



esri Colombia

Python en la Plataforma ArcGIS

Xander Bakker - Technical Advisor

xbakker@esri.co

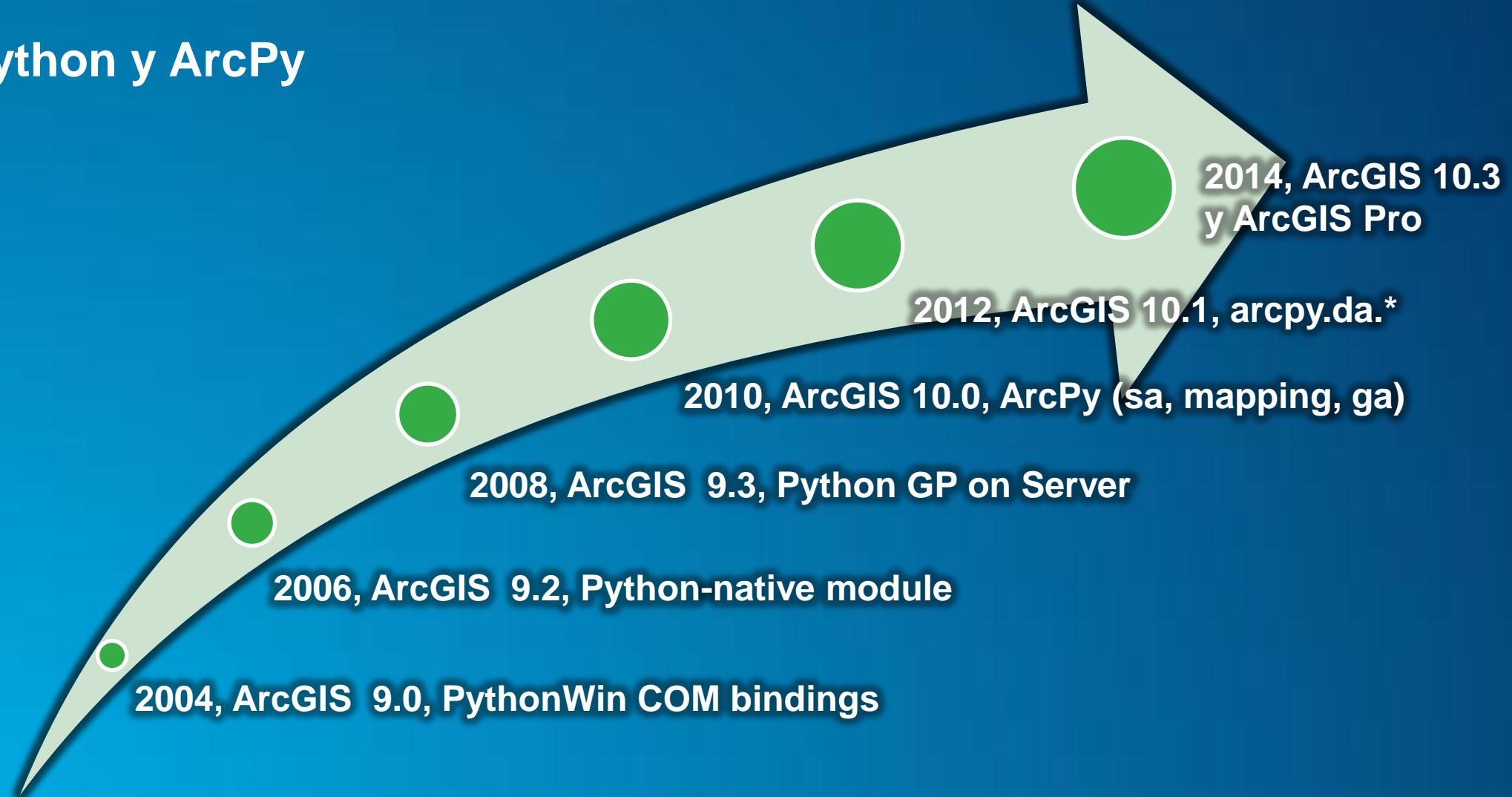
Contenido

- Python y ArcPy
- Por que Python?
- El rol de Python en la Plataforma ArcGIS
- Ejemplos de uso en EPM
- Como empezar con Python?
- Recursos de ayuda
- Presentaciones DevSummit



Python y ArcPy

Python y ArcPy



*SciPy stack, Package Management Environment (pip)
Integration with R statistical language*

Porque Python?

Por que Python?

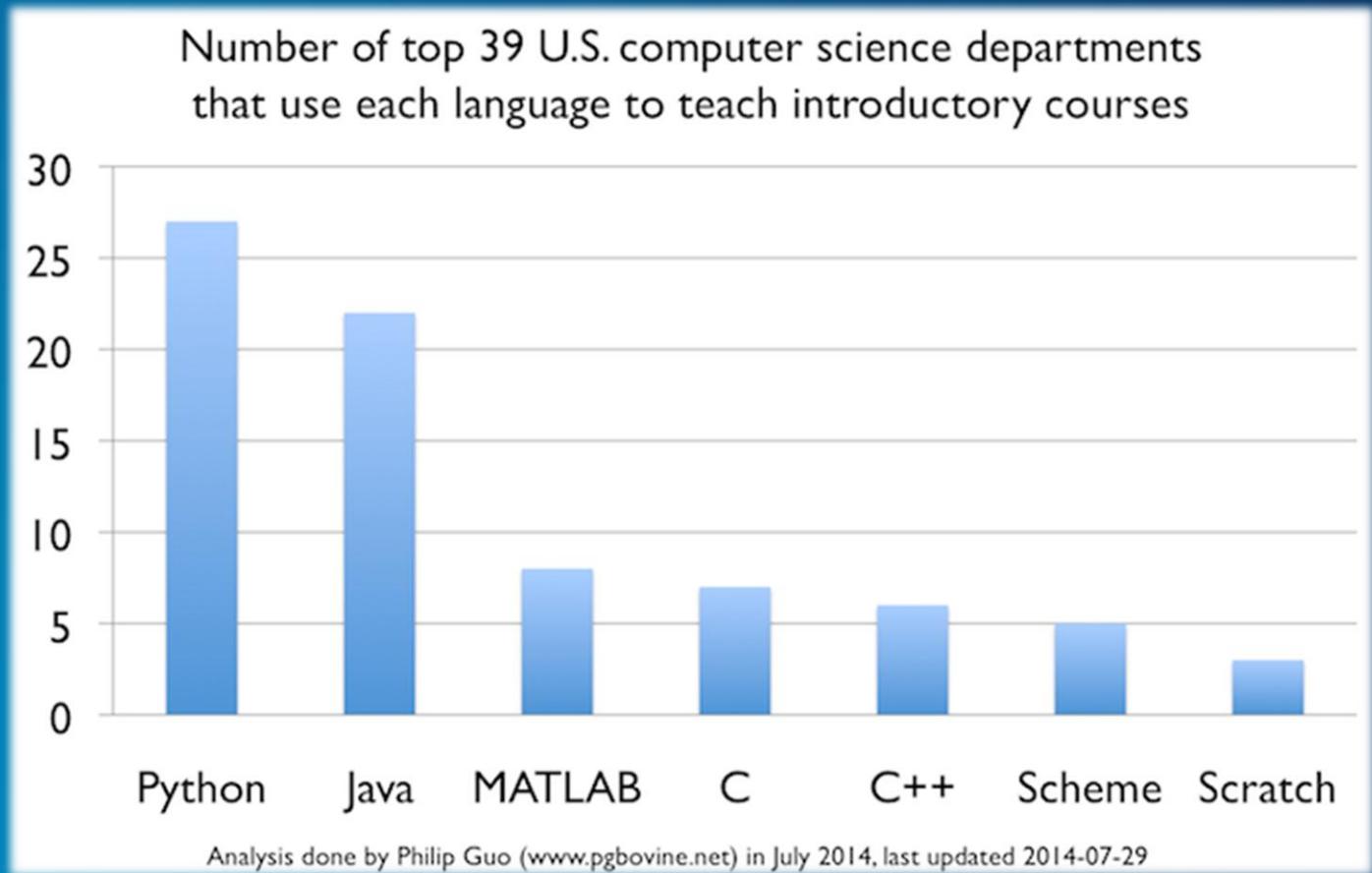
- Python es fuente abierta, de libre distribución
- Sencilla y fácil de aprender y de mantener
- Amplia aceptación
- Multiplataforma
- Tareas programadas
- Modular (56.000 paquetes en PiPy)

T H E
MATRIX

Por que Python?

En julio 2014, Python fue el lenguaje de programación más popular para enseñar la introducción a ciencias de computación en los mejores universidades de los Estados Unidos.

Más específicamente, 8 de las 10 mejores y 27 de los 39 mejores universidades enseñan Python en los cursos introductorios.



Quienes están usando Python actualmente?



Power of Python

Bill Moreland
Mark Janikas

Jim Tochterman @jtochterman · Mar 12
If your not using **#Python**, your doing things the hard way. **#DevSummit**
#ProTip

Expand

Reply Retweeted Favorite More

Followed by Shaun Walbridge and 11 others
Brett Lord-Castillo @blordcastillo · Mar 11
Time for a big portion. Bill Moreland "python is the language of **#ArcGIS**"
#devsummit

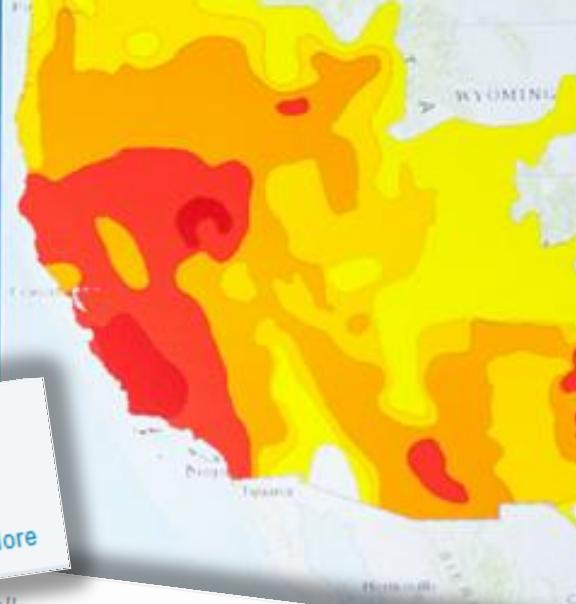
from Palm Springs, CA

Reply Retweet Favorite More

Followed by Andy Gup and 2 others
Ted Chapin @ChapinGIS · Mar 11
"Python is the language of GIS" **#DevSummit**
Expand

