eduarctic/games/26421/arctic-time-out">https://www.wisc-online.com/users/eduarctic/games/26421/arctic-time-out</a>
11	Polar TIC-TAC-TOE	<a href="https://www.wisc-online.com/users/eduarctic/games/26401/polar-tic-tac-toe">https://www.wisc-online.com/users/eduarctic/games/26401/polar-tic-tac-toe</a>
12	Arcade Snake – ARCTIC RACE	<a href="https://www.wisc-online.com/users/eduarctic/games/26399/arctic-race">https://www.wisc-online.com/users/eduarctic/games/26399/arctic-race</a>
13	Who wants to be a polar researcher?	<a href="http://www.superteachertools.us/millionaire/millionaire.php?gamefile=57583">http://www.superteachertools.us/millionaire/millionaire.php?gamefile=57583</a>
14	Arctic mammals: living on the edge – Kahoot! Quiz	<a href="https://play.kahoot.it/#/lobby?quizId=dce64676-45b3-492e-88ed-2c97dfd4c2ff">https://play.kahoot.it/#/lobby?quizId=dce64676-45b3-492e-88ed-2c97dfd4c2ff</a>



15	Spot the connection!	<a href="https://www.classtools.net/connect/201805_QHH_UJ6">https://www.classtools.net/connect/201805_QHH_UJ6</a>
16	Online jigsaw – Faroe Islands	<a href="https://puzzlefactory.pl/pl/puzzle/graj/krajobrazy/176201-faroe-islands">https://puzzlefactory.pl/pl/puzzle/graj/krajobrazy/176201-faroe-islands</a>
17	Online jigsaw – PUFFIN	<a href="https://puzzlefactory.pl/pl/puzzle/graj/zwierzeta/176161-puffin-fratercula-arctica">https://puzzlefactory.pl/pl/puzzle/graj/zwierzeta/176161-puffin-fratercula-arctica</a>
18	Wordsearch puzzle: find 5 Polarpedia terms	<a href="https://www.educaplay.com/learning-resources/3441671-find-polarpedia-terms.html">https://www.educaplay.com/learning-resources/3441671-find-polarpedia-terms.html</a>
19	Match definitions and terms	<a href="https://www.educaplay.com/learning-resources/3441673-match-terms-and-definitions.html">https://www.educaplay.com/learning-resources/3441673-match-terms-and-definitions.html</a>
20	Arctic fauna: match definitions and images	<a href="https://www.educaplay.com/learning-resources/3440299-what-does-the-image-show.html">https://www.educaplay.com/learning-resources/3440299-what-does-the-image-show.html</a>
21	Arctic fauna – hangman puzzle	<a href="https://www.proprofs.com/games/word-games/hangman/how-well-do-you-know-arctic-animals/">https://www.proprofs.com/games/word-games/hangman/how-well-do-you-know-arctic-animals/</a>
22	Arctic animals – brain teaser	<a href="https://www.proprofs.com/games/brain-teasers/arctic-animals-and-plants/">https://www.proprofs.com/games/brain-teasers/arctic-animals-and-plants/</a>
23	Wordsearch puzzle: find 5 Polarpedia terms	<a href="https://www.educaplay.com/learning-resources/3439432-find-polarpedia-terms.html">https://www.educaplay.com/learning-resources/3439432-find-polarpedia-terms.html</a>
24	Polar JEOPARDY game	<a href="http://www.superteachertools.us/jeopardyx/jeopardy-review-game.php?gamefile=2426115#.XQD7xIj7S9J">http://www.superteachertools.us/jeopardyx/jeopardy-review-game.php?gamefile=2426115#.XQD7xIj7S9J</a>
25	Polar bear ve. Penguin – Kahoot!	<a href="https://create.kahoot.it/share/f1654ba3-8b7b-4234-897c-a5e6fa4e096a">https://create.kahoot.it/share/f1654ba3-8b7b-4234-897c-a5e6fa4e096a</a>
26	Icy crossword	<a href="https://www.educaplay.com/learning-resources/3441879-icy-crossword.html">https://www.educaplay.com/learning-resources/3441879-icy-crossword.html</a>
27	Jumbled word – “Animals & Plants”	<a href="https://www.educaplay.com/learning-resources/3442855-put-letters-in-correct-order.html">https://www.educaplay.com/learning-resources/3442855-put-letters-in-correct-order.html</a>
28	Jumbled word – “People and society”	<a href="https://www.educaplay.com/learning-resources/3442850-put-letters-in-correct-order.html">https://www.educaplay.com/learning-resources/3442850-put-letters-in-correct-order.html</a>
29	Jumbled word – “Ice & Snow”	<a href="https://www.educaplay.com/learning-resources/3442844-put-letters-in-correct-order.html">https://www.educaplay.com/learning-resources/3442844-put-letters-in-correct-order.html</a>
30	Jumbled sentence – subsea permafrost	<a href="https://www.educaplay.com/learning-resources/3442841-put-the-words-in-correct-order.html">https://www.educaplay.com/learning-resources/3442841-put-the-words-in-correct-order.html</a>
31	Matching columns	<a href="https://www.educaplay.com/learning-resources/3441573-match-parts-of-sentences.html">https://www.educaplay.com/learning-resources/3441573-match-parts-of-sentences.html</a>



32	Matching game – build the mosaic	<a href="https://www.educaplay.com/learning-resources/3442798-match-photo-with-name-term.html">https://www.educaplay.com/learning-resources/3442798-match-photo-with-name-term.html</a>
33	Arctic riddle: what is it?	<a href="https://www.educaplay.com/learning-resources/3442006-it-s-in-the-north-and-growing-fast.html">https://www.educaplay.com/learning-resources/3442006-it-s-in-the-north-and-growing-fast.html</a>
34	Fill in the gaps – FIBONACCI SEQUENCE	<a href="https://www.educaplay.com/learning-resources/3441985-polarpedia-term-missing-words.html">https://www.educaplay.com/learning-resources/3441985-polarpedia-term-missing-words.html</a>
35	Fill in the gaps – SEA ICE EXTENT INDEX	<a href="https://www.educaplay.com/learning-resources/3441572-complete-polarpedia-term.html">https://www.educaplay.com/learning-resources/3441572-complete-polarpedia-term.html</a>
36	Fill in the gaps – Arctic amplification	<a href="https://www.educaplay.com/learning-resources/3440315-complete-polarpedia-term.html">https://www.educaplay.com/learning-resources/3440315-complete-polarpedia-term.html</a>
37	Polarpedia alphabet game	<a href="https://www.educaplay.com/learning-resources/3441956-polarpedia-alphabet.html">https://www.educaplay.com/learning-resources/3441956-polarpedia-alphabet.html</a>
38	Polar – STEM crossword	<a href="https://www.educaplay.com/learning-resources/3440283-polar-stem-crossword.html">https://www.educaplay.com/learning-resources/3440283-polar-stem-crossword.html</a>

### Quizzes

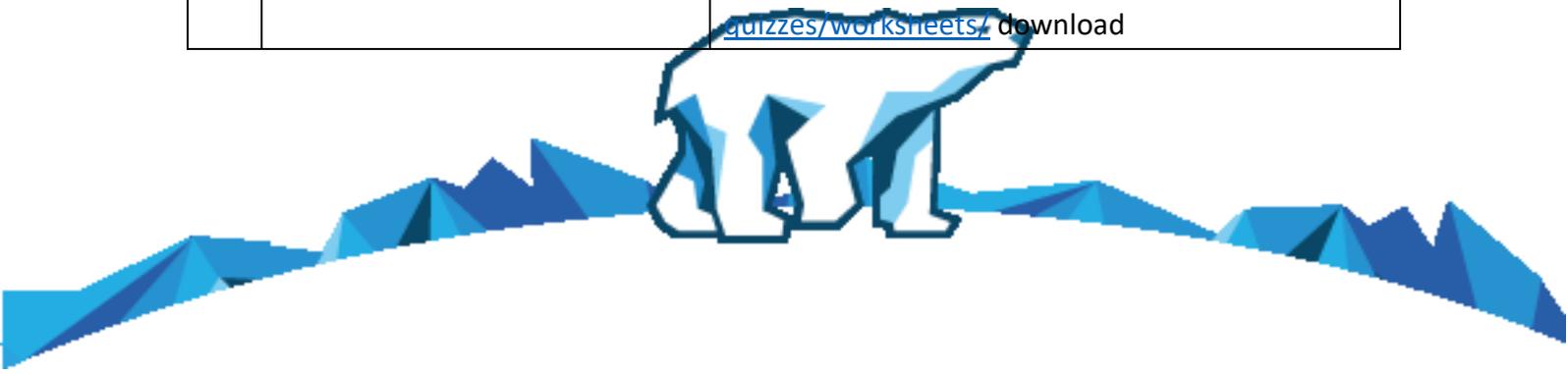
No.	Quizzes in English	Links
1	POLAR SUDOKU	<a href="https://polarpedia.eu/en/category/games-quizzes/quizzes/">https://polarpedia.eu/en/category/games-quizzes/quizzes/</a> - download sudoku
2	How can people live among the rocks?	<a href="https://play.kahoot.it/#/?quizId=8989042f-6196-4cf5-998b-6fdf722a61b8">https://play.kahoot.it/#/?quizId=8989042f-6196-4cf5-998b-6fdf722a61b8</a>
3	Types of research in the polar regions	<a href="https://quizlet.com/297744937/types-of-research-in-the-polar-regions-flash-cards/">https://quizlet.com/297744937/types-of-research-in-the-polar-regions-flash-cards/</a>
4	QUIZ – “Greenland – Kalaallit Nunaat in a nutshell”	<a href="https://play.kahoot.it/#/?quizId=ee992826-0efc-4492-84d2-892ed7e88237">https://play.kahoot.it/#/?quizId=ee992826-0efc-4492-84d2-892ed7e88237</a>
5	“How it’s made – satellite photos” – Kahoot quiz	<a href="https://play.kahoot.it/#/?quizId=c9a3e719-59b9-4d8b-91e9-0e17404039b8">https://play.kahoot.it/#/?quizId=c9a3e719-59b9-4d8b-91e9-0e17404039b8</a>
6	“Iceland – the land of air and water” Kahoot! Quiz	<a href="https://play.kahoot.it/#/?quizId=fb0b5d5d-bb24-4f54-b9b9-a78d35819410">https://play.kahoot.it/#/?quizId=fb0b5d5d-bb24-4f54-b9b9-a78d35819410</a>
7	“Volcanoes and humans” KAHOOT quiz	<a href="https://play.kahoot.it/#/?quizId=5dff0447-e7b2-497a-9f30-1b61a41e25ff">https://play.kahoot.it/#/?quizId=5dff0447-e7b2-497a-9f30-1b61a41e25ff</a>
8	Sixth mass extinction (and previous 5)	<a href="https://play.kahoot.it/#/?quizId=6b8aba1d-8afb-41bf-9d7e-dc14bd91200a">https://play.kahoot.it/#/?quizId=6b8aba1d-8afb-41bf-9d7e-dc14bd91200a</a>
9	Arctic fauna quiz	<a href="https://www.educaplay.com/learning-resources/3441913-arctic-fauna-quiz.html">https://www.educaplay.com/learning-resources/3441913-arctic-fauna-quiz.html</a>



10	Are you an “Arctic expert”?	<a href="https://www.educaplay.com/learning-resources/3440322-polarpedia_quiz.html">https://www.educaplay.com/learning-resources/3440322-polarpedia_quiz.html</a>
11	When living is toxic: bioaccumulation and biomagnification	<a href="https://play.kahoot.it/#/?quizId=66e883ec-0d87-4d0e-adbc-a2c8636ef59d">https://play.kahoot.it/#/?quizId=66e883ec-0d87-4d0e-adbc-a2c8636ef59d</a>
12	Jumble sentence – BRINICLE	<a href="https://www.educaplay.com/learning-resources/3441685-put-the-words-in-correct-order.html">https://www.educaplay.com/learning-resources/3441685-put-the-words-in-correct-order.html</a>
13	Climate change – myths vs science	<a href="https://play.kahoot.it/#/?quizId=40b4b6d0-bf21-4c34-8e4c-37f9c299890f">https://play.kahoot.it/#/?quizId=40b4b6d0-bf21-4c34-8e4c-37f9c299890f</a>
14	Ocean currents – the dance of water	<a href="https://play.kahoot.it/#/?quizId=fe7bac75-4fb4-48c3-948c-5937d14d803d">https://play.kahoot.it/#/?quizId=fe7bac75-4fb4-48c3-948c-5937d14d803d</a>
15	Tadigrades – the ultimate survivors	<a href="https://play.kahoot.it/#/?quizId=50c29a8b-f59c-4f9e-901a-d82f127fad84">https://play.kahoot.it/#/?quizId=50c29a8b-f59c-4f9e-901a-d82f127fad84</a>
16	Weirdest Arctic Fun Facts	<a href="https://play.kahoot.it/#/?quizId=8d3faff8-38ef-479b-8bfa-24c2265a49e7">https://play.kahoot.it/#/?quizId=8d3faff8-38ef-479b-8bfa-24c2265a49e7</a>
17	Adapt or die: how do organisms react to climate change?	<a href="https://play.kahoot.it/#/?quizId=0bb0740e-c08e-4f2c-b77d-e25fe7303c44">https://play.kahoot.it/#/?quizId=0bb0740e-c08e-4f2c-b77d-e25fe7303c44</a>

### Worksheets

No	Worksheets in English	Links
1	Biological clocks	<a href="https://polarpedia.eu/en/category/games-quizzes/worksheets/">https://polarpedia.eu/en/category/games-quizzes/worksheets/</a> download
2	MUSHORROMS IN NATURE – OUR HELPERS	<a href="https://polarpedia.eu/en/category/games-quizzes/worksheets/">https://polarpedia.eu/en/category/games-quizzes/worksheets/</a> download
3	How does Arctic charr cope with everything	<a href="https://polarpedia.eu/en/category/games-quizzes/worksheets/">https://polarpedia.eu/en/category/games-quizzes/worksheets/</a> download
4	“The Arctic – people’s land” – worksheet	<a href="https://polarpedia.eu/en/category/games-quizzes/worksheets/">https://polarpedia.eu/en/category/games-quizzes/worksheets/</a> download
5	“Iceland – the land of air and water” worksheet	<a href="https://polarpedia.eu/en/category/games-quizzes/worksheets/">https://polarpedia.eu/en/category/games-quizzes/worksheets/</a> download
6	“LiDAR: laser in humanity’s service” worksheet	<a href="https://polarpedia.eu/en/category/games-quizzes/worksheets/">https://polarpedia.eu/en/category/games-quizzes/worksheets/</a> download
7	Worksheet Great Migrations	<a href="https://polarpedia.eu/en/category/games-quizzes/worksheets/">https://polarpedia.eu/en/category/games-quizzes/worksheets/</a> download
8	Worksheet megafauna	<a href="https://polarpedia.eu/en/category/games-quizzes/worksheets/">https://polarpedia.eu/en/category/games-quizzes/worksheets/</a> download



9	Worksheet – flying penguins	<a href="https://polarpedia.eu/en/category/games-quizzes/worksheets/">https://polarpedia.eu/en/category/games-quizzes/worksheets/</a> download
10	Worksheet – Polar bear vs. penguins	<a href="https://polarpedia.eu/en/category/games-quizzes/worksheets/">https://polarpedia.eu/en/category/games-quizzes/worksheets/</a> download
11	Worksheet – When living is toxic – environmental cycles	<a href="https://polarpedia.eu/en/category/games-quizzes/worksheets/">https://polarpedia.eu/en/category/games-quizzes/worksheets/</a> download

### Experiments

No.	Experiments in English	Links
1	Thawing permafrost	<a href="https://polarpedia.eu/en/category/games-quizzes/experiments/">https://polarpedia.eu/en/category/games-quizzes/experiments/</a> download
2	Ocean acidification	<a href="https://polarpedia.eu/en/category/games-quizzes/experiments/">https://polarpedia.eu/en/category/games-quizzes/experiments/</a> download
3	Global Conveyor Belt – How does it work?	<a href="https://polarpedia.eu/en/category/games-quizzes/experiments/">https://polarpedia.eu/en/category/games-quizzes/experiments/</a> download
4	How are icebergs formed?	<a href="https://polarpedia.eu/en/category/games-quizzes/experiments/">https://polarpedia.eu/en/category/games-quizzes/experiments/</a> download
5	Fake “BRINICLE”	<a href="https://polarpedia.eu/en/category/games-quizzes/experiments/">https://polarpedia.eu/en/category/games-quizzes/experiments/</a> download

### Teamwork

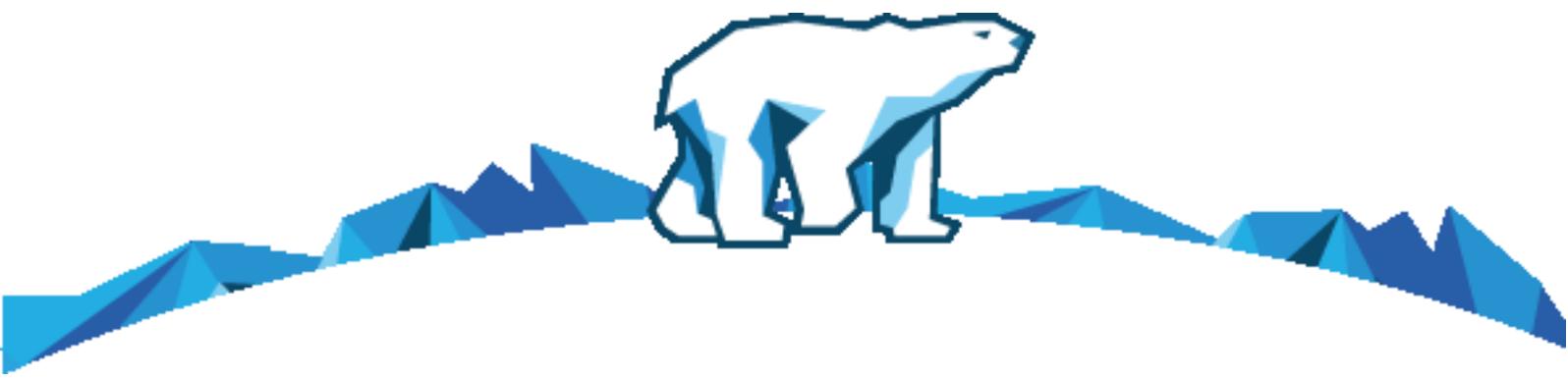
No	Teamwork in English	Links
1	Quest: Sving Global Seed Vault	<a href="https://polarpedia.eu/en/category/games-quizzes/teamwork/">https://polarpedia.eu/en/category/games-quizzes/teamwork/</a> download
2	Polar JEOPARDY game	<a href="http://www.superteachertools.us/jeopardyx/jeopardy-review-game.php?gamefile=2426115#.XQEcg4j7S9J">http://www.superteachertools.us/jeopardyx/jeopardy-review-game.php?gamefile=2426115#.XQEcg4j7S9J</a>
3	Glassroom game – story of birds’ migration	<a href="https://polarpedia.eu/en/category/games-quizzes/teamwork/">https://polarpedia.eu/en/category/games-quizzes/teamwork/</a> download

