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Climate and Land Use Change
Earth Resources Observation and Science (EROS) Center

GeoSUR SRTM 30-m / TPS

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16 May 2013

U.S. Department of the Interior
U.S. Geological Survey

SRTM Mission

Shuttle Radar Topography Mission (SRTM)

Space Shuttle Endeavour during the 11-day STS-99 mission in February 2000

Used a technique known as Interferometric Synthetic Aperture Radar to generate a DEM at a near global extent of 56° S to 60° N

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GeoSUR SRTM Derivative Products

Data offerings:

- SRTM derivatives:
  - Aspect
  - Hillshade
  - Shaded Relief
  - Slope
- Elevation Data
  - SRTM Level 1 (90 m, 3 arc-second)
  - HydroSHEDs conditioned DEM
  - GMTED2010 Median (7.5, 15, and 30 arc-second)

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The Global Multi-resolution Terrain Elevation Data (GMTED2010)

Work performed with support from the National Geospatial-Intelligence Agency (NGA)

U.S. Department of the Interior
U.S. Geological Survey

Global Multi-resolution Terrain Elevation Data 2010

Primary Goal

Developed a global medium scale elevation model to replace GTOPO30. Generated seven products at three separate resolutions (horizontal post spacings) of **30 arc-seconds** (1 km), **15 arc-seconds** (500 m), and **7.5 arc-seconds** (250 m) from the best available higher resolution data sources.

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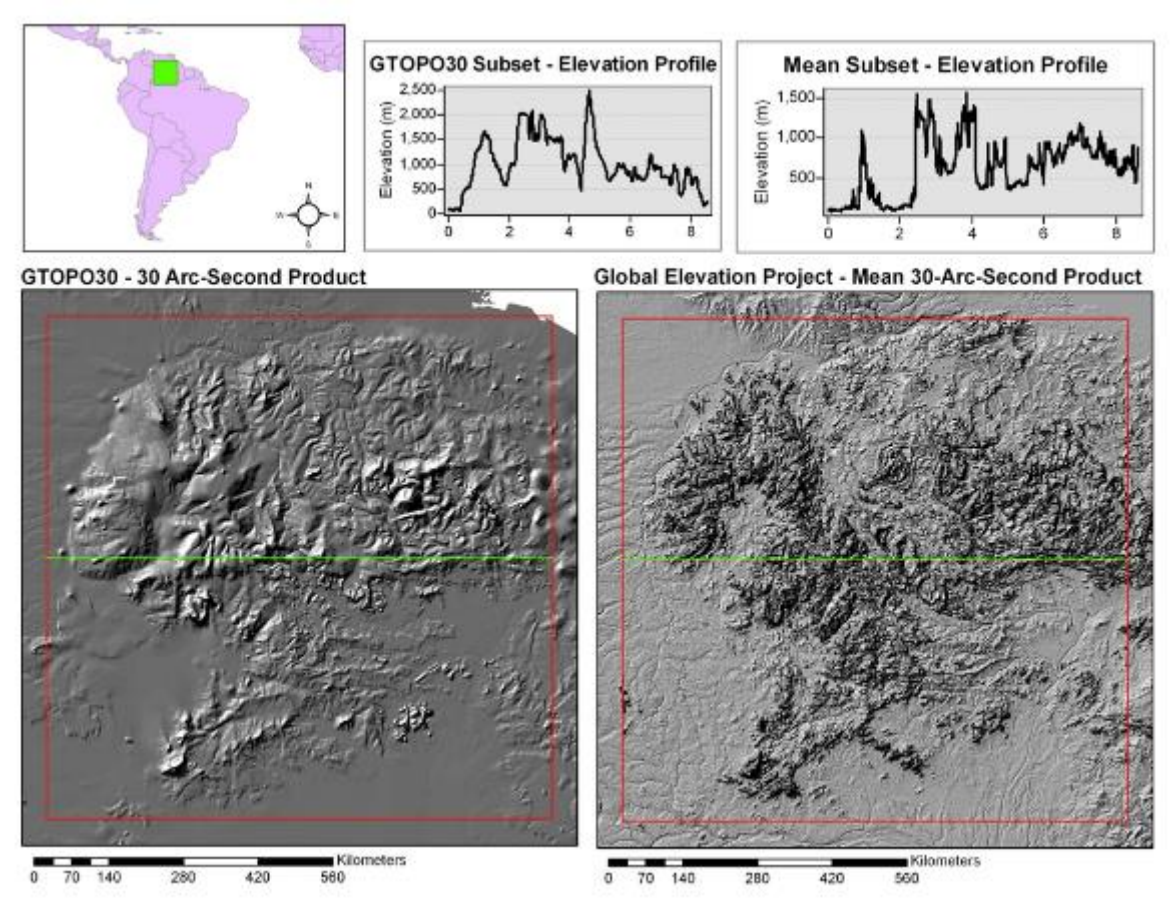
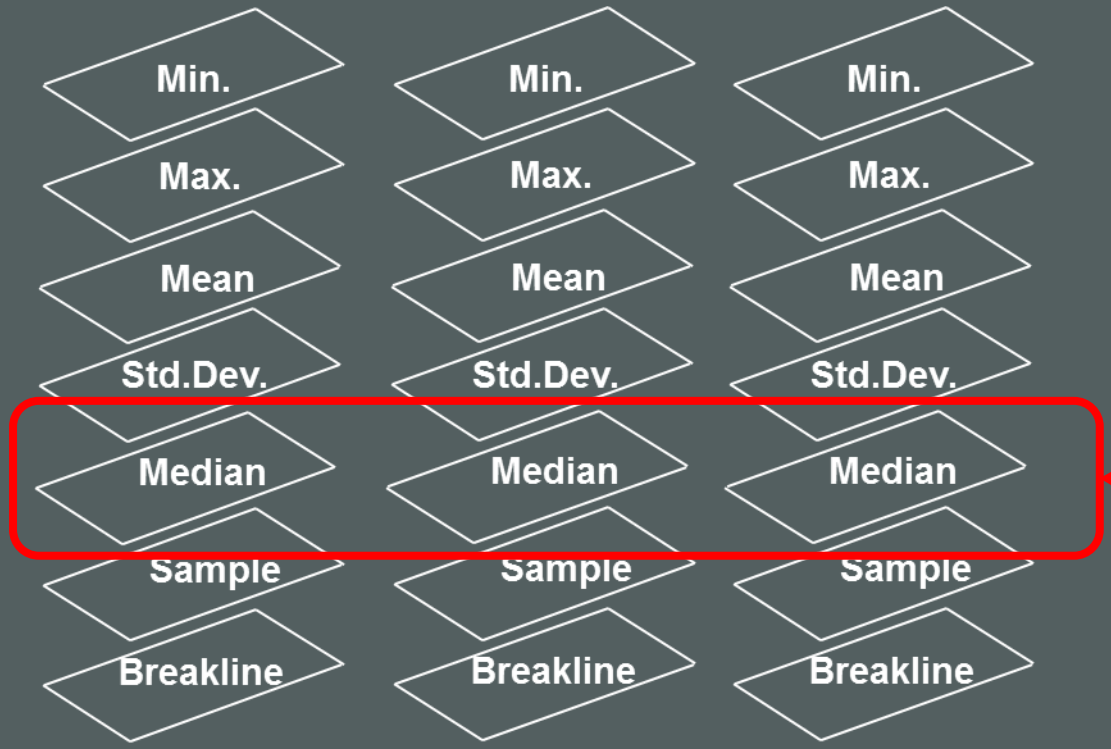
GTOPO30 and GMTED2010 Mean 30 Arc-Second Product Comparisons



GMTED2010



30 arc-sec (1-km)

15 arc-sec (500-m)

7.5 arc-sec (250-m)

GTOPO30

30 arc-sec (1-km)

Currently available on TPS for download

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GMTED2010 – Technical Documentation

Available online at http://pubs.usgs.gov/of/2011/1073

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Topographic Processing Service (TPS)

U.S. Department of the Interior
U.S. Geological Survey

Objectives

- Enhance South America's (SA) regional Spatial Data Infrastructures (SDI).
- Provide open access to the Shuttle Radar Topography Mission (SRTM) 1 arc-second (~30 meter) Digital Elevation Model (DEM) derivative products*.
- Develop a data distribution service that can efficiently adapt to the needs of its users.

* Only derivative product approved by U.S. National Geospatial-Intelligence Agency (NGA).

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Approach / Rationale

Approach

- Provide a dynamic service that can efficiently adapt to the user community's requirements.

Rationale

- Developing services that generate products dynamically rather than prepossessed giving the user an opportunity to define the requirements of a product.
- The Web service approach provides an efficient environment to create new products that meet the ever changing needs of the GeoSUR user community.

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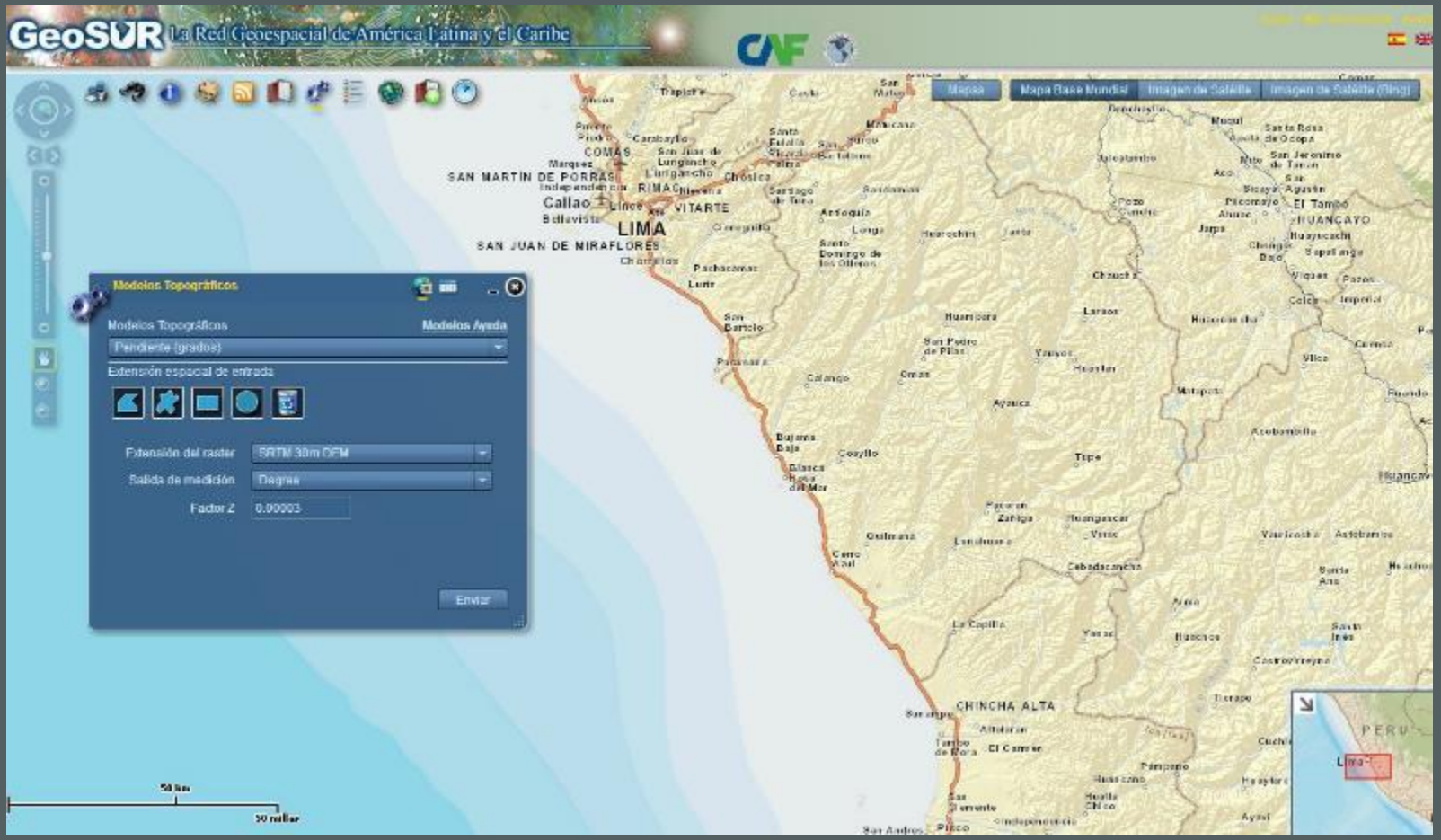
Result

Topographic Processing Service (TPS)

- The TPS provides a geo-processing Web service accessible through GeoSUR's Regional Map Service (RMS), ESRI's ArcGIS desktop software, Python scripting environment, and has a JavaScript API for custom Web development.

