

Week#4 GIS Problems 2017

Alaska Lightning Strikes

Download the June 1-14 2017 lightning strike locations for Alaska from

<http://fire.ak.blm.gov/predsvcs/maps.php>

(select Historic Lightning)

AICC ArcIMS Mapping Products [requires JavaScript]

Active Fires on Google Earth  [Updated on Den


Fire Perimeter Shape File Download  [Updatec

Statewide Fires 


Current Lightning 


Fire History 

Historical Lightning 

Current Weather and Indices 


Historical Lightning

Starting Date Jul 1 2017  **Hour** 00:00

Ending Date Jul 15 2017  **Hour** 00:00

All Strikes Positive Negative

Select a theme to view



shapefile.

Then press the Extract Shape File button.

Layer Name

Historical(TOA) ▼

Export in Alaska Albers NAD 83

Extract Shape File

What day had the most lightning strikes within 100km of Fairbanks?

Select points within 100km of Fairbanks lightning sensor.

Layer Properties

General Source Selection Display Symbology Fields Definition

Definition Query:

Query Builder

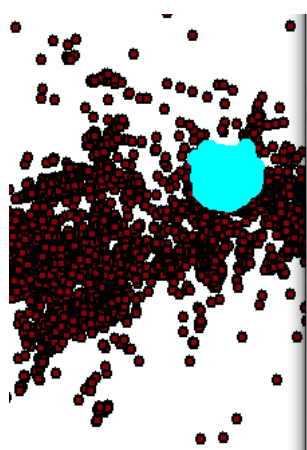
"FID"
 "SensorID"
 "Name"
 "Type"
 "Latitude"

= <> Like
 > >= And
 < <= Or
 % () Not
 Is In Null

'BARROW'
 'BETHEL'
 'BETTLES'
 'FAIRBANKS'
 'FORT YUKON'
 'GALENA'
 'GLENDALE'

Get Unique Values Go To:

SELECT * FROM LDF WHERE:
 "Name" = 'FAIRBANKS'



Select features from one or more target layers based on their relationship to the features in the source layer.

Selection method:
 select features from

Target layer(s):

Fairbanks Sensor
 LightningStrikes_toa

Only show selectable layers in this list

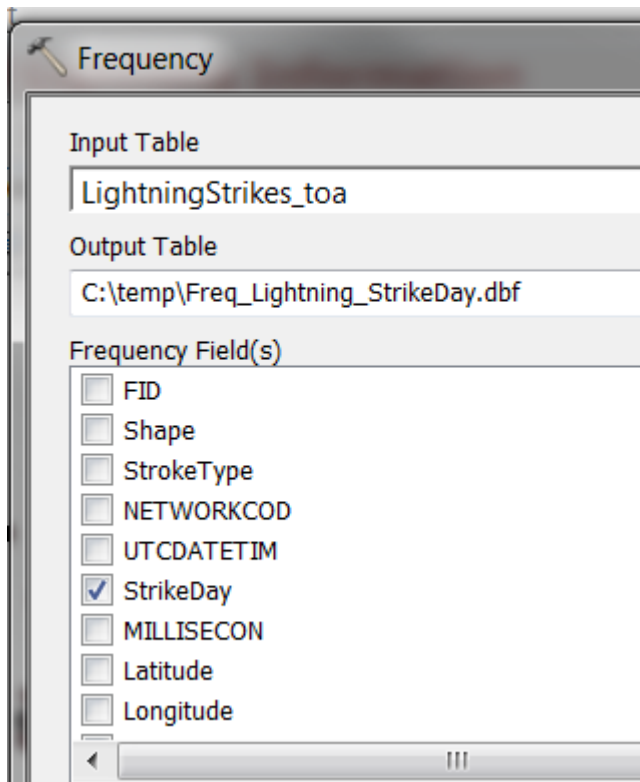
Source layer:
 Fairbanks Sensor

Use selected features (0 features selected)

Spatial selection method for target layer feature(s):
 intersect the source layer feature

Apply a search distance
 100 Kilometers

Select a location




FREQUENCY	StrikeDay
96	6/5/2017
76	6/10/2017
74	6/12/2017
15	6/9/2017
10	6/4/2017
7	6/6/2017
3	6/3/2017
3	6/13/2017
1	6/2/2017

