IceTrendr - Polygon

A Landsat data visualization tool for monitoring glacier ecosystems

http://polygon.icetrendr.oregonstate.edu/

Land Cover

INTRODUCTION

We want to describe the process that caused a change on the landscape (in the entire area of the polygon outlined in red in the KML on Google Earth), and we want to record as much as possible about that change as you can understand from the context of the Landsat satellite imagery, high resolution imagery, and the Glacier Time Series graph. We want to know what was there before the change, after the change, how confidant you are in your call, and why. Be aware of the 'Change Year' value.

TASK: IDENTIFY LAND COVER USING DEFINED LIST

The key strategy here is to capture the dominant land cover at a specific point in time, either at the 'start' or 'end' of the Change Year value. Separately, we capture the reason for the change between the start and end dates using the segment process menu.

1. **Glacier** ice, bare ice
2. **Glacier** ice, firn
3. G**lacier** ice, snow-covered
4. **Glacier** ice, debris-covered
5. **Glacier** ice, crevassed
6. **Glacier** ice, other
7. I**ceberg**
8. **Snow**, seasonal snow
9. **Snow**, permanent snowfield
10. **Moraine**, terminal
11. **Moraine**, lateral
12. **Moraine**, medial
13. **Rock**, nunatak
14. **Rock**, horn
15. **Rock**, other
16. **Water**, supraglacial melt pond or lake
17. **Water**, supraglacier stream
18. **Water**, proglacial lake, high turbidity
19. **Water**, proglacial lake, low turbidity
20. **Water**, proglacial braided channels
21. **Water**, other
22. **Vegetation**, shrub
23. **Vegetation**, trees
24. **Vegetation**, other

contact:
Peder Nelson (Peder.Nelson@oregonstate.edu)
Anne Nolin (anne.nolin@gmail.com)

Land Cover

DEFINITIONS

Glacier ice, bare ice = originates from the compaction of snow into firn and finally to ice under the weight of several successive annual accumulations. Refrozen melt water usually contributes to the increasing density of the glacial ice mass.

Glacier ice, firn = rounded, well-bonded snow that is older than one year; firn has a density greater than 550 kilograms per cubic-meter (35 pounds per cubic-foot); called névé during the first year. https://nsidc.org/cryosphere/glossary?keys=firn.

Glacier ice, snow covered = New snow accumulation in which the original form of the ice crystals can be recognized. New snow becomes névé which is young, granular snow that has been partially melted, refrozen and compacted. Névé that survives a full season is called firn; firn becomes glacial ice. https://nsidc.org/cryosphere/glossary?keys=firn.

Glacier ice, debris-covered = usually includes a poorly sorted mess of rocks and fine material; may include: (1) interstitial ice a meter or so below the surface ("ice-cemented"), (2) a buried core of ice ("ice-cored"), and/or (3) rock debris from avalanching snow and rock. This class includes debris-covered mountain glacier.

Glacier ice, crevassed = area of glacier with severe crevassing (open fissures in the glacier surface) create additionally shadowing apparent in the Landsat imagery. https://nsidc.org/cryosphere/glossary?keys=crevasse.

Glacier ice, other = originates from the compaction of snow into firn and finally to ice under the weight of several successive annual accumulations. This category includes any other type of glacier ice not explicitly detailed above.

Iceberg = area with pieces of broken glacier ice surrounded by water. These are piece of ice that have broken off from the end of a glacier that terminates in water. https://nsidc.org/cryosphere/glossary?keys=iceberg.

Snow, seasonal snow = area with accumulations of snow and firn that did not entirely melt during the ablation season.

Snow, permanent snowfield = area with accumulations of snow and firn that did not entirely melt during the ablation season. Snowfields can normally be distinguished from 'Glacier' category by their relative lack of flow features.

Moraine, terminal = the lowest end of a glacier (also called glacier snout or toe) Including: moraine – push = moraine built out ahead of an advancing glacier. http://nsidc.org/cryosphere/glossary-terms/glaciers?page=14.

contact:
Peder Nelson (Peder.Nelson@oregonstate.edu)
Anne Nolin (anne.nolin@gmail.com)

Land Cover

Moraine, lateral = a ridge-shaped moraine deposited at the side of a glacier and composed of material eroded from the valley walls by the moving glacier. (http://nsidc.org/cryosphere/glossary-terms/glaciers?page=12).

Moraine, medial = a ridge-shaped moraine in the middle of a glacier originating from a rock outcrop, nunatak, or the converging lateral moraines of two or more ice streams. (http://nsidc.org/cryosphere/glossary-terms/glaciers?page=12).

Rock, nunatak = a rocky crag or small mountain projecting from and surrounded by a glacier or ice sheet. https://nsidc.org/cryosphere/glossary?keys=nunatak.

Rock, horn = a peak or pinnacle thinned and eroded by three or more glacial cirques. https://nsidc.org/cryosphere/glossary?keys=horn.

Rock, other = area covered by stone or rock with very little if any vegetation.

Water, supraglacial melt pond or lake = standing water on surface of glacier ice. Includes 'moulin' a nearly vertical channel in ice that is formed by flowing water; usually found after a relatively flat section of glacier in a region of transverse crevasses; also called a pothole. https://nsidc.org/cryosphere/glossary?keys=moulin.

Water, supraglacier stream = melt river on surface of glacier ice.

Water, proglacial lake, high turbidity = water body adjacent to glacier with high turbidity visible in Landsat imagery. High turbidity is usually caused by 'glacier flour', a fine powder of silt- and clay-sized particles that a glacier creates as its rock-laden ice scrapes over bedrock; usually flushed out in meltwater streams and causes water to look powdery gray; lakes and oceans that fill with glacier flour may develop a banded appearance; also called rock flour. https://nsidc.org/cryosphere/glossary/term/glacier-flour.

Water, proglacial lake, low turbidity = water body adjacent to glacier with hlow turbidity visible in Landsat imagery.

Water, proglacial braided channels = newly deglaciated areas comprised of rock till and outlet streams. Braided channels are characterized as having a number of alluvial channels with bars or islands between meeting and dividing again.

Water, other = areas with surface water including rivers, lakes, ocean, and other non-proglacial water features.

contact:
Peder Nelson (Peder.Nelson@oregonstate.edu)
Anne Nolin (anne.nolin@gmail.com)

Land Cover

Vegetation, shrub = Areas dominated by shrubs; shrub canopy accounts for 25-100 percent of the cover. Shrub cover is generally greater than 25 percent when tree cover is less than 25 percent. Shrub cover may be less than 25 percent in cases when the cover of other life forms (e.g. herbaceous or tree) is less than 25 percent and shrubs cover exceeds the cover of the other life forms.

Vegetation, trees = Areas characterized by tree cover (natural or semi-natural woody vegetation, generally greater than 6 meters tall); tree canopy accounts for 25-100 percent of the cover

Vegetation, other = Areas characterized by composition of herbaceous, shrub, and tree cover (natural or semi-natural woody vegetation, generally greater than 6 meters tall); tree canopy accounts for less than 25 percent of the cover. This class may include wetlands or pioneer vegetation species.

.

contact:
Peder Nelson (Peder.Nelson@oregonstate.edu)
Anne Nolin (anne.nolin@gmail.com)