- The service allows users to request 6 SRTM 30-m derivative products: *slope, slope classification, aspect, shaded relief, classified elevation* and an e*levation profile report*.

Web Application Interface



http://www.geosur.info/map-viewer/index.html

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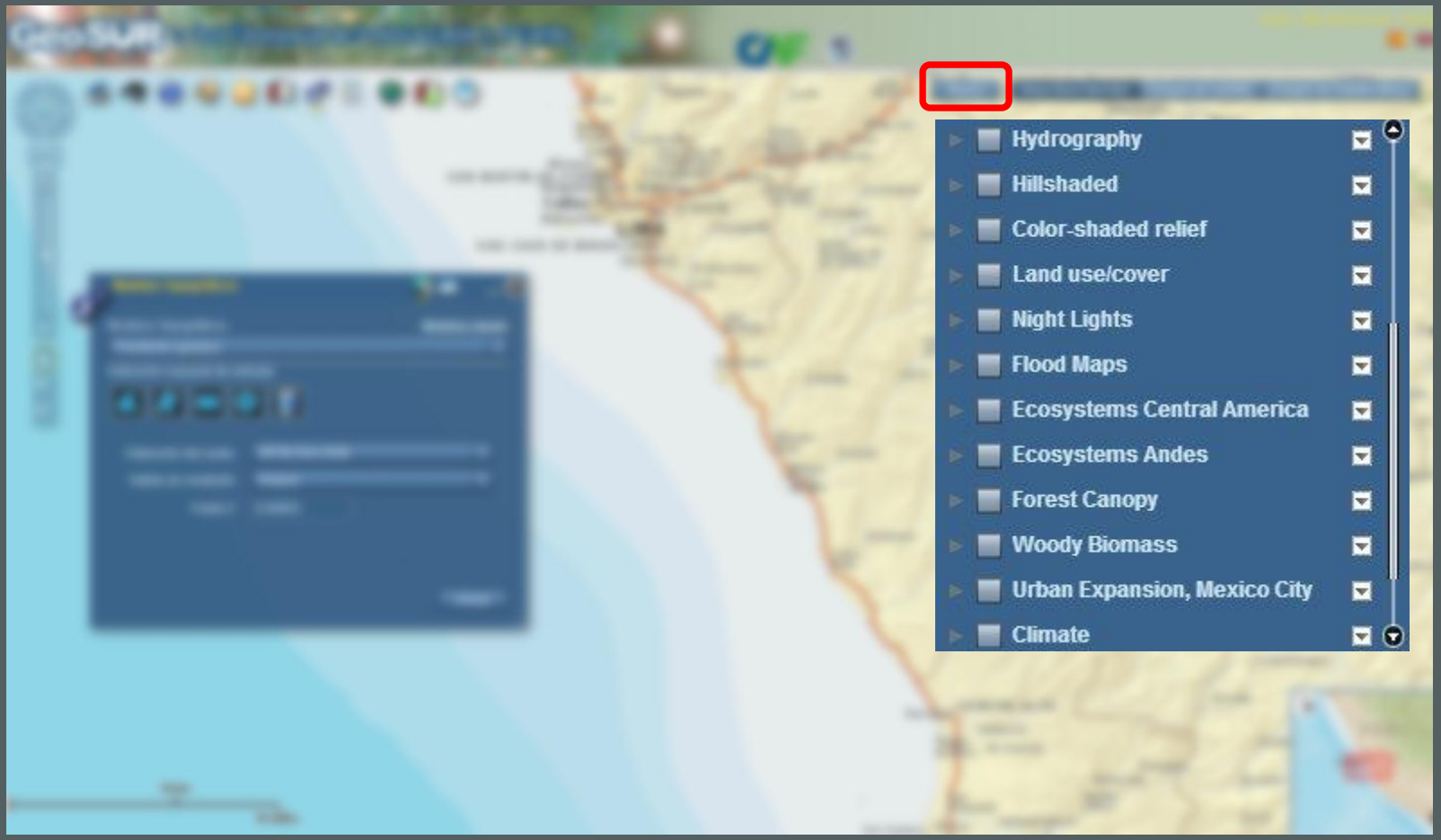
Web Application Interface



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Web Application Interface

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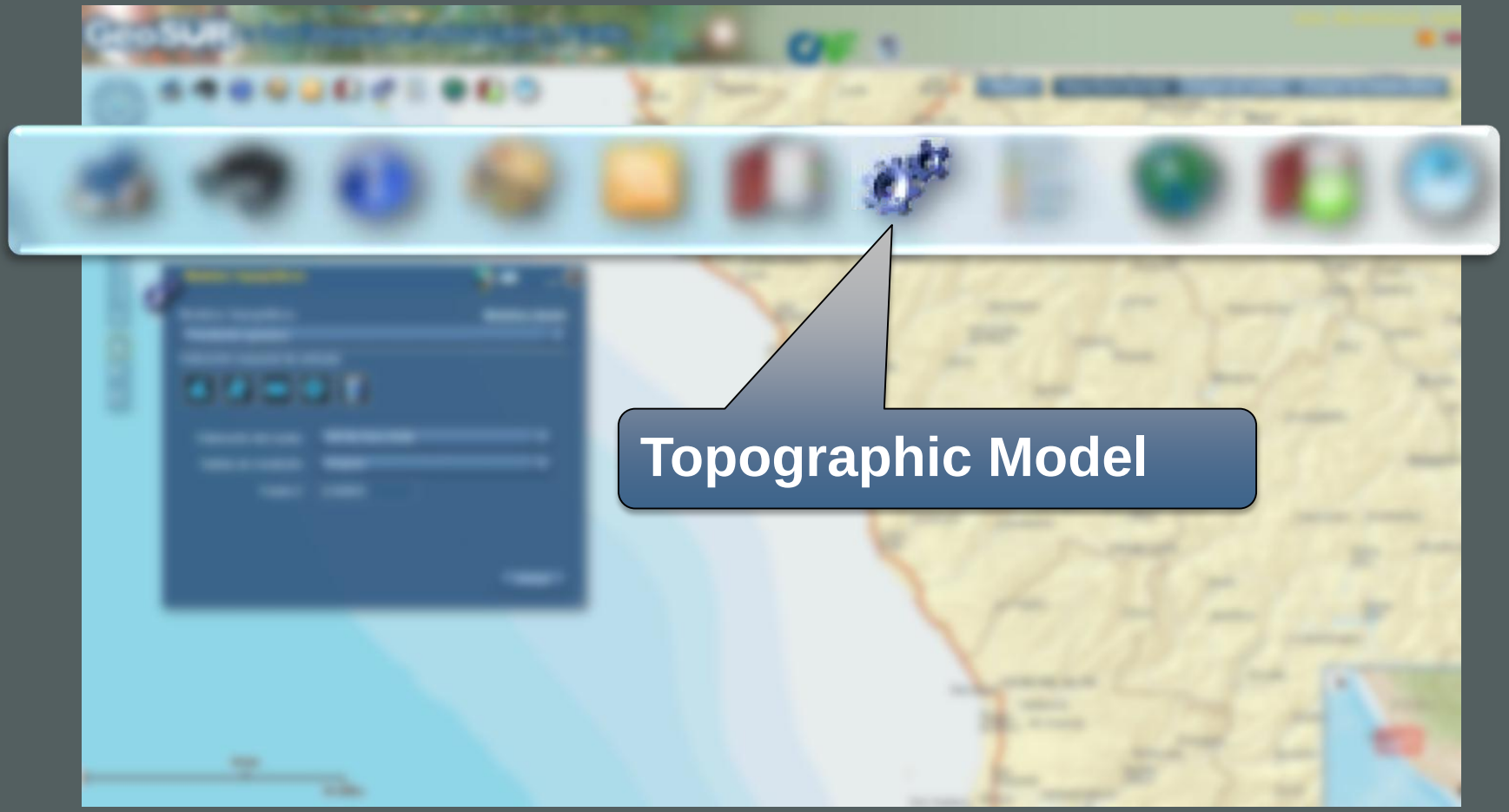
Web Application Interface