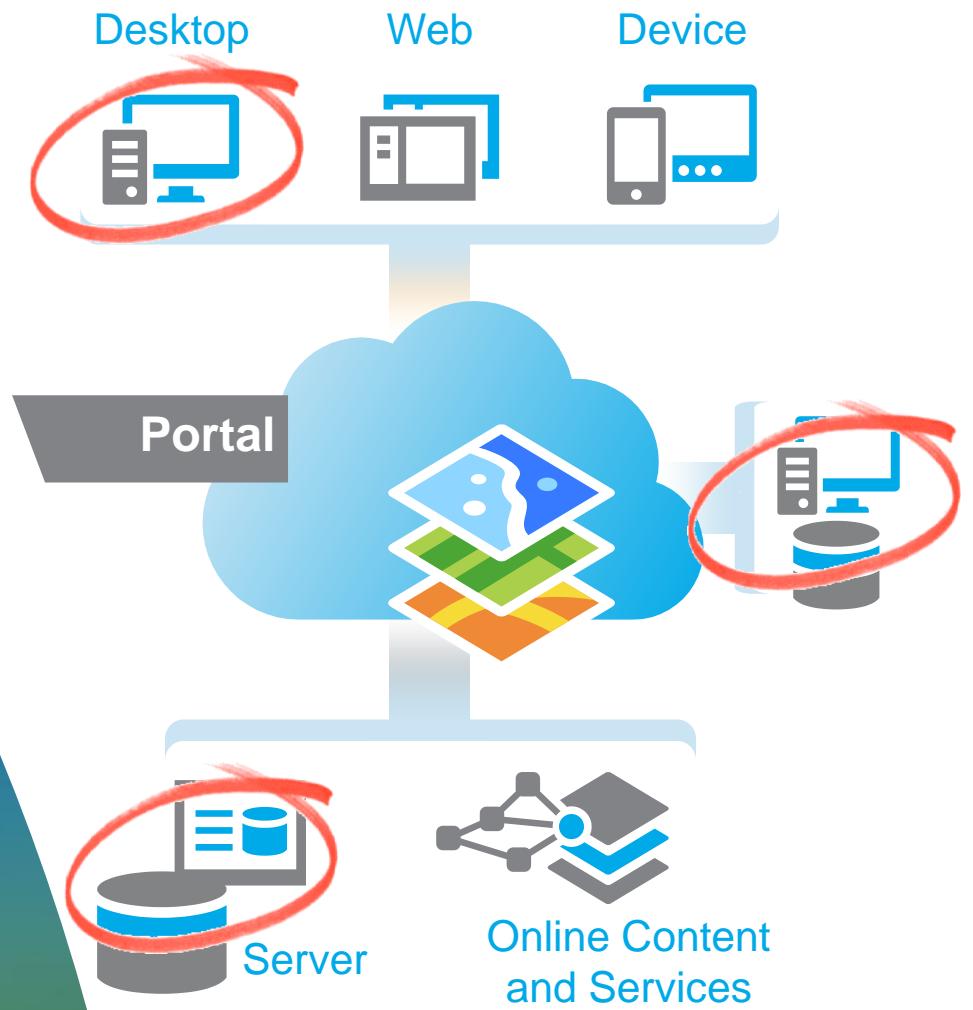
Reply Retweet Favorite More

Power of
Python
Bill Moreland
Mark Janikas



Python en la Plataforma ArcGIS

Python en la Plataforma ArcGIS



A prueba de futuro



8.0

ArcGIS for Desktop



9.0



10.0

10.3



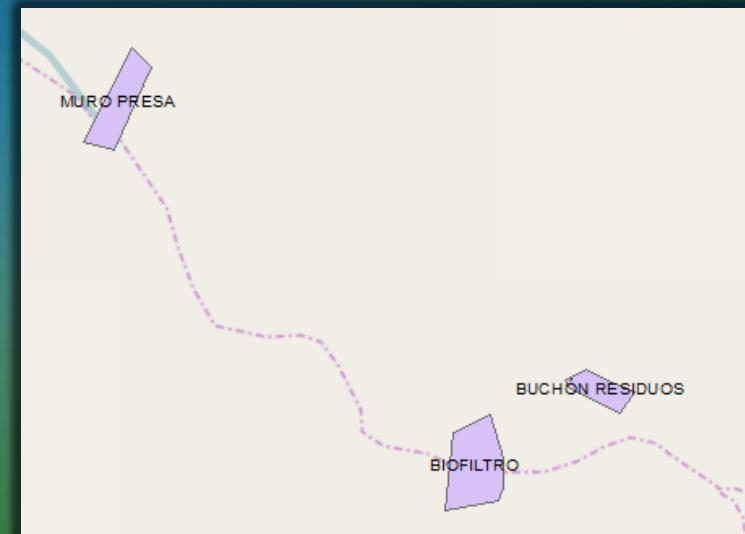
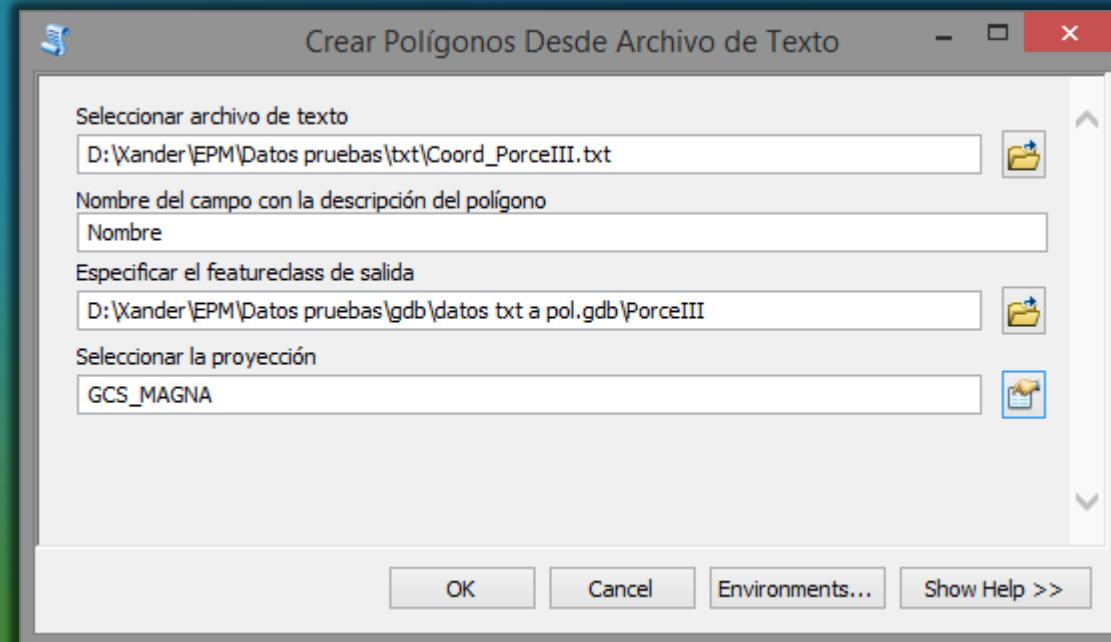
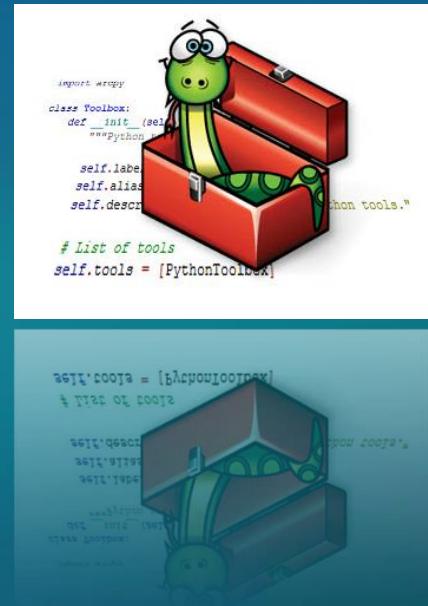
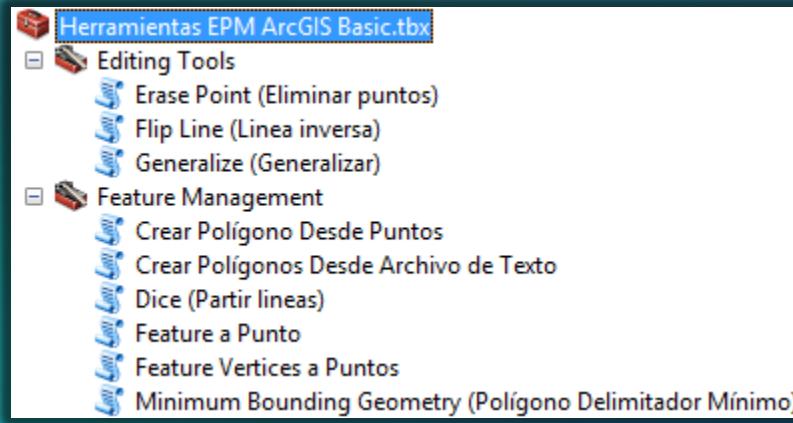
1.0



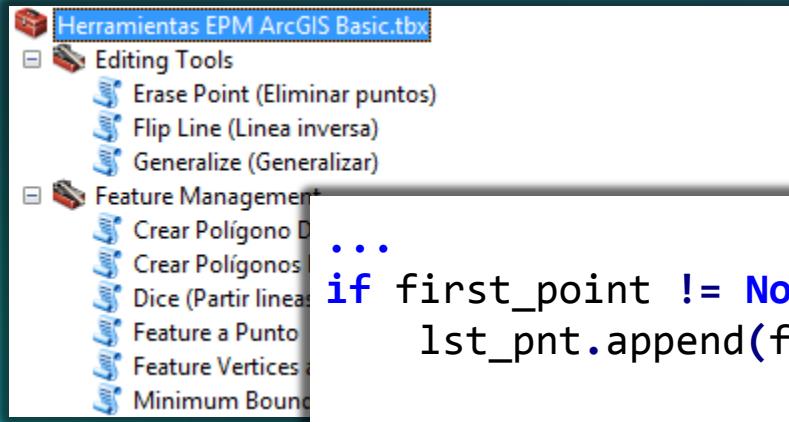
ArcGIS Pro

Ejemplos de uso en epm®

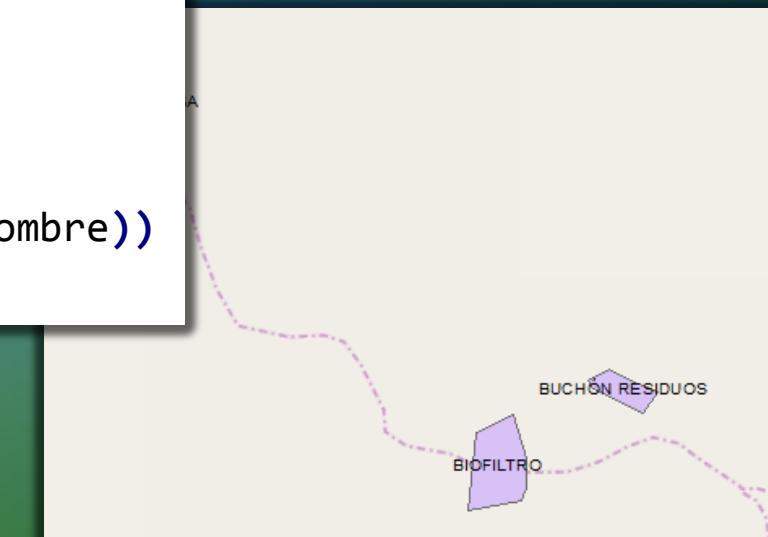
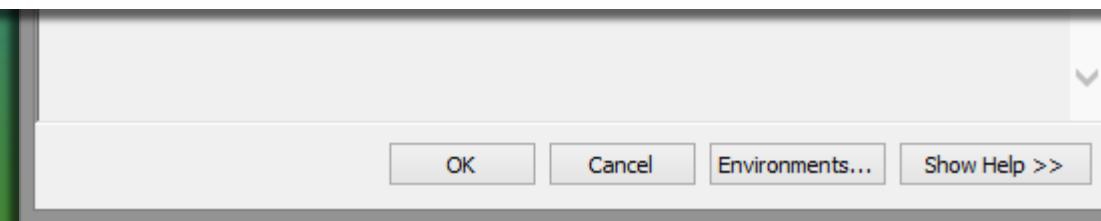
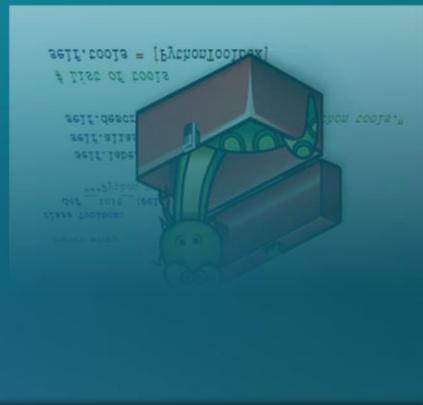
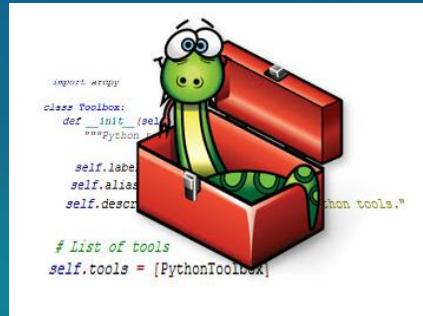
Agilizar el trabajo con cajas de herramientas