### Miscellanea

No	Miscellanea in English	Links
1	Polar taboo	<a href="https://polarpedia.eu/en/category/games-quizzes/miscellanea/">https://polarpedia.eu/en/category/games-quizzes/miscellanea/</a> download
2	MOBILE “Augmented reality” POLAR QUIZ	<a href="https://mtvrs.io/InfiniteGrowingHorsefly">https://mtvrs.io/InfiniteGrowingHorsefly</a> scan and play



3	Answer and draw!	<a href="https://polarpedia.eu/en/category/games-quizzes/miscellanea/">https://polarpedia.eu/en/category/games-quizzes/miscellanea/</a> download
4	MOBILE APP – Polar match	<a href="https://polarpedia.eu/en/category/games-quizzes/miscellanea/">https://polarpedia.eu/en/category/games-quizzes/miscellanea/</a> download app
5	MOBILE APP – Polar scratcher	<a href="https://polarpedia.eu/en/category/games-quizzes/miscellanea/">https://polarpedia.eu/en/category/games-quizzes/miscellanea/</a> download app
6	MOBILE APP – POLAR WORDSEARCH	<a href="https://polarpedia.eu/en/category/games-quizzes/miscellanea/">https://polarpedia.eu/en/category/games-quizzes/miscellanea/</a> download app
7	Polar Cryptograms	<a href="https://polarpedia.eu/en/category/games-quizzes/miscellanea/">https://polarpedia.eu/en/category/games-quizzes/miscellanea/</a> download
8	Polar MAZE	<a href="https://polarpedia.eu/en/category/games-quizzes/miscellanea/">https://polarpedia.eu/en/category/games-quizzes/miscellanea/</a> download
9	Which Arctic animal am I?	<a href="https://polarpedia.eu/en/category/games-quizzes/miscellanea/">https://polarpedia.eu/en/category/games-quizzes/miscellanea/</a> download
10	Boardgame – MASTER OF CITIZEN SCIENCE	<a href="https://polarpedia.eu/en/category/games-quizzes/miscellanea/">https://polarpedia.eu/en/category/games-quizzes/miscellanea/</a> download
11	POLAR BINGO	<a href="https://polarpedia.eu/en/category/games-quizzes/miscellanea/page/2/">https://polarpedia.eu/en/category/games-quizzes/miscellanea/page/2/</a> download
12	International Space Day – space rocks	<a href="https://www.youtube.com/watch?v=e23eWdssV7E">https://www.youtube.com/watch?v=e23eWdssV7E</a>

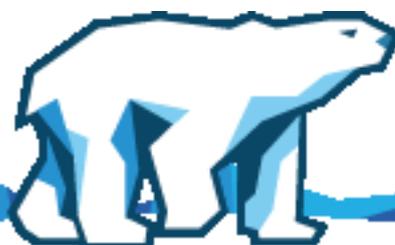
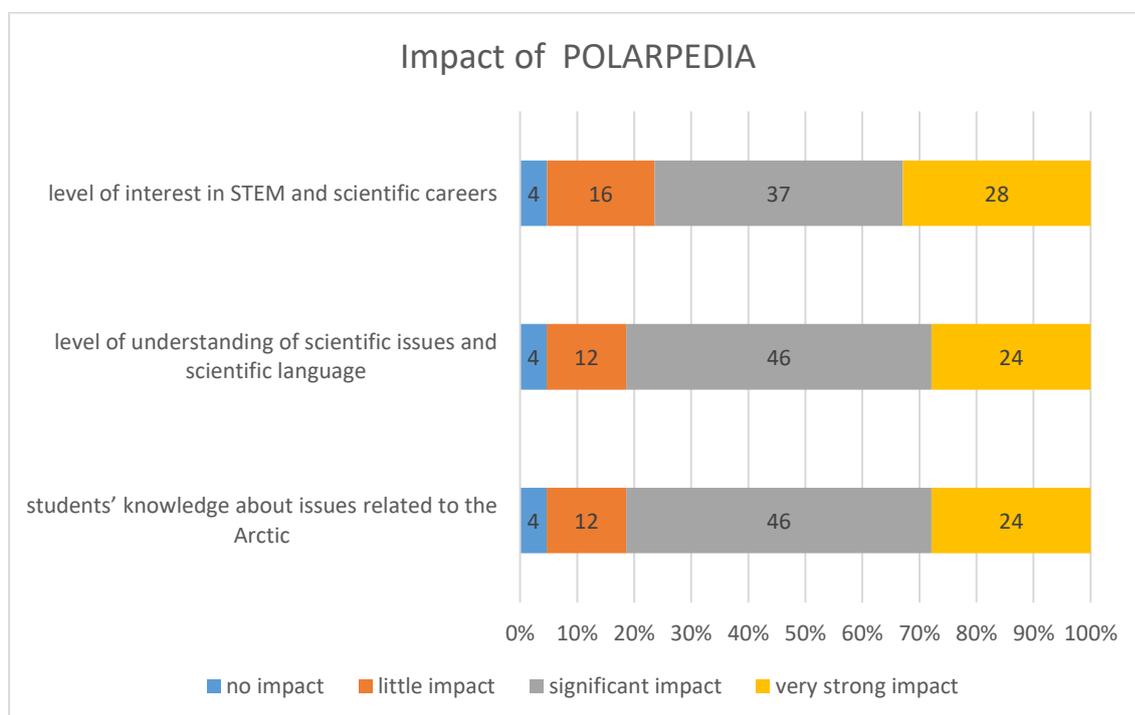


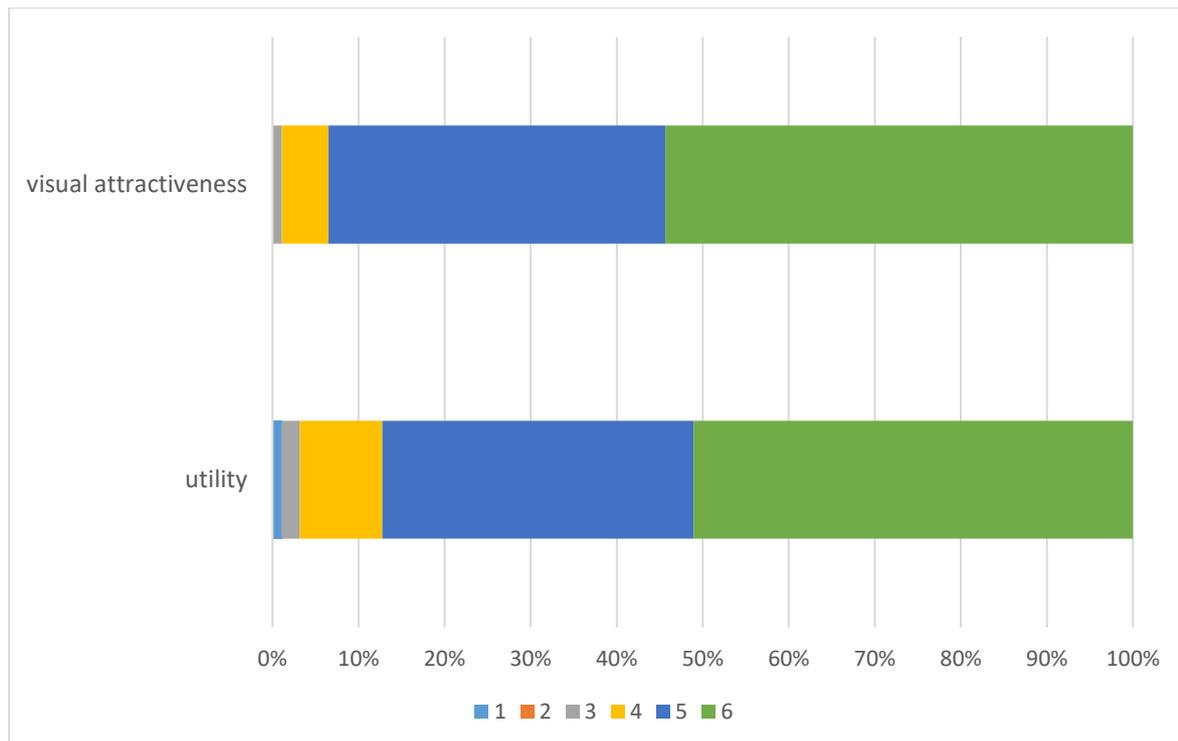
## Audience, Analytics and Analysis

### Impact of Polarpedia

As part of the project assessment on the impact of participation in the EDU-ARCTIC program, the project collected measures on students' interest in STEM and their knowledge. The technique used for collecting data is CAWI surveys. CAWI (Computer Assisted Web Interviews) research technique is an interview in which participants fill in an online questionnaire or survey received via the Internet. Currently the CAWI method is one of the most popular and fastest-growing research methods. The surveys consist of questions about changes in pupils' behaviour, openness and scientific courage due to participating in EDU-ARCTIC. During the period 7.01.2019.-20.02.2019., after two years of running the program, a survey was conducted assessing the general impact of the project and all particular activities implemented within. 80 full surveys and 19 partially completed surveys were obtained from participating teachers and educators from 19 countries. The survey was available to all teachers, who were active in the program for at least one full year. The survey was divided into 2 parts: (1) TECHNOLOGY including 3 questions about the various modules of the EDU-ARCTIC portal and (2) FACTUAL including 6 questions about the impact of the project on students (e.g. interest, understanding, knowledge).

Following are charts with aggregated survey information on the **Impact** on students, **Visual attractiveness** and **Utility**. Results are displayed as low on the left to very strong on right.



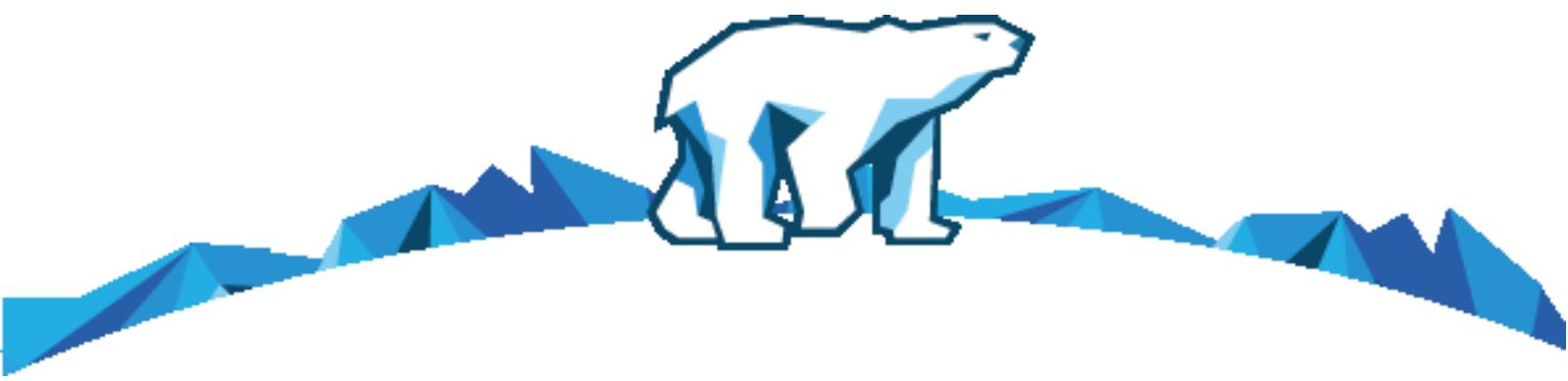


To assess the utility and attractiveness of Polarpedia, teachers were requested to give marks on a scale of 1 to 6, where 1 is the lowest and 6 the highest. The results are presented above.

The response from the teachers through the survey is very positive and promising for the sustainability of the Polarpedia as the majority finds that it makes a significant or very strong **Impact** on students, is highly **Visually** attractive and very good or exceptional in **Utility**.

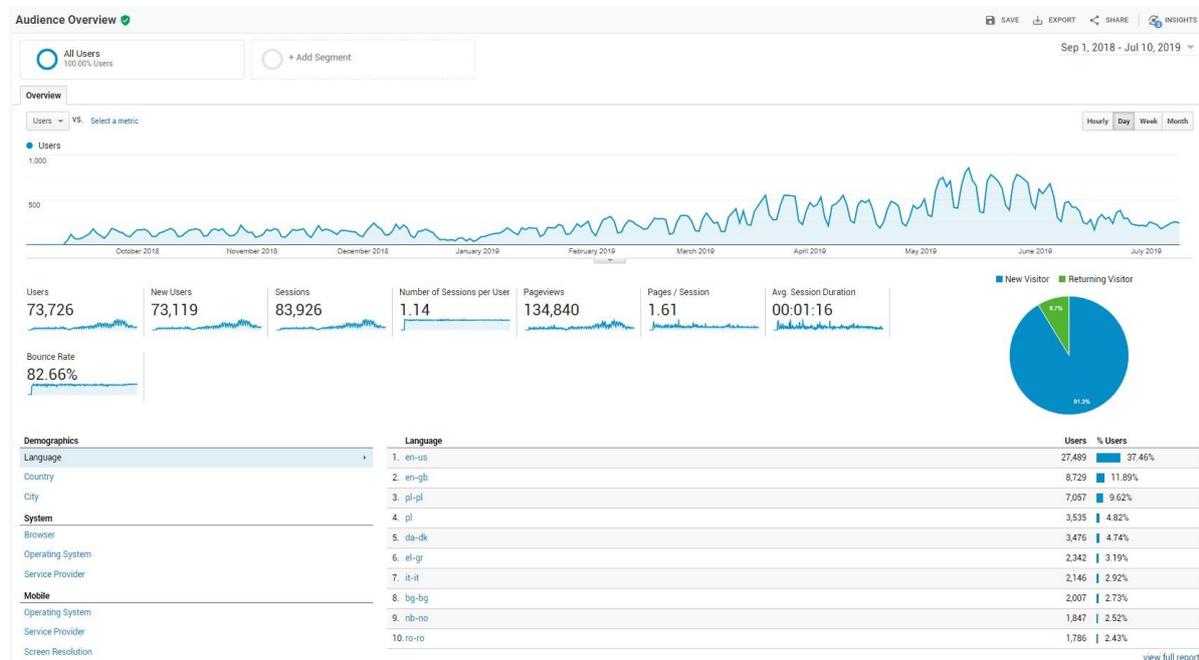
It should also be noted that the Polarpedia has increased and improved significantly in content and usability since the time of the survey, which should support the review of the teachers even more.

The increase in content has further resulted in a sharp increase in the number of users, as can be reviewed in the following chapter on analytics and their analysis.



## Analytics and Analysis

The project has collected user statistics for the Polarpedia part of the project since October 2018, using Google Analytics. The start of collecting of statistics reflects the period from when the Polarpedia was considered complete enough to attract general audience.



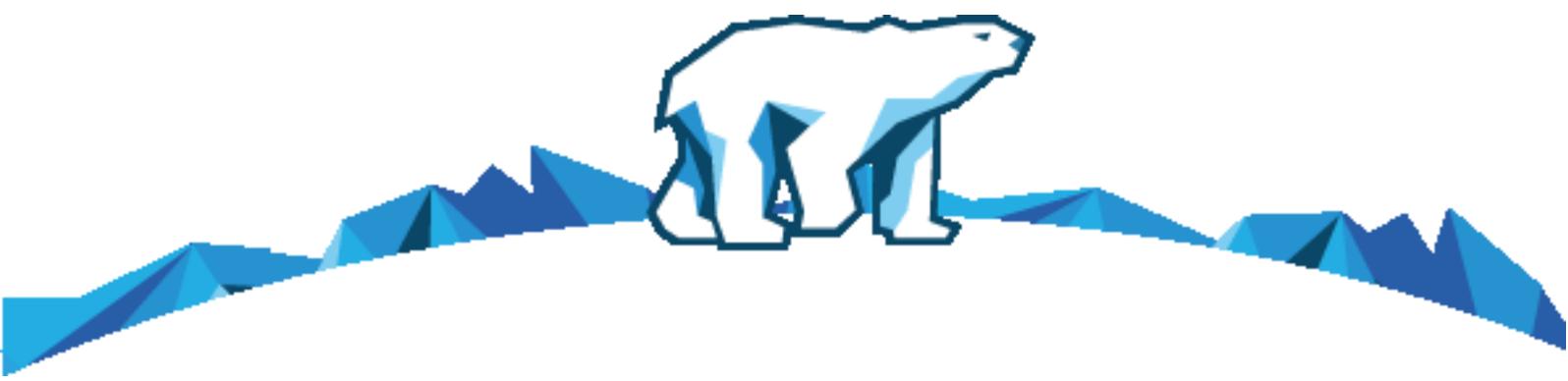
The graph, showing the period from October 2018 until 10 July 2019 clearly indicates that the number of individual users is steadily increasing, reaching highest 866 individual users in late May ([see bigger photo in Appendix No 2 page 60](#)).