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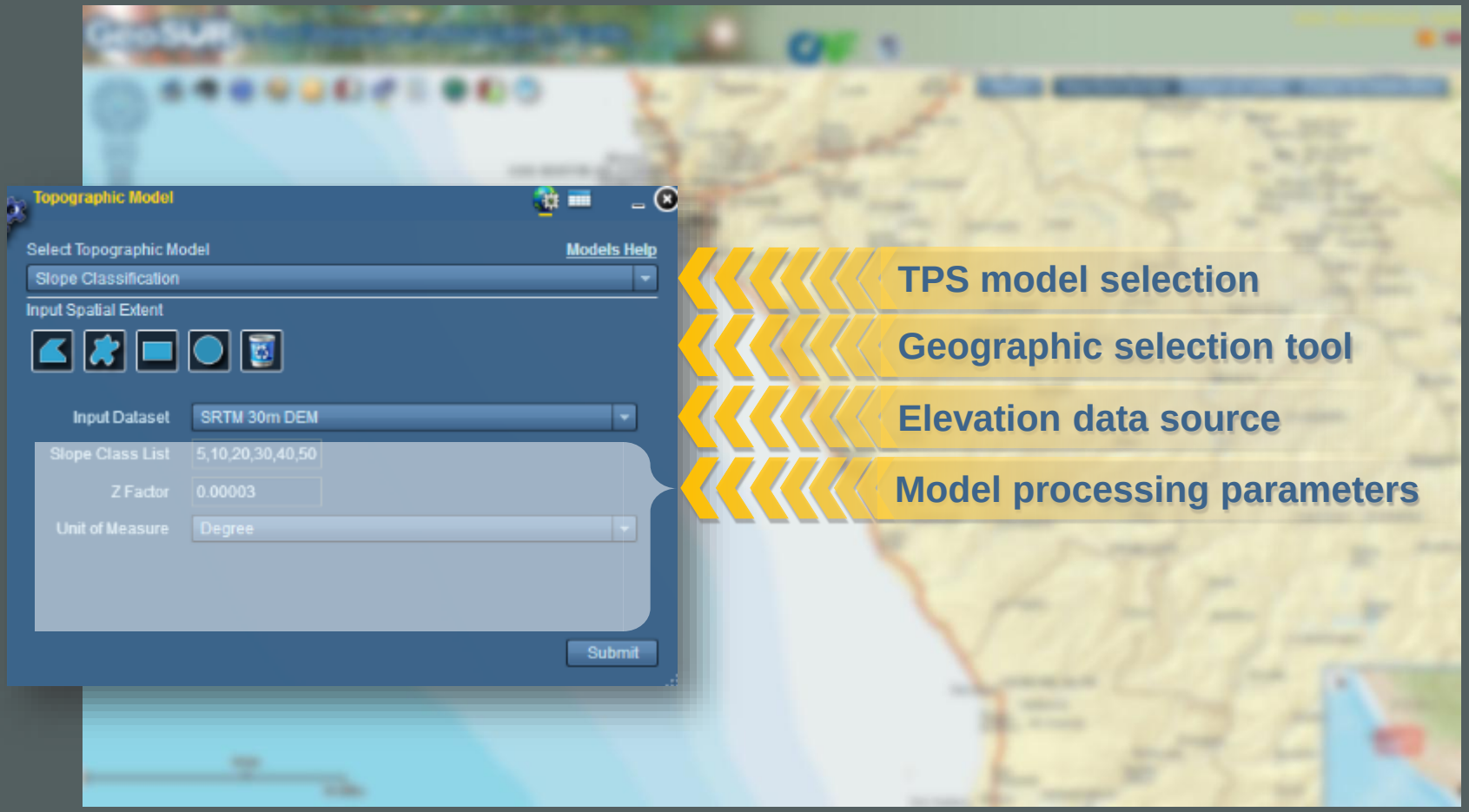

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Web Application Interface

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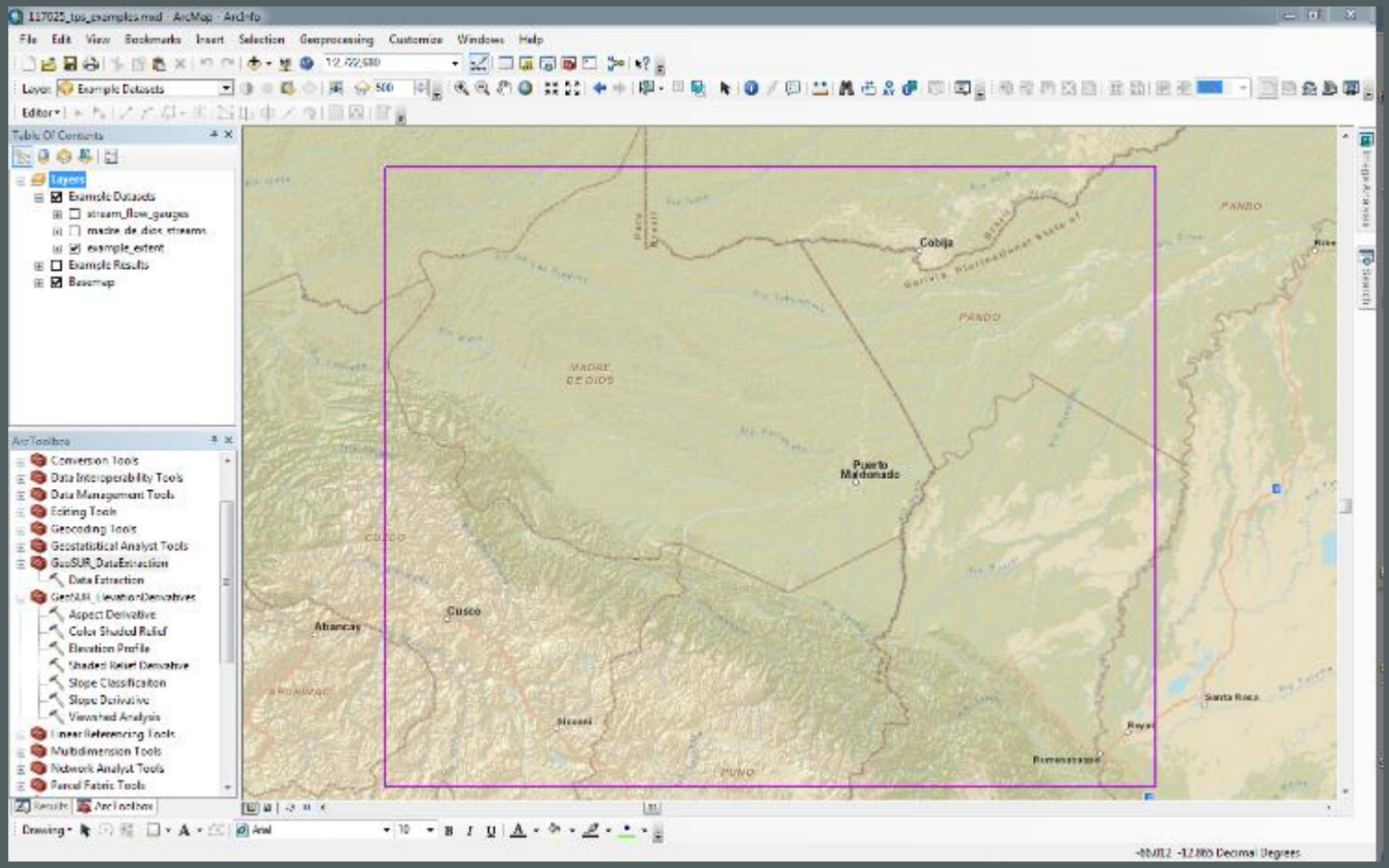
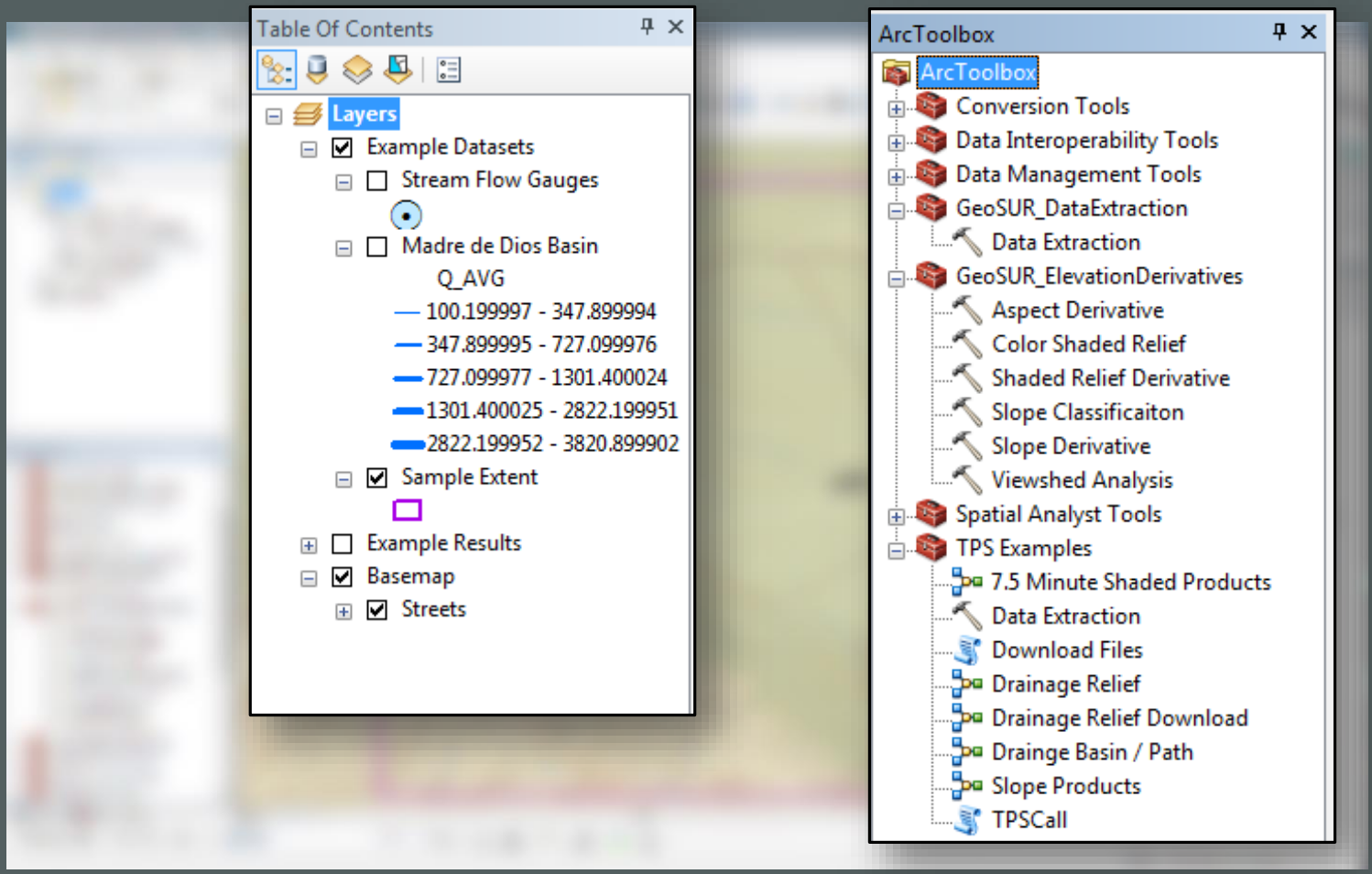
ESRI ArcGIS ArcMap Interface