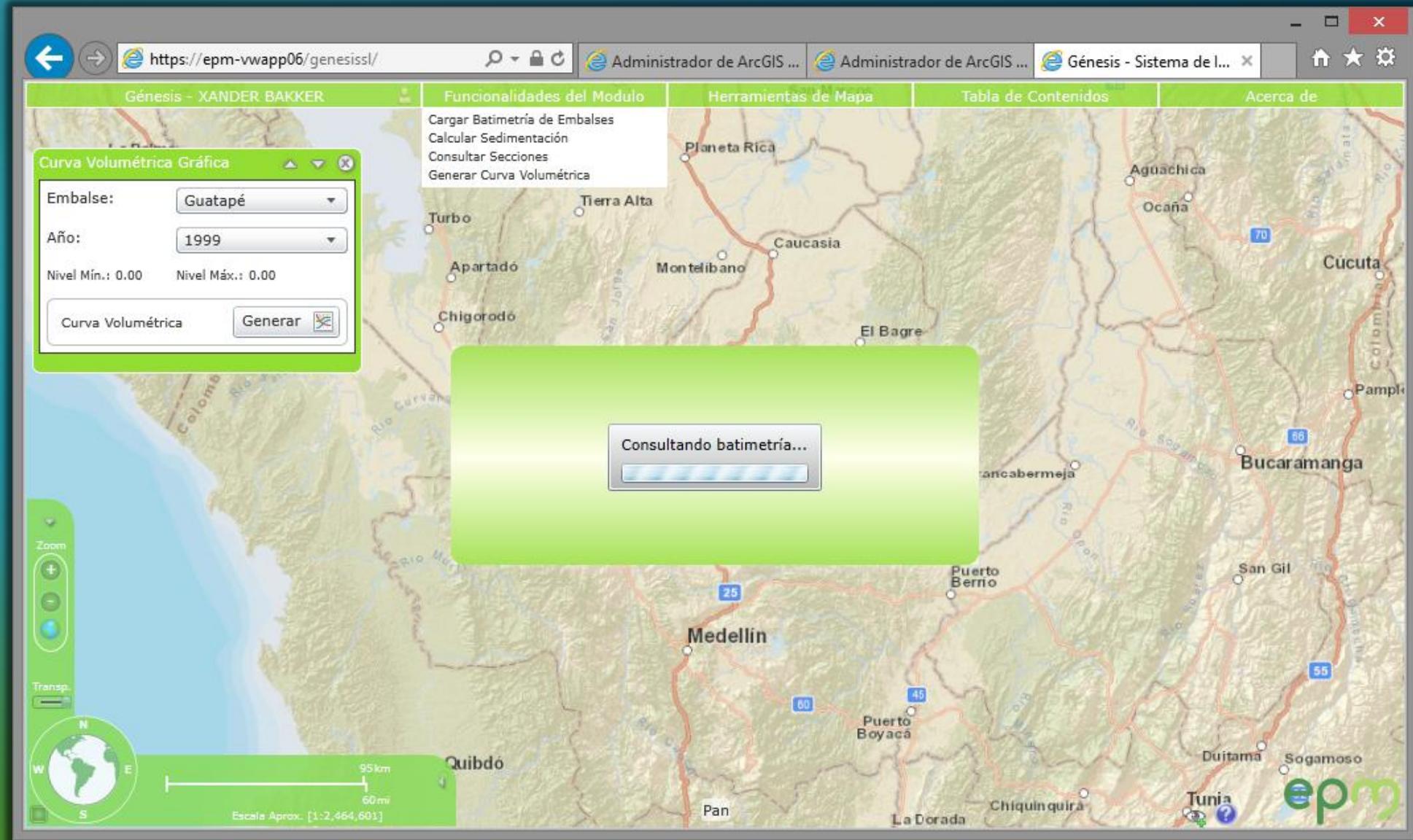
Agilizar el trabajo con cajas de herramientas



```
if first_point != None:  
    lst_pnt.append(first_point)  
  
if len(lst_pnt) > 3:  
    # crear polígono anterior y escribir a fc  
    polygon = arcpy.Polygon(arcpy.Array(lst_pnt), sr)  
    curs.insertRow((polygon, nombre, ))  
lst_pnt = []  
nombre = line.strip()  
bln_start = True  
arcpy.AddMessage("Procesando polígono: '{0}'".format(nombre))  
...
```



Empoderando grupos de usuarios con servicios de geo-procesamiento



Empoderando grupos de usuarios con servicios de geo-procesamiento

The image shows a screenshot of a web-based geoprocessing application. On the left, there is a map of Colombia with a specific area highlighted in blue. A sidebar on the left contains a form for generating a volumetric curve, with fields for Embalse (Guatapé), Año (1999), Nivel Min. (0.00), and Nivel Máx. (0.00). Below the form is a button labeled "Curva Volumétrica" and a "Generar" button. On the right, there is a list of geoprocessing services, each with a red toolbox icon, a name, a brief description, and status information (Estado, Instancias ejecutándose, Instancias en uso, Instancias máximas). The services listed include:

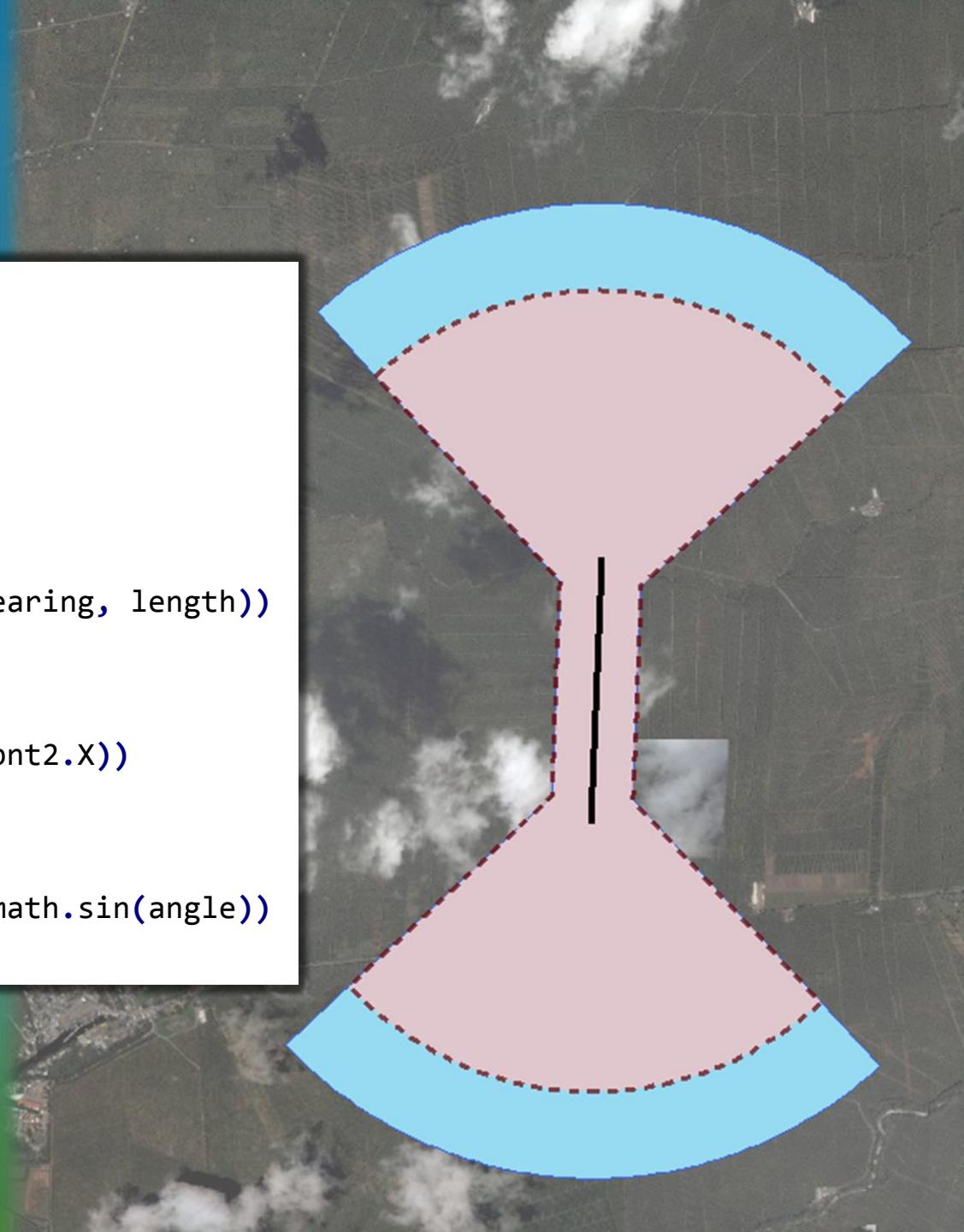
- AnalisisMultitemporal (Servicio de geoprocесamiento) - Estado: Iniciado, Instancias ejecutándose: 1, Instancias en uso: 0, Instancias máximas: 2.
- AnalisisVisibilidad (Servicio de geoprocесamiento) - Estado: Parado, Instancias ejecutándose: 0, Instancias en uso: 0, Instancias máximas: 0.
- AnalisisVisibilidad (Servicio de mapas) - Estado: Parando..., Instancias ejecutándose: 0, Instancias en uso: 0, Instancias máximas: 0.
- CalcularVolumen (Servicio de geoprocесamiento) - Estado: Iniciado, Instancias ejecutándose: 1, Instancias en uso: 0, Instancias máximas: 2.
- CalcularVolumen (Servicio de mapas) - Estado: Iniciado, Instancias ejecutándose: 1, Instancias en uso: 0, Instancias máximas: 2.
- ConvertirInformacionAlfanumerica (Servicio de geoprocесamiento) - Estado: Iniciado, Instancias ejecutándose: 1, Instancias en uso: 0, Instancias máximas: 2.
- ConvertirInformacionAlfanumerica (Servicio de mapas) - Estado: Iniciado, Instancias ejecutándose: 1, Instancias en uso: 0, Instancias máximas: 2.
- CortarRaster (Servicio de geoprocесamiento) - Estado: Iniciado, Instancias ejecutándose: 1, Instancias en uso: 0, Instancias máximas: 2.
- DelinearCuenca (Servicio de geoprocесamiento) - Estado: Iniciado, Instancias ejecutándose: 1, Instancias en uso: 0, Instancias máximas: 2.
- DelinearPerfilTopografico (Servicio de geoprocесamiento) - Estado: Iniciado, Instancias ejecutándose: 1, Instancias en uso: 0, Instancias máximas: 2.
- GenerarIsolineas (Servicio de geoprocесamiento) - Estado: Permitir/generar de forma independiente curvas de nivel a cada lado de la barrera, Instancias ejecutándose: 0, Instancias en uso: 0, Instancias máximas: 0.
- GenerarModeloElevacion (Servicio de geoprocесamiento) - Estado: Generar un modelo de elevación digital a partir de diversas fuentes de datos, Instancias ejecutándose: 0, Instancias en uso: 0, Instancias máximas: 0.
- GenerarRedDrenaje (Servicio de geoprocесamiento) - Estado: Se genera una red de drenaje a partir de la definición de una cantidad mínima de celdas aportantes sobre un raster de acumulación creado de un raster de elevación, Instancias ejecutándose: 0, Instancias en uso: 0, Instancias máximas: 0.
- SeleccionarDrenajeOptimo (Servicio de geoprocесamiento) - Estado: Permite escoger los drenajes óptimos para ser candidatos a un análisis de ubicación de una represa, Instancias ejecutándose: 0, Instancias en uso: 0, Instancias máximas: 0.
- SimularAfectacionRuido (Servicio de geoprocесamiento) - Estado: Estima el área afectada por una o varias fuentes de ruido, Instancias ejecutándose: 0, Instancias en uso: 0, Instancias máximas: 0.
- SimularLlenadoEmbalse (Servicio de geoprocесamiento) - Estado: Simula el llenado de un embalse para determinar diferentes características que definen su comportamiento como el volumen, área, altura de llenado y tiempo de llenado, Instancias ejecutándose: 0, Instancias en uso: 0, Instancias máximas: 0.
- SimularLlenadoEmbalse (Servicio de mapas) - Estado: Instancias ejecutándose: 0, Instancias en uso: 0, Instancias máximas: 0.
- TR_RF0103 (Servicio de geoprocесamiento) - Estado: Servicio de geoprocесamiento modulo tecnica raster funcionalidades RF 01 a 03, Instancias ejecutándose: 0, Instancias en uso: 0, Instancias máximas: 0.
- TR_RF0103 (Servicio de mapas) - Estado: Instancias ejecutándose: 0, Instancias en uso: 0, Instancias máximas: 0.