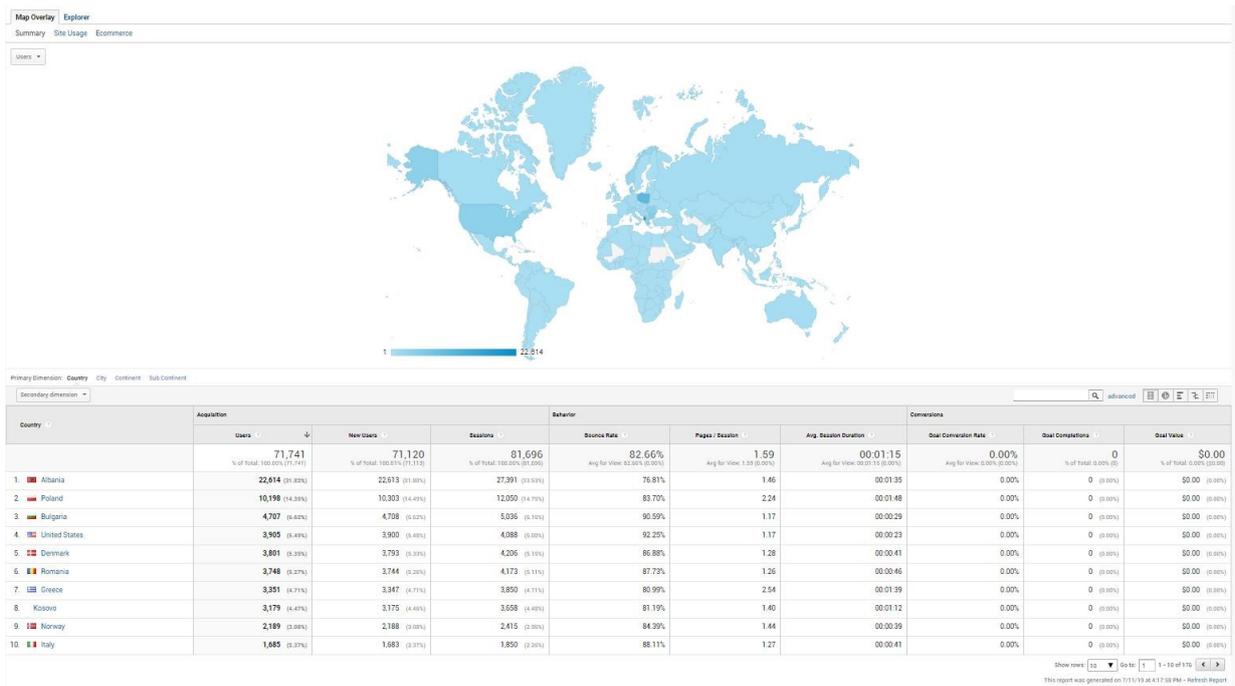
It also shows that the user's traffic drops significantly on Fridays and Saturdays, strongly indicating that the Polarpedia is used for educational purposes.

The drop by end of June reflects the end of the school year. Interestingly the use is still considerable, constantly around 300 individual users/ IP addresses in July.

The statistics further reflect that English is by far the most used language, around 50% of users, though other languages as Polish are growing, now at around 15%. This can be seen reflecting the accessibility of translated material which has been constantly increasing throughout.

As it has been identified that Page visits per visitor are rather low, links between individual terms are being improved. The change will support visitors in identifying the categories available within the Polarpedia, browse through terms as well as making it easy to explore other related terms, most viewed per category and more.

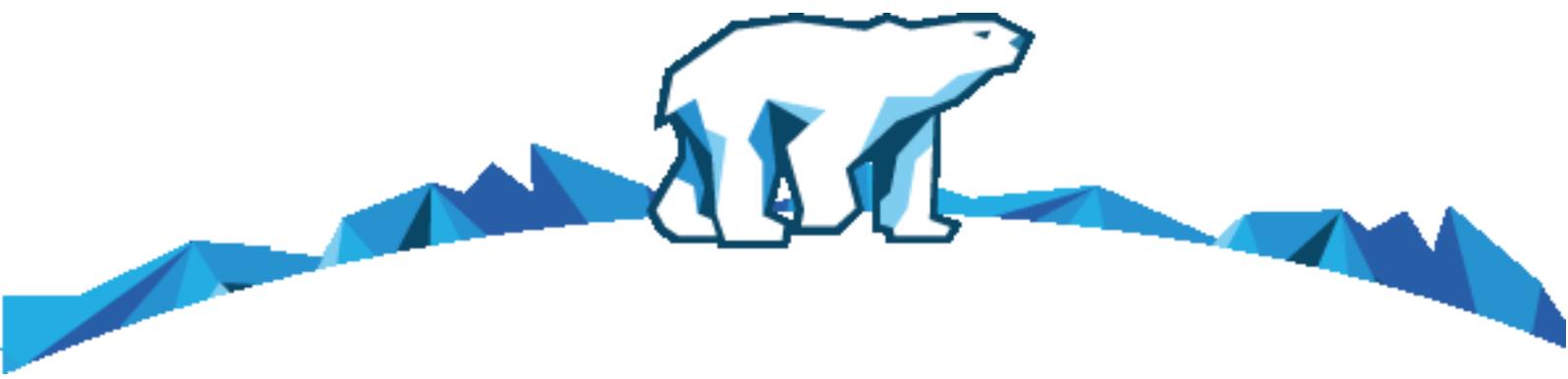


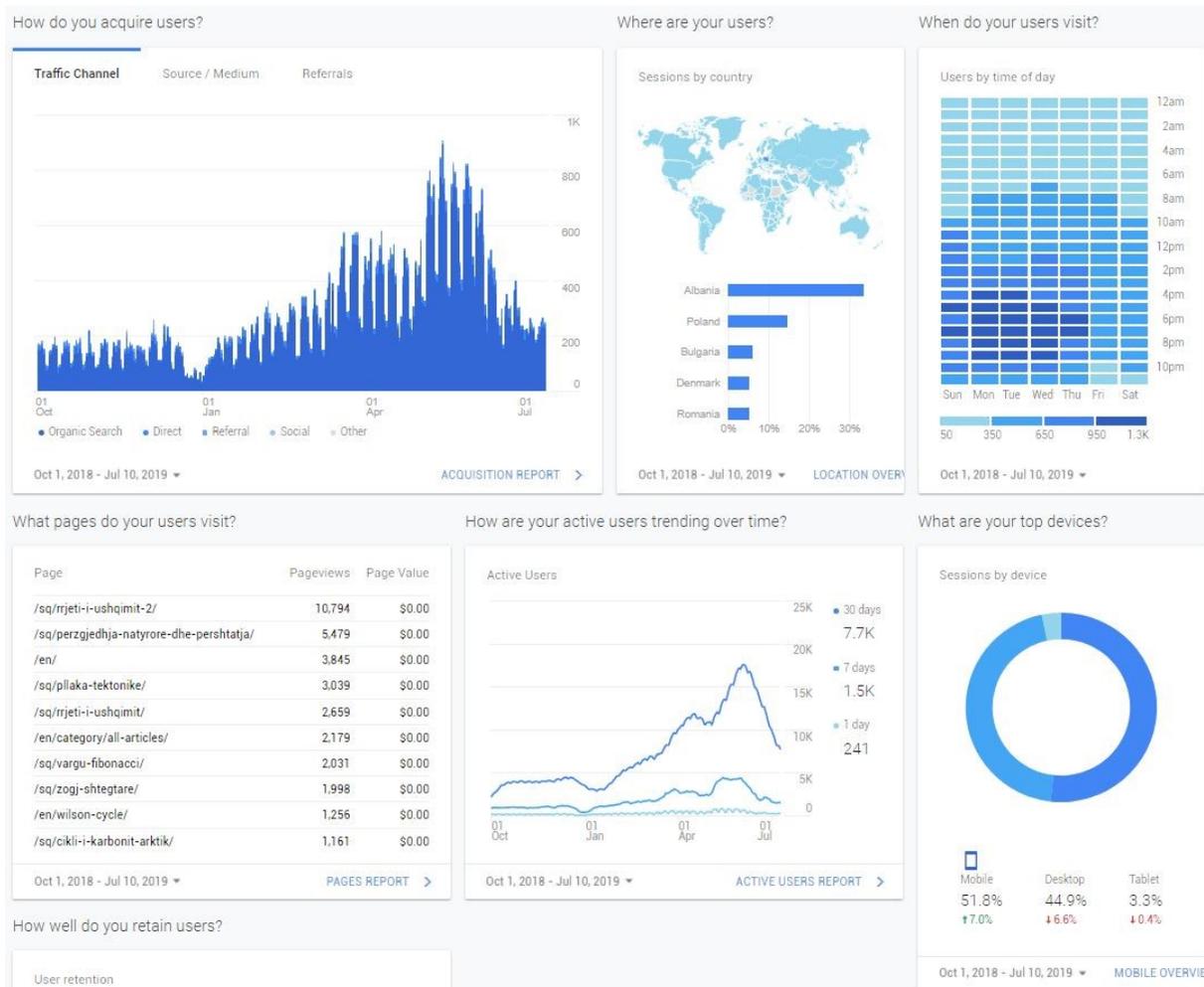


Visits to the Polarpedia are international as seen on the World map, with visits from almost all world countries ([see bigger in Appendix No 2 page 61](#)).

Highest individual countries clearly show the interest in STEM and the Arctic from Eastern Europe with Albania, Poland, Bulgaria, in top three.

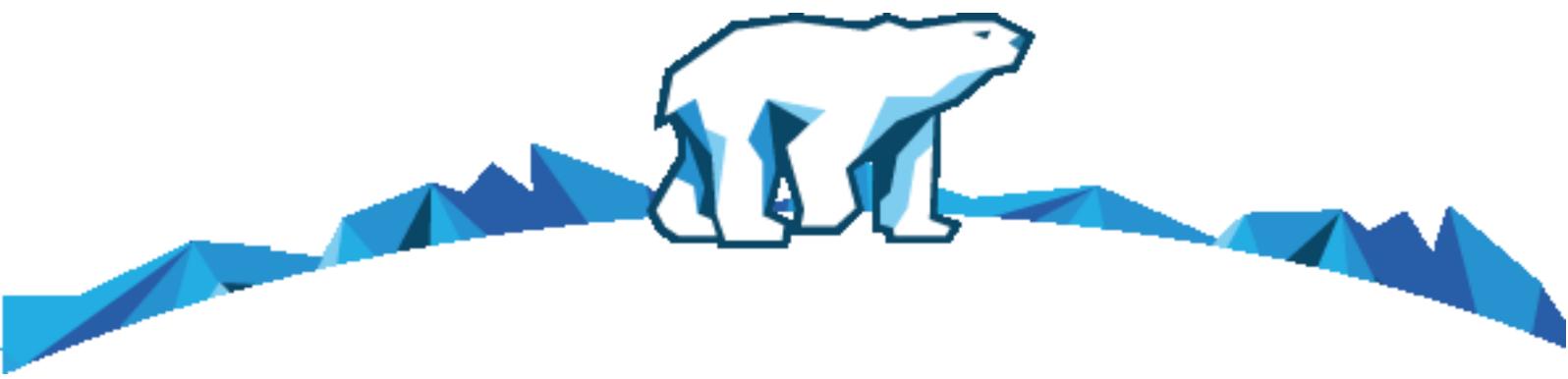
Interestingly USA is number four, reflecting that most users visit the Polarpedia through online search. Denmark, Romania, Greece and Kosovo are very equal closely following the USA.

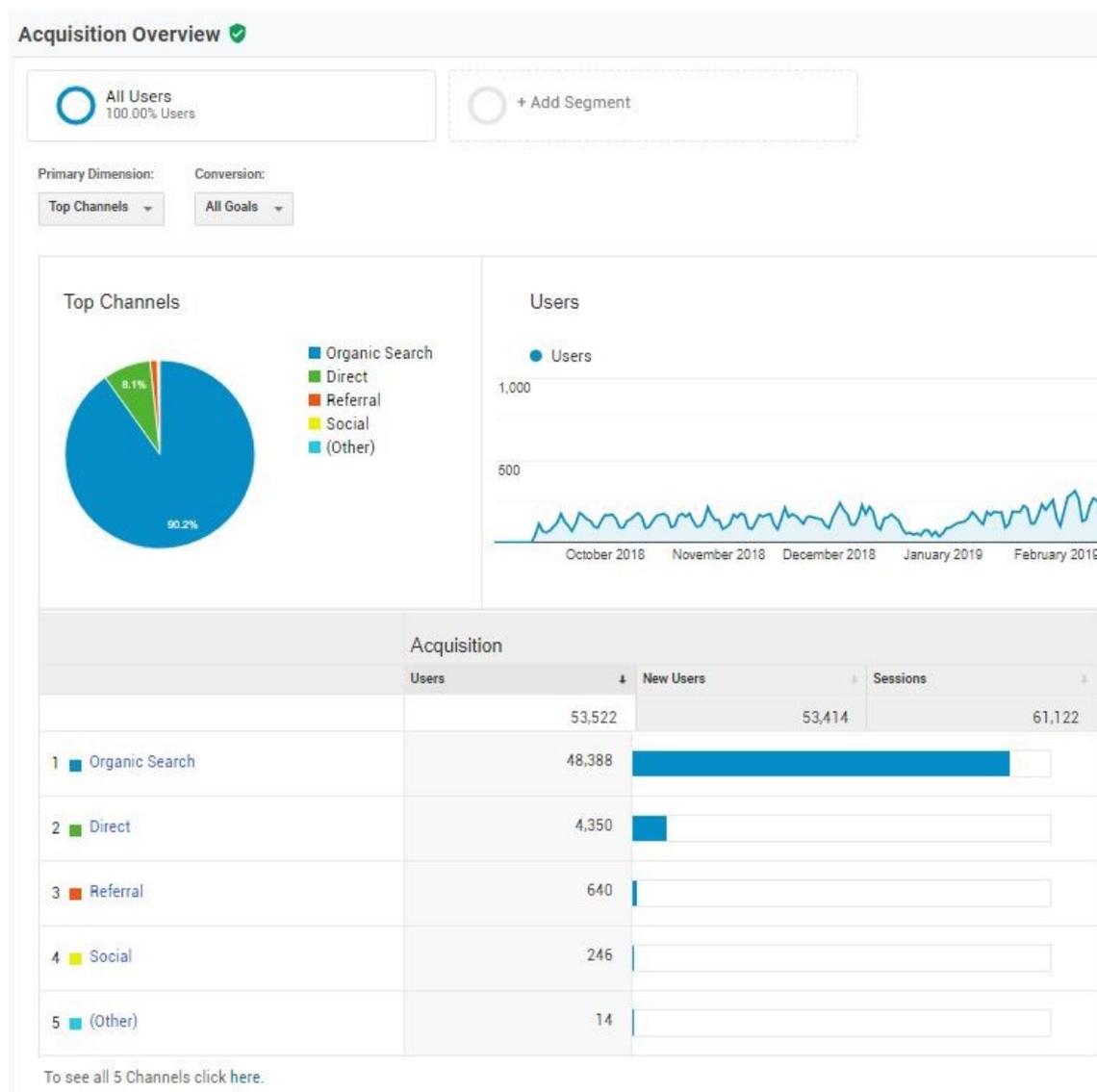




Another issue indicating the type of users and the link to education is the diagram showing how the majority of users access the Polarpedia in the morning in European time zone ([see bigger photo in Appendix No 2 page 62](#)).

It is highly important that the system is responsive and Mobile friendly as 51.8 % of all user’s access the Polarpedia do so using their mobile device, versus 44.9 % using desktops.



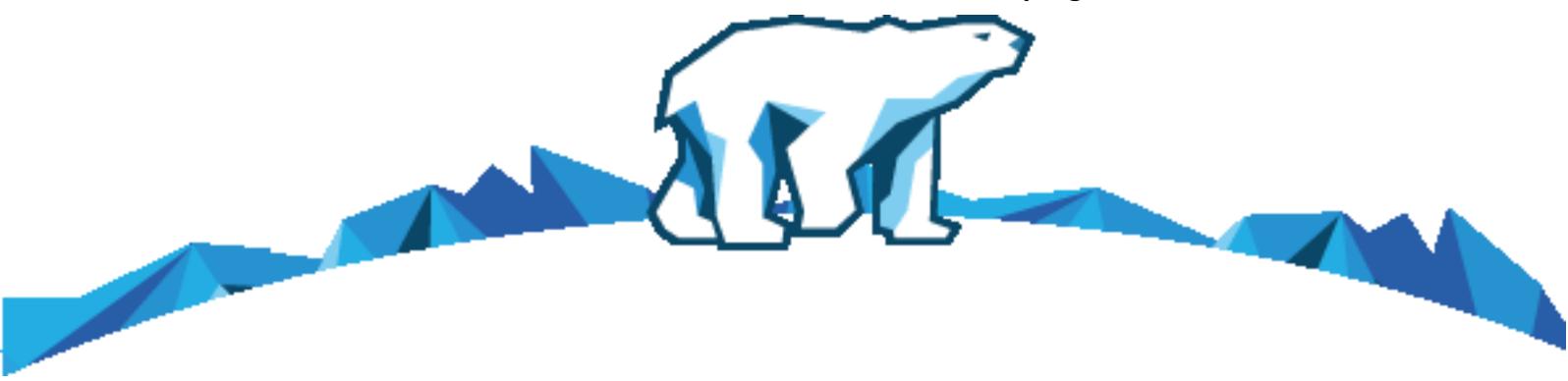


The graph shows how users find and access the website.

This clearly indicates that the majority of users find the Polarpedia and its content using organic search.

**The above provided information on how the material is accessed as well as the average time spent and to limited number of page visits on the website per user indicates, for future reference, the need to carefully monitor the use and seek ways to optimize the search and the internal referral between terms and entries within the Polarpedia and other components of the project.**

**This should be noted in further EDU-ARCTIC activities or similar programs.**



Based on the observation of this deliverable the following changes are being implemented into the Polarpedia: all categorizes are made visible and accessible when viewing a term by adding the logos; obvious links are made to the previous and next term in alphabetical order within a category; related terms to the term being viewed are highlighted. Additionally, a list of most viewed terms will be added on the main page of each category.

As it is not possible to add related terms to all the current terms in the system before the end of the project, related terms will be first added to the most viewed terms. The change will be applied before the project closure and thus give a good opportunity to analyse the impact on use of the Polarpedia.

Analytics will be continued to help monitor and analyse the user response to the recommended improvements and changes.

**IDEAS OF IMPROVEMENT FOR POLARPEDIA**

**Categories on every page**

**Previous term**

**Add related terms**

**Next term**

Polarpedia terms are created by EDU ARCTIC Consortium, which holds responsibility for quality of translations in following languages: Polish, French, Danish, Norwegian, German, Russian, Italian, unless indicated otherwise. If you see an error - please contact us: edukacja@igf.edu.pl

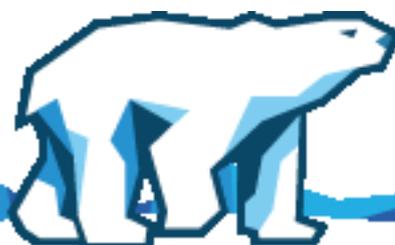
**About**  
 Objectives  
 Coordination  
 Consortium  
 Contacts  
 Patronage

**Program**  
 Online Lessons  
 Polarpedia  
 Arctic Competitions  
 Monitoring Systems  
 Teacher Workshops and Training

**Library**  
 Promotional Material  
 Videos  
 Project Reports  
 Other Documents

**Partners**

www.edu-arctic.eu



## Technical parameters

### Programming language and used technologies

The Polarpedia web application is built on:

- programming language PHP, version 7.1;
- web server Apache, version 2.4;
- database MySQL, version 5.7.