ESRI ArcGIS ArcMap Interface



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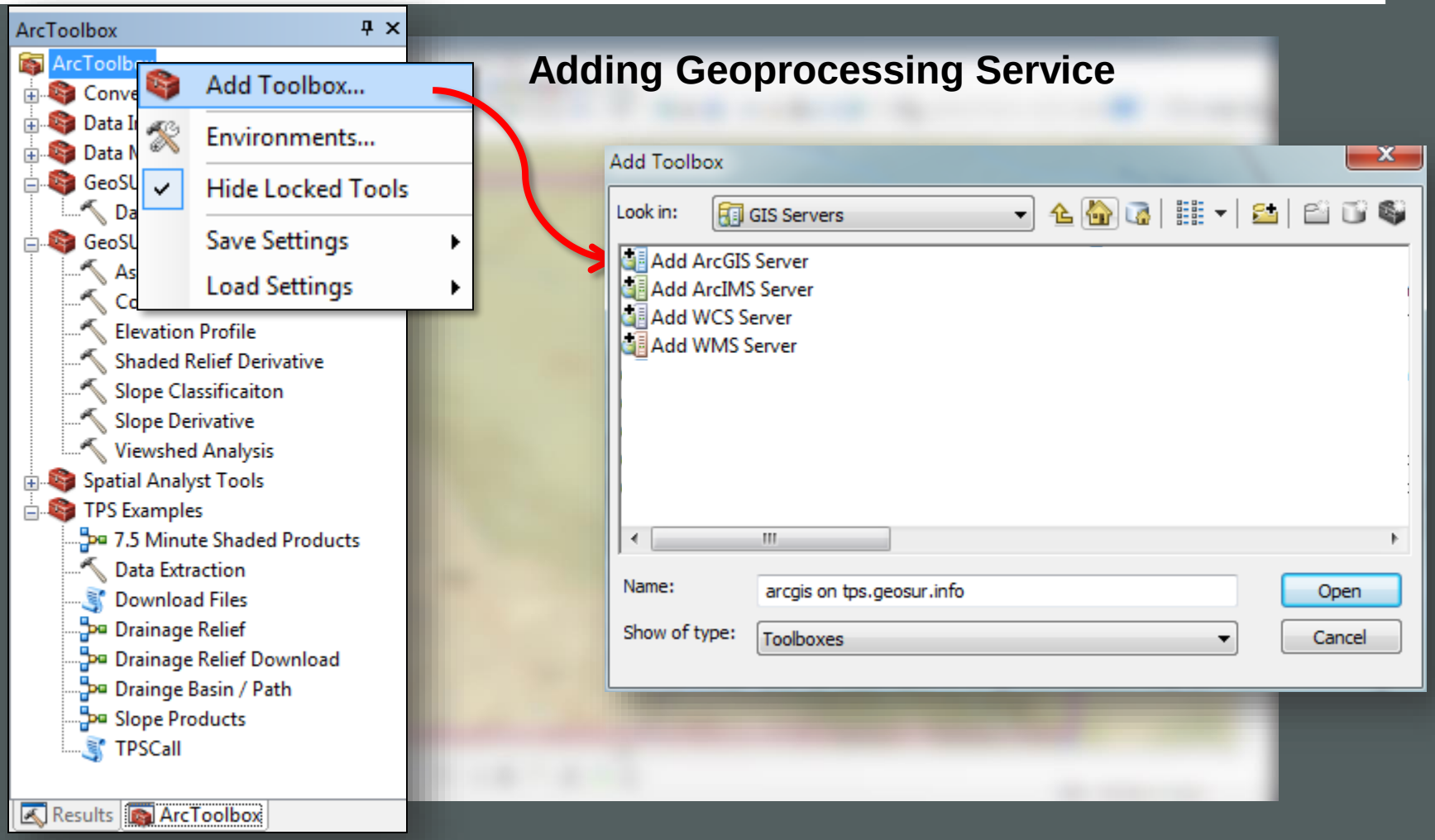

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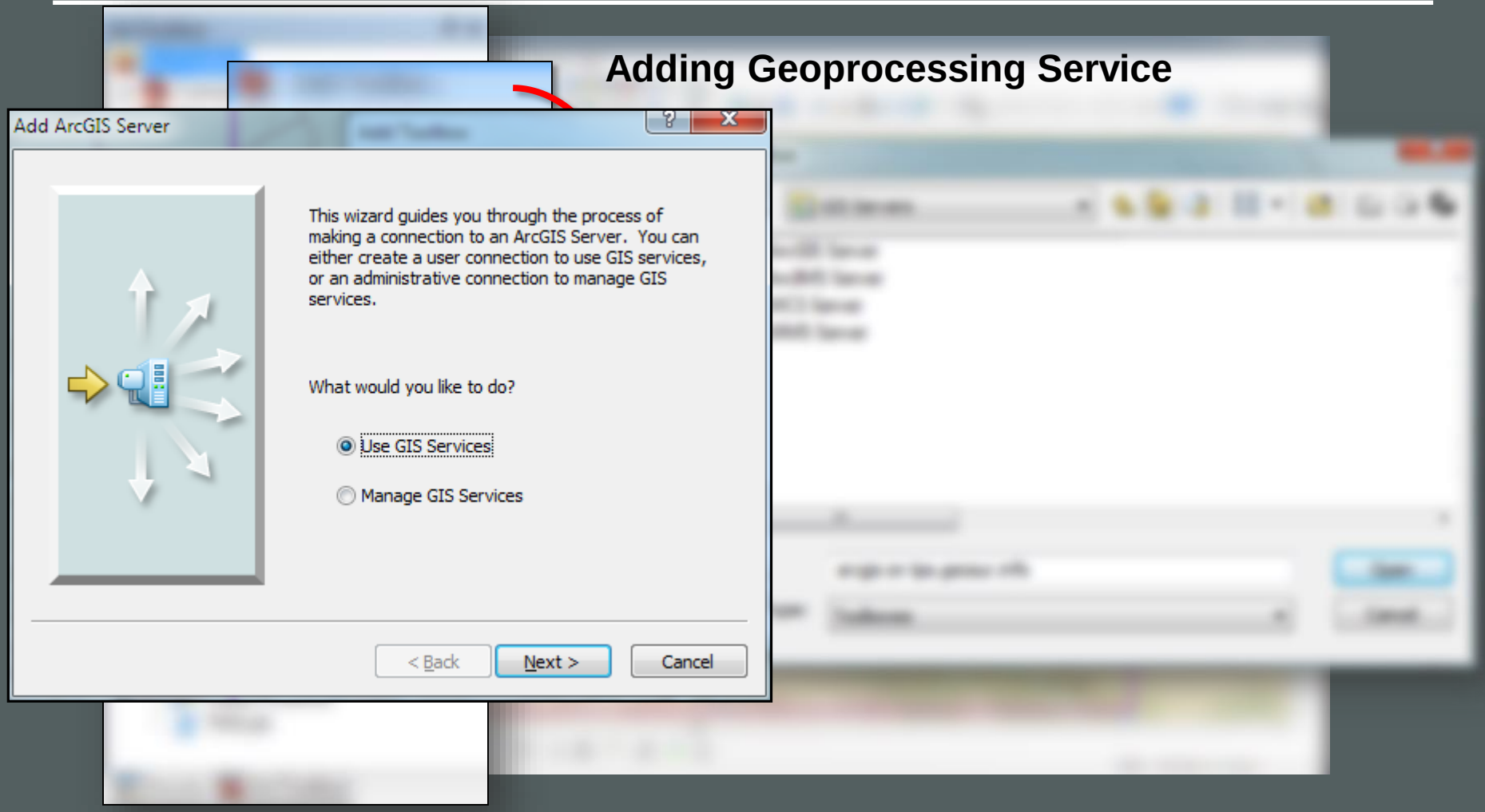

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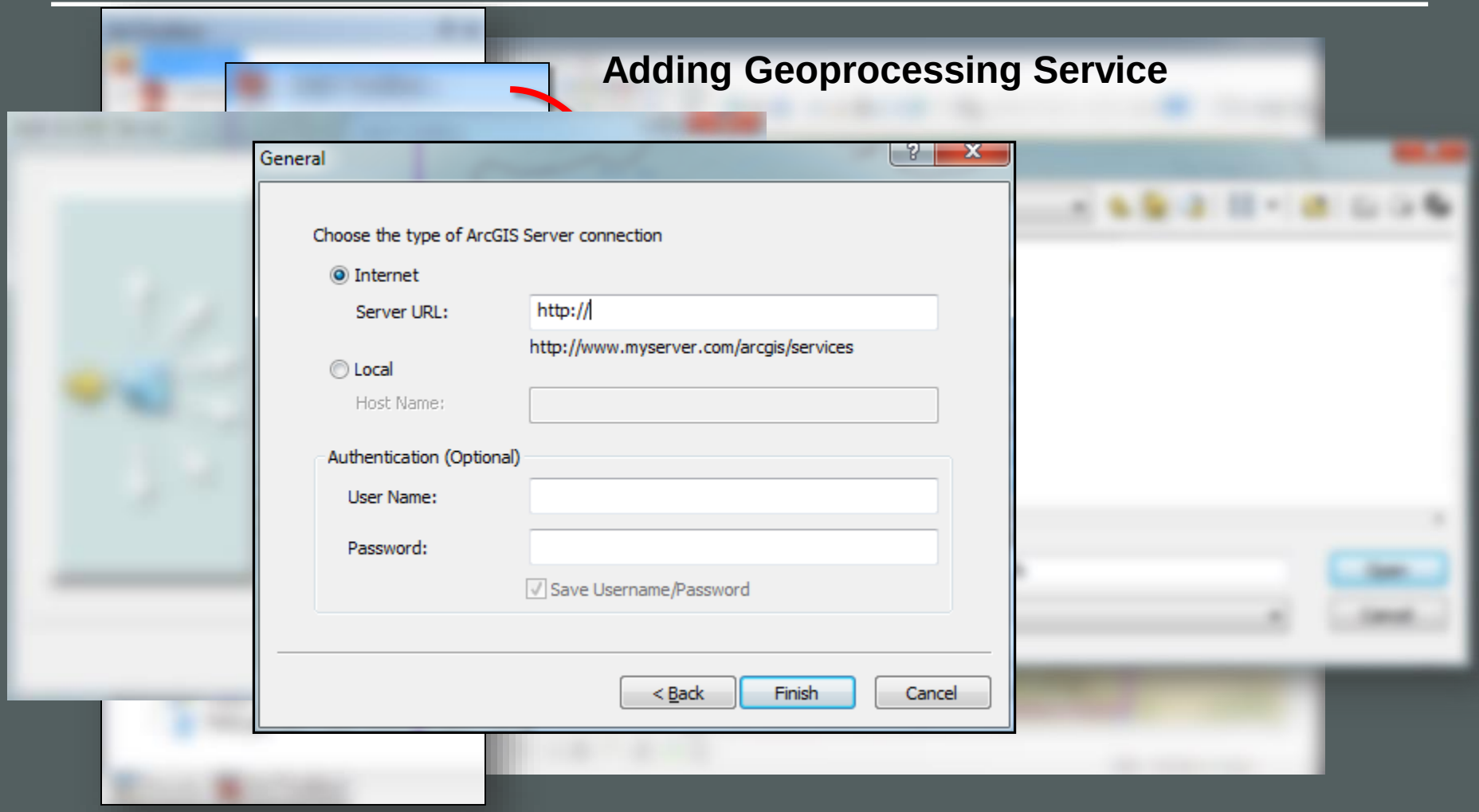