Creando geometrías específicas

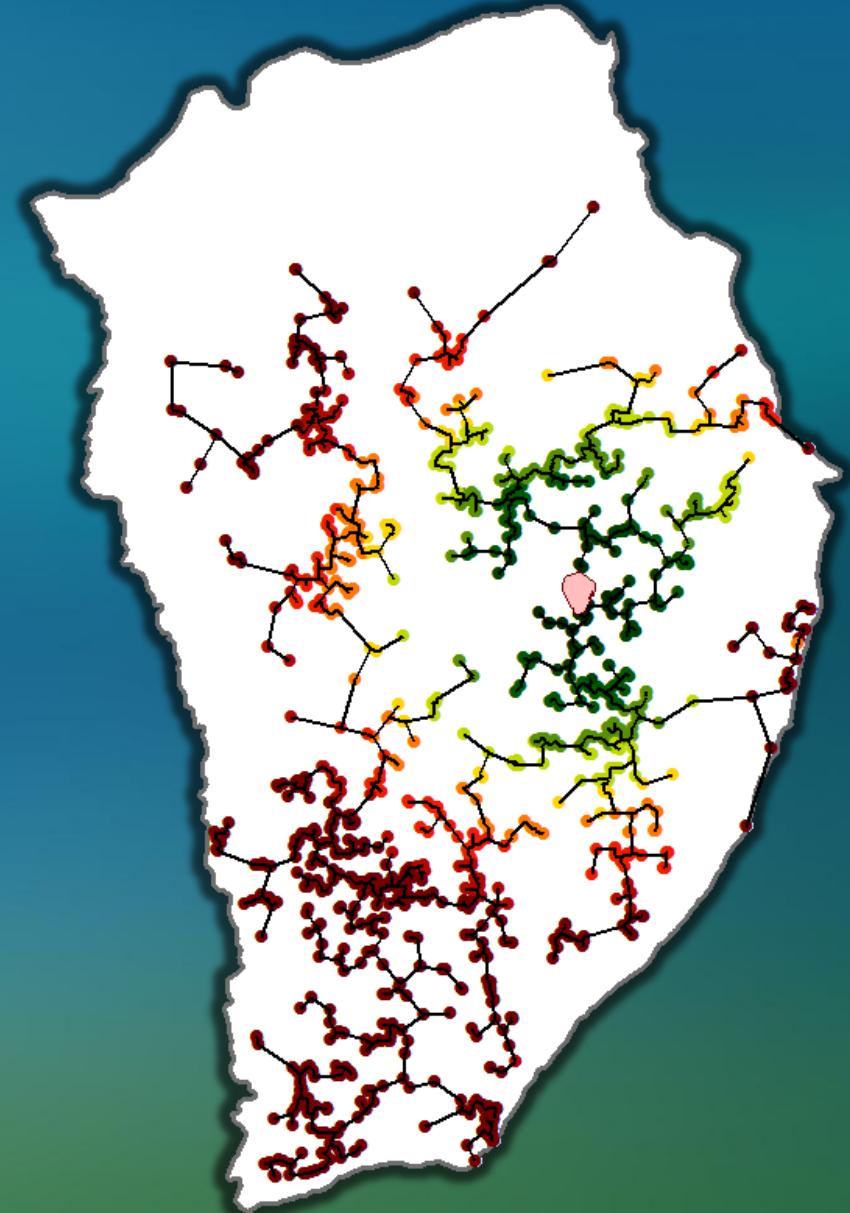
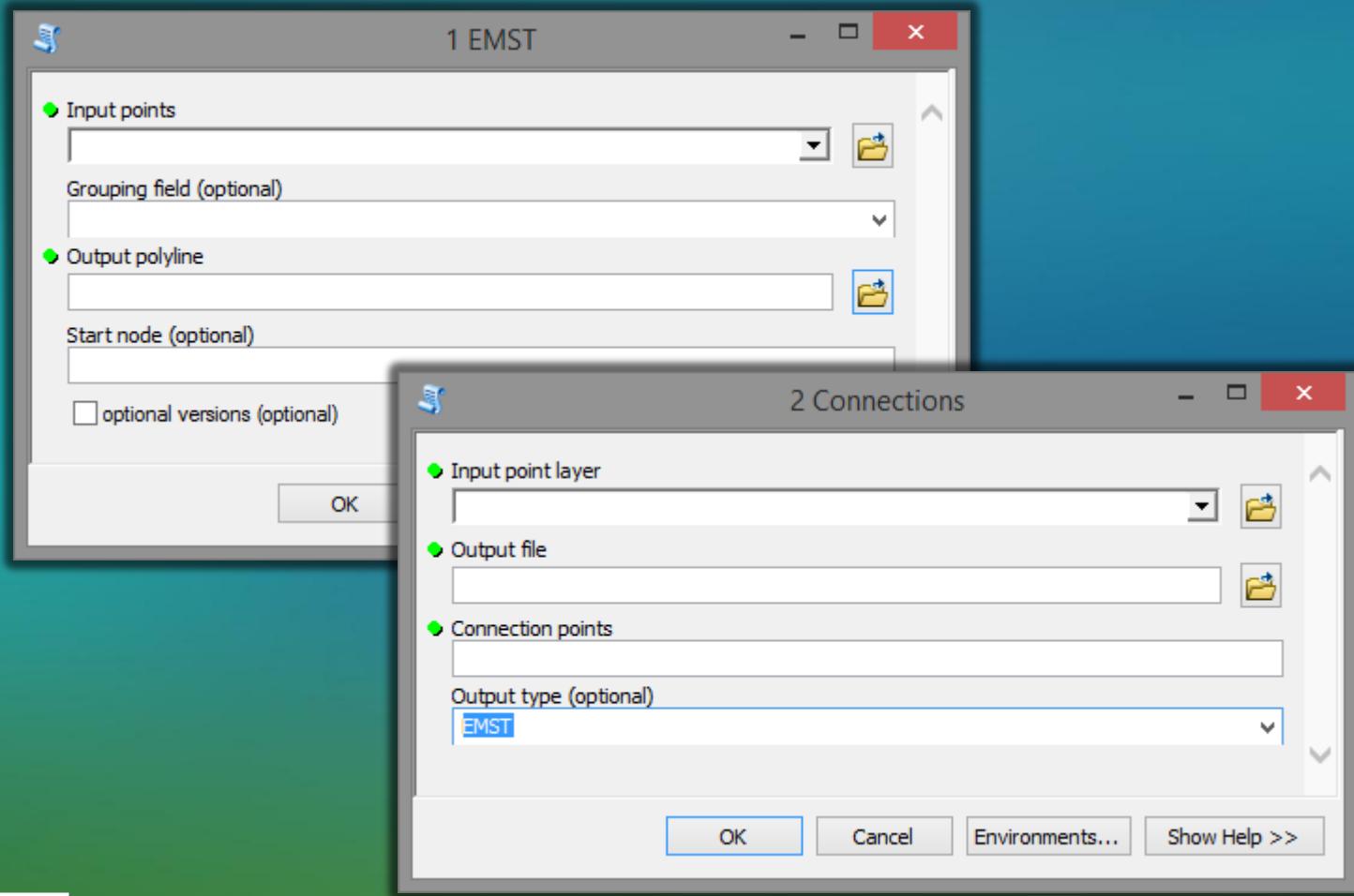
```
def createSector(pnt_from, pnt_to, length, angle, sr):
    # determinar el bearing con base en las 2 puntos
    bearing = getBearing2Points(pnt_from, pnt_to)
    start = bearing - (angle / 2)
    end = bearing + (angle / 2)
    arrPnts = arcpy.Array()
    arrPnts.add(pnt_from)
    for bearing in range(int(start), int(end) + 1):
        arrPnts.add(createPointAtAngleWithBearing(pnt_from, bearing, length))
    return arcpy.Polygon(arrPnts, sr)

def getBearing2Points(pnt1, pnt2):
    return math.degrees(math.atan2(pnt1.Y - pnt2.Y, pnt1.X - pnt2.X))

def createPointAtAngleWithBearing(pnt, angle, distance):
    angle = math.radians(angle)
    dist_x, dist_y = (distance * math.cos(angle), distance * math.sin(angle))
    return arcpy.Point(pnt.X + dist_x, pnt.Y + dist_y)
```

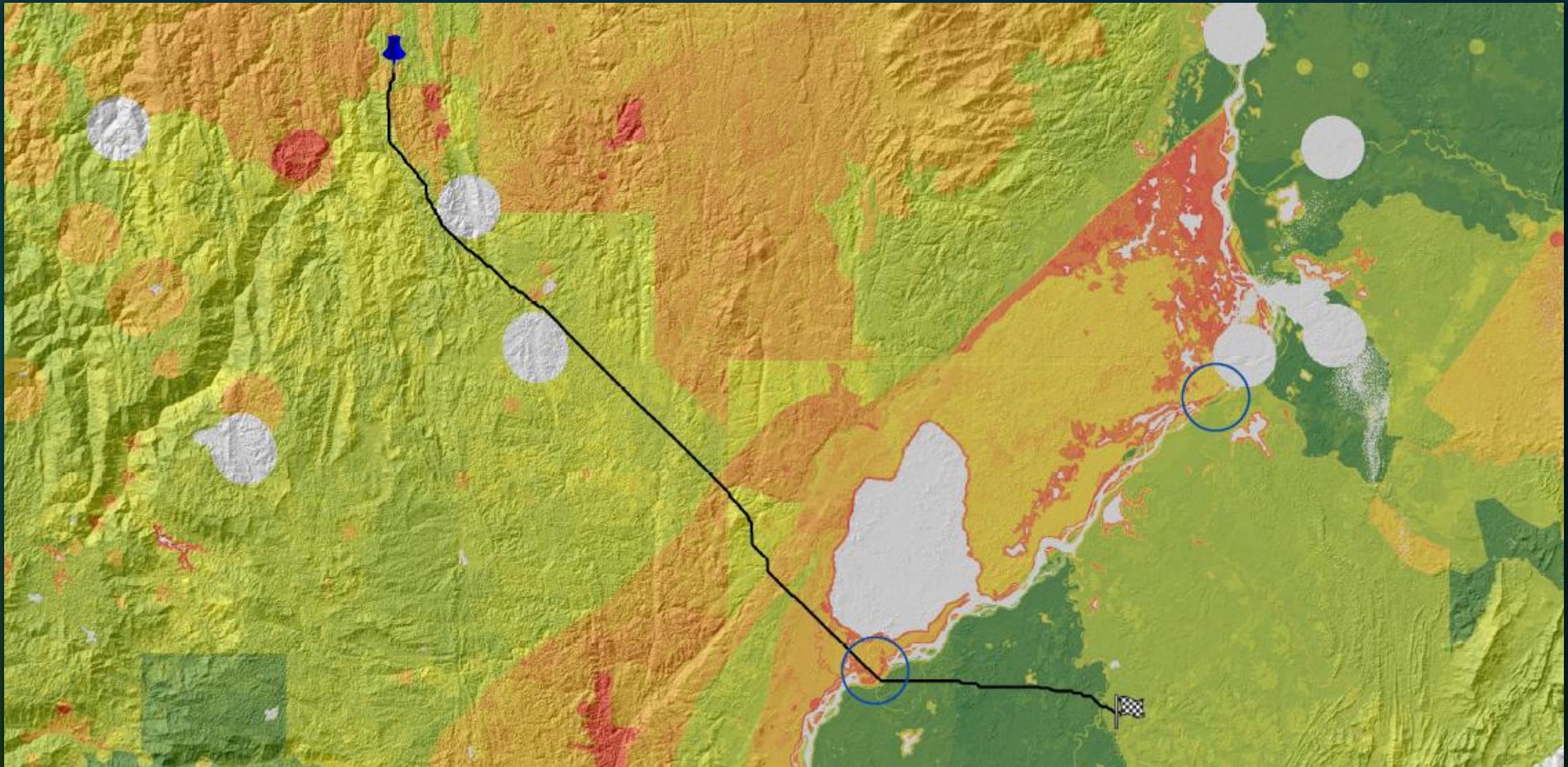


“Minimum Spanning Tree”