Alaska Anadromous Fish

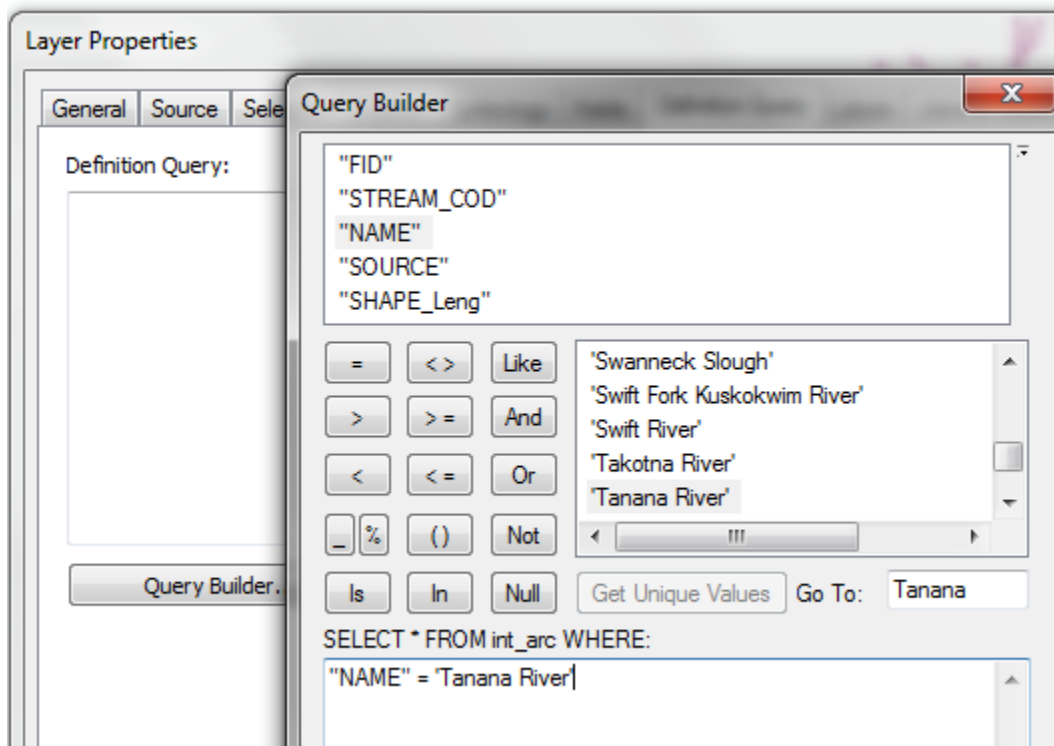
Download the Alaska Fish and Game Anadromous Waters GIS data for interior Alaska from

<https://www.adfg.alaska.gov/sf/SARR/AWC/index.cfm?adfg=data.GIS>

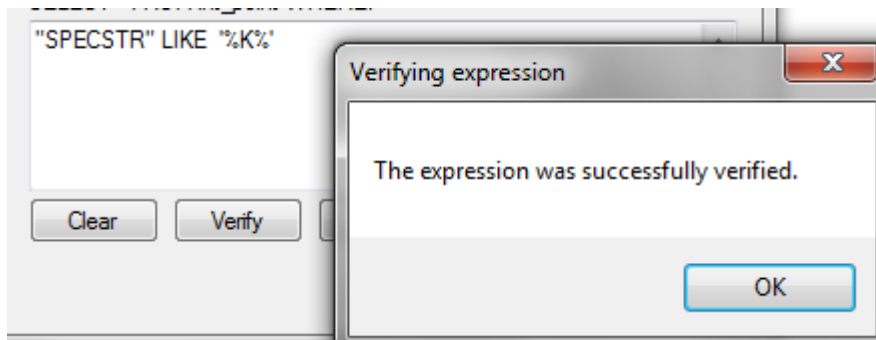
	AWC for the Interior Region	This data layer contains the AWC point and polyline data used to create the AWC atlas for the Interior Region.	Shapefile , KMZ
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Find all locations that have reports of King salmon within 100m of the Tanana River.

