**Title:** Arctic lakes ice break-up timing for 2000 - 2013

**Data description:** This dataset includes break-up start and break-up end dates for 13 300 lakes larger than 1 km2 in five study areas in the Arctic. The dates were derived using time-series of daily surface reflectance data at 250m spatial resolution acquired by the Moderate Resolution Imaging spectroradiometer (MODIS) aboard the TERRA satellite. Detailed description of the methodology, validation and analysis is available in Šmejkalová 2014 and Šmejkalová, Edwards, and Dash 2016.

**Parameters:** Break-up start (BUS) - The day of year when ice-free water appears. (Lat/Lon lake centroid)

Break-up end (BUE) – The day of year when water is completely ice-free. (Lat/Lon lake centroid)

**Spatial coverage:** Northern Europe (> 65°N)

Northeast Canada (mainland; > 65°N; 85°- 105°E)

Alaskan Arctic Coastal Plain (> 69°N; 150°- 160°E)

Northeast Siberia (> 67°N; 140°- 165°W)

Central Siberia (70°- 75°N; 90°- 110°W)

**Spatial resolution:** Lakes larger than 1 km2

**Temporal coverage:** 1 year

**Temporal resolution:** 2000-2013 (not all years available for all lakes)

**Data formats:** CSV (Coma Separated Values, \*.csv)

ESRI Shapefile (\*.shp)

**Files:** Alaska\_ACP\_BUS.csv

Alaska\_ACP\_BUE.csv

C\_Siberia\_BUS.csv

C\_Siberia\_BUE.csv

N\_Europe\_BUS.csv

N\_Europe\_BUE.csv

NE\_Canada\_BUS.csv

NE\_Canada\_BUE.csv

NE\_Siberia\_BUS.csv

NE\_Siberia\_BUE.csv

**Auxiliary data:** Lake\_polygons\_1km2\_Alaska\_ACP.shp [EPSG 3995; WGS 84 / Arctic Polar Stereographic]

Lake\_polygons\_1km2\_C\_Siberia.shp [EPSG 3995; WGS 84 / Arctic Polar Stereographic]

Lake\_polygons\_1km2\_NE\_Canada.shp [EPSG 3995; WGS 84 / Arctic Polar Stereographic]

Lake\_polygons\_1km2\_N\_Europe.shp [EPSG 3995; WGS 84 / Arctic Polar Stereographic]

Lake\_polygons\_1km2\_NE\_Siberia.shp [EPSG 3995; WGS 84 / Arctic Polar Stereographic]

Study\_areas.shp [EPSG 3995; WGS 84 / Arctic Polar Stereographic]

**References and related publications:**

Šmejkalová, Tereza, Mary Edwards, and Jadunandan Dash. “Arctic Lakes Show Strong Decadal Trend in Earlier Spring Ice-Out.” *Scientific Reports* 6 (December 7, 2016): 38449. <https://doi.org/10.1038/srep38449>.

Šmejkalová, Tereza. “Quantifying Decadal Changes in Arctic Lake Ice Phenology.” MSc. Thesis, Southampton, University of Southampton, 2014. http://www.itc.nl/library/papers\_2014/msc/gem/smejkalova.pdf.