<http://www.arcgis.com/home/item.html?id=6ce9db93533345e49350d30a07fc913a>

Haciendo análisis espacial con la facilidad de cambiar parámetros



Manejar la base de datos centralizada

Contenido DLLO PRUE 101.xlsx - Excel

XANDER BAKKER

A	B	C	D	E	F	G	H
1	Base de d FeatureClass	Dataset	Numero d 976	Tipo de ge Point	Sistema de Coorden GCS_MAGNA (4686)	Campos vs Dominios	FC Extent
35	DLLO 10.1	GENESIS.PROY_Lyr_Sitio_Int	GENESIS.PROY_CATASTRO	285	GCS_MAGNA (4686)		XMin: -77.875722932, YMin: 4.666236196, XMax: -71.459980515, YMax: 12.429419302
133	DLLO 10.1	GENESIS.PROY_Lyr_IMG_Proyectos	GENESIS.PROY_INFORMACION_PROYE	908	GCS_MAGNA (4686)		XMin: -115.005665348, YMin: 1.67583879, XMax: -18.152817944, YMax: 68.091646405
186	DLLO 10.1	GENESIS.PROY_Lyr_Invasiones	GENESIS.PROY_INVASIONES	956	GCS_MAGNA (4686)	T_AC_IMP:Dom_Tipo_Acta	XMin: -75.954696035, YMin: 6.174166, XMax: -75.337169, YMax: 7.185979249
214	DLLO 10.1	GENESIS.PuntoMuestreo_ICA	GENESIS.PROY_ABiotico	44	GCS_MAGNA (4686)		XMin: -75.924794263, YMin: 6.228406508, XMax: -74.448504064, YMax: 8.893718654
382	DLLO 10.1	GENESIS.TEMP_Lyr_Linderos	GENESIS.PROY_ALINDERAMIENTO	26	Polygon		XMin: -75.924794263, YMin: 4.574365211, XMax: -74.053612786, YMax: 7.249159414
383	DLLO 10.1	GENESIS.Lyr_Segmentos	GENESIS.PROY_ALINDERAMIENTO	223	Point		XMin: -75.924794263, YMin: 6.242852829, XMax: -74.896079743, YMax: 7.249159414
384	DLLO 10.1	GENESIS.Lyr_Linderos	GENESIS.PROY_ALINDERAMIENTO	98	Polygon		XMin: -75.924794263, YMin: 4.596200417, XMax: -74.077507917, YMax: 7.068675418
396	DLLO 10.1	GENESIS.VW_FM_INV_GS_LINFRAEST_V		9	Polygon		XMin: -77.126132879, YMin: 5.418364906, XMax: -73.875646958, YMax: 8.88464401
406	DLLO 10.1	GENESIS.VW_INV_MUN_CAMBUCHES		282	Polygon		XMin: -76.380925391, YMin: 6.394439461, XMax: -75.437157905, YMax: 7.417057721
407	DLLO 10.1	GENESIS.VW_FM_INV_GS_LPRODUCTIVA_V		259	Polygon		XMin: -77.126132879, YMin: 5.418364906, XMax: -73.875646958, YMax: 8.88464401
416	DLLO 10.1	GENESIS.VW_FM_INV_GS_LMEJAMBIENTAL_V		405	Point		XMin: -77.126132879, YMin: 5.418364906, XMax: -73.875646958, YMax: 8.88464401
417	DLLO 10.1	GENESIS.VW_INVASIONES_PROY		15	Polygon		XMin: -75.872403363, YMin: 6.644407248, XMax: -75.659320715, YMax: 7.137451615
422	DLLO 10.1	GENESIS.VW_FM_INV_GS_COMUNITARIO_M		5	Polygon		XMin: -75.727446343, YMin: 5.989452395, XMax: -74.496566697, YMax: 6.97106826
428	DLLO 10.1	GENESIS.VW_INV_VER_CAMBUCHES		5	Polygon		XMin: -75.688148882, YMin: 7.056252938, XMax: -75.607139313, YMax: 7.145716088
441	DLLO 10.1	GENESIS.VW_INV_VER_PERSONAS		0	Polygon		XMin: -75.688148882, YMin: 7.056252938, XMax: -75.607139313, YMax: 7.145716088
445	DLLO 10.1	GENESIS.VW_FM_INV_GS_INSTITUCIONAL_V		9	Polygon		XMin: -77.126132879, YMin: 5.418364906, XMax: -73.875646958, YMax: 8.88464401
446	DLLO 10.1	GENESIS.VW_INV_MUN_PERSONAS		211	Polygon		XMin: -76.380925391, YMin: 6.394439461, XMax: -75.437157905, YMax: 7.417057721
457	DLLO 10.1	GENESIS.VW_FM_INV_GS_COMUNITARIO_V		497	Point		XMin: -77.126132879, YMin: 5.418364906, XMax: -73.875646958, YMax: 8.88464401
466	DLLO 10.1	GENESIS.VW_INV_DESALOJOS					XMin: nan, YMin: nan, XMax: nan, YMax: nan



Manejar la base de datos centralizada

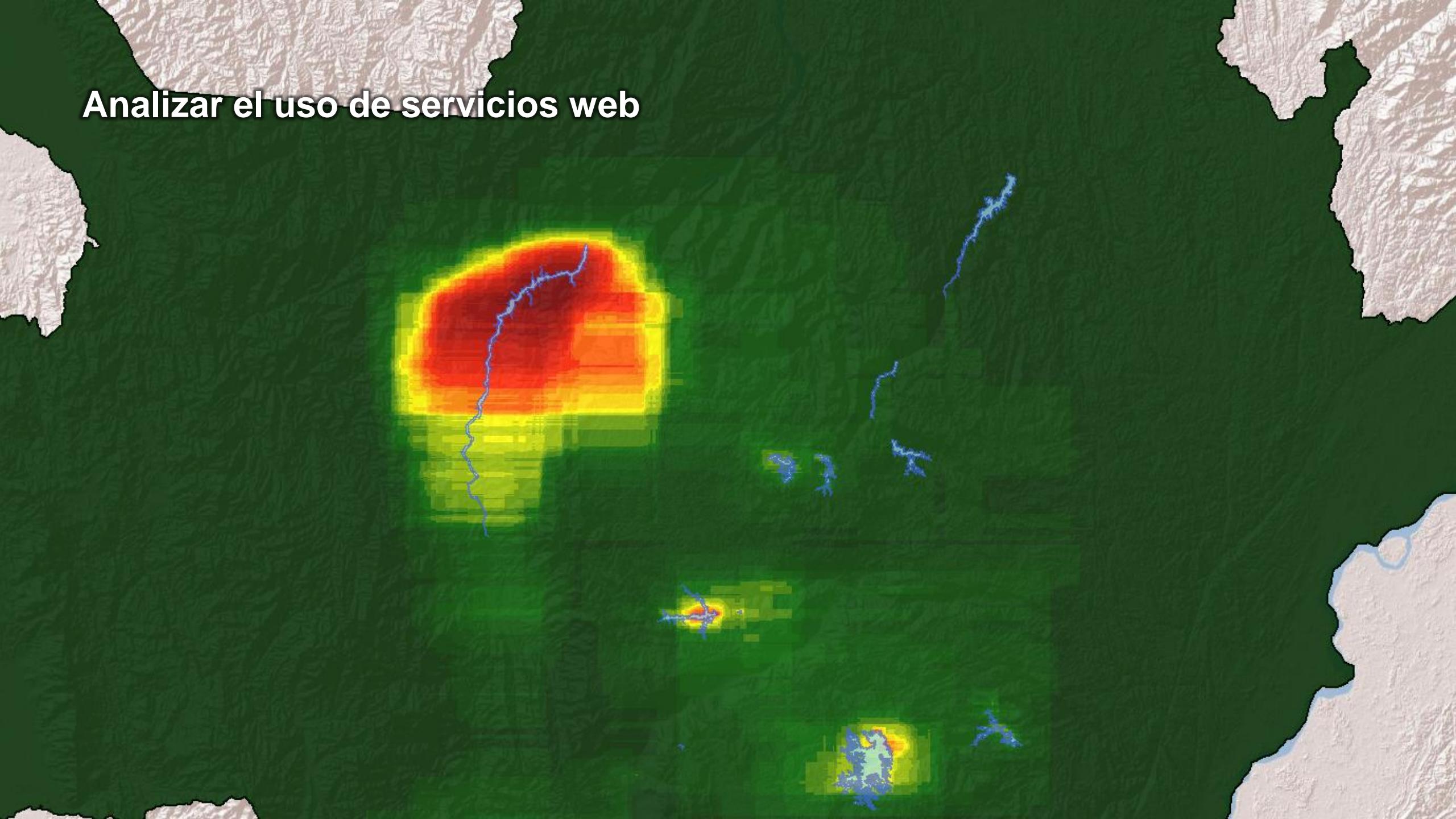
```
lst_amb = ["DLLO 9.x", "TEST 9.x", "PROD 9.x", "DLLO 10.x", "TEST 10.x", "PROD 10.x"]

dct_conn = {"DLLO 9.x":r"C:\Users\xbakker\AppData\Roaming\ESRI\Desktop10.3\ArcCatalog\DLLO 9.x.sde",
            "TEST 9.x": r"C:\Users\xbakker\AppData\Roaming\ESRI\Desktop10.3\ArcCatalog\TEST 9.x.sde",
            "PROD 9.x": r"C:\Users\xbakker\AppData\Roaming\ESRI\Desktop10.3\ArcCatalog\PROD 9.x.sde",
            "DLLO 10.x": r"C:\Users\xbakker\AppData\Roaming\ESRI\Desktop10.3\ArcCatalog\DLLO 10.x.sde",
            "TEST 10.x": r"C:\Users\xbakker\AppData\Roaming\ESRI\Desktop10.3\ArcCatalog\TEST 10.x.sde",
            "PROD 10.x": r"C:\Users\xbakker\AppData\Roaming\ESRI\Desktop10.3\ArcCatalog\PROD 10.x.sde"}

for amb in lst_amb:
    arcpy.env.workspace = dct_conn[amb]
    lst_ds = arcpy.ListDatasets()
    lst_ds.append("")
    for ds in lst_ds:
        lst_fc = arcpy.ListFeatureClasses(feature_dataset=ds)
        for fc in lst_fc:
            desc = arcpy.Describe(fc)
            feats = int(arcpy.GetCount_management(fc).getOutput(0))
            fc_geom = desc.shapeType
            sr_name = desc.spatialReference.name
            ...
```



Analizar el uso de servicios web



Analizar el uso de servicios web

Analizar el uso de servicios web

```
dct_geom = {}
dct_oid = {}
cnt = 0
with arcpy.da.SearchCursor(fc_in, ("SHAPE@JSON", "OID@")) as curs:
    for row in curs:
        cnt += 1
        if cnt % 10000 == 0:
            print "Leyendo feature: {}".format(cnt)
        txt_json = str(row[0])
        oid = row[1]
        if txt_json in dct_geom:
            dct_geom[txt_json] += 1
        else:
            dct_geom[txt_json] = 1
            dct_oid[txt_json] = oid
```

