Dataset Title: Recovered Drained Thaw Lake Basins (DTLBs) on the Arctic Coastal Plain of Alaska using InSAR DEM and Remote Sensing Imagery

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Classification: Hydrology

Data Overview:

Paleoshorelines of Drained Thaw Lake Basins (DTLBs) on the Alaskan North Slope were mapped using the Interferometric Synthetic Aperture Radar (InSAR) DEM and remote sensing imagery. A total of ~10,200 km^2 of DTLBs were recovered on a ~22,000 km^2 region with the complete latitudeinal range of the western Arctic Coastal Plain (ACP) of Alaska. This region extends from the Point Barrow (71°23′N) southward to the northern end of the Arctic Foothills physiographic province (69°30′N), and from the Beaufort Sea (154°23′W) westward to the Chukchi Sea (158°13′W). Shape of the region is confined by the valid spatial extent of the airborne InSAR DEM acquired by *Intermap* Technologies in the summers of 2002–2004.

The DTLB paleoshorelines were primarily delineated by an edge-detection algorithm developed on the 5.0 m resolution InSAR. The DTLB spatial extents were quality controlled with the aid of a 2.5 m resolution aerial photo over the Barrow Peninsula acquired in 2005 by *AeroMetric* and three Landsat TM scenes collected from the summer months of 2005 and 2010. A variety of topologic patterns such as merging, nesting, and overtopping are presented in the reconstructed DTLBs. An average uncertainty/precision of 74 cm was calculated in paleoshoreline elevations.

The data provided here are the largest basin extents after dissolving merged or nested DTLBs in the detailed product. The classified largest DTLB extents has a producer accuracy of 98.6%, validated from a total of 1,500 stratified random sample points identified using photo-interpretation of the Landsat TM and aerial imagery. Several DTLB characteristics including area, perimeter, average and maximal paleoshoreline elevations are provided in the attribute table.

Data Format:

The DTLB spatial extents are stored in a single ArcView shapefile named *DTLBs_extent.shp*. This shapefile is in UTM map projection Zone 5 North with coordinate units of meters (m), and has the following attributes:

FID (integer): Unique feature identifier
Shape (string): Polygon (geometry)

AREA (double): DTLB area (km^2)
PERIMETER (double): DTLB paleoshoreline perimeter (km)
MEAN_ELEV (double): Average elevation of paleoshoreline vertices (m)

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