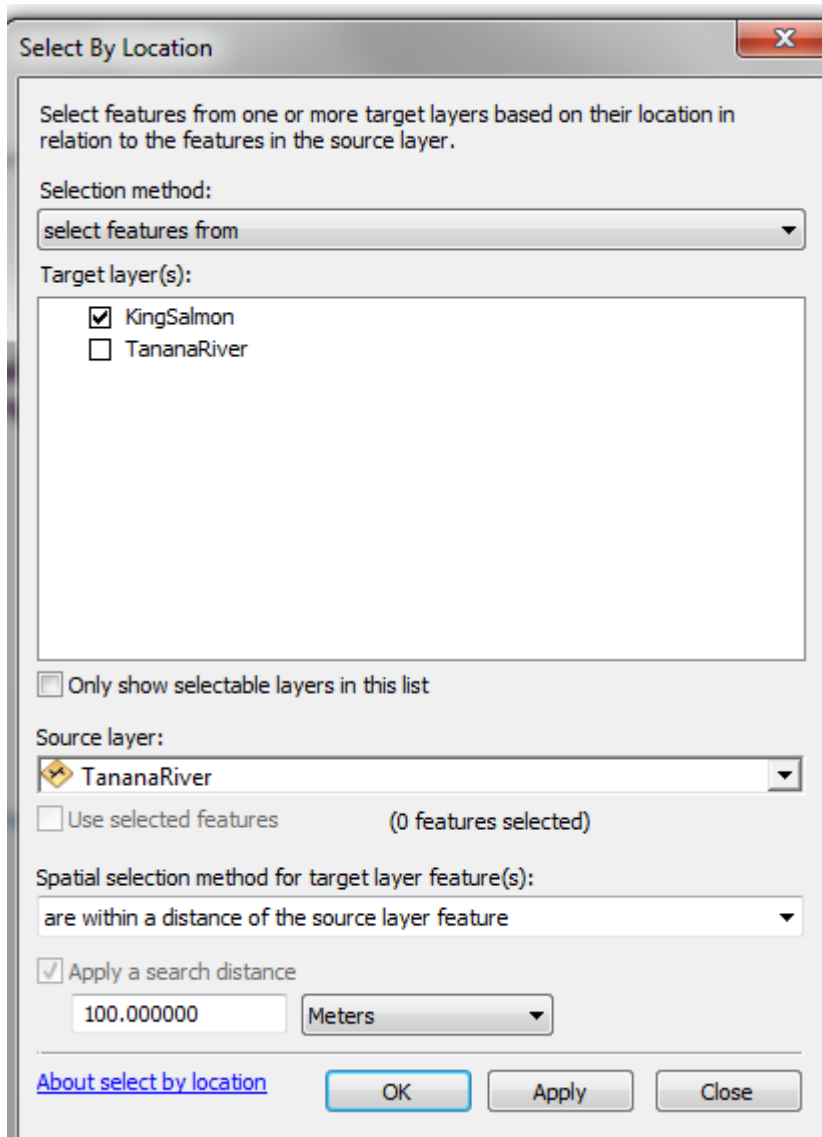
Create layer representing the Tanana River.

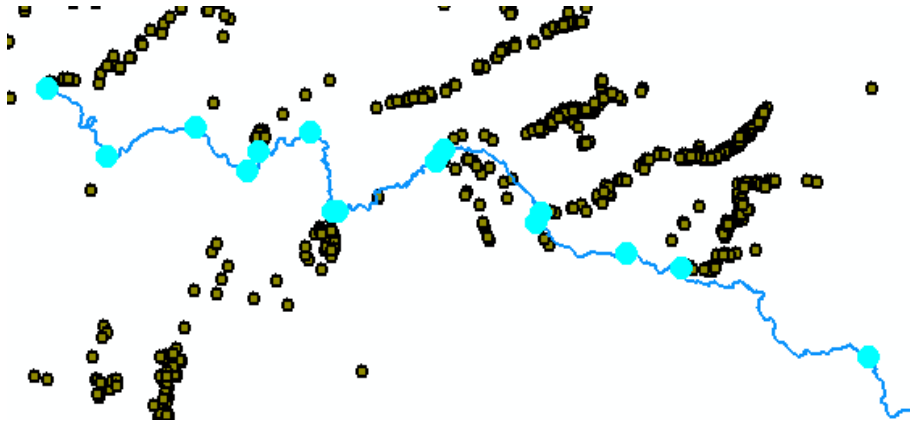


Create layer of points king salmon locations.