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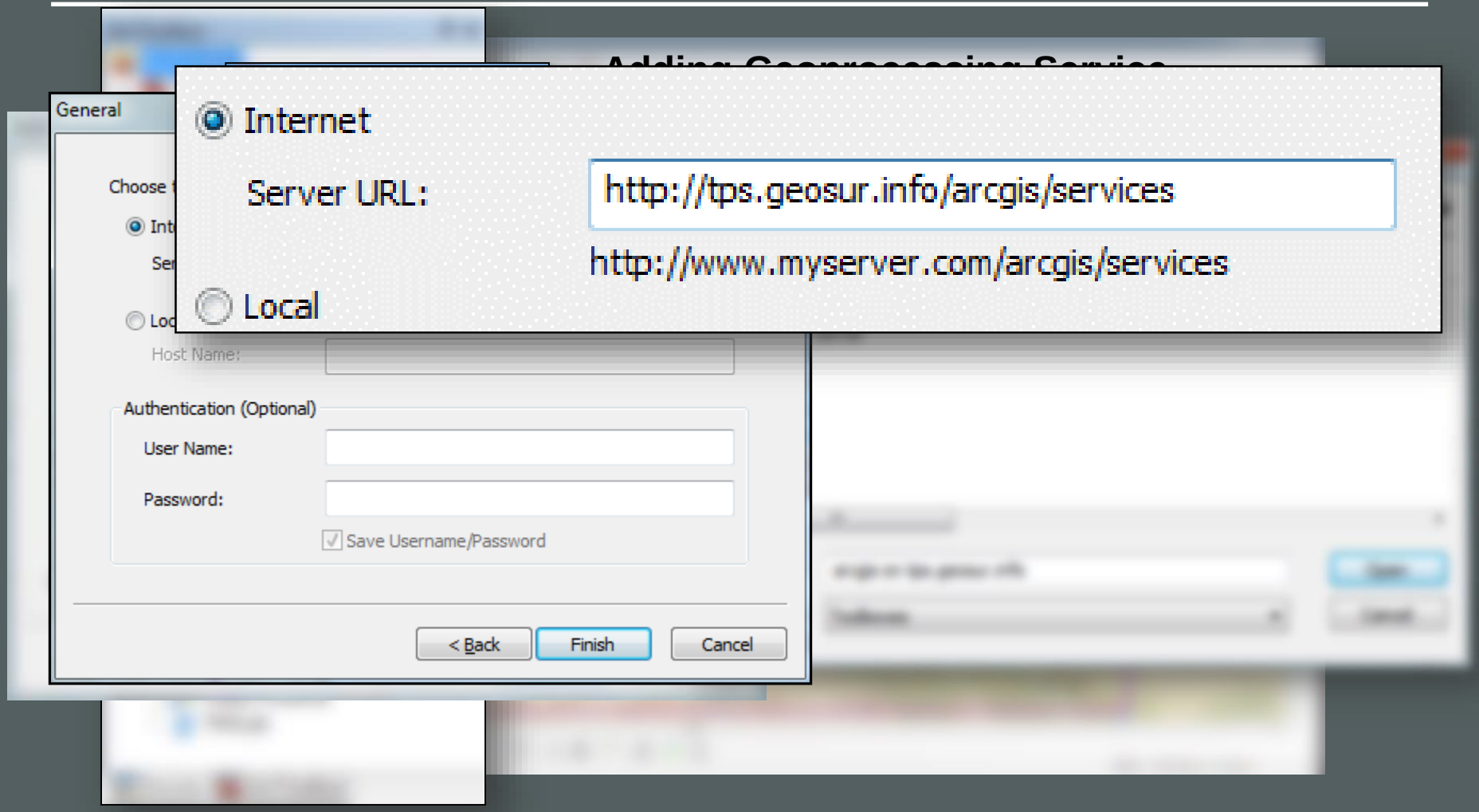

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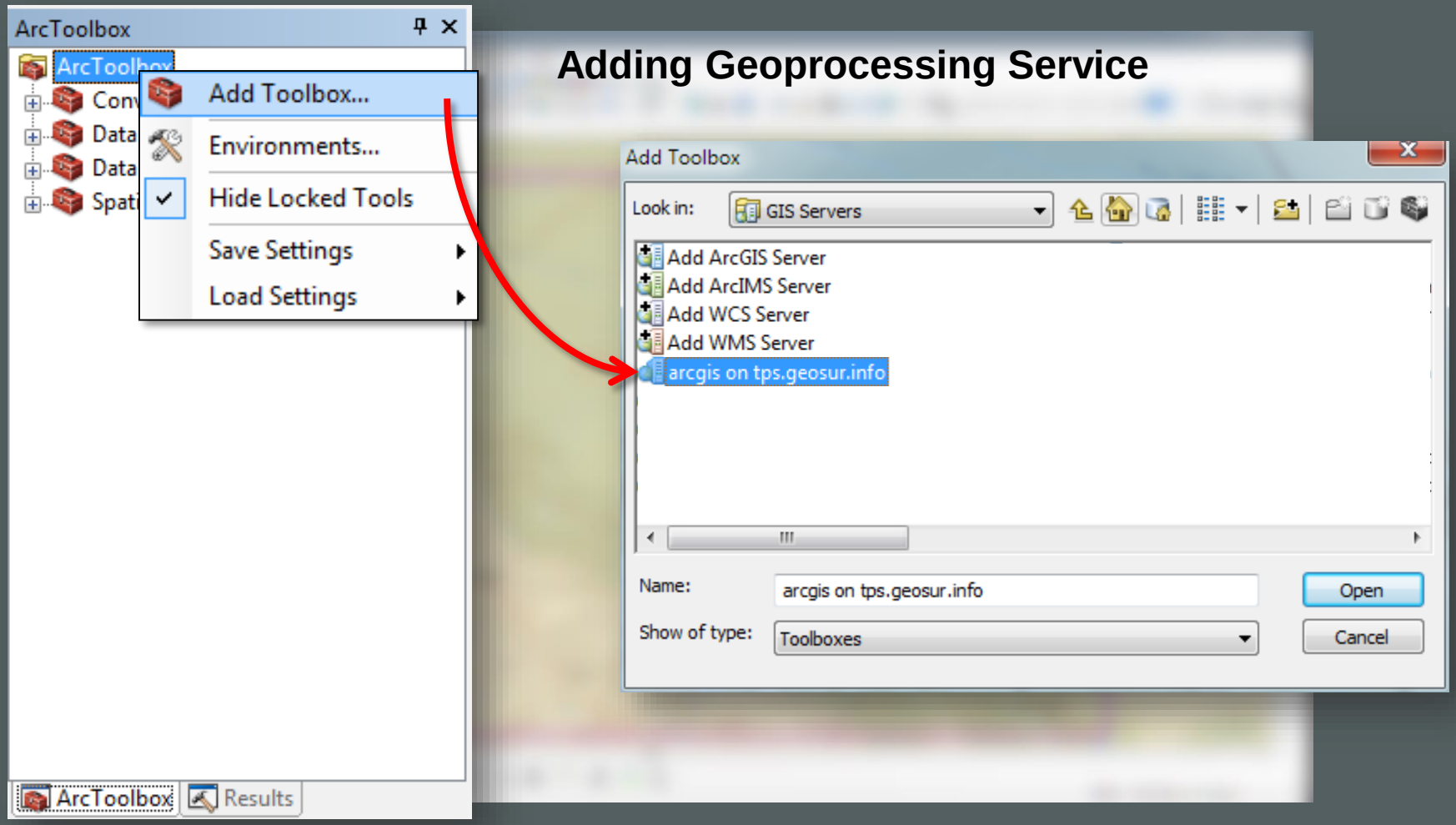

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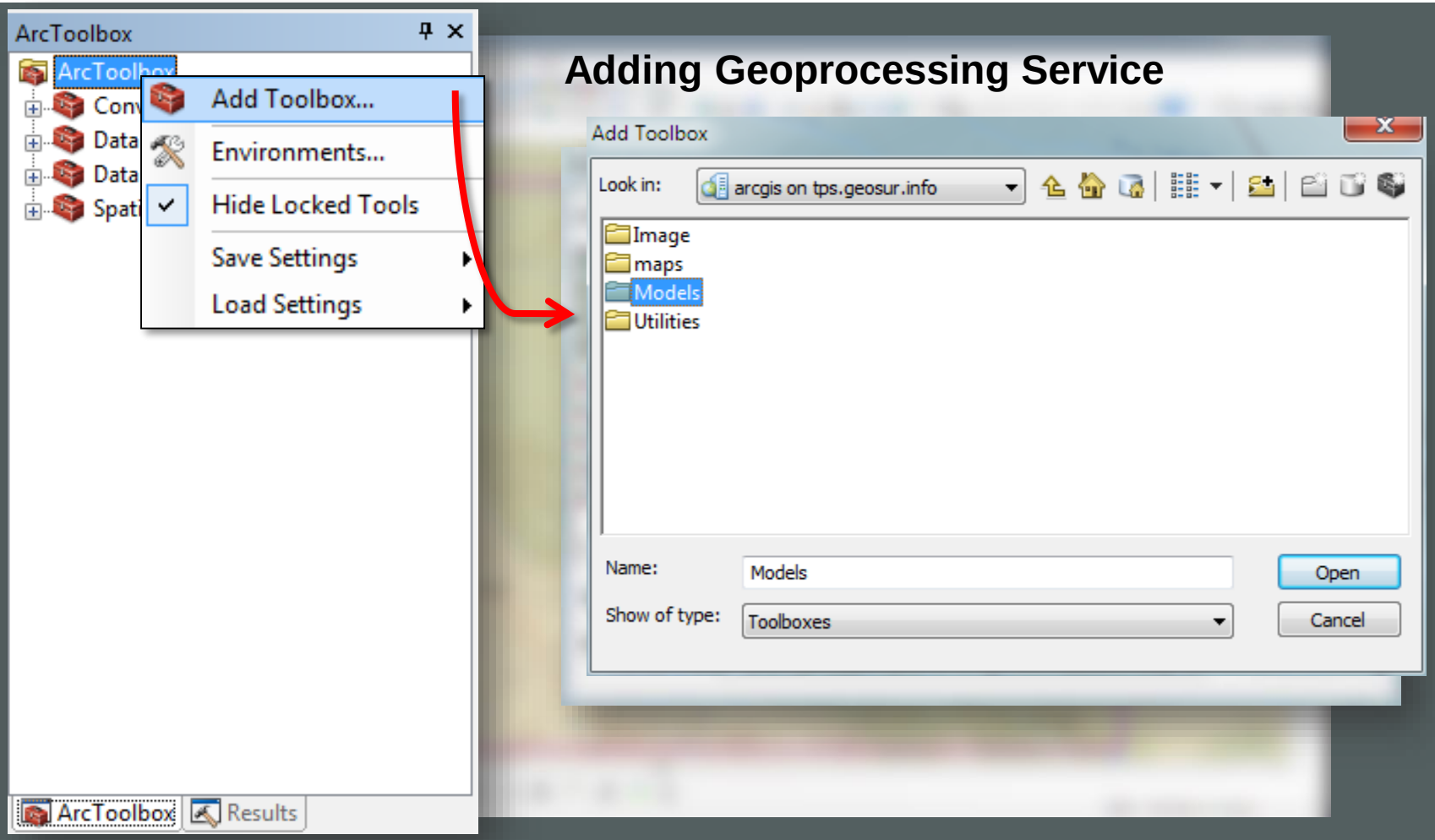

