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Project Title: Collaborative Research: Changes in Lake Dynamics on the Arctic Coastal Plain of North America Over the Past Half-Century

NSF Grant: ARC-0713813

Classification: Hydrology

Dataset Title: Landsat derived lake extents, 1977, 1985, 1992, 2001, and 2008.

Lake extent shape files:

p087r10_2m19770713_MSS.shp

p080r010_5t19850805_TM.shp

p079r010_5t19920708_TM.shp

p079r010_7x20010701_ETM.shp

p080r010_5t20080820_TM.shp

Lake extent maps for the Barrow peninsula from five historical Landsat satellite images were classified by a hierarchical classification system. Normalized Difference Water Index (NDWI) was calculated from the green and near infra-red bands and each lake was classified by an independently derived NDWI threshold value. The acquisition dates for the images were 13 July, 1977, 5 August, 1985, 8 July, 1992, 1 July, 2001, 20 August, 2008.

Each shapefile consists of a group of five to seven files total. All files are projected in the UTM Zone 4 North with units of meters (m). All have the following attributes:

Shape: Polygon (geometry)

OBJECTID: Unique feature identifier (integer)

IMGSOURCE: Filename of the Landsat Image source (text)

ACQDATE: Acquisition date of Landsat image (YYYYMMDD)

NDWI_T: NDWI threshold value from lake classification (unitless)

Cent_X: X coordinate of lake centroid in UTM projection (m)

Cent_Y: Y coordinate of lake centroid in UTM projection (m)

Shape_Leng: Perimeter of lake (m)

Shape_Area: Lake area (m²)

The spatial resolution of the lake maps depends on the resolution of the Landsat image on which it was based. The 1977 map has a resolution of 60 x 60 meters. All other maps have 30 x 30 meter resolution.