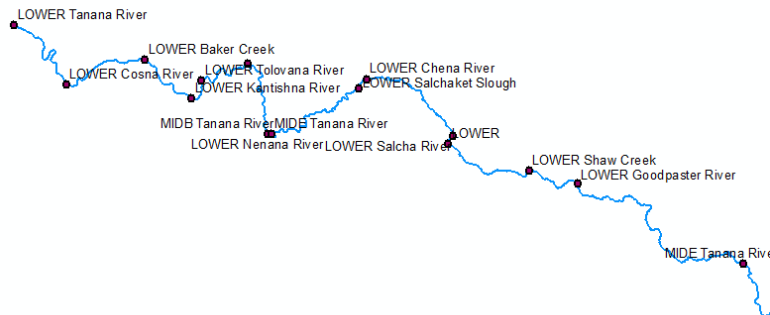


Select points with 100m of Tanana River line:





NAME	SPECIES	TYPE
Baker Creek	COr,Kp	LOWER
Chena River	CHs,Kp	LOWER
Cosna River	CHp,Kp	LOWER
Goodpaster River	Ks	LOWER
Kantishna River	CHs,Ksr	LOWER
Nenana River	CHp,COp,Kp,Sp	LOWER
Salcha River	CHp,COp,Kp	LOWER
Salchaket Slough	CHs,Ksr	LOWER
Shaw Creek	CHp,COp,Kp	LOWER
Swanneck Slough	CHp,COp,Kp	LOWER
Tanana River	Kp	MIDE
Tanana River	CHp,COp,Kp,Sp	LOWER
Tanana River	CHr,COr,Kr	MIDB
Tanana River	CHr,COr,Kr	MIDE
Tolovana River	CHp,COp,Kp	LOWER



Polygon in Polygon Analysis

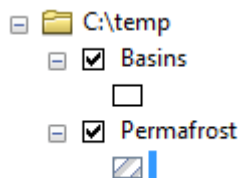
<http://agdc.usgs.gov/data/usgs/water/yukon.html>

Major Drainage Basins	Metadata	Download Files (662 KB)
Permafrost	Metadata	Download Files (109 KB)
Physiography	Metadata	Download Files (93 KB)
Precipitation	Metadata	Download Files (118 KB)
Roads	Metadata	Download Files (29KB)
Soils	Metadata	Download Files (1.37M)
Towns	Metadata	Download Files (8 KB)

Develop a table showing the percent continuous permafrost within each major drainage basin.

From Metadata, grid code value 11 represents continuous permafrost.

Use Copy Features to create shapefile layers from arc/info coverages:



Use Dissolve geoprocessing tool to create one polygon for each basin.

Calculate area of each basin in hectares

SUBBASIN	Basin_HA
Chandalar River	3,551,452.9
East Central Yukon	6,273,475.0
Koyukuk River	8,132,715.3
Lower Yukon	9,709,720.1
Pelly River	4,902,357.8
Porcupine River	11,640,081.3
Stewart River	5,213,620.2
Tanana River	11,584,347.0
Teslin River	3,397,010.4
Upper Yukon	7,139,670.6
West Central Yukon	6,214,804.9
White River	4,702,448.9
Yukon Headwaters	3,178,290.8

Use Intersect geoprocessing tool to create permafrost polygons with basin information.