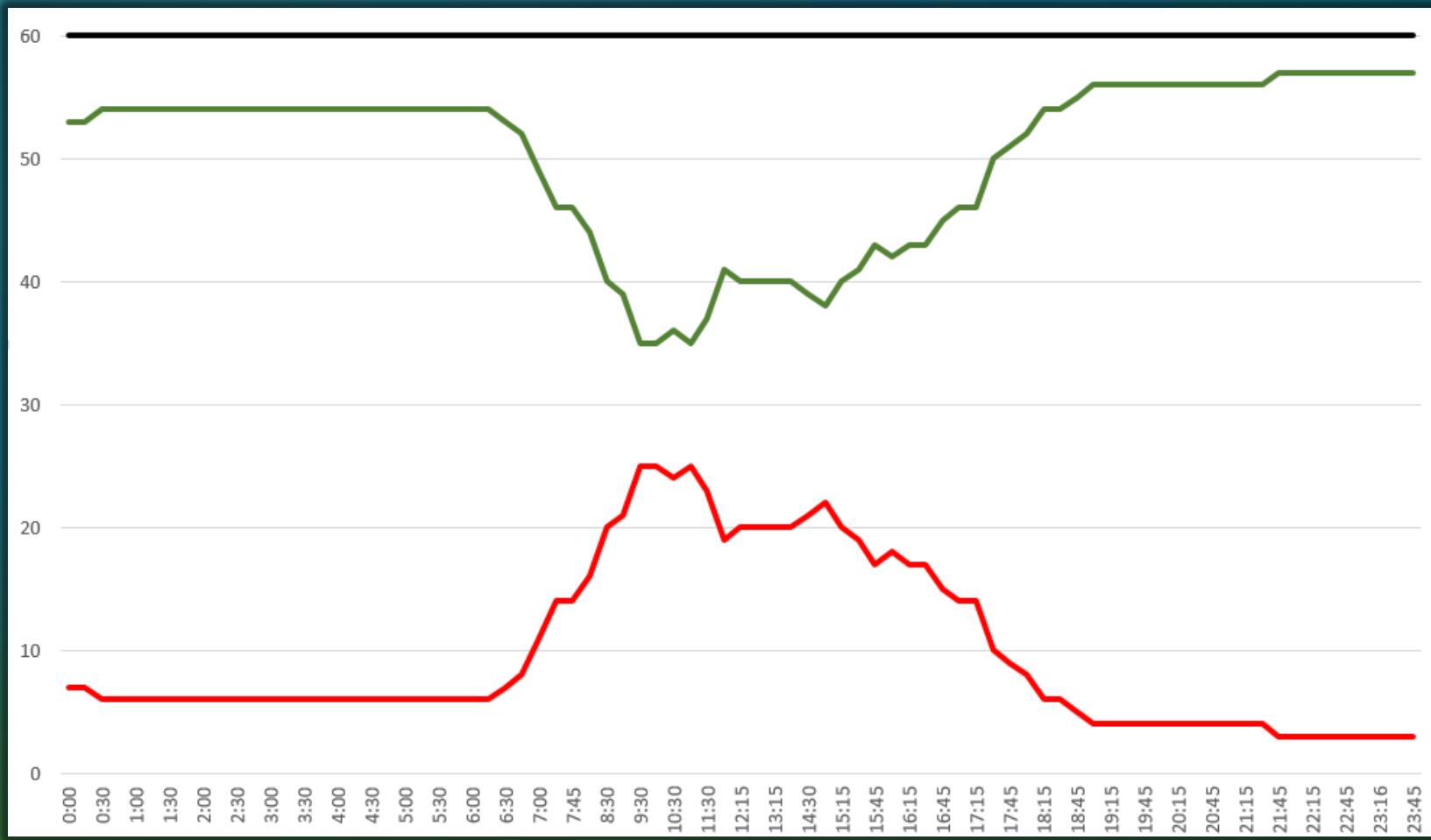
Analizar el uso de servicios web

```
# create output fc
path, name = os.path.split(fc_out)
arcpy.CreateFeatureclass_management(path, name, "POLYGON", fc_in, "DISABLED", "DISABLED", sr)
arcpy.AddField_management(fc_out, fldname, "LONG")

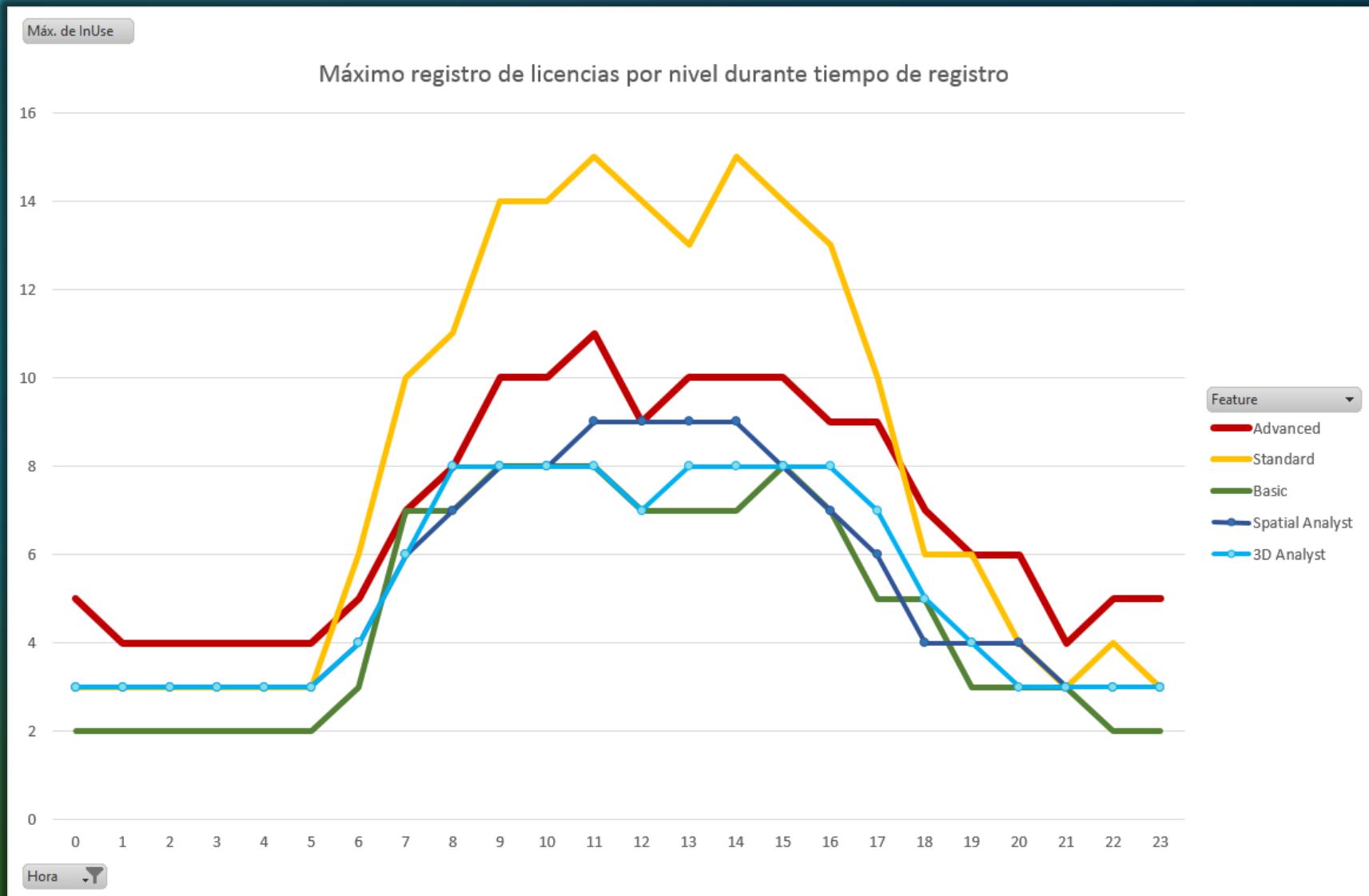
with arcpy.da.InsertCursor(fc_out, ("SHAPE@", fldname)) as curs:
    cnt = 0
    for txt_json, hits in dct_geom.items():
        cnt += 1
        if cnt % 250 == 0:
            print "Processing feature: {}".format(cnt)

        where = "OBJECTID = {}".format(dct_oid[txt_json])
        polygon = arcpy.da.SearchCursor(fc_in, ("SHAPE@",), where).next()[0]
        curs.insertRow((polygon, hits,))
```

Monitorear el uso de las licencias de ArcGIS



Monitorear el uso de las licencias de ArcGIS



Monitorear el uso de las licencias de ArcGIS

Máx. de InUse

Máximo registro de licencias por nivel durante tiempo de registro

```
16

lmparams='lmstat -f %s -c %i@%s' % (feature, port, server)
stdin,stdout,stderr = os.popen3(lmexe + ' ' + lmparams)
stdout = stdout.read()
stderr = stderr.read()

pattern = re.compile(r'Total of \d+ license[s]* avail', re.IGNORECASE)
avail = re.findall(pattern,stdout)

if not avail:
    pattern = re.compile(r'Total of \d+ license[s]* issued', re.IGNORECASE)
    avail = re.findall(pattern,stdout)
if not avail:
    raise Exception, '='*10+'\nSTDOUT:'+'\n'+stdout+'='*10+'\nSTDERR:'+'\n'+stderr

avail = int(avail[0].split(' ')[2])
```

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23

Hora

Como empezar?

Aprender Python y ArcPy



<http://blogs.esri.com/esri/supportcenter/2014/03/26/8-easy-ways-learning-python-arcpy/>

<http://learnpythonthehardway.org/>

<http://www.greenteapress.com/thinkpython/>

<https://www.coursera.org/course/pythonlearn>

<http://www.codecademy.com/>

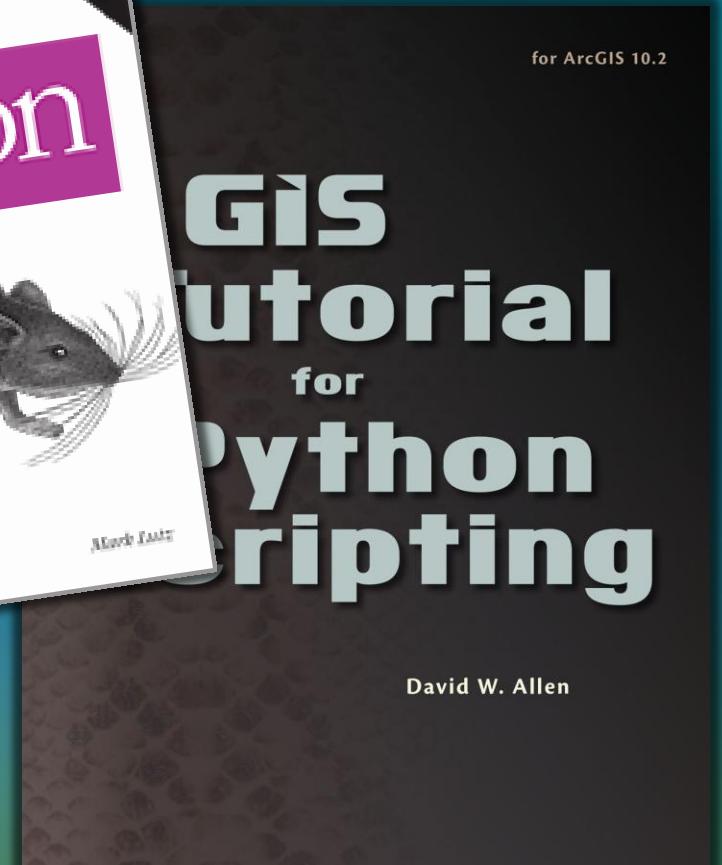
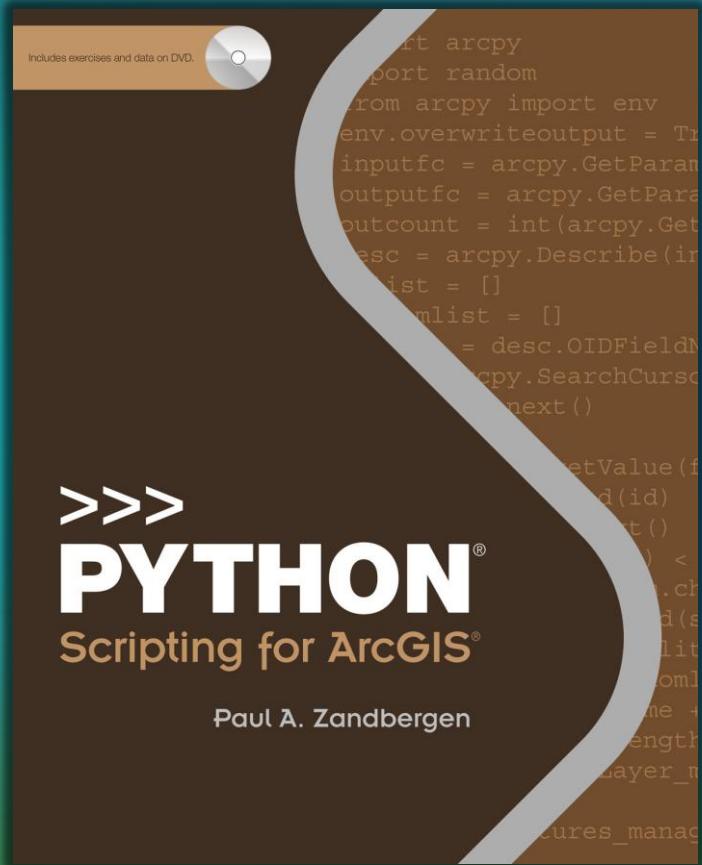


