Using the ArcGIS Landscape Analysis Services

Pete Aniello
Living Atlas: Earth & Life on ArcGIS Online
Landscape Layers are part of the Living Atlas

Basemaps
Imagery and Observations
Demographics
Lifestyles
Urban Systems
Transportation
Landscape
Story Maps
Landscape: Earth, Life, People in Living Atlas

Helps Us Understand and Analyze our World
What are Landscape Analysis Layers?

- A streaming authoritative-source data library to support biogeographic analysis, natural resource management, land use planning and conservation

  - Currently approx. 120 services for U.S
  - International coverage starting with Africa
  - Focused on national and regional scales
What’s New?

Esri is modernizing its content offerings by providing a large body of application ready DATA (not just maps, which are pictures of data) as services:

• Image Services

• Map Services w/ feature access

• Story Maps that show examples of use

Provide content that supports ANALYSIS as well as visualization
Publication of useful data for landscape analysis and decision-making that works across the ArcGIS System
Value of Landscape

- Saves time and money

- User does not have to acquire, process, store, maintain essential data themselves

- Esri provides ready to use content
  - Input to models

- Landscape for Contributors for provider-direct content
  - Valuable content for users
  - Exposure to wider audience for providers
Landscape Content
supports decision makers across many industries

- Planners
- Policy makers
- Scientists
- Analysts
- Educators

Modeling the land around us
Ready to Use

Online Analytics

Online and Desktop GP Tools

Location Analytics and Data Enrichment
Data Criteria

• Data that has a proven use case
  - Support for Key Performance Measurements (KPM) in Government
  - Support for Strategic Planning and Policy Development
  - Scale ranges that can support regional and national analysis
    - Larger-scale, limited-area data served/maintained by provider
  - Cost and benefits considered for each layer

• Data that is considered authoritative
  - Measured, summarized, or modeled
  - Well documented
  - Currency is important
Esri Evaluates and Documents the Quality and Integrity of Data

- Review data via hardcopy plots, digital overlays
- Identify layers that are likely to be correlated/integrated
- Find the inconsistencies, problems with integrity, problems buried in process lineages
- We employ a subcontractor to provide and independent evaluation of data
- Provide quality assessments and recommendations to original authors

Identify gaps in available data and find opportunities for adding value
What Changes Do We Make to the Original data?

• Minimal corrections to geometry or attributes (quick error fixes)
• Project to Web Mercator (maps) or Equal Area (raster and vector data)
• Convert Vector to Raster
• Clip to a Shoreline
• We may parse out a subset of data such as creating a raster for one soil parameter

We are careful to preserve the integrity of the original content
Data Processing and Access

Concept: No “Throw-Away” Data

Services

ArcGIS

Desktop / GP Analysis

Location Analytics

Web Maps

Vectors

Rasters

Summarized Polygons
Rasterization Example

SSURGO- Available Water Storage - 0-150 cm weighted average
### Available Layers (U.S.)

<table>
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<tr>
<th>Raster Map Layers:</th>
<th>Vector Map Layers:</th>
<th>Provider-contributed Layers:</th>
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<tr>
<td>USA Critical Habitat</td>
<td>USA Active Quaternary Faults</td>
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<tr>
<td>USA Critical Habitat Chinook Salmon</td>
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International Layers

- Harmonized World Soils
- Topographic Moisture Potential
- Global Land Cover
- Surficial Lithology
- Hydro flow direction
- Isobioclimates
- Climate Change Severity 2020, 2050
- Mean Temperature 1950-2000
- Mean Precipitation 1950-2000
- Evapotranspiration
- Population Density
- Infant Mortality
- Global Crop Harvest Data
- Terrestrial Ecosystems
- Global Biodiversity Index
- Carbon Biomass

Rolling out on a continent-by-continent basis, beginning with Africa
Additional Planned Landscape Content

International

- New Analysis Layers
  - Crop Diversity, IUCN Red List derivative
- 30m Hydro-conditioned DEM (Africa)
  - Flow Direction, Flow Accumulation, Synthetic Streams
- From LandSAT8
  - Land Cover, Land Use, Change Detection (Africa)
- Beta Landscape Databuilder ("landscape kit") for distributors/partners/national mapping agencies
  - Workflows, Tools

USA Content

- 303d Impaired waters layer
- Point source pollution layer
- Natural Capital Project - InVest Sediment Retention analysis
- Natural Capital Project - InVest Nutrient Removal analysis
- Threats to Watershed (Report)
Access

- Requires an ArcGIS Online subscription
- Discoverable through
  - ArcGIS Online
    - Featured groups
    - Map viewer (Add Esri map layers)
    - Living Atlas
    - Reserved tag: esri_landscape
  - Sample apps on Marketplace.arcgis.com
What’s included in Landscape

• Landscape layers
  - Raster (as image services)
  - Vector (as web maps with feature access)

• Geoprocessing Services
  - Elevation-based (watershed, viewshed, others)

• Web maps

• Story maps

• Sample Apps for Landscape (on Marketplace)
  - Landscape Analyst
  - Landscape Modeler
  - Esri Insights
Contacts

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• Technical Manager: Pete Aniello (paniello@esri.com)

• Questions?
Thank you...

• Please fill out the session survey:

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Paper – pick up and put in drop box
Understanding our world.

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