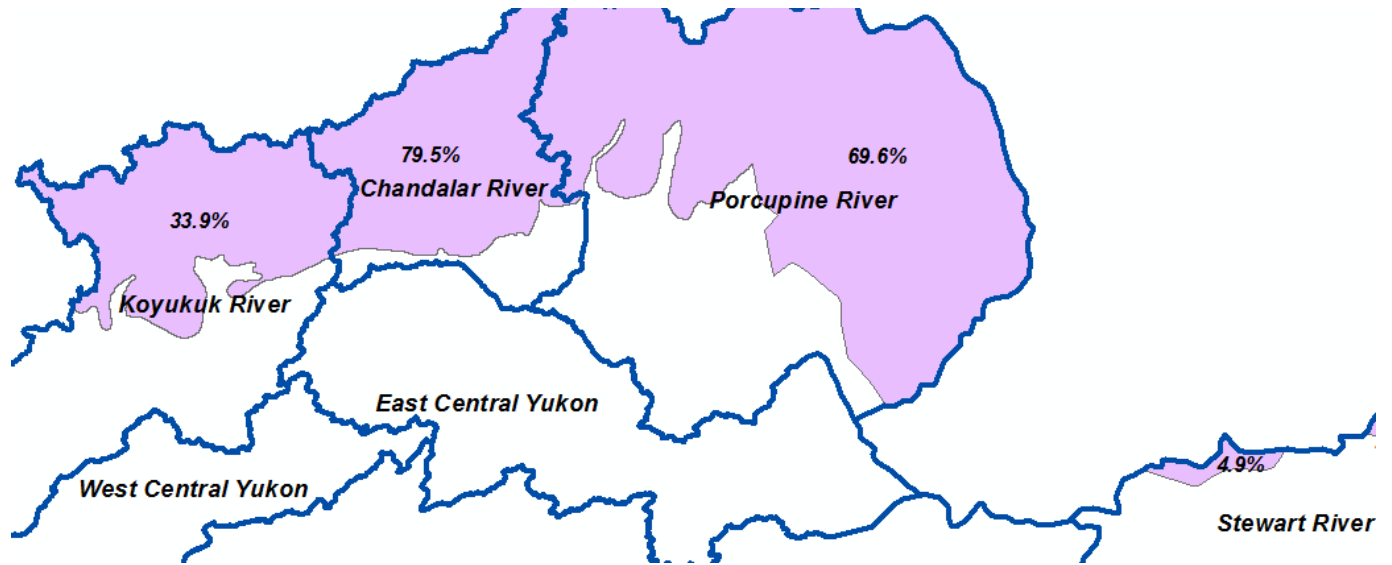
Shape *	SUBBASIN	Ha_Basins	GRID_CODE
0 Polygon	Chandalar River	3551452.94387	11
1 Polygon	Koyukuk River	8132715.29458	11
2 Polygon	Porcupine River	11640081.299	11
3 Polygon	Porcupine River	11640081.299	11
4 Polygon	Porcupine River	11640081.299	11
5 Polygon	Porcupine River	11640081.299	11
3 Polygon	Porcupine River	11640081.299	11
7 Polygon	Porcupine River	11640081.299	11
3 Polygon	Porcupine River	11640081.299	11
3 Polygon	Stewart River	5213620.23413	11
0 Polygon	Stewart River	5213620.23413	11

Dissolve by SubBasin

Shape *	SUBBASIN	MIN_Basin_HA	MAX_Basin_HA
Polygon	Chandalar River	3,551,452.9	3,551,452.9
Polygon	Koyukuk River	8,132,715.3	8,132,715.3
Polygon	Porcupine River	11,640,081.3	11,640,081.3
Polygon	Stewart River	5,213,620.2	5,213,620.2

Compute percent permafrost within each basin.

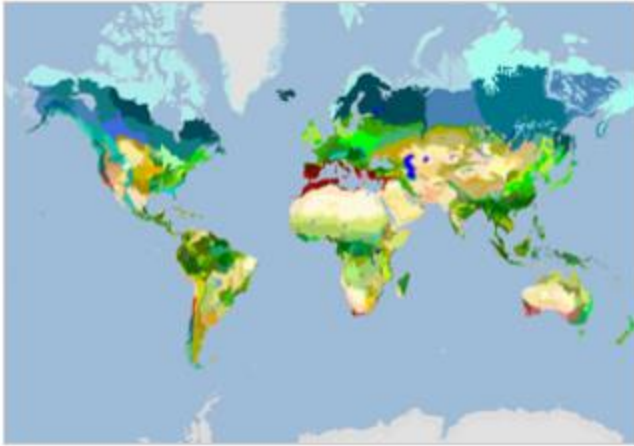
MIN_Basin_HA	MAX_Basin_HA	PermafrostHA	Percent
3,551,452.9	3,551,452.9	2,821,653.1	79.5%
8,132,715.3	8,132,715.3	2,759,675.4	33.9%
11,640,081.3	11,640,081.3	8,099,940.1	69.6%
5,213,620.2	5,213,620.2	254,336.7	4.9%



Ecoregions of Alaska

Download the Terrestrial Ecoregions of the World shapefile from:

http://maps.tnc.org/gis_data.html



Terrestrial Ecoregions

This is the master spatial data layer for TNC's *terrestrial ecoregions of the world*, exported from the geodatabase listed above. Note that it includes Mangroves, Inland Water, and Rock and Ice MHTs, although they are not being handled by terrestrial assessments. This layer is based on WWF's ecoregions outside the United States, and loosely based on Bailey's ecoregions (from the USDA Forest Service) within the United States.