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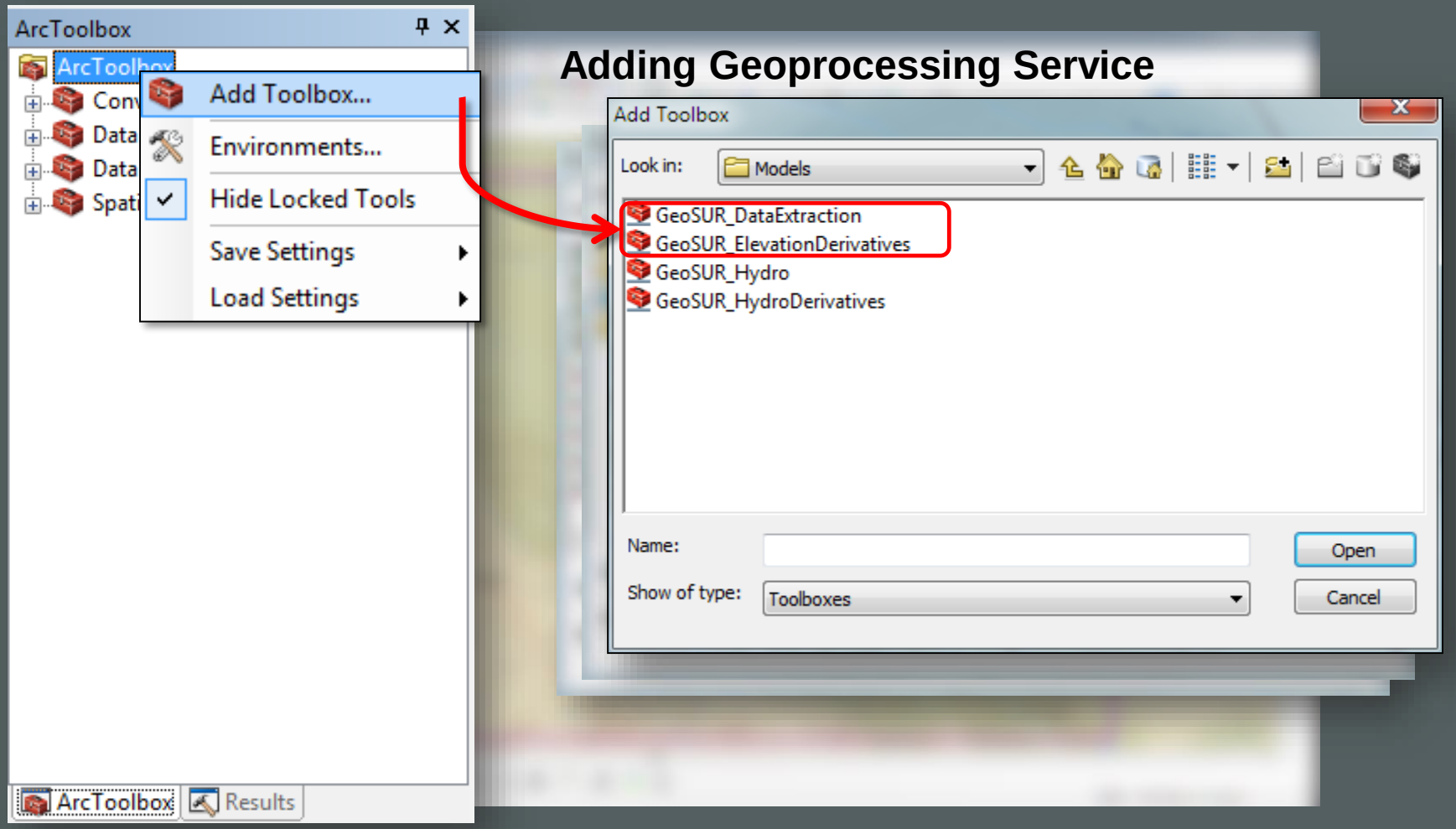

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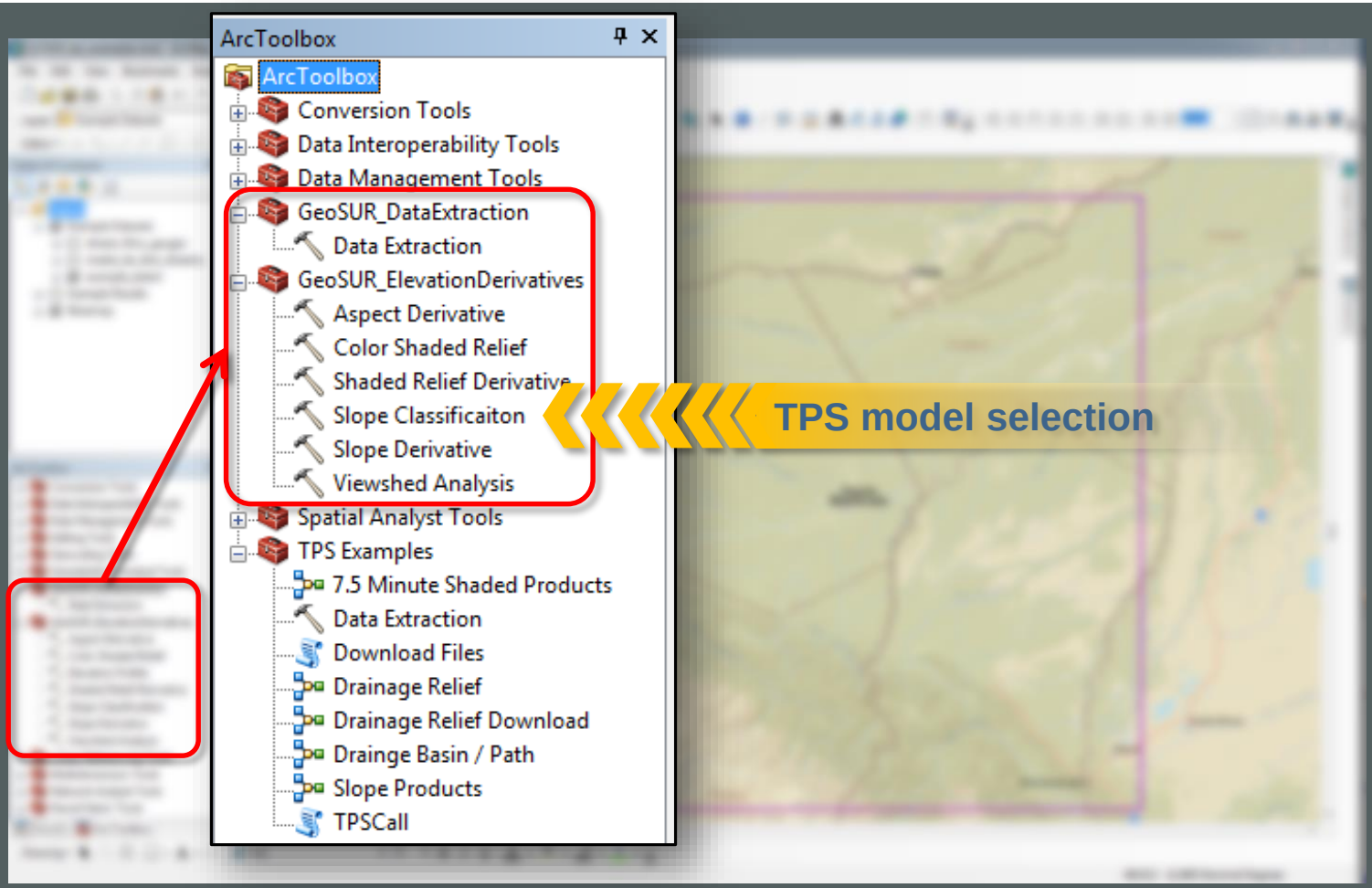

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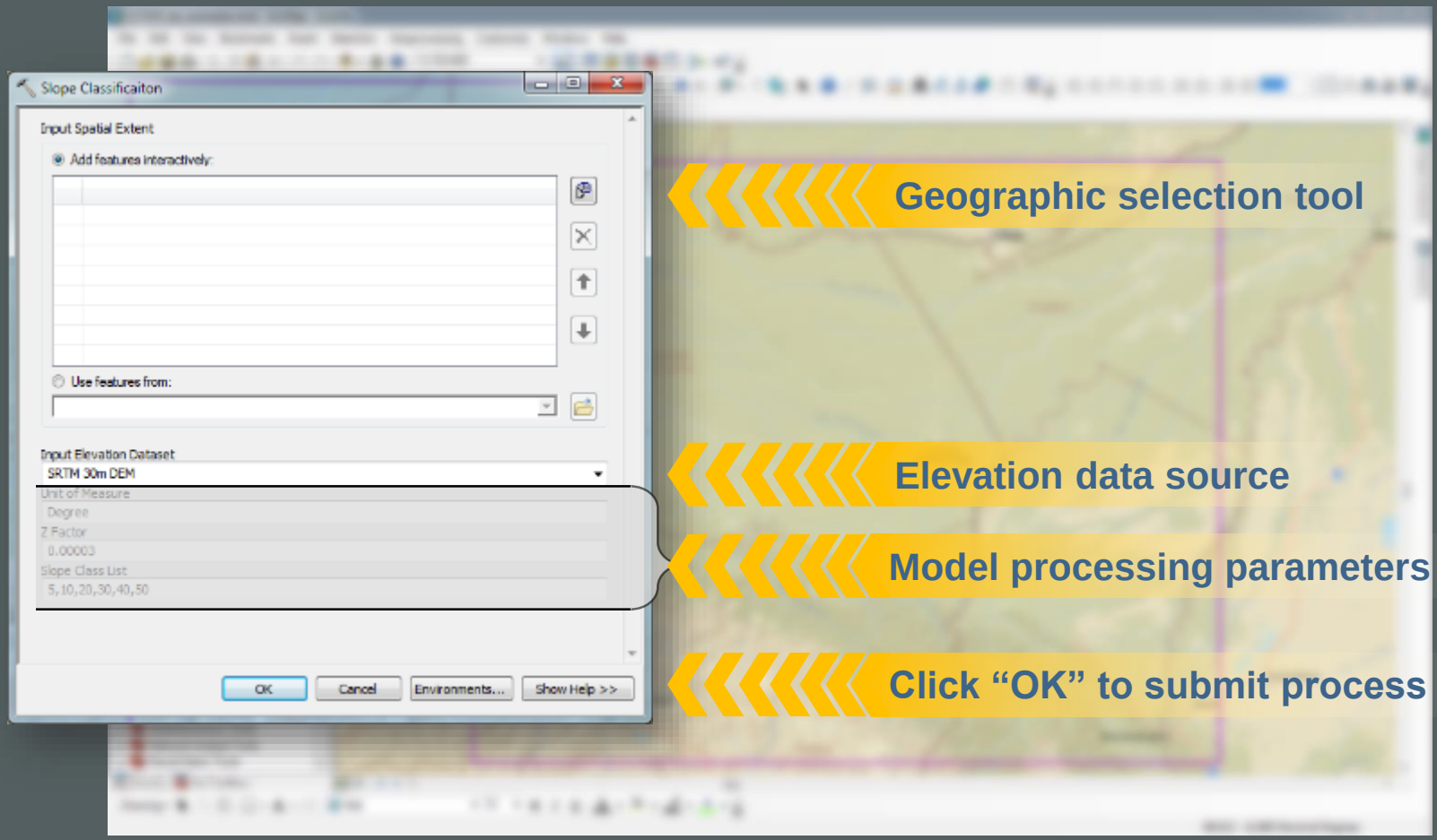
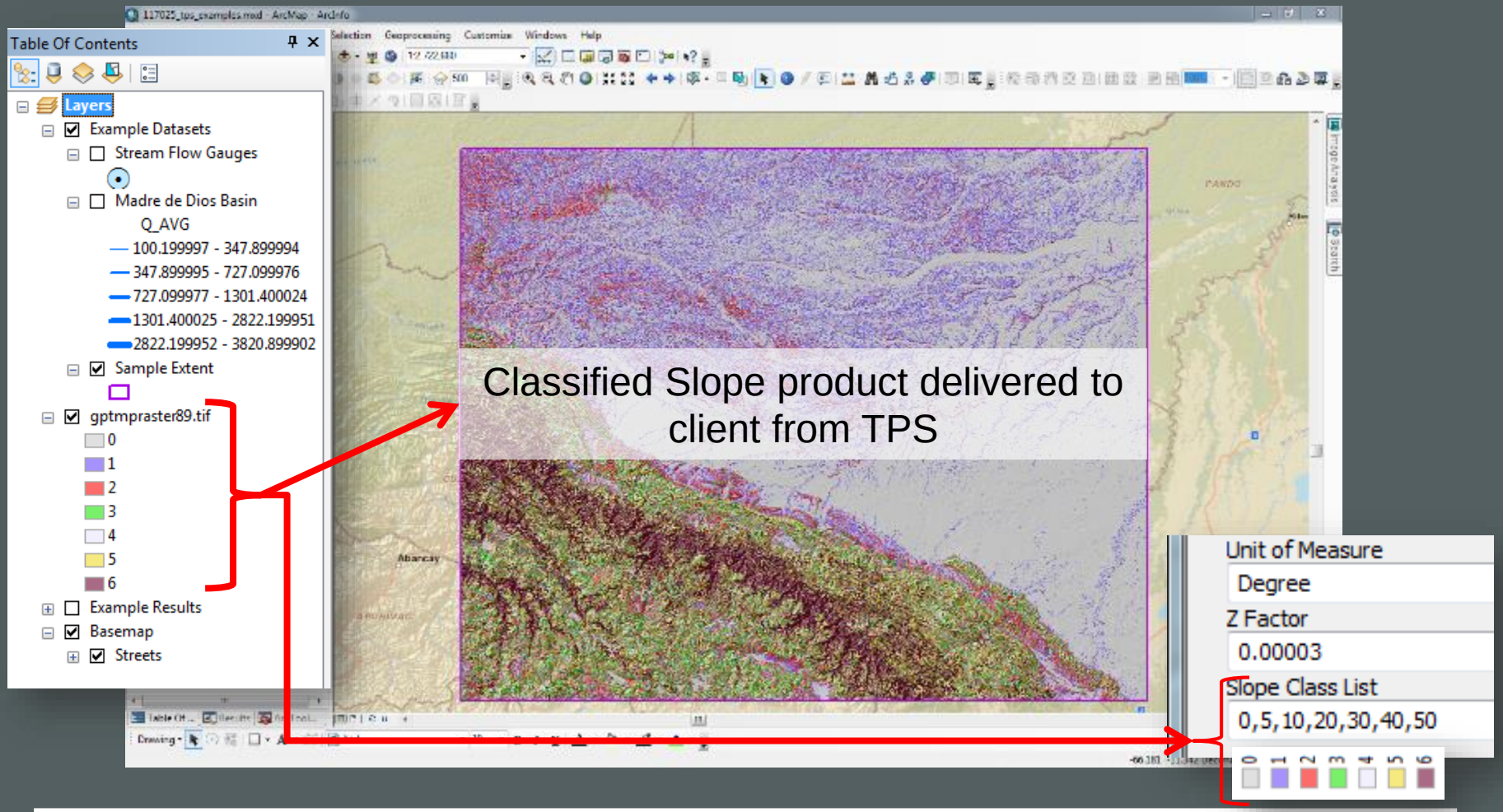