<http://www.cursosdeprogramacionadistancia.com/static/pdf/material-sin-personalizar-python.pdf>

<http://training.esri.com/gateway/index.cfm?fa=search.results&searchterm=python>



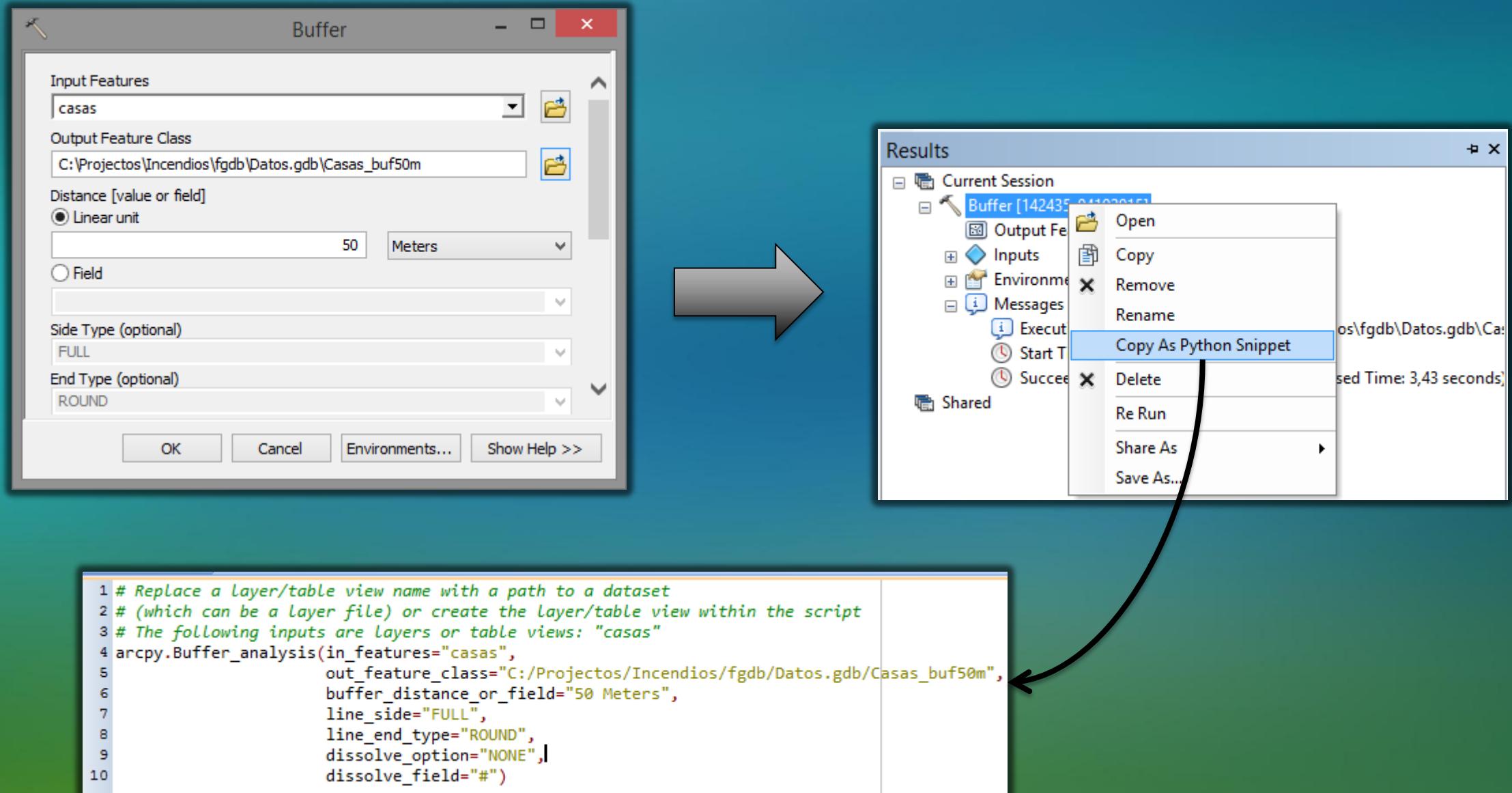
Libros de Python y ArcPy



<http://esripress.esri.com/display/index.cfm>

<http://training.fws.gov/courses/references/tutorials/geospatial/CSP7305/Programming%20Cookbook.pdf>

Ventana de resultados



Ventana de Python



ArcGIS for Desktop

Python

```
>>> arcpy.Buffer_analysis(  
    "casas"  
    "lineas de conexión"  
    "polígonos de incendios")
```

Buffer_analysis(in_features,
out_feature_class,
buffer_distance_or_field,
{line_side}, {line_end_type},
{dissolve_option},
{dissolve_field};dissolve_field...)
Creates buffer polygons around input
features to a specified distance.

INPUTS:
in features (Feature Layer):

ArcGIS Pro

Python

```
arcpy.analysis.Buffer('Countries', "#", "55 miles", )
```

Buffer_analysis(in_features, out_feature_class,
buffer_distance_or_field, {line_side}, {line_end_type},
{dissolve_option}, {dissolve_field};dissolve_field..., {method})

Full
Left
Right
Exclude the input polygon from buffer

IDE - Entorno de desarrollo integrado

<http://blogs.esri.com/esri/arcgis/2013/06/24/choosing-the-right-python-integrated-development-environment/>

<https://geonet.esri.com/polls/1153>

Recursos de ayuda

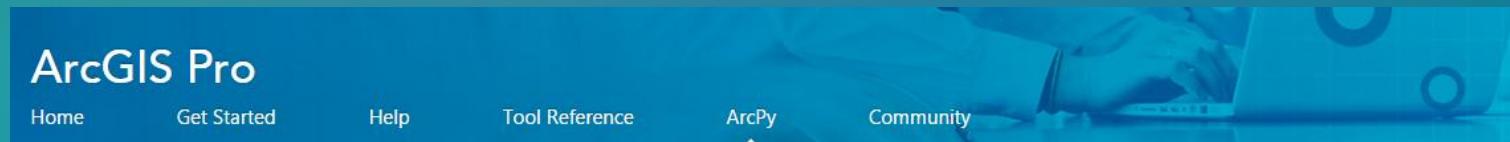
Ayuda en línea



ArcGIS for Desktop 10.3

Home Get Started Map Analyze Manage Data Tools More...

<http://desktop.arcgis.com/en/desktop/latest/analyze/arcpy/what-is-arcpy-.htm>



ArcGIS Pro

Home Get Started Help Tool Reference ArcPy Community

<http://pro.arcgis.com/en/pro-app/arcpy/main/arcgis-pro-arcpy-reference.htm>



ArcGIS Resources

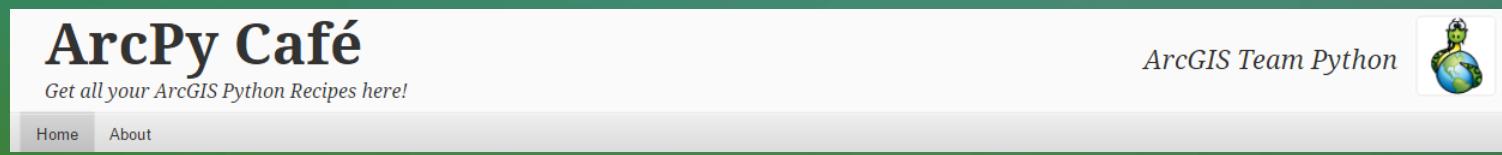
ArcGIS Online Cerrar sesión Español ▾

Inicio Comunidades Ayuda Blog Foros Vídeos

Search ArcGIS Help

Ayuda de ArcGIS (10.2, 10.2.1 y 10.2.2)

http://resources.arcgis.com/en/help/main/10.2/index.html#/What_is_ArcPy/000v000000v700000/



ArcPy Café

Get all your ArcGIS Python Recipes here!

ArcGIS Team Python

<https://arcpy.wordpress.com/>

<https://esri.github.io/#Python>

Esri is on GitHub!

We're excited about helping developers build and share software. Browse our open source code and get started with our powerful ArcGIS platform today.

[BROWSE ON GITHUB](#)

Need an ArcGIS subscription? Start developing today for free.

Filter by language or keyword:

gis-tools-for-hadoop
Python

The GIS Tools for Hadoop are a collection of GIS tools for spatial analysis of big data.

482 ⭐ 143

ago-admin-wiki
Python

A collection of code samples, scripts, hacks, tools, and information for ArcGIS Online administrators.

410 ⭐ 60

arcrest
Python

python package for REST API (AGS, AGOL, webmap JSON, etc..)

431 ⭐ 39

geoprocessing-tools-for-hadoop
Python

The Hadoop GP Toolbox provides tools to exchange features between a Geodatabase and Hadoop and run Hadoop workflow jobs.

424 ⭐ 38

ago-tools
Python

A Python package to assist with administering ArcGIS Online Organizations.

458 ⭐ 28

dojo-theme-flat
Python

Custom flat theme based on Twitter's Bootstrap for Dojo dijits, dgrid, and esri widgets.

410 ⭐ 28

Search ArcScripts (BETA)

SEARCH



Search

Language

Software Product

Result Type

Items Per Page

SEARCH

Item Type

Product Name

Language

Title

Tags

Summary

File Ning...nado

UPLOAD

Title	Software	Language	Author	Modified ▾	Result Type
Scientific Data Workflows		Python	RasterDevTeam	March 30, 2015	Code Sample
Esri PYTH course code samples		Python	tps	March 28, 2015	Code Sample
Activity Log MapViewer		qml, Qml	RneelGH	March 23, 2015	Code Sample
ALFlib v1.11.0		Python	Esri_Technical_Marketing	March 18, 2015	Code Sample
ALFprocessor v1.4.0		Python	Esri_Technical_Marketing	March 18, 2015	Code Sample
MapBooksInPro_Pro1.0_v1	ArcGIS Pro	Python	MapAutomationTeam	March 9, 2015	Code Sample

GeoNet

The Esri Community



Home

Content

People

Places

Map



Search



All Places > Developers > GIS Developers

Python

Overview

Content

People

Subspaces and Projects

More

Actions

About

Manage

ACTIONS

- Start a discussion
- Upload a file
- Write a document
- Write a blog post
- Create a poll
- Create an event
- Create a video



0

VIEW THE BLOG

Python

All Content (7015)

Filter by action:

None

Filter by shared content

▼

▼

Sort by latest activity: newest first

▼

1

2

◀

▶

How to use where clause with
NumPyArray to Feature?

Geoffrey West

April 7, 2015 1:16:21 PM

28

0

0

1

▼

Problem with select analysis + copy
rows in loop

KON. PETROV

April 7, 2015 1:10:45 PM

257

21

0

28

▼

Create a script tool that uses
multiprocessing

Duncan Homby

April 7, 2015 10:36:23 AM

186

2

2

2

▼

How to access map service layer in
Python toolbox?

Rami Ghaly

April 7, 2015 9:58:28 AM

35

0

0

2

▼

How often should I use Python to
better understand it?

Gloria Tshokama

April 7, 2015 9:55:12 AM

57

1

0

3

▼

CreateEnterpriseGeodatabase pass
encrypted DBA password

Oleg Kachirski

April 7, 2015 8:44:36 AM

38

0

0

2

▼

Create

Use large menu

CONTENT

Discussion

Uploaded File

Document

Blog Post

Poll

Status Update

Message

Event

Video

PLACES

Project

[Home](#)[Content](#)[People](#)[Places](#)[Map](#)

Tienen una cuenta en GeoNet?