[View Metadata](#)

Download: [GIF Data](#)

Download the Alaska boundary from the national map website:

<http://viewer.nationalmap.gov/basic/>

Data

- Boundaries - National Boundary Dataset

[Show Preview](#)

Product Search Filter

Data Extent

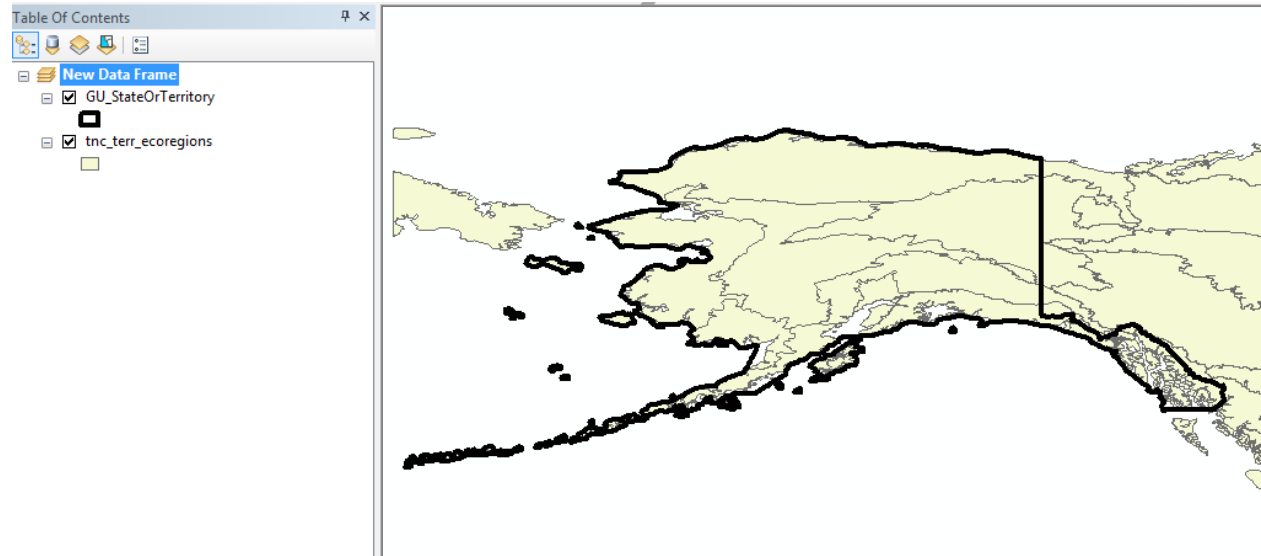
- National
- State

File Format

- FileGDB 10.1
- Shapefile



Estimate the percentage of tundra, boreal forest, and temperate conifer forest in Alaska



Use Clip geoprocessing tool to cut out ecoregions inside Alaska



	WWF_MHTNAM	RealmMHT	ER_UPDATE
	Tundra	NA11	Updated
	Tundra	NA11	Updated
	Tundra	NA11	Updated
	Tundra	NA11	Updated
	Tundra	NA11	Updated
	Temperate Conifer Forests	NA5	Updated
	Temperate Conifer Forests	NA5	Updated
	Boreal Forests/Taiga	NA6	Updated
	Boreal Forests/Taiga	NA6	Original
	Boreal Forests/Taiga	NA6	Updated
	Boreal Forests/Taiga	NA6	Updated
Dissolve by	Boreal Forests/Taiga	NA6	Updated

dissolve			
	FID *	Shape *	WWF_MHTNAM
	1	Polygon	Boreal Forests/Taiga
	2	Polygon	Temperate Conifer Forests
	3	Polygon	Tundra

Project to Alaska Albers NAD83

	Shape *	WWF_MHTNAM
1	Polygon	Boreal Forests/Taiga
2	Polygon	Temperate Conifer Forests
3	Polygon	Tundra

Add field and compute percents:

Ecoregions_Meters				
	Shape *	WWF_MHTNAM	KM2	Percent
	Polygon	Boreal Forests/Taiga	679,658.1	45.1%
	Polygon	Temperate Conifer Forests	177,763.9	11.8%
	Polygon	Tundra	648,109.0	43.0%