ESRI ArcGIS-ArcMap Interface



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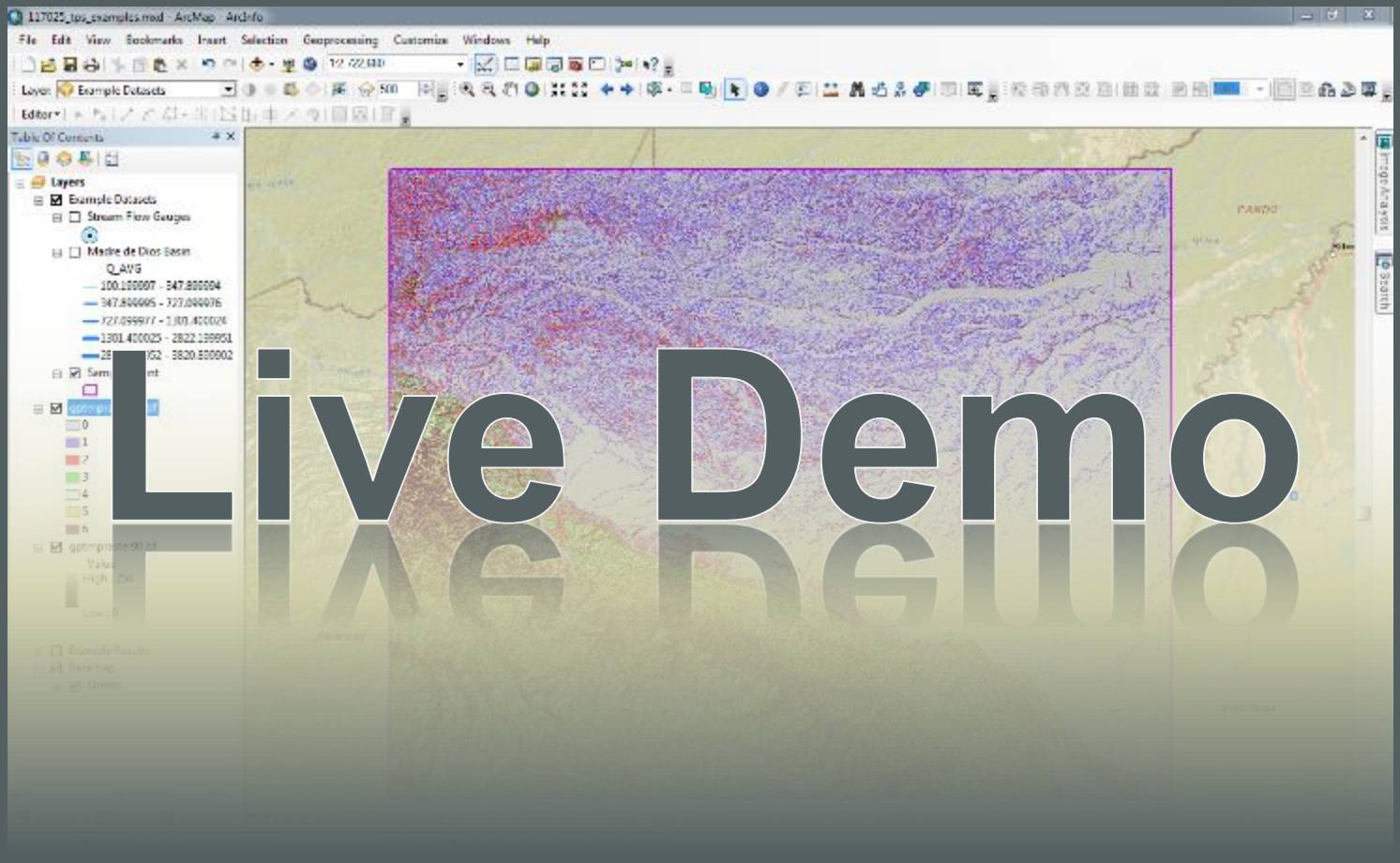

Service Request Scripting Interfaces

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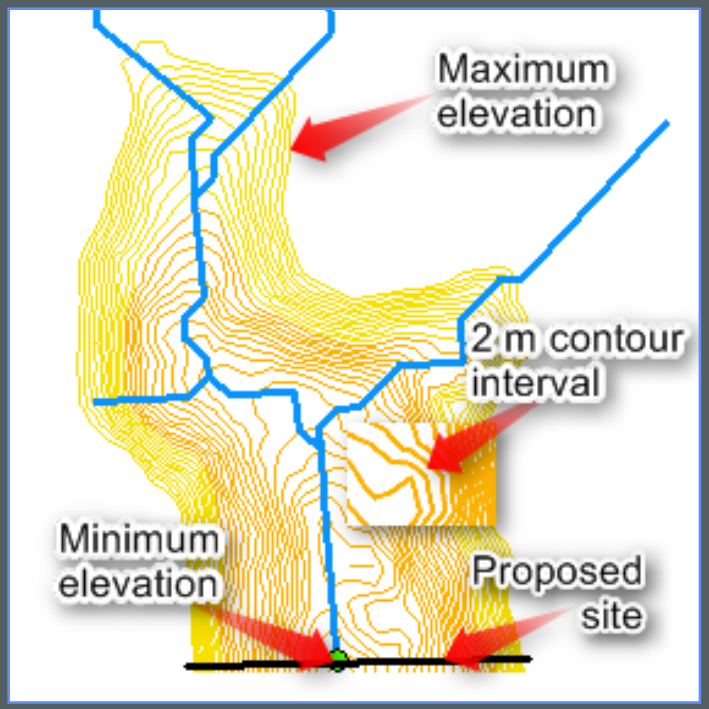
ESRI ArcGIS ArcMap Interface