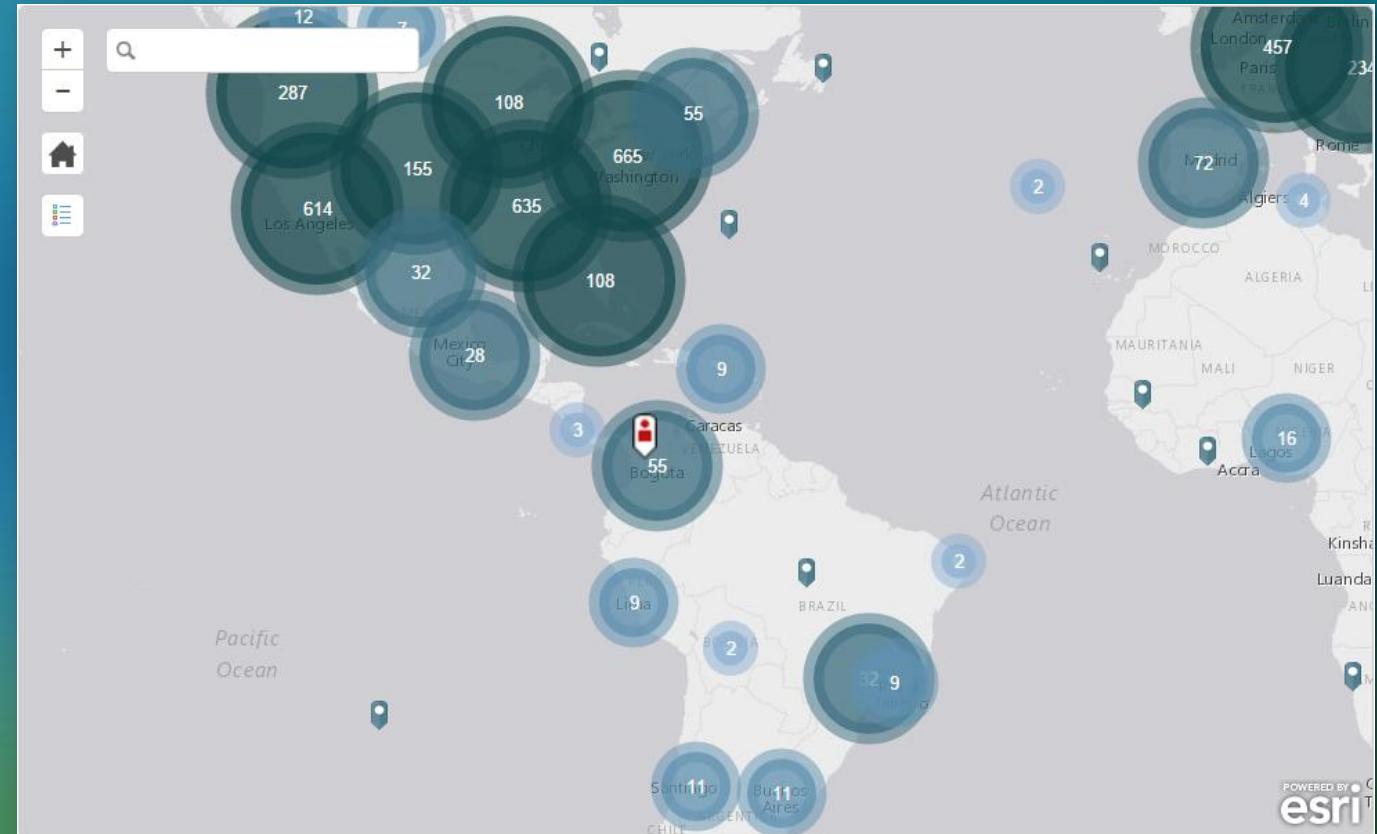




- > 100.000 usuarios registrados
- ~ 20.000 usuarios activos (últimos 30 días)
- > 23.000 ítems de contenido

Lugares más visitados (últimos 30 días)

- 1) *GIS* – (715.000)
- 2) *ArcGIS API for JavaScript* (465.000)
- 3) *Managing Data* – (430.000)
- 4) *Python* – (400.000)



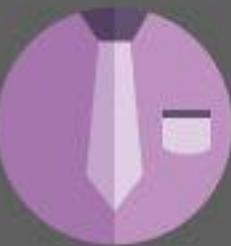
GeoNet Contest

2015 Semi-Annual Contest
February 1st - June 30th

LEADERBOARD

Top 10 My Rank

Rank	User	Points
1st	Robert Scheitl...	51,375 Points
2nd	Dan Patterson	46,159 Points
3rd	Xander Bakker	34,154 Points
4th	Jake Skinner	31,650 Points
5th	Darren Wiens	26,547 Points
6th	Rebecca Stra...	22,295 Points
7th	Jayanta Poddar	21,015 Points
8th	Timothy Hales	18,825 Points



Follow

Join this group

Everyone

1st	Robert Scheitlin, GISP	249,226 Points
2nd	Dan Patterson	126,237 Points
3rd	Jake Skinner	99,981 Points
4th	Xander Bakker	90,137 Points
5th	Ken Buja	62,280 Points
6th	Timothy Hales	56,586 Points
7th	Anthony Giles	54,805 Points

<https://geonet.esri.com/groups/geonet-contest>



All Places > Developers > Python GIS Developers > Python > Documents

Some Python Snippets

Created by Xander Bakker on Jul 23, 2014 10:03 PM. Last modified by Xander Bakker on Dec 29, 2014 4:51 PM.

General snippets

```
Split path and filename
01. filePathName = 'C:/Folder/SubFolder/afile.ext'
02. filePath,fileName=os.path.split(filePathName)
```

Following in 1

Share

Bookmark 52

Like 30

ACTIONS

Edit

Manage versions

```
dct = {r[0]: r[1] for r in arcpy.da.SearchCursor(fc, (fld_oid, fld_valores)) if r[1] > unvalor}
```

```
Check if field exists
01. def FieldExist(tbl, fieldname):
02.     """Check if a field exists, return boolean"""
03.     return bool(arcpy.ListFields(tbl, fieldname))
04.

Formatting leading zero's
01. # format a number to 3 digits (with leading zero's)
02. text = "%03d" % (value,)
03.
```

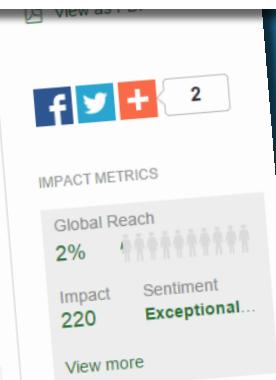
or following the suggestion of [Neil Ayres](#):

```
length = 7
02. value = 123
03. text = "{0:0{1}d}".format(value).zfill(length)
04.
05. # or indicating the number of decimals:
06. length = 10
07. value = 123.4567890
08. decimals = 2
09. text = "{0:0.{1}f}".format(round(value, decimals)).zfill(length)
```

Also have a look at this website: [Python String Format Cookbook | mkaz.com](#) as was suggested by [Anthony Giles](#) in this thread: [What is label expression for formatting a number to have thousands separator and decimals?](#)

Working with dictionaries

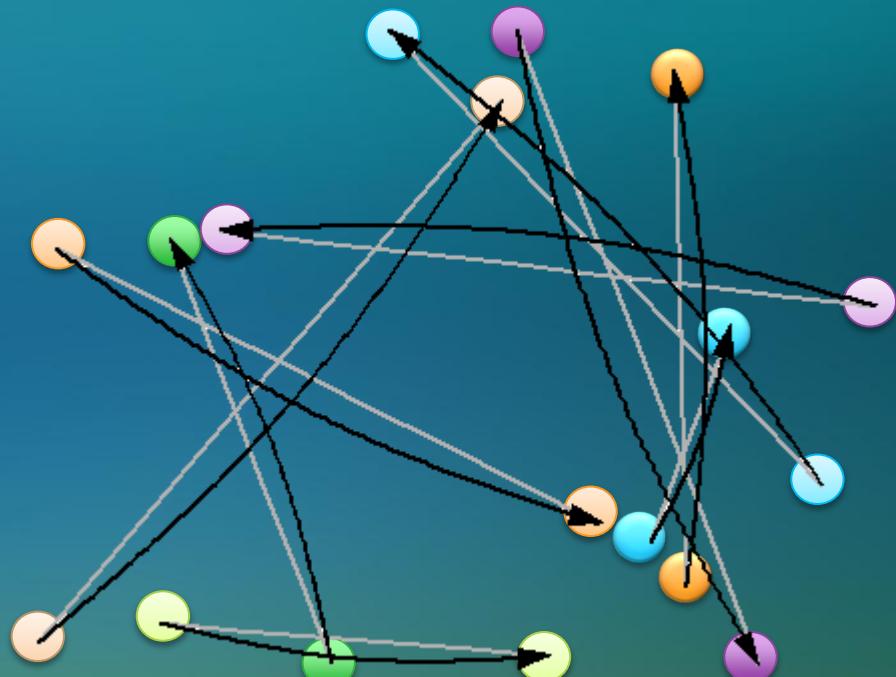
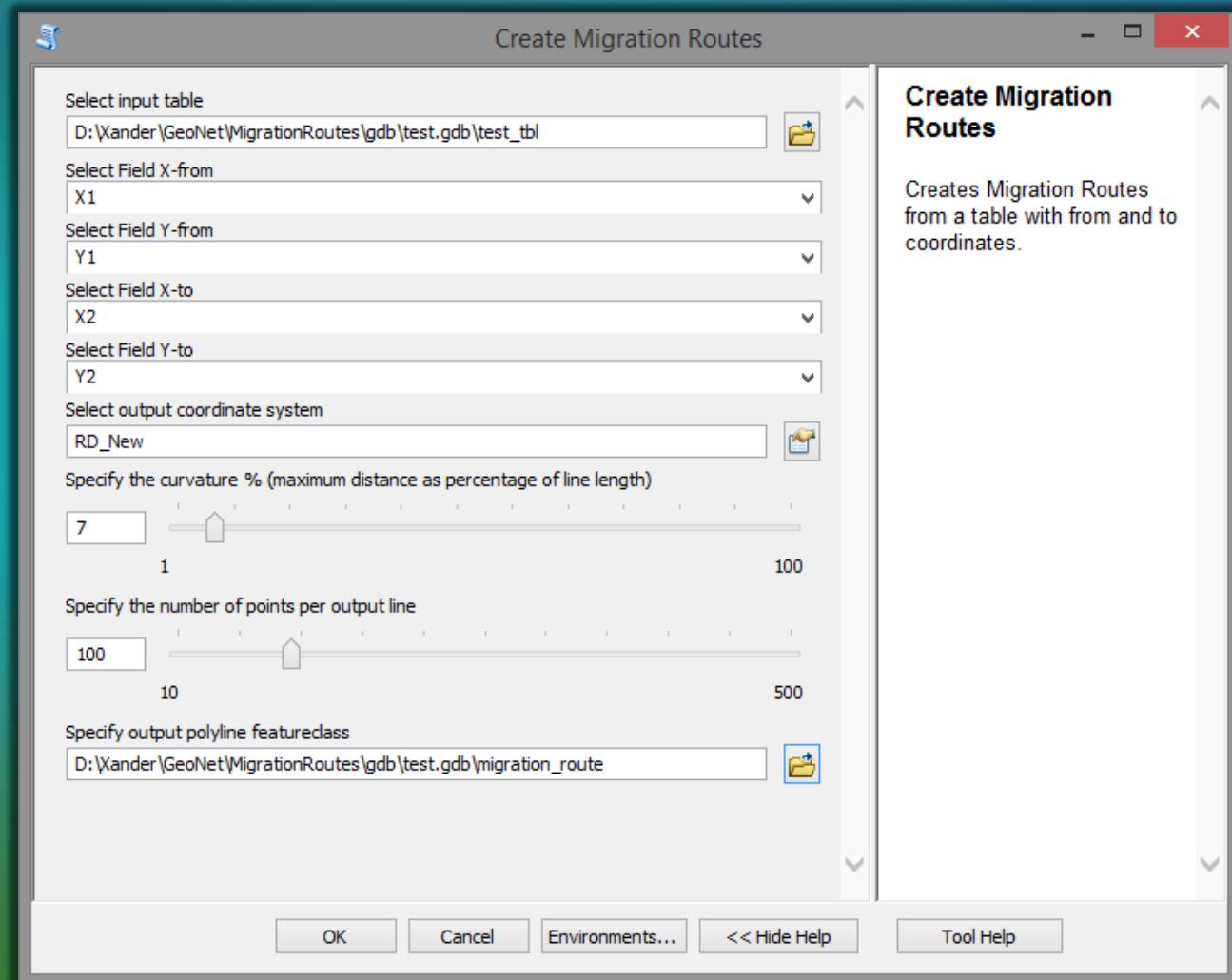
```
01. # Create a dictionary:
02. myDict = dict()
03. myDict = {}
```



MORE LIKE THIS

- Identify Widget Version 1.1.1 - 3/30/2015
- Extract Raster Values using Numpy
- Think Python: How to Think Like a Computer Scientist

Visualizar migración

