Dataset name:	iCUPE Datasets (DS) from Deliverable 3.2.2:
	Datasets on Classification of artificial light sources in the Yamal Peninsula, Western Siberia
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Place and date:	**Potsdam, Germany. 19.03.2020**

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This dataset and code are related to artificial light emissions in the arctic area. They are a supplement to the iCUPE report "Capabilities and limitations of advanced optical satellite missions for snow, vegetation, and artificial light source applications in Arctic areas". The dataset and code are published at the following permanent address: http://doi.org/10.5880/GFZ.1.4.2019.007

Code:

The data publication includes the python code "Arctic light pollution clustering script", which identifies areas with bright light emissions in the arctic. The script requires the monthly composite images from the Day/Night Band of the Visible Infrared Imaging Radiometer Suite produced by the Earth Observation Group as an input. These data are currently available here: https://eogdata.mines.edu/download_dnb_composites.html

Dataset:

The Radiance Light Trends app was used to identify artificial light sources on the Yamal Peninsula in Russia. In order to determine whether a location was lit, a threshold of 5 nW/cm² sr (displayed in

yellow in the Radiance Light Trends app) was defined. Visible band daytime imagery from Google Maps and Bing Maps was then used to identify what type of human activity was responsible for the light. The positions of the 78 lit areas and their light source classification are provided in a csv table and kmz file. The classes are defined as: industry, industry / flare, community, ship/ airport, road, water and unknown. This data publication includes the artificial light sources on the Yamal Penninsula (Western Siberia) in .csv and .kmz formats.

Data format:

Two formats are available, csv and kmz. The format for the csv file is as follows:

Index
Latitude
Longitude
Source class

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Dataset name: **iCUPE Datasets (DS) from Deliverable 3.2.2:**

Datasets of novel optical remote sensing products on snow, vegetation and gas flaring mapping in selected sites: Visible Near Infrared (VNIR) airborne and simulated EnMAP satellite hyperspectral imagery of Toolik Lake, Alaska

Author(s) and affiliations: **Alison Beamish[1], Sabine Chabrillat[1], Maximilian Brell[1], Sebastian Rössler[3], Birgit Heim[2], Torsten Sachs[1]**

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Place and date: **Potsdam, 17.03.2020**

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The dataset (in .dat raster format) contains an airborne ortho-mosaic from an Airborne Imaging Spectrometer for Applications (AisaEAGLE, Specim, Spectral Imaging Ltd, Oulu, Finland) Visible Near Infrared (VNIR) hyperspectral scanner as well as an Environmental Mapping and Analysis (EnMAP) simulated hyperspectral ortho-mosaic (30 m) of Arctic tundra vegetation at the Toolik Lake Research Natural Area. The AisaEAGLE imager has 130 bands (404.9 – 1002.5 nm) with a bandwidth of 4 nm with data acquired at a spatial resolution of 1.3 m at nadir. The data were atmospherically and radiometrically corrected. The radiometric correction was performed using sensor specific software of the instrument manufacturer (Richter and Schläpfer, 2012). The direct geometric correction was performed using manufacturer´s software and/with the simultaneously measured IMU/GPS data stream. Subsequently, the geocorrected radiance data were atmospherically corrected using ATCOR4. The resulting surface reflectance flight lines were subset to the first 97 bands (451.7 – 897 nm). The AISA mosaic was used as an input to the EnMAP satellite End-to-End Simulation tool (EeteS) to simulate an EnMAP-like mosaic with 78 bands (423 – 903 nm), a spectral sampling between 6.5 and 10 nm, and a ground sampling distance of approximately 30 m (Segl et al., 2012, 2010).

Previously published datasets of simultaneously collected ground-based spectral reflectance data and photosynthetic pigment data from dominant plant species are linked below:

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Beamish, AL (2018): Spectroscopy and pigment data from Toolik Vegetation Grid, Toolik Lake, Alaska. https://doi.org/10.1594/PANGAEA.

This dataset, metadata, and Technical Report are available at:
http://dataservices.gfz-potsdam.de/enmap/doi:10.2312/enmap.2020.001

The link to datatset:
https://doi.org/10.5880/enmap.2020.001

Beamish, Alison; Chabrillat, Sabine; Brell, Maximilian; Heim, Birgit; Sachs, Torsten (2020): Toolik Lake Research Natural Area AISA-Eagle hyperspectral Mosaic - An EnMAP Preparatory Flight Campaign. EnMAP Flight Campaigns Technical Report, GFZ Data Services.
https://doi.org/10.2312/enmap.2020.001