Web Tool for Counter Level Creation



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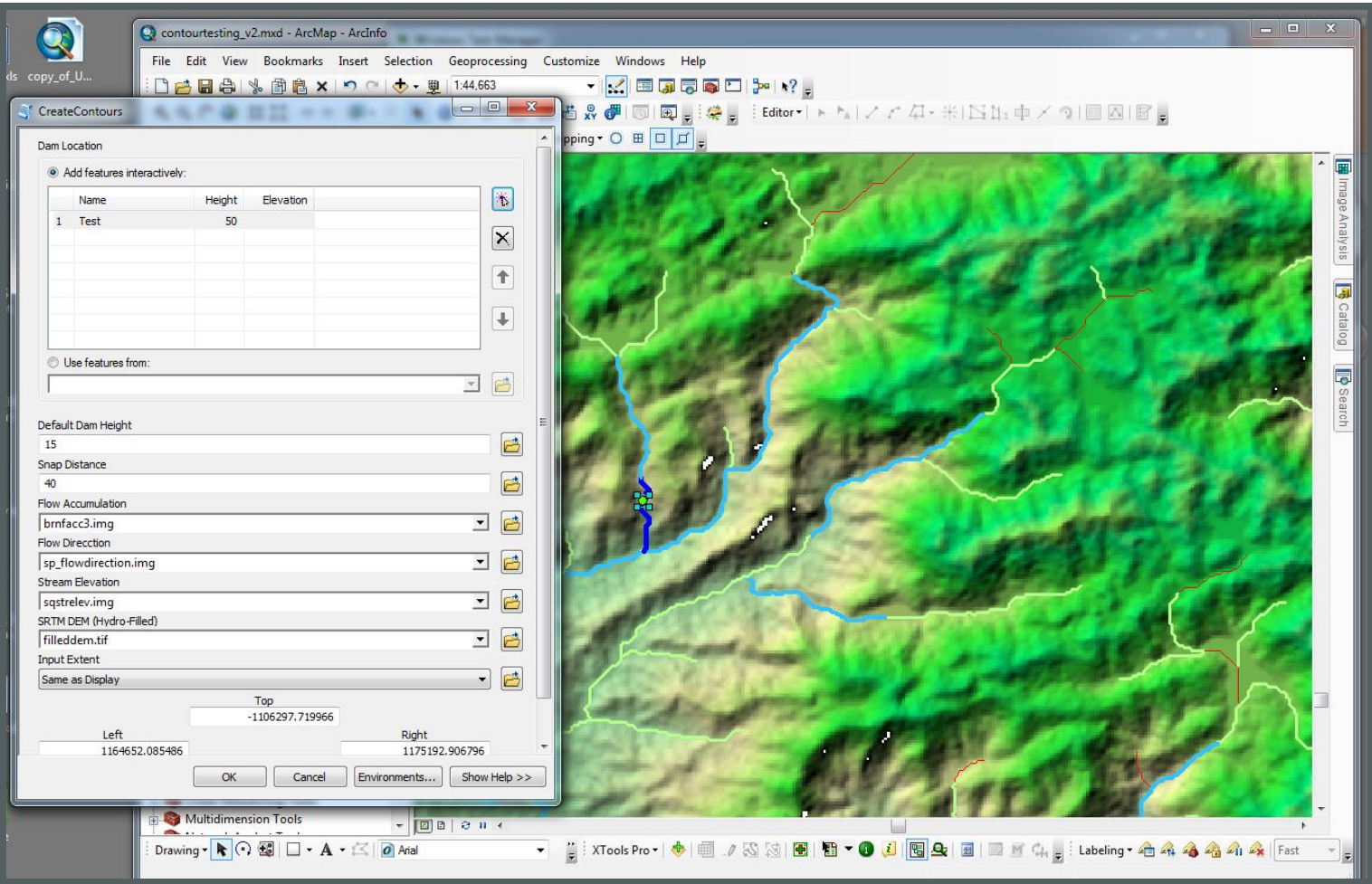
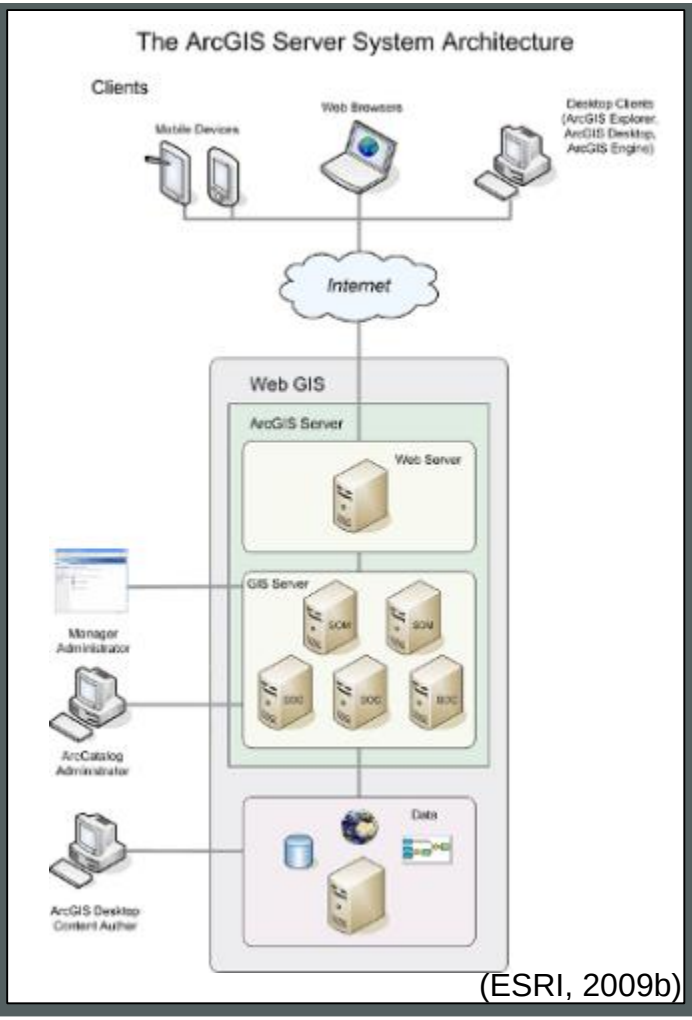
Web Tool for Counter Level Creation



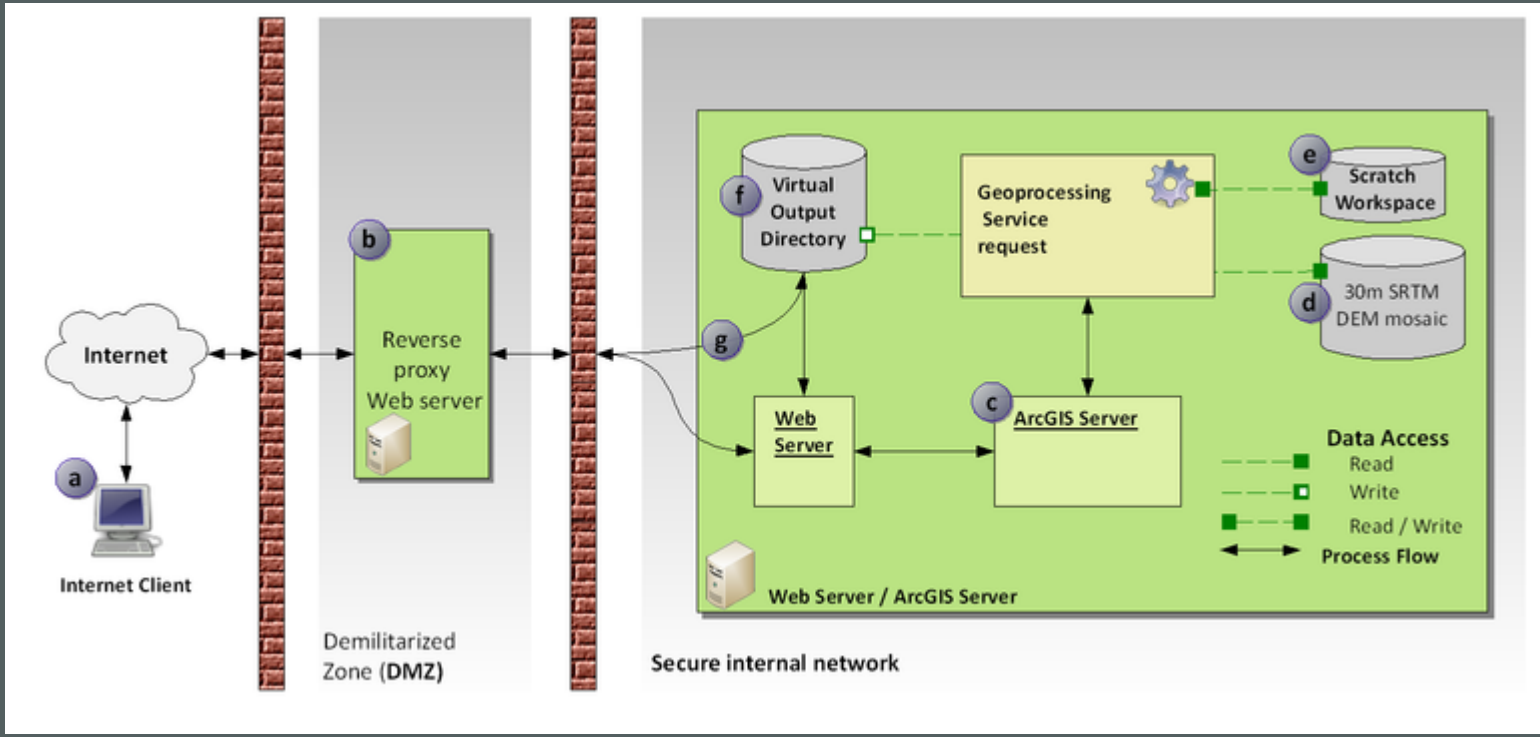
GeoSUR ArcGIS Server Architecture

- Web Clients
  - Mobile devices, Web Browser, and desktop clients.
- Web Server
- GIS Server(s)
- Administrative Client
- Desktop Clients



(ESRI, 2009b)

TPS Data Security



Status…

The TPS provides the countries of SA the best available seamless continental DEM derivatives products. In addition it offers a platform for developing geographic processing services to meet regional geospatial needs.

User Community

Identifying the user communities.

Developers

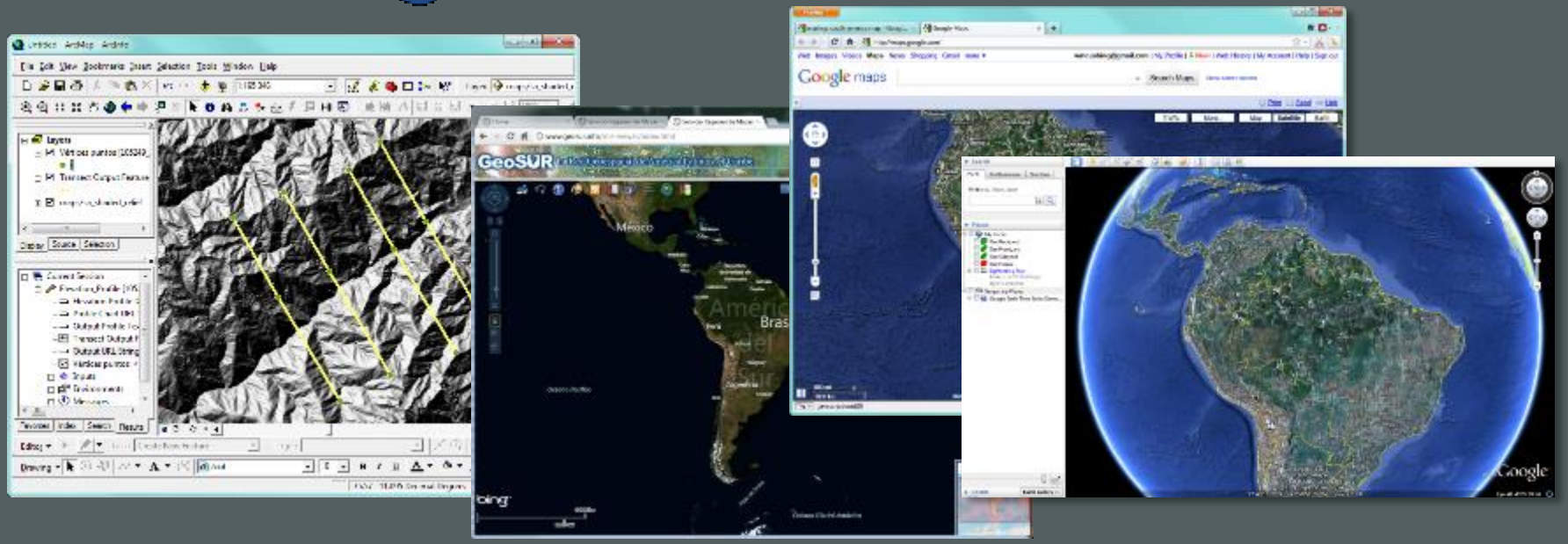
User → Technical

User → General Public

User Community

Software Developers

- **Localized tools for regional communities**: *States, Local Governments, Interest groups (Hiking, cycling clubs, etc)*
- **Private industry for project planning**



User Community

Users

Technical

General Public

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TPS Resource Links

TPS Background:
http://go.usa.gov/TvjG

CAF - Development Bank of Latin America GeoSUR
http://goo.gl/46xF5

GeoSUR Regional Map Service (RMS)
http://goo.gl/y2vL4

GMTED2010 Documentation
go.usa.gov/TdJj

USGS Earth Explorer
http://go.usa.gov/TvDR