### More technical information:

Server operating system:

- Ubuntu 16.04.6 LTS

Docker:

- Docker, version 17.05
- docker-compose, version 1.21

Web server:

- Apache 2.4

Database software:

- MySQL 5.7

Deployment:

Deployment is facilitated by Docker, who manages all the containers required by the production environment:

- polarpedia: app server for Polarpedia;
- polarpedia\_spare: spare app server for restarts;
- polarpedia\_db: database of Polarpedia;

Software

Polarpedia is based on content management system WordPress and uses custom theme build by American Systems. Polarpedia has 13 plugins installed.

WordPress is on GPLv2+ License.

Plugin list:

- Categories Images – Version 2.5.4
- Classic Editor – Version 1.4 | GPLv2 License
- Duplicate Post – Version 3.2.2 | GPLv2 License
- Google XML Sitemaps – Version 4.1.0 | GPLv2 License
- Polylang – Version 2.5.3 | GPLv2 License
- Polylang assets URLs fix – Version 1.1 | GPLv2 License
- Post Views Counter – Version 1.2.14 | MIT License
- Rank Math SEO – Version 1.0.23 | GPLv2 License



- Responsive Lightbox & Gallery – Version 2.1.0 | MIT License
- Table of Contents Plus – Version 1601 | GPLv2 License
- TinyMCE Templates – Version 4.8.1 | MIT License
- Wordfence Security – Version 7.2.5 | Wordfence Free License
- WP Mail SMTP – Version 1.4.2 | GPLv3 License

## Installation guide

Required operating system: Linux.

Required software: Docker and docker-compose.

For proper installation, perform the following command in the terminal:

Cloning a project from the repository:

```
$ git clone --recursive git@git.american-systems.pl:eduarctic/eduarctic.git
```

Copying files from environment variables:

```
$ cp .env.example .env
$ cp app/.env.example app/.env
$ cp polarpedia/.env.example polarpedia/.env
```

Building according to defined files in Docker Compose:

```
$ docker-compose build
```

Start the server with applications:

```
$ docker-compose up polarpedia polarpedia_db
```

## Backups

The system provides the ability to backup both applications, data applications and the entire operating system.

A copy of the same application can be easily created using the tar command:

```
tar -cvpzf /copy_dir_name/copy_name.tar.gz /application_dir_name/
```

A copy of the application data (databases) can be created using command:

```
/application_dir_name/bin/docker-compose exec polarpedia_db bash -c
'MYSQL_PWD="$MYSQL_ROOT_PASSWORD" mysqldump -u wordpress wordpress' >
copy_dir_name/polarpedia_dump.sql
```

The cron allows for automatic backup. To add a backup command to the list of commands executed every 24 hours, enter the command:

```
crontab -e
```

and add the line to open file:

```
0 3 * * * command
```

which will trigger the action of the same command at 3:00 every night.

Restore backup

A copy of the same application can be easily restored using the tar command:

```
tar -xvpzf /copy_dir_name/copy_name.tar.gz /application_dir_name/
```

To restore the database from a backup use command:



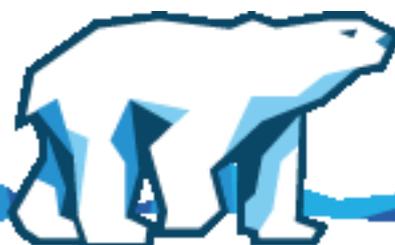
```
cat copy_dir_name/polarpedia_dump.sql | /application_dir_name/bin/docker-  
compose exec polarpedia_db bash -c 'MYSQL_PWD="$MYSQL_ROOT_PASSWORD" -u  
wordpress wordpress'
```

## Database

MySQL is an object-relational database management system (ORDBMS).

Polarpedia database contains 48 tables:

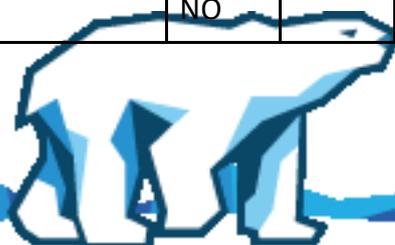
- wp\_commentmeta
- wp\_comments
- wp\_links
- wp\_options
- wp\_post\_views
- wp\_postmeta
- wp\_posts
- wp\_rank\_math\_404\_logs
- wp\_rank\_math\_internal\_links
- wp\_rank\_math\_internal\_meta
- wp\_rank\_math\_redirections
- wp\_rank\_math\_redirections\_cache
- wp\_rank\_math\_sc\_analytics
- wp\_term\_relationships
- wp\_term\_taxonomy
- wp\_termmeta
- wp\_terms
- wp\_usermeta
- wp\_users
- wp\_wfBadLeechers
- wp\_wfBlockedCommentLog
- wp\_wfBlockedIPLog
- wp\_wfBlocks
- wp\_wfBlocks7
- wp\_wfBlocksAdv
- wp\_wfConfig
- wp\_wfCrawlers
- wp\_wfFileChanges
- wp\_wfFileMods
- wp\_wfHits
- wp\_wfHoover
- wp\_wflssues
- wp\_wfKnownFileList
- wp\_wfLeechers
- wp\_wfLiveTrafficHuman
- wp\_wfLockedOut



- wp\_wfLocs
- wp\_wfLogins
- wp\_wfNet404s
- wp\_wfNotifications
- wp\_wfPendingIssues
- wp\_wfReverseCache
- wp\_wfSNIPCache
- wp\_wfScanners
- wp\_wfStatus
- wp\_wfThrottleLog
- wp\_wfTrafficRates
- wp\_wfVulnScanners

Table `wp\_post` contains 23 fields (stores all created articles in the Polarpedia):

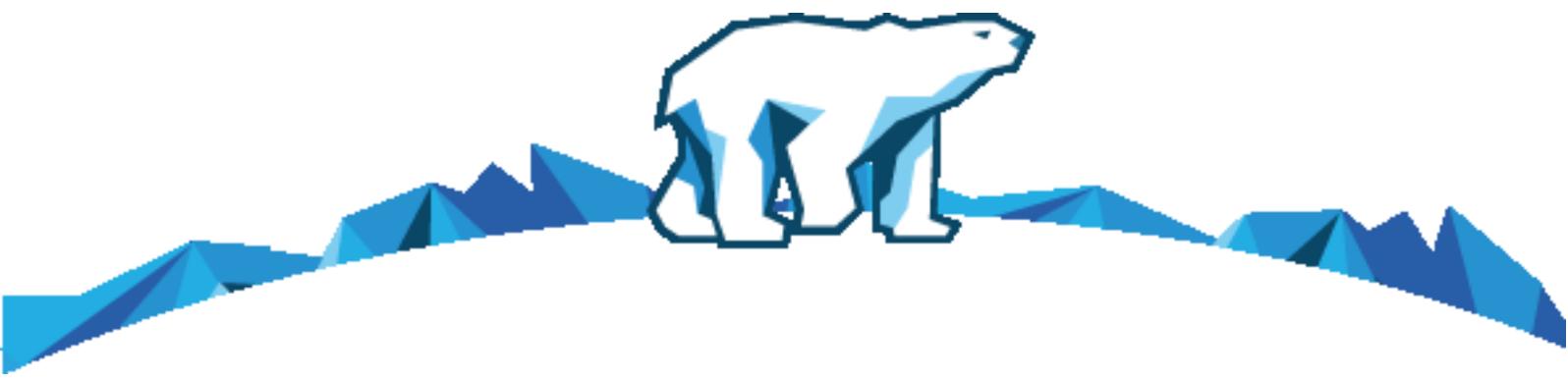
Field	Type	Null	Key	Default
ID	bigint(20) unsigned	NO	PRI	NULL
post_author	bigint(20) unsigned	NO	MUL	0
post_date	datetime	NO		0000-00-00 00:00:00
post_date_gmt	datetime	NO		0000-00-00 00:00:00
post_content	longtext	NO		NULL
post_title	text	NO		NULL
post_excerpt	text	NO		NULL
post_status	varchar(20)	NO		publish
comment_status	varchar(20)	NO		open
ping_status	varchar(20)	NO		open
post_password	varchar(255)	NO		
post_name	varchar(200)	NO	MUL	
to_ping	text	NO		NULL
pinged	text	NO		NULL
post_modified	datetime	NO		0000-00-00 00:00:00



post_modified_gmt	datetime	NO		0000-00-00 00:00:00
post_content_filtered	longtext	NO		NULL
post_parent	bigint(20) unsigned	NO	MUL	0
guid	varchar(255)	NO		
menu_order	int(11)	NO		0
post_type	varchar(20)	NO	MUL	post
post_mime_type	varchar(100)	NO		
comment_count	bigint(20)	NO		0

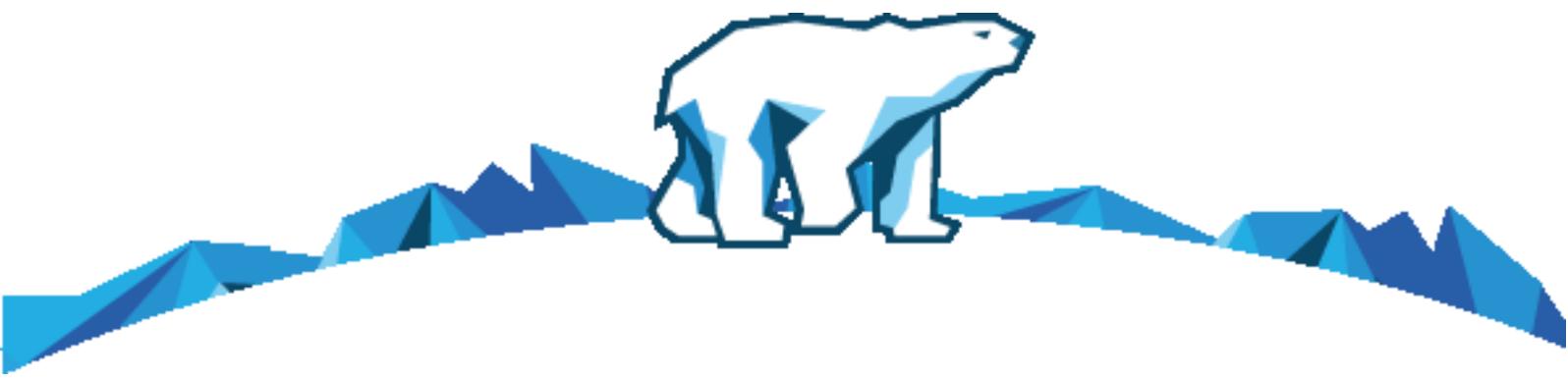
Table `wp\_users` contains 10 fields (stores users of the Polarpedia):

Field	Type	Null	Key	Default
ID	bigint(20) unsigned	NO	PRI	NULL
user_login	varchar(60)	NO	MUL	
user_pass	varchar(255)	NO		
user_nicename	varchar(50)	NO	MUL	
user_email	varchar(100)	NO	MUL	
user_url	varchar(100)	NO		
user_registered	datetime	NO		0000-00-00 00:00:00
user_activation_key	varchar(255)	NO		
user_status	int(11)	NO		0
display_name	varchar(250)	NO		



### Back-end functions and roles

- Administrator (slug: 'administrator') – somebody who has access to all the administration features within a single site.
- Editor (slug: 'editor') – somebody who can publish and manage posts including the posts of other users.
- Author (slug: 'author') – somebody who can publish and manage their own posts.
- Contributor (slug: 'contributor') – somebody who can write and manage their own posts but cannot publish them.
- Subscriber (slug: 'subscriber') – somebody who can only manage their profile.



## Appendix No 1 – Polarpedia User Manual

**POLARPEDIA**

Contact    

**EDU-ARCTIC**

About Polarpedia All Articles Categories Program Search for...


















**Ice & Snow** **Climate & Weather** **People & Society**  
**Atmosphere** **Animals & Plants** **Water resources**  
**Land & Geology** **Space** **Places & Stories**  
**Games & Quizzes**

**Newest term**

- Sustainable energy
- Polaris (North Star)
- Kinetic energy
- Potential energy
- Non-renewable energy
- Okta scale
- Carbon capture and storage
- Biodiversity
- Ice shelf
- Ice sheet
- Renewable energy
- Emission scenarios
- Downscaling
- General Circulation Models
- Svalbard
- Krill
- Glaucous gull
- Governor of Svalbard
- Faroe Islands
- Orogeny

Polarpedia terms are created by EDU-ARCTIC Consortium, which holds responsibility for quality of translations in following languages: Polish, French, Danish, Norwegian, German, Russian, Italian, unless indicated otherwise. If you see an error - please contact us: [edukacja@igf.edu.pl](mailto:edukacja@igf.edu.pl)

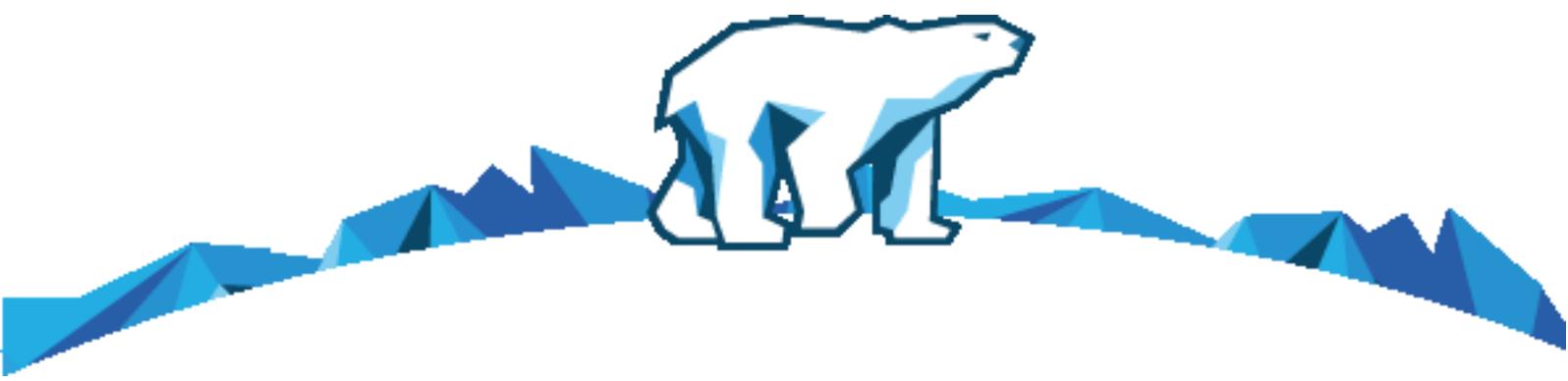
### Summary

Polarpedia is a large, complex and continuously growing platform as a component in the EDU-ARCTIC educational project.

Polarpedia uses the Wordpress (Content Management System) as engine which provides many development options.

This manual is not a complete overview but explains the most important parts as related to the page creation and page management.

Polarpedia can be accessed on the [Edu-Arctic.eu](http://Edu-Arctic.eu) main website or directly via [polarpedia.eu](http://polarpedia.eu)



## General Information

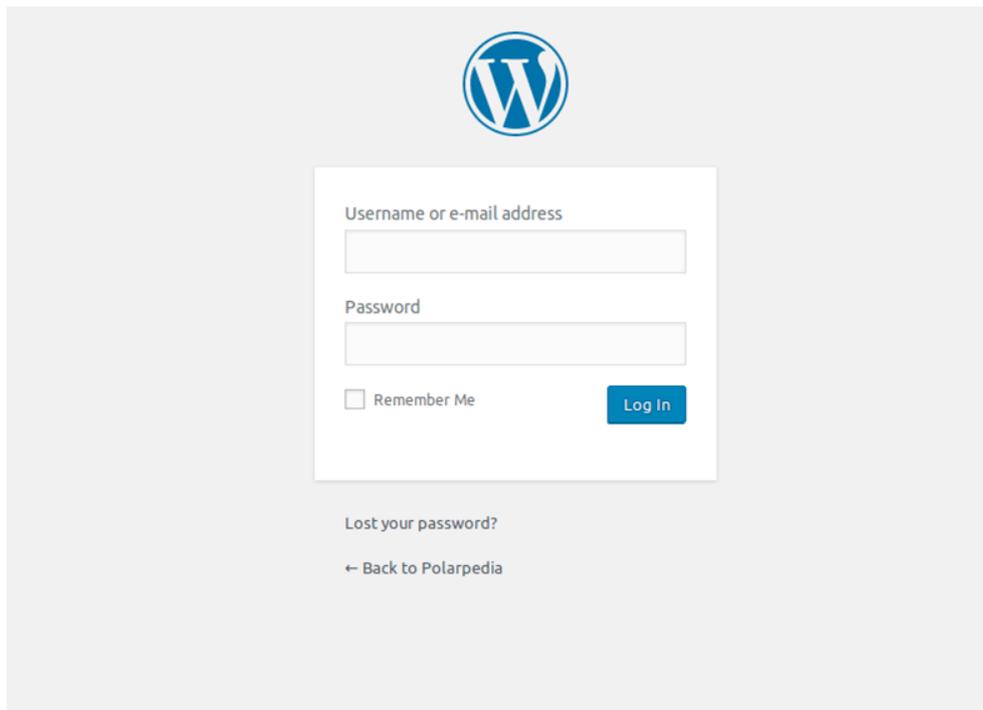
This document provides guidance on how to work with the Polarpedia CMS, especially how to create and manage new terms (new expression).

The document fulfills several basic goals:

- Guidance
- Tips
- Warnings
- Shortcuts “Polarpedia” – a web open encyclopedia on polar research will be prepared and shared with schools and students via the project’s portal. Polarpedia will be found at: <https://polarpedia.eu/>

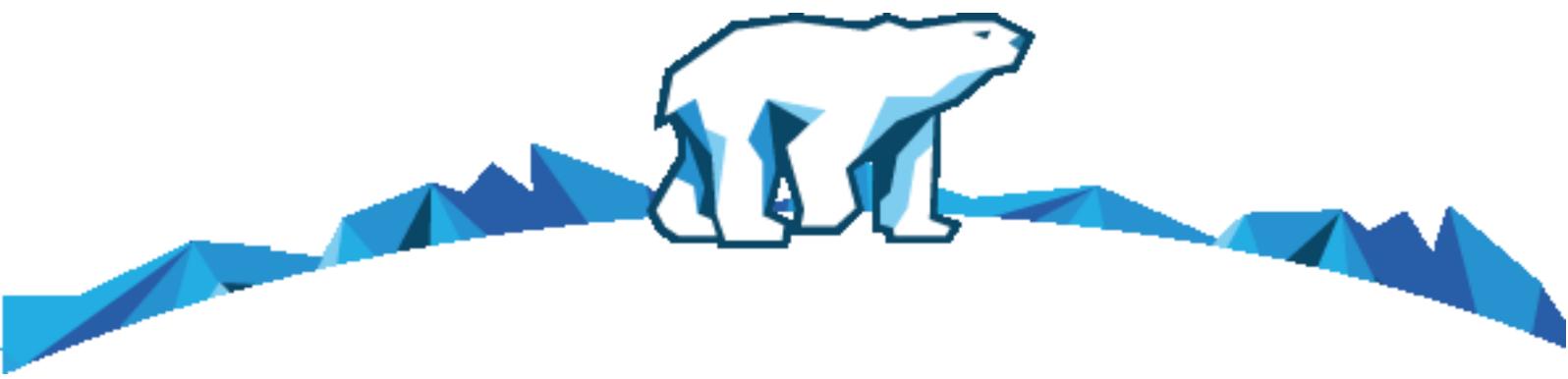
## Logging in

In order to login please follow the below steps: Go to: <https://polarpedia.eu/wp-login.php>  
You will then be prompted to enter your user name/e-mail and password.



The screenshot shows the WordPress login interface. At the top center is the WordPress logo. Below it is a white rectangular form containing the following elements: a text input field labeled 'Username or e-mail address', a text input field labeled 'Password', a checkbox labeled 'Remember Me', and a blue button labeled 'Log In'. Below the form, there are two links: 'Lost your password?' and '← Back to Polarpedia'.

If you click the box "Remember Me", you will not have to give your password again, when you access Polarpedia from the same computer.

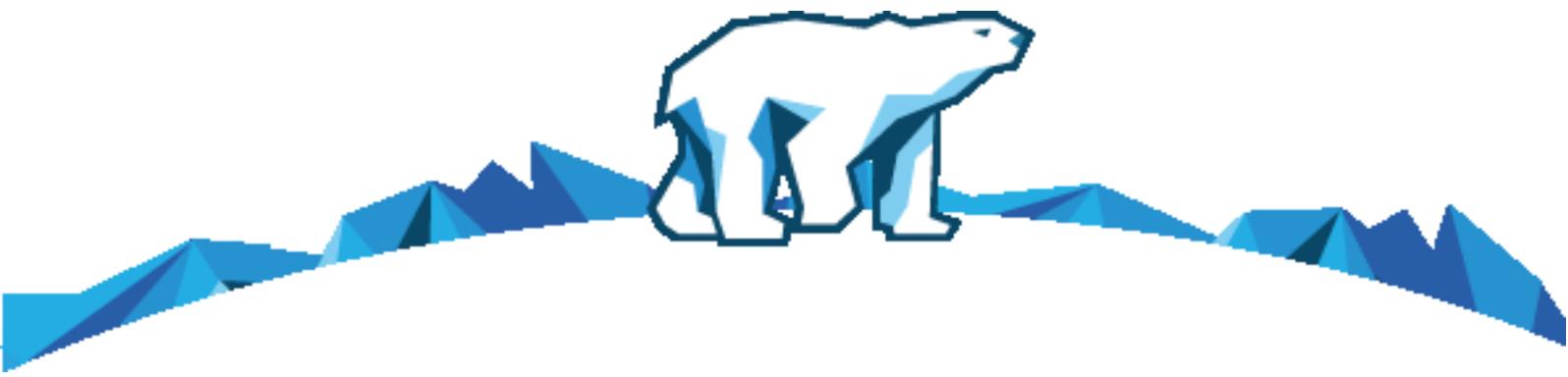
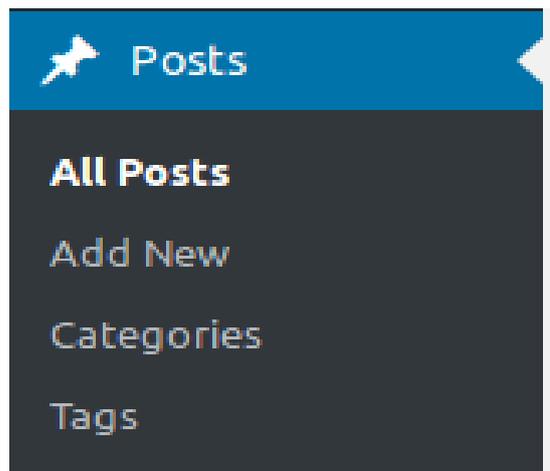


## Creation of a new term

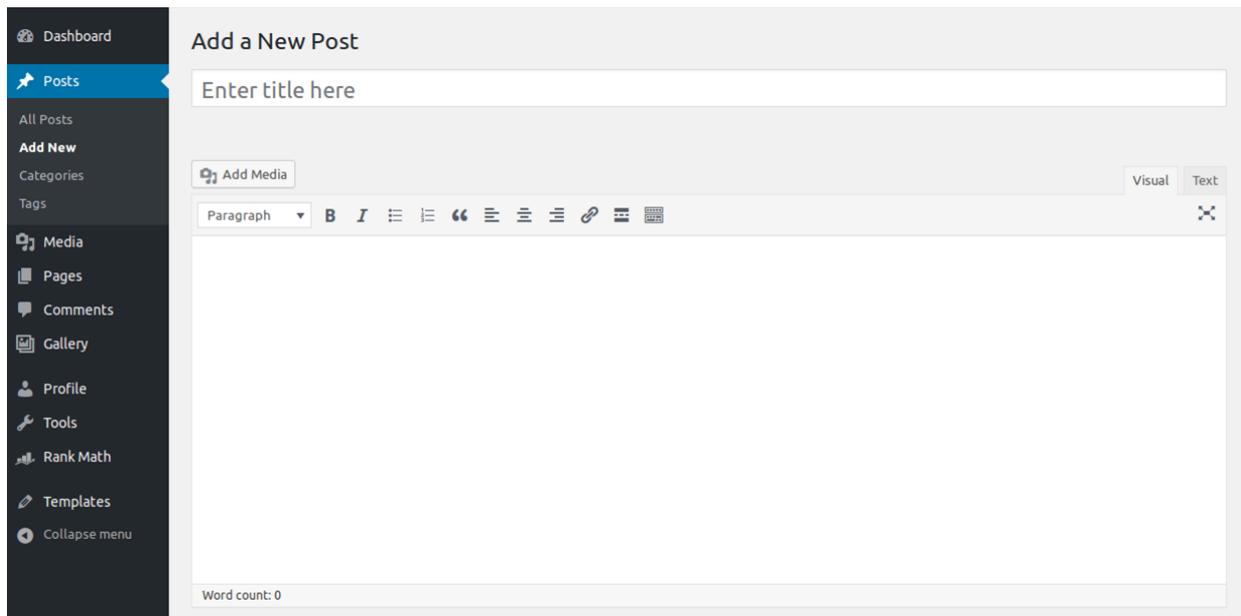
To create new expression, go to "Posts":



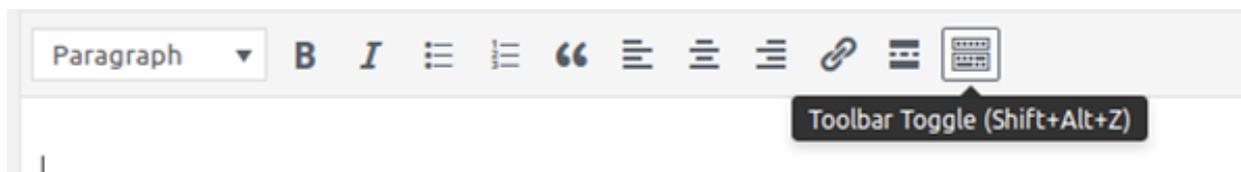
Select "Add new":



On page "Add a New Post" you can add title and content of new term.

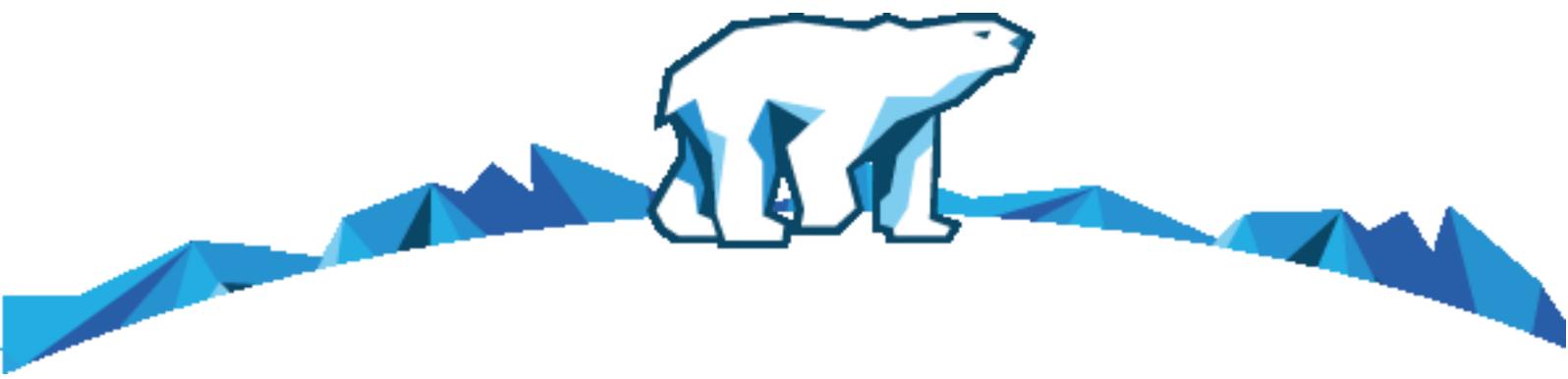
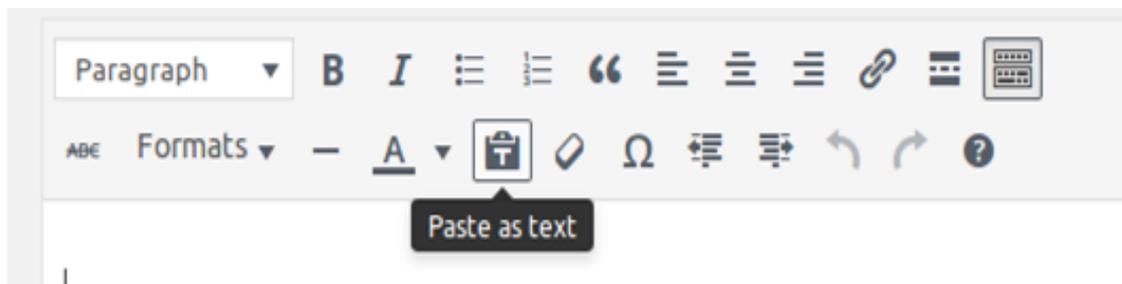


You can format your content by using tools from "Toolbar". You can find more tools after you click on "Toolbar Toggle".



**Caution!** Please be aware if copying your styles from other programs (ex. Word, Writer).

You can remove formatting by using "Paste as text" or "Clear formatting" (next to previous button).



You can save your work by clicking on “Save as draft” or “Publish”. You can also preview your work before saving by clicking “Preview”.

## Publish

Save Draft Preview

 Status: **Draft** [Edit](#)

 Visibility: **Public** [Edit](#)

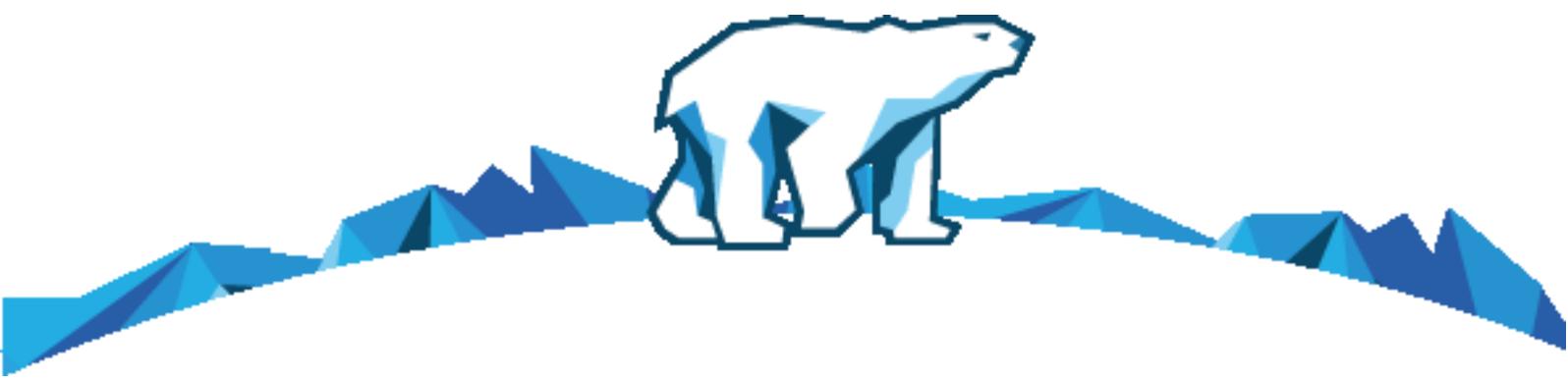
 Revisions: **2** [Browse](#)

 Publish **immediately** [Edit](#)

 Post Views: **1**

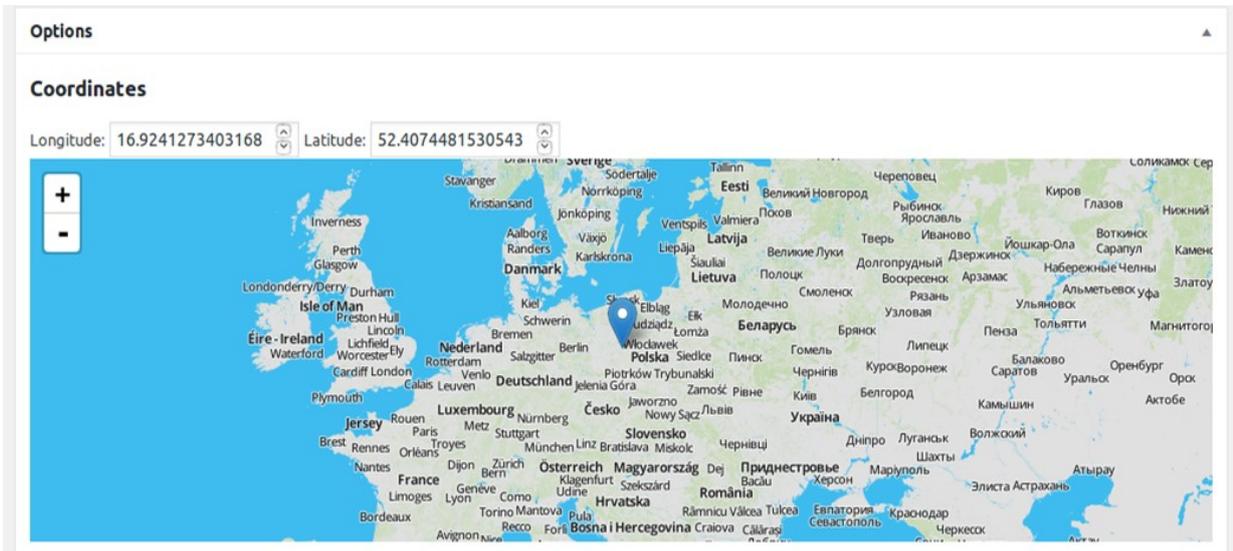
 **SEO: 12 / 100**

[Copy to a new template](#)  
[Copy to a new draft](#)  
[Move to Bin](#) Publish

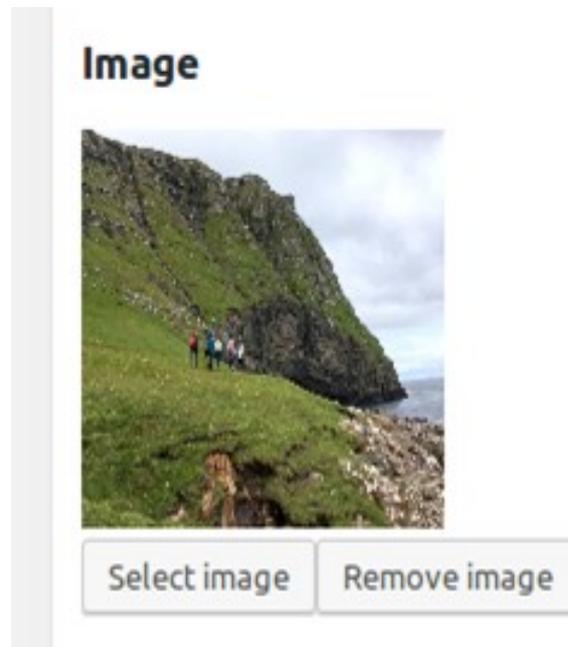


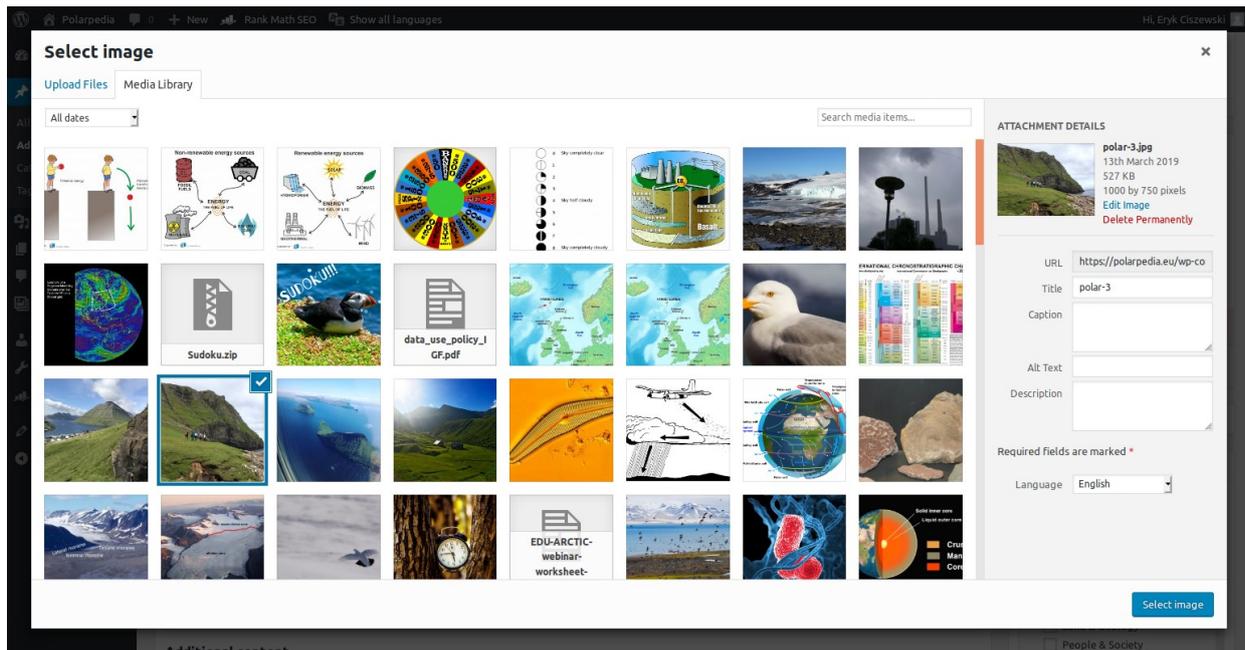
You can add more information to your expression/term in "Options" section:

- Coordinates – you can paste “Longitude” and “Latitude” or use map to select your coordinates. Map zoom is preserved on expression page.



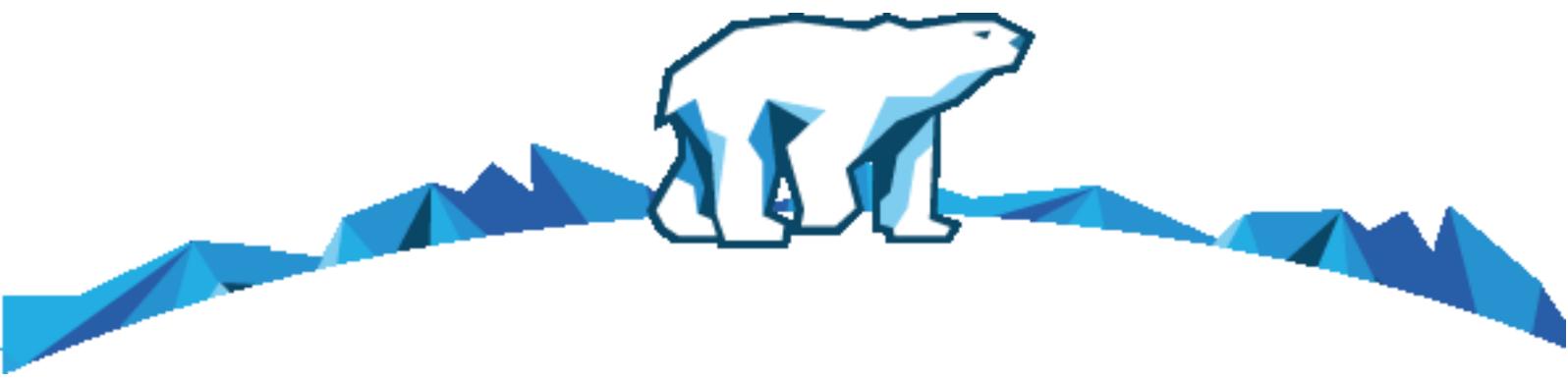
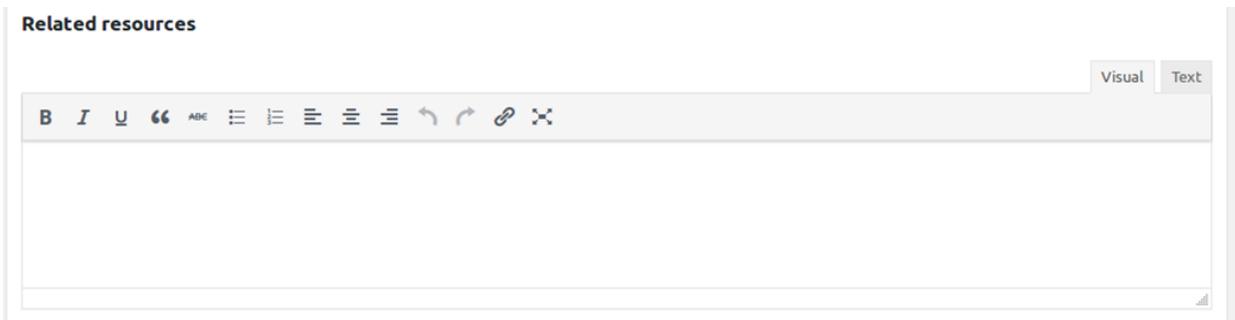
- Add an image





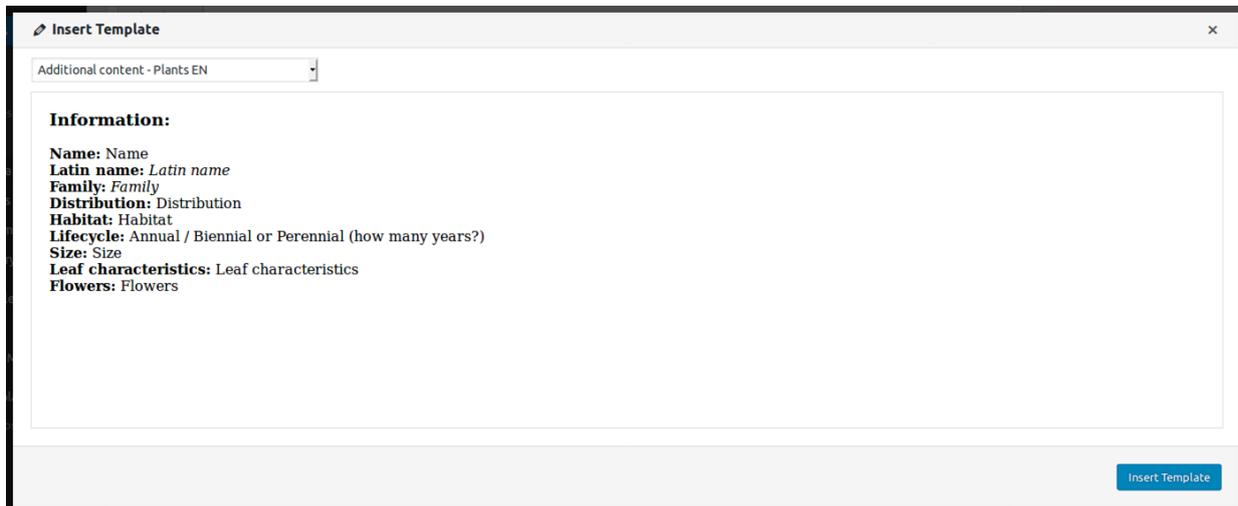
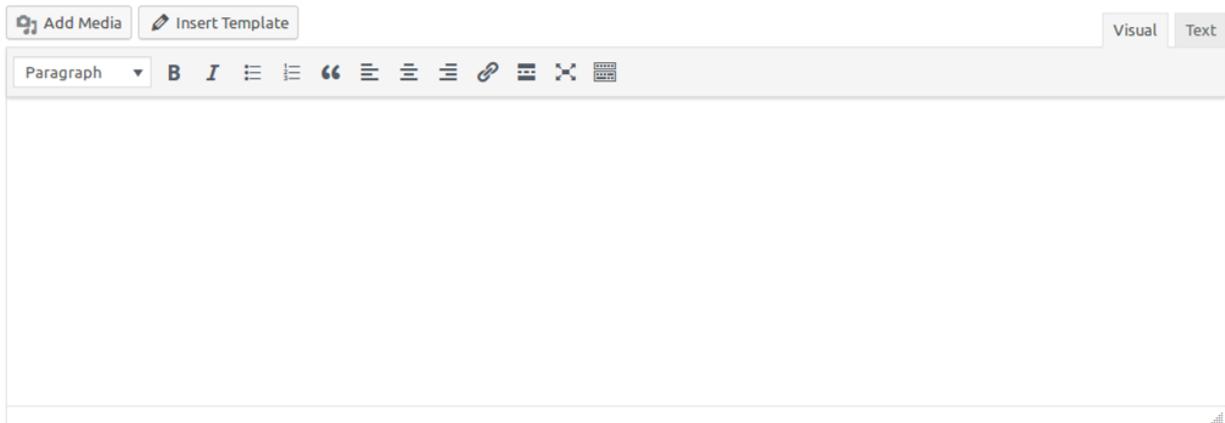
**Remember:** If an image is selected, map is hidden.

- Related resources – additional paragraph in sidebar with header: “Related resources”



- Additional content – additional paragraph in sidebar with template select

#### Additional content

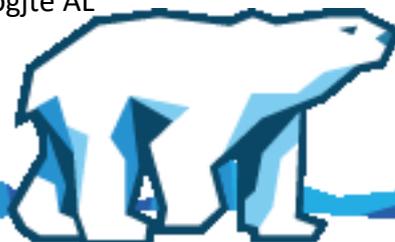


#### List of available templates:

- Additional content - Plants EN
- Additional content - Animals EN
- Additional content - Birds EN
- Viðbótarefni - Dýr ÍSL
- Viðbótarefni - Fuglar ÍSL
- Viðbótarefni - Plöntur ÍSL
- Tilleggsinformasjon - Dyr NO

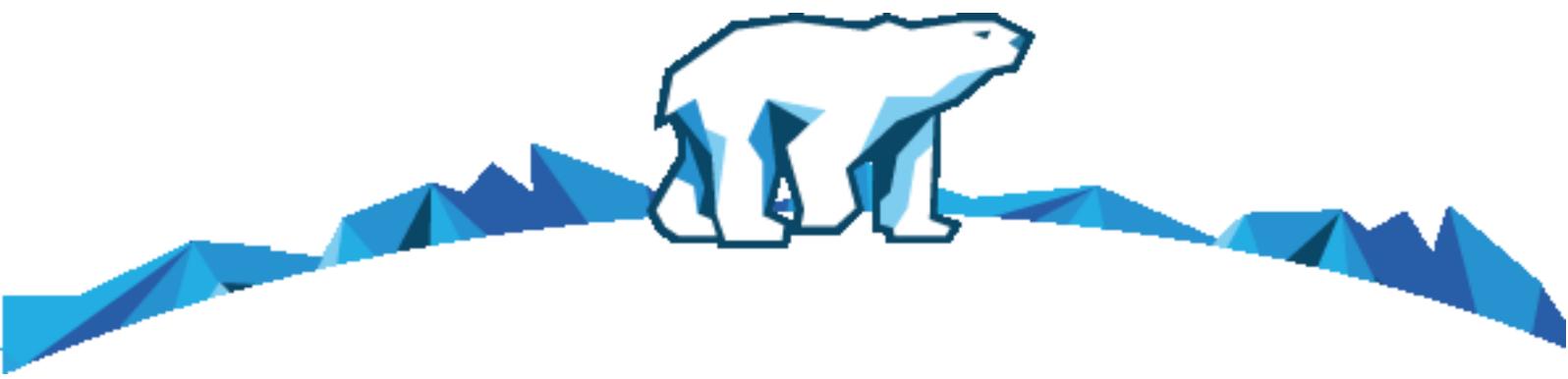


- Tilleggsinformasjon - Fugler NO
- Tilleggsinformasjon - Planter NO
- Yderligere informasjon - Dyr DK
- Dodatkowe informacje - Ptaki PL
- Dodatkowe informacje - Zwierzęta PL
- Dodatkowe informacje - rośliny PL
- Information additionnelle - Animaux FR
- Information additionnelle - Des oiseaux FR
- Information additionnelle - Les plantes FR
- Yderligere informasjon - Fugle DK
- Yderligere informasjon - Planter DK
- Informatii suplimentare - Plante ROU
- Informații suplimentare - Animale ROU
- Informații suplimentare - Păsări ROU
- Ulteriori informazioni - Animali ITL
- Ulteriori informazioni - Uccelli ITL
- Ulteriori informazioni - Piante ITL
- Πρόσθετες πληροφορίες - Φυτά GRK
- Πρόσθετες πληροφορίες - Ζώα GRK
- Πρόσθετες πληροφορίες - Πτηνά GRK
- Дополнительная информация - Животные RU
- Дополнительная информация - птицы RU
- Дополнительная информация - Растения RU
- Допълнителна информация - Растения BG
- Дополнительная информация - Животные BG
- Допълнителна информация - Птици BG
- Informacione shtesë - Bimët AL
- Informacione shtesë - Kafshët AL
- Informacione shtesë - Zogjtë AL



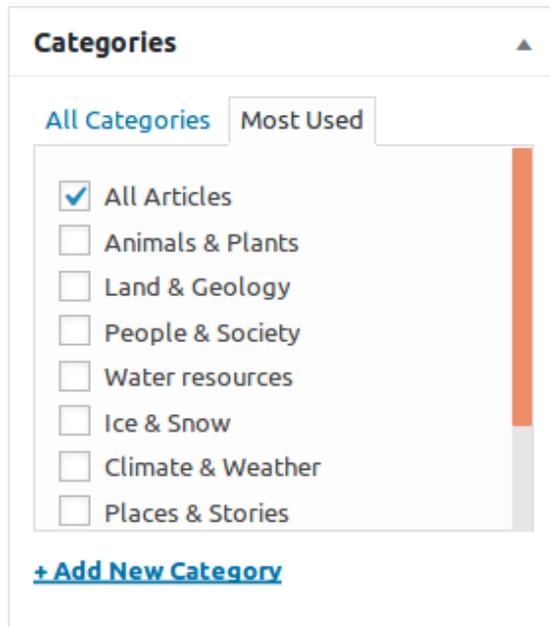
- Dodatne informacije - Biljke HR
  - Dodatne informacije - Životinje HR
  - Dodatne informacije - Ptice HR
  - Додатне информације - Животиње RS
  - Додатне информације - Птице RS
  - Додатне информације - биљке RS
  - Дополнителни информации - растенија МК
  - Дополнителни информации - животниа МК
  - Дополнителни информации - Птици МК
  - Zusätzliche Informationen - Pflanzen DE
  - Zusätzliche Informationen - Tiere DE
  - Zusätzliche Informationen - Vögel DE
- 
- Related webinar – enables icon of “graduation cap” on expression list
  - Translated by teacher – if filled, shows information on expression page
  - Author – if filled, shows information on expression page
  - Text of button – if filled, shows big button on expression page
  - Link of button – button link

<b>Related webinar</b> <input type="checkbox"/>
<b>Translated by teacher</b> <input type="text"/>
<b>Author</b> <input type="text"/>
<b>Text of button</b> <input type="text"/>
<b>Link of button</b> <input type="text"/>

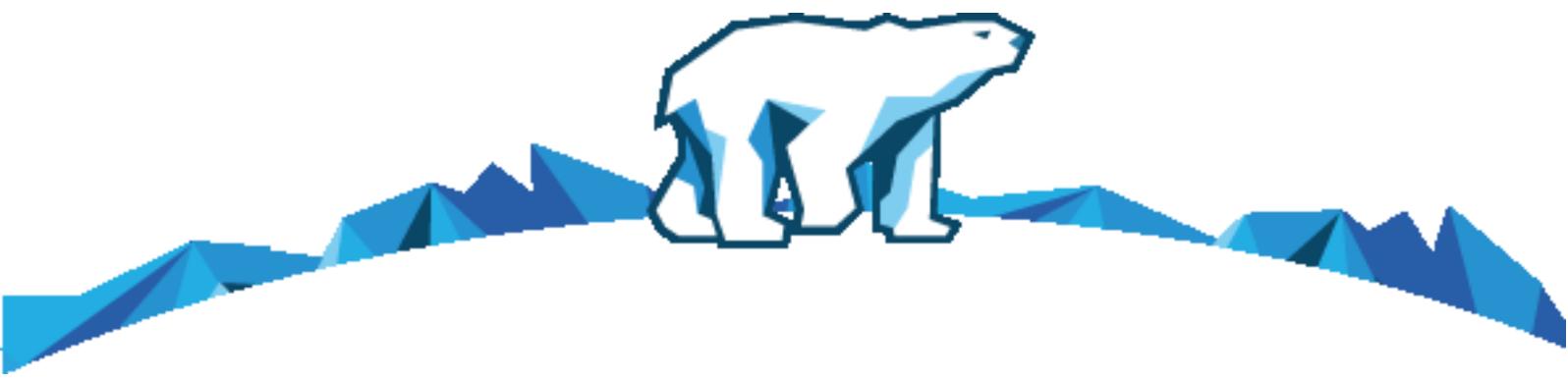
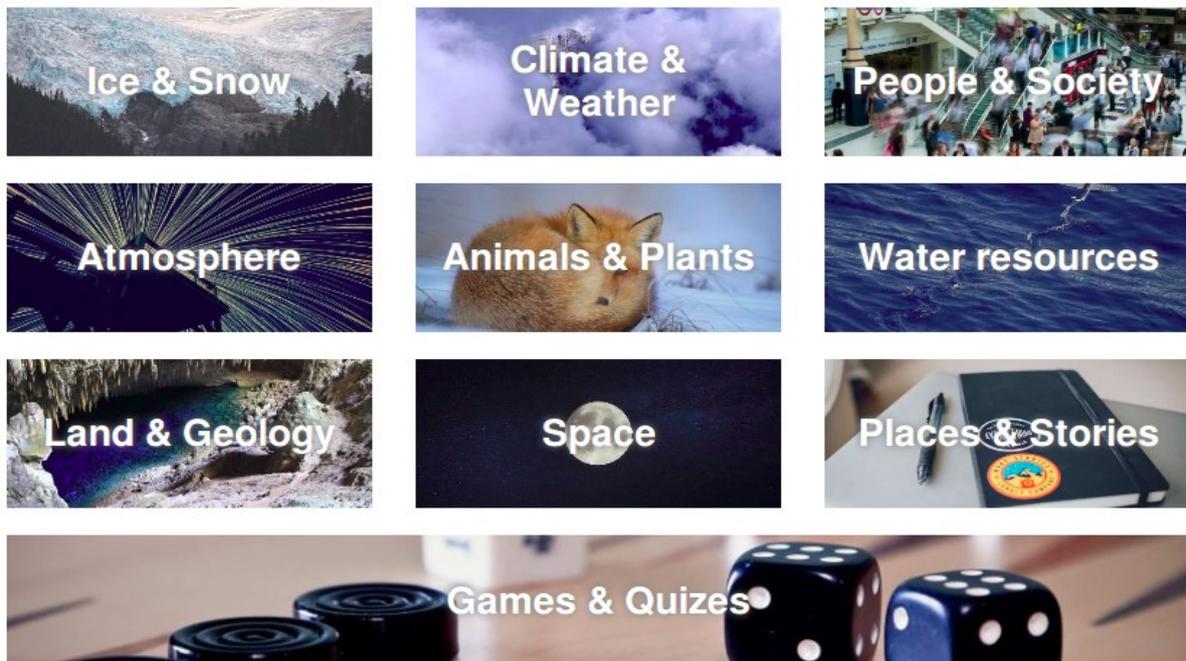


## Catagories

Each term is assigned to an applicable category, one or more.

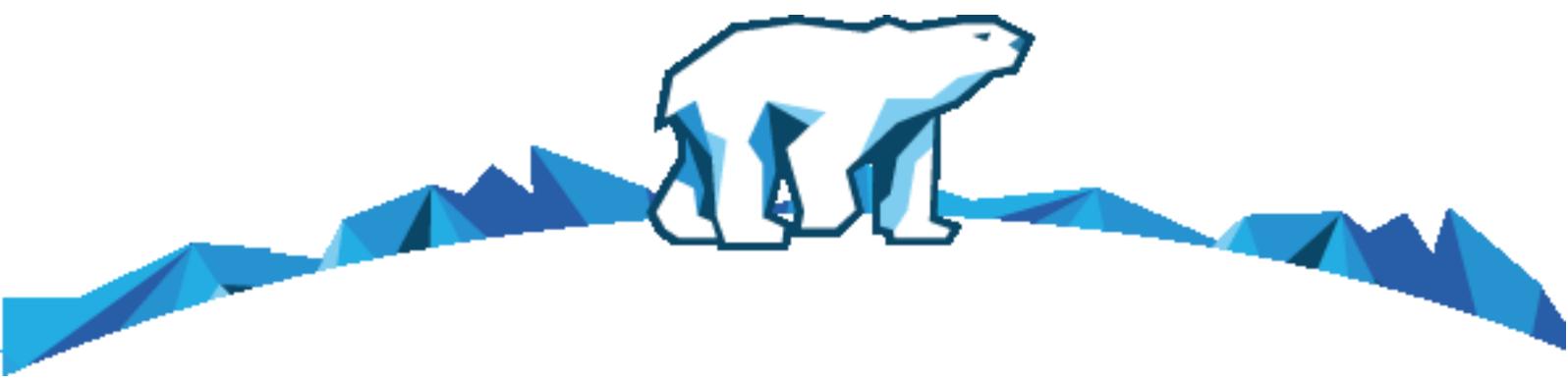


Categories organize the content on the site, making it easier for users to find them.



**List of Polarpedia categories in English:**

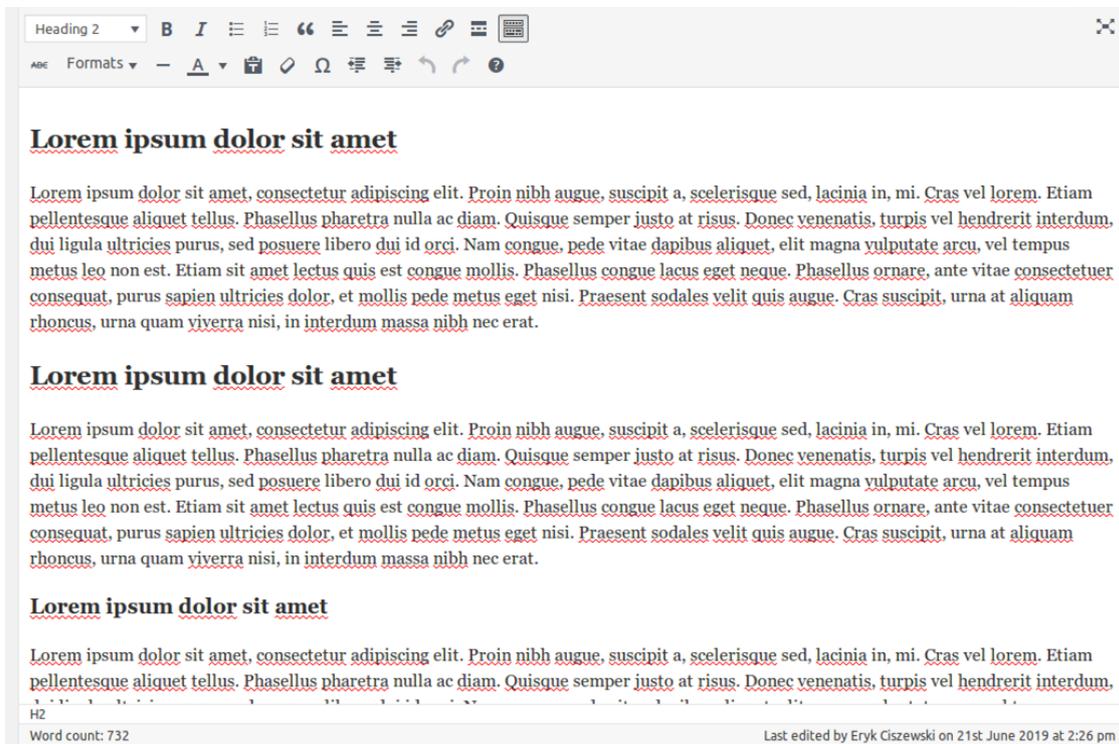
- Animals & Plants
- Atmosphere
- Climate & Weather
- Ice & Snow
- Land & Geology
- People & Society
- Places & Stories
- Space
- Water resources
- Games & Quizzes
  - Experiments
  - Miscellanea
  - Online games
  - Quizzes
  - Teamwork
  - Worksheets



## Table of content ( Headings )

A table of contents (TOC) is automatically generated on a page when "Heading 2" is used.

Example:



Heading 2

**Lorem ipsum dolor sit amet**

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**Lorem ipsum dolor sit amet**

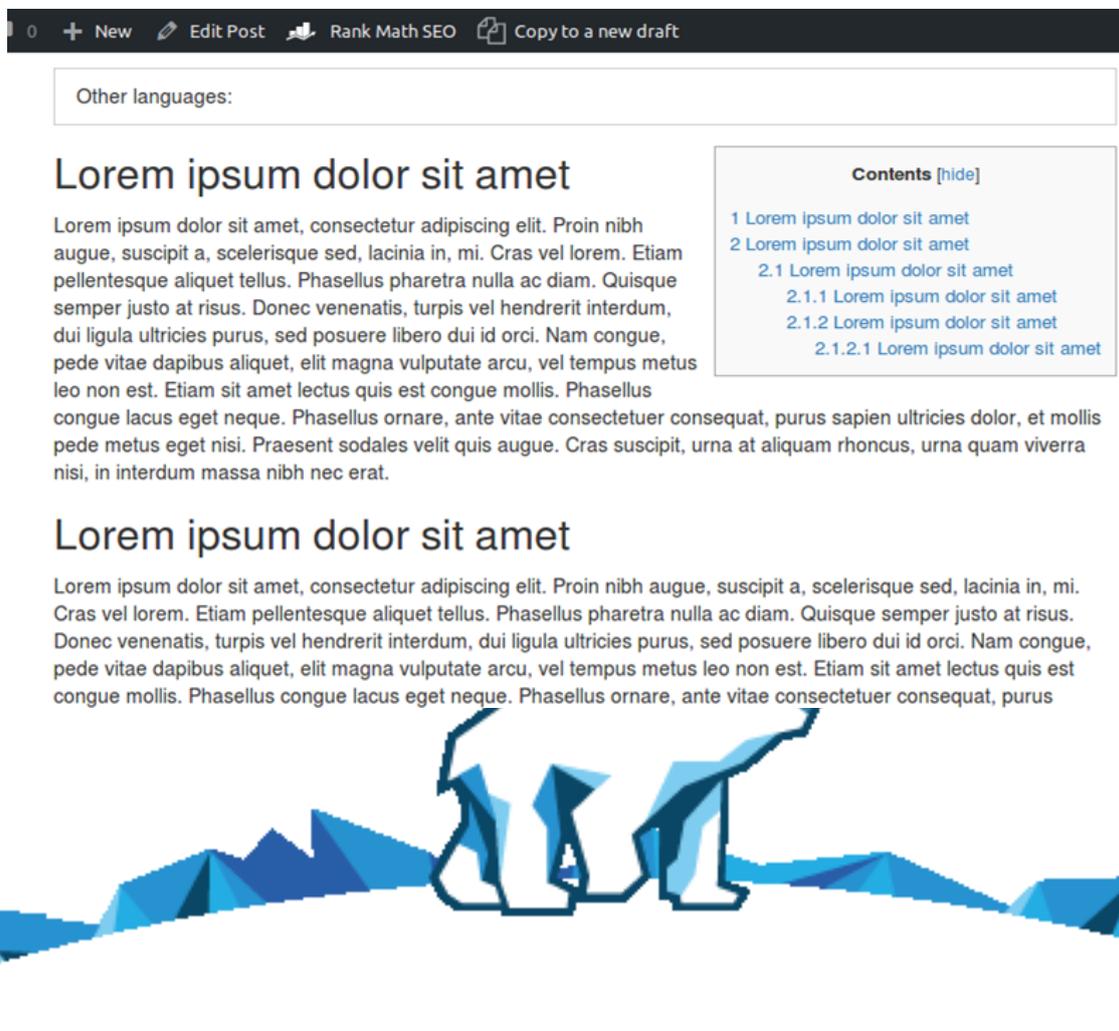
Lorem ipsum dolor sit amet, consectetur adipiscing elit. Proin nibh augue, suscipit a, scelerisque sed, lacinia in, mi. Cras vel lorem. Etiam pellentesque aliquet tellus. Phasellus pharetra nulla ac diam. Quisque semper justo at risus. Donec venenatis, turpis vel hendrerit interdum, dui ligula ultricies purus, sed posuere libero dui id orci. Nam congue, pede vitae dapibus aliquet, elit magna vulputate arcu, vel tempus metus leo non est. Etiam sit amet lectus quis est congue mollis. Phasellus congue lacus eget neque. Phasellus ornare, ante vitae consectetur consequat, purus sapien ultricies dolor, et mollis pede metus eget nisi. Praesent sodales velit quis augue. Cras suscipit, urna at aliquam rhoncus, urna quam viverra nisi, in interdum massa nibh nec erat.

H2

Word count: 732

Last edited by Eryk Ciszewski on 21st June 2019 at 2:26 pm

Creates this:



0 + New Edit Post Rank Math SEO Copy to a new draft

Other languages:

**Lorem ipsum dolor sit amet**

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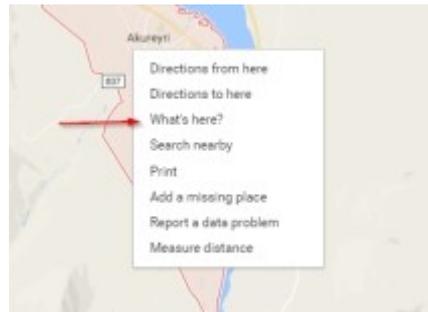
**Contents [hide]**

- 1 Lorem ipsum dolor sit amet
- 2 Lorem ipsum dolor sit amet
  - 2.1 Lorem ipsum dolor sit amet
    - 2.1.1 Lorem ipsum dolor sit amet
    - 2.1.2 Lorem ipsum dolor sit amet
      - 2.1.2.1 Lorem ipsum dolor sit amet

## Coordinates

If you want to display a map you must get coordinates for that. Please perform the following activities:

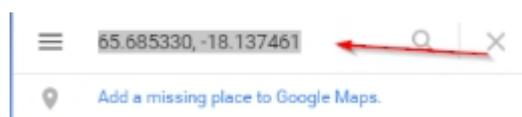
- 1) Go to Google maps;
- 2) Write the location you want to display;
- 3) Once located, click right mouse button and choose "What's here?";



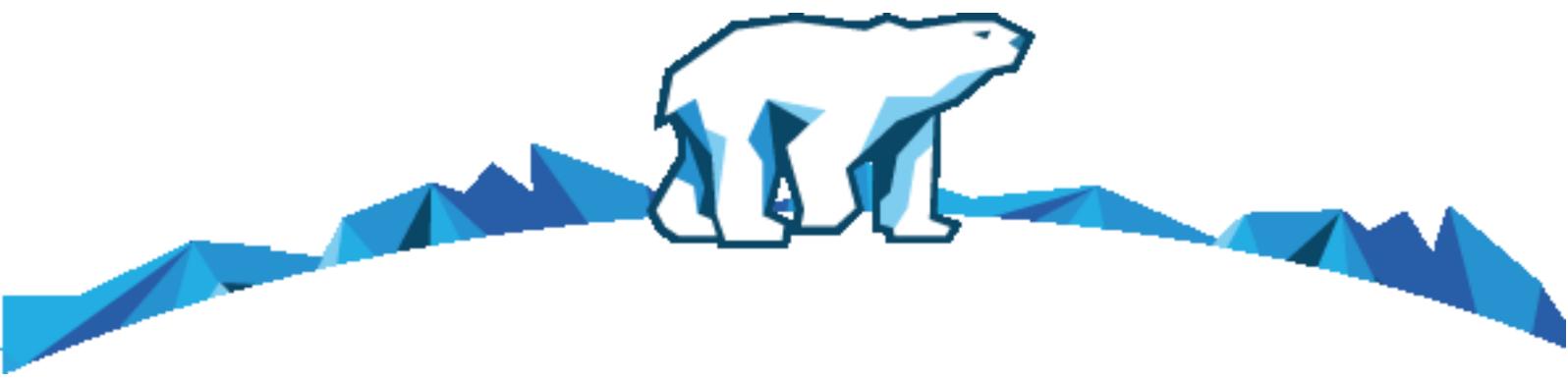
- 4) Click on the coordinates;



- 5) You will get coordinates on search box on the upper right – copy;



- 6) Paste the coordinates in the text box in Polarpedia in the right place – See "How it works – creation of a new expression"



## Youtube

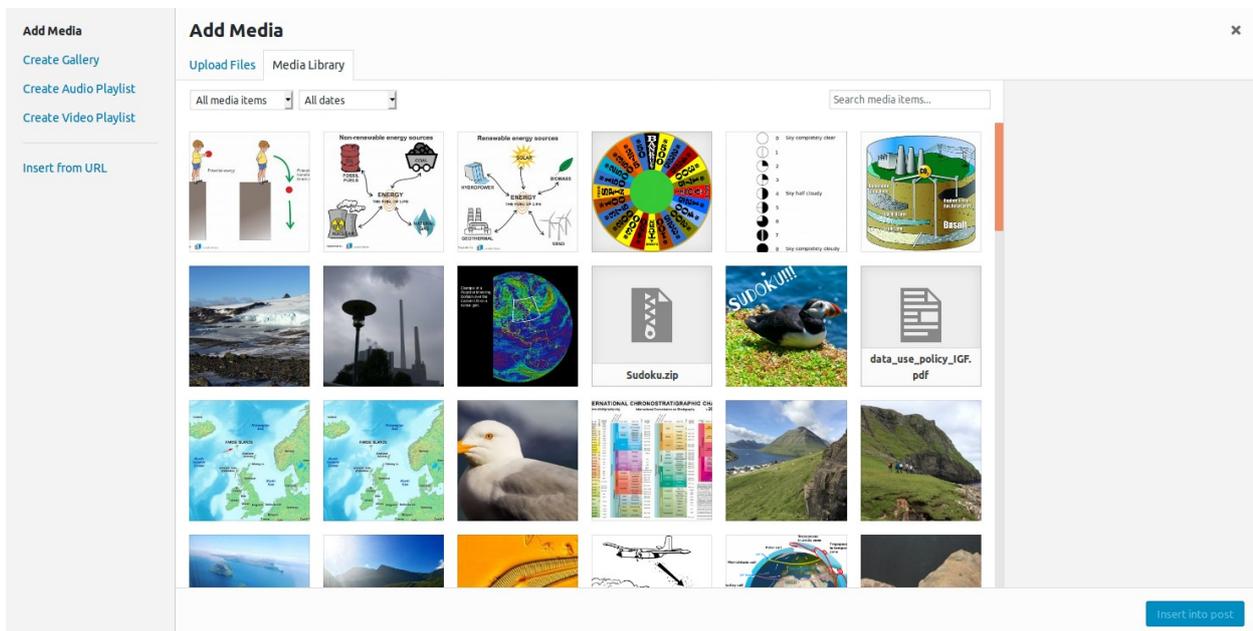
In order to add youtube video please decide where you want to add video and paste a link to video.

You can find more detailed information on <https://en.support.wordpress.com/videos/youtube/>.

## Images and Galleries

By clicking “Add media” button you can add photos and galleries to your term.

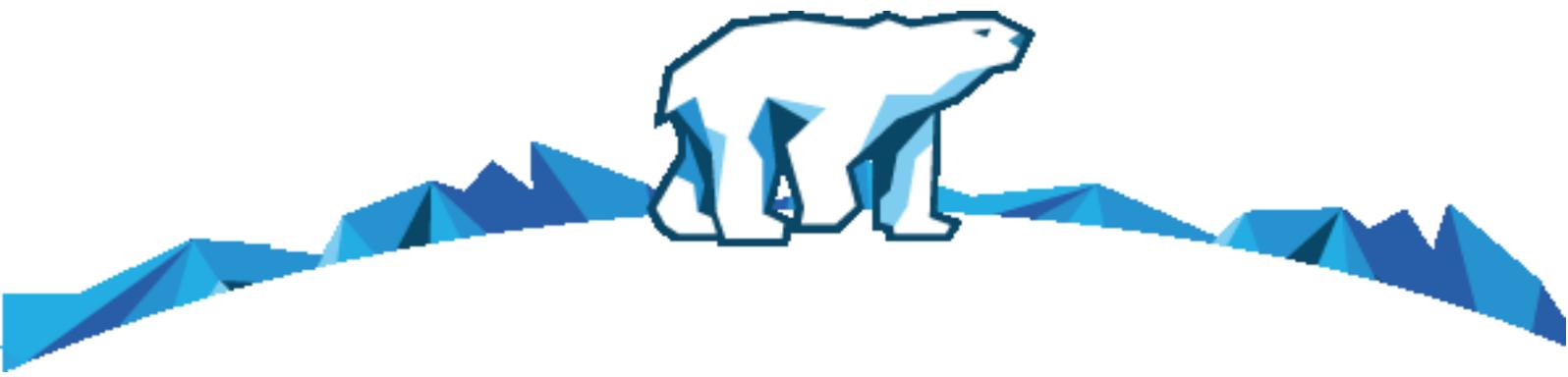
You can upload files or use already existing files in media library.



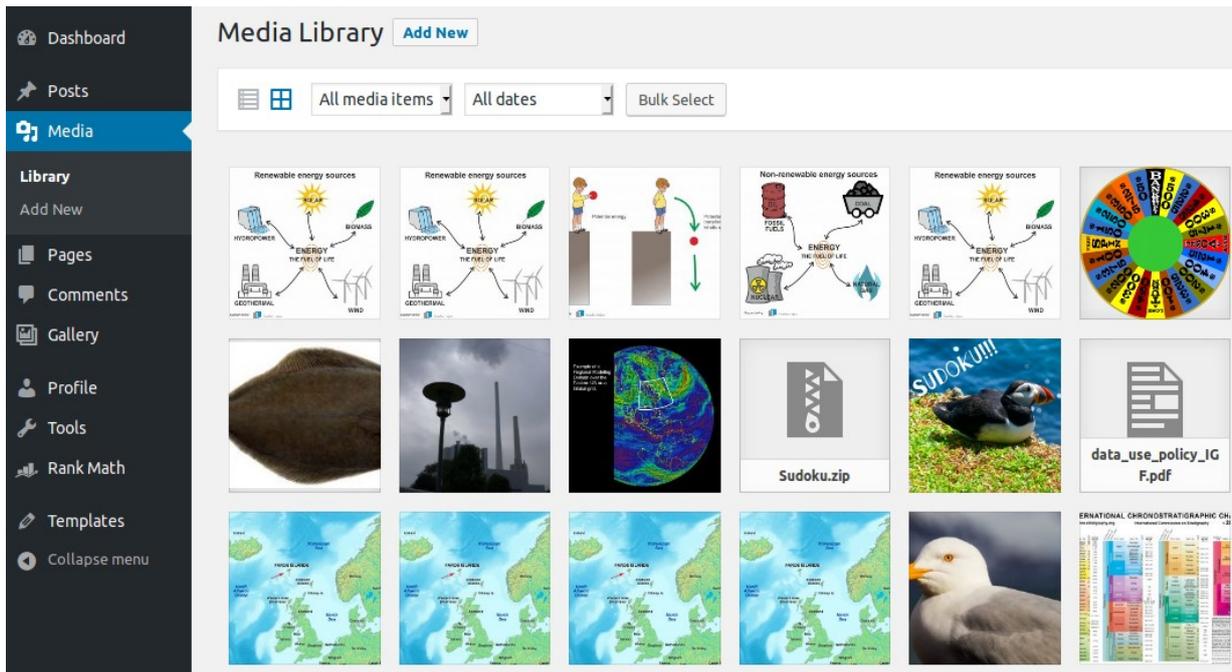
The screenshot displays the WordPress 'Add Media' interface. On the left, there is a sidebar with options: 'Add Media', 'Create Gallery', 'Create Audio Playlist', 'Create Video Playlist', and 'Insert from URL'. The main area is titled 'Add Media' and has tabs for 'Upload Files' and 'Media Library'. Below the tabs, there are filters for 'All media items' and 'All dates', and a search bar labeled 'Search media items...'. The main content area shows a grid of media items, including:

- Diagrams: 'Non-renewable energy sources', 'Renewable energy sources', and a circular diagram with various energy sources.
- Images: A landscape with snow, a factory, a globe, a seagull, and various nature scenes.
- Files: 'Sudoku.zip' and 'data\_use\_policy\_JGF.pdf'.
- Maps: Two maps of Europe.
- Charts: A bar chart titled 'INTERNATIONAL CHRONOSTRATIGRAPHIC CHART'.
- Other: A 'SUDOKU!!!' image with a penguin, a 'data\_use\_policy\_JGF.pdf' icon, and a 'data\_use\_policy\_JGF.pdf' icon.

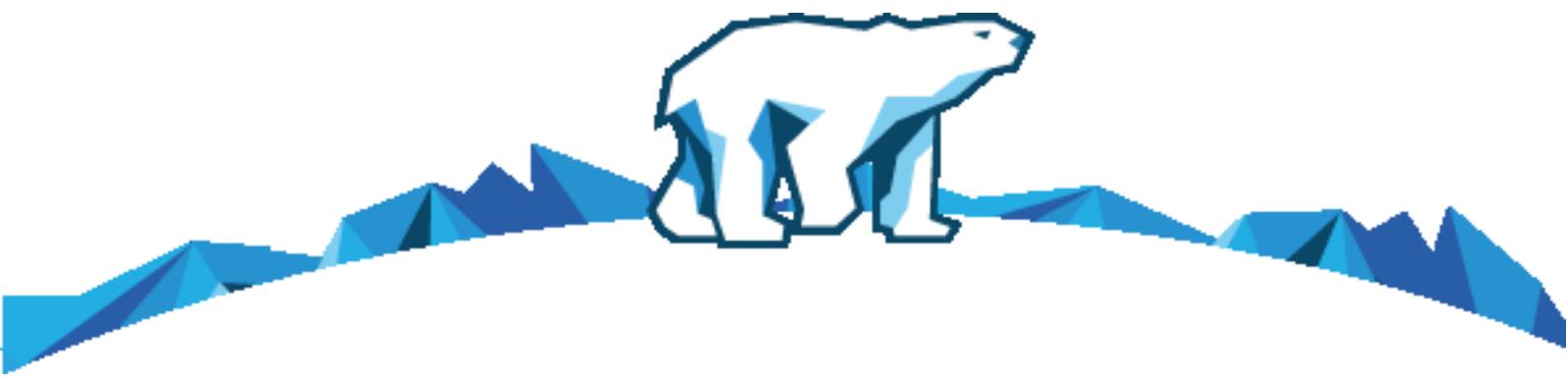
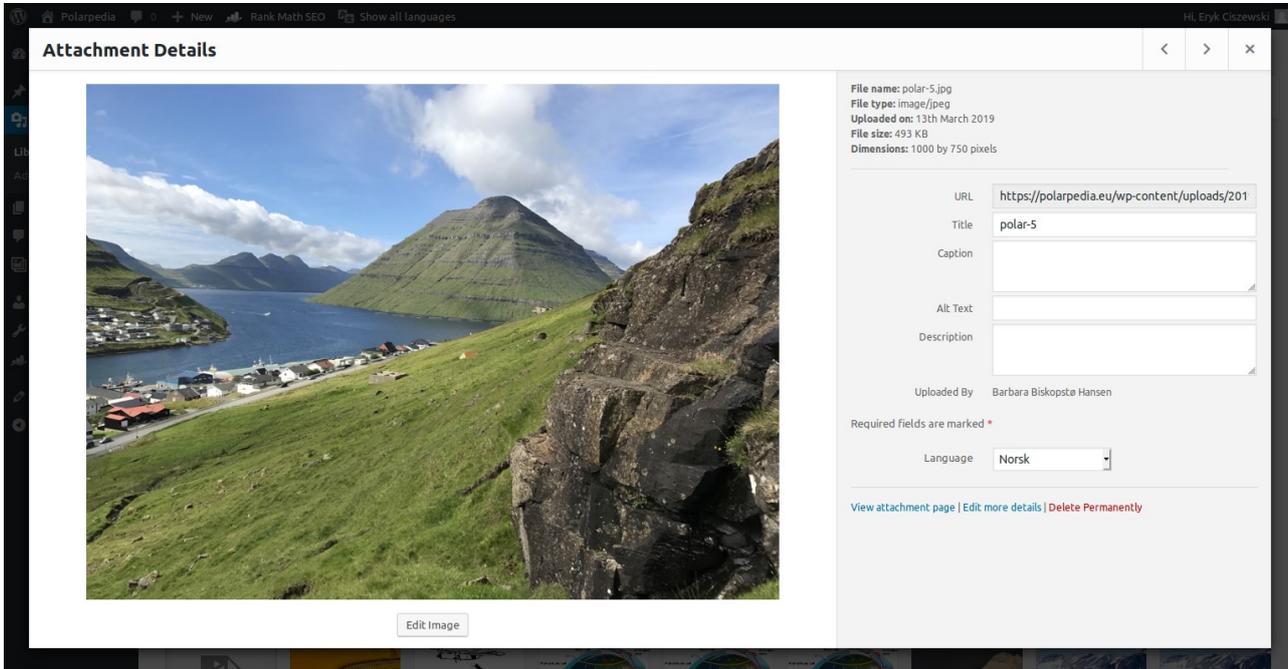
At the bottom right of the interface, there is a blue button labeled 'Insert into post'.

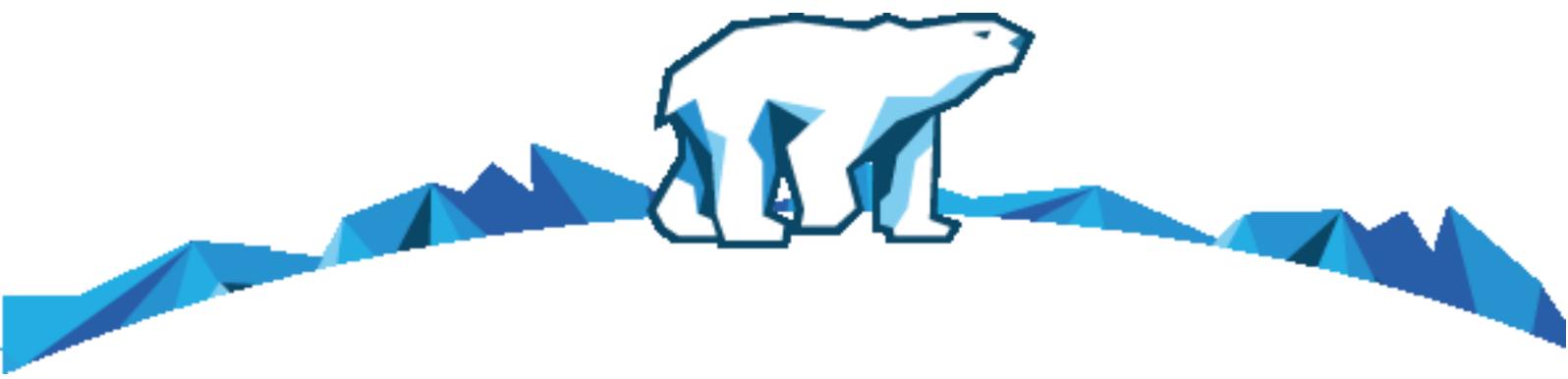
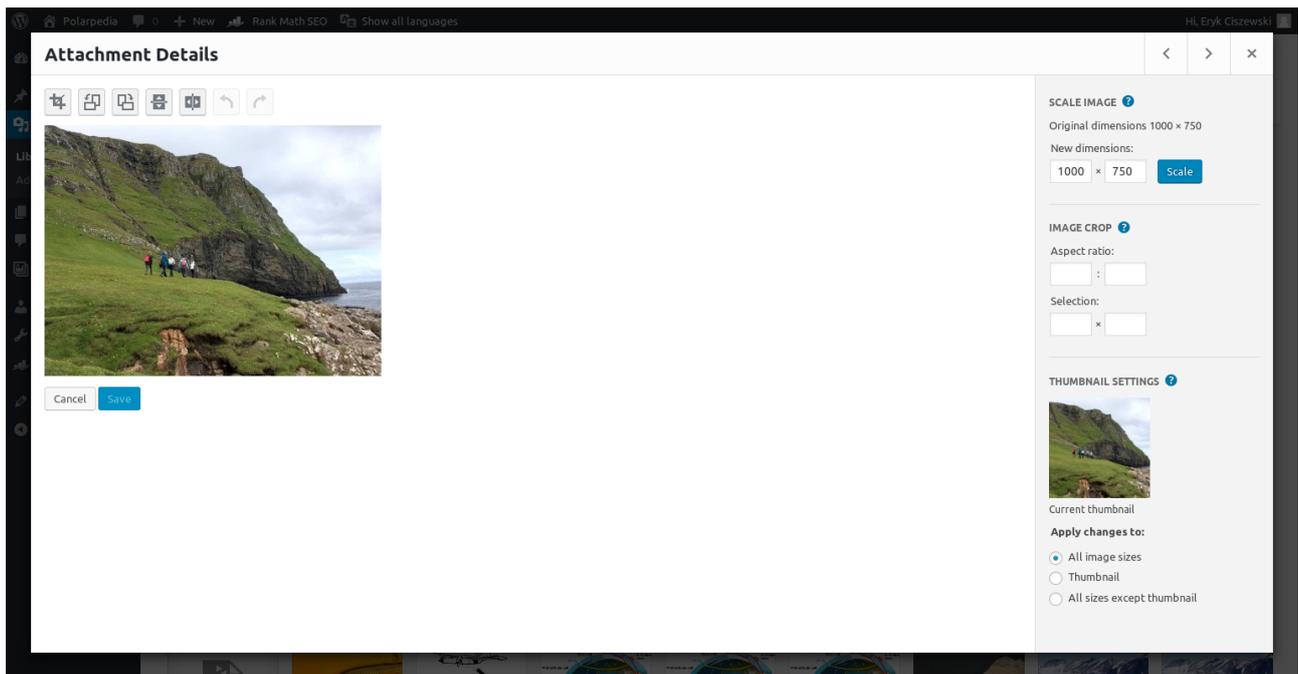


You can manage media file from “Media Library”.



For each file you can fill in detailed information that can be used in a term page and run simple edit tasks for images.





## Translation

You can translate any term by editing and selecting language form "Languages" menu.

### Languages

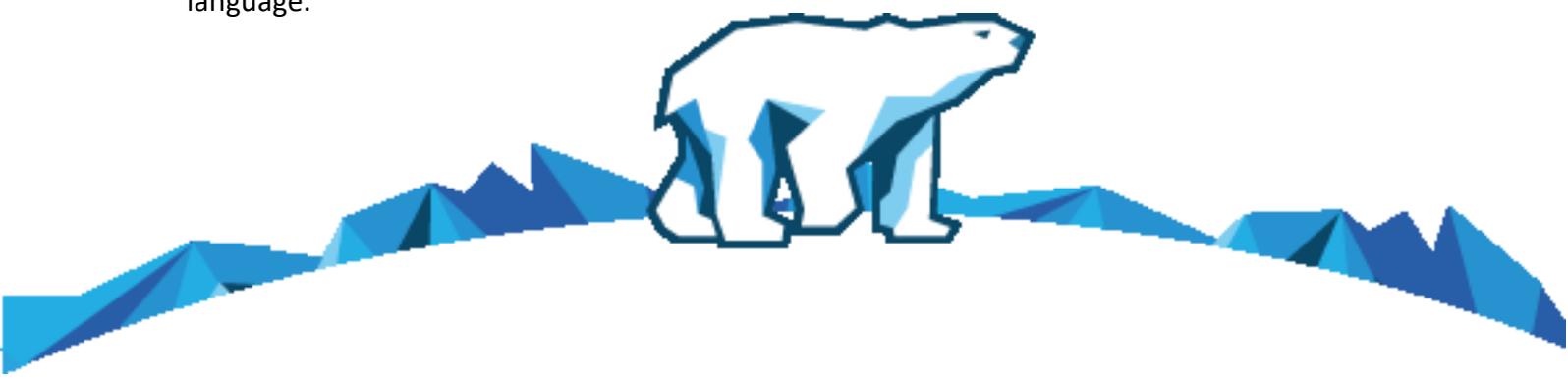
**Language**

 English

**Translations**

	+	<input type="text"/>
	+	<input type="text"/>
	+	<input type="text"/>
	+	<input type="text"/>
	+	<input type="text"/>
	+	<input type="text"/>
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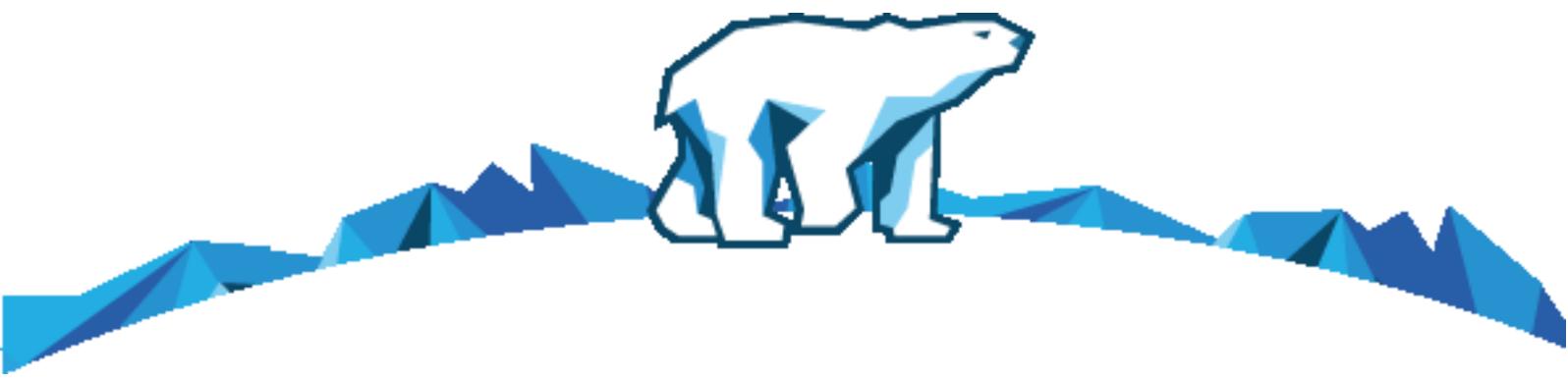
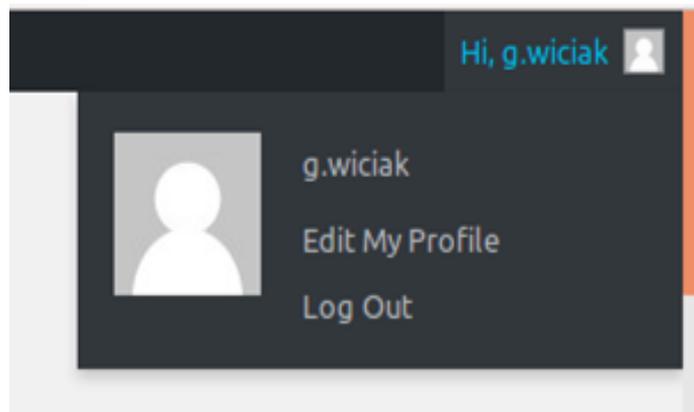
**Caution!** When you translate a term content of options section is copied from the main language.



## User profiles

Clicking on the "Edit my profile" link in the upper right while logged in allows you to change your preferences.

You will be presented with the Profile section. I assume you would like to change your password and that section allows you to do so.



Appendix No 2 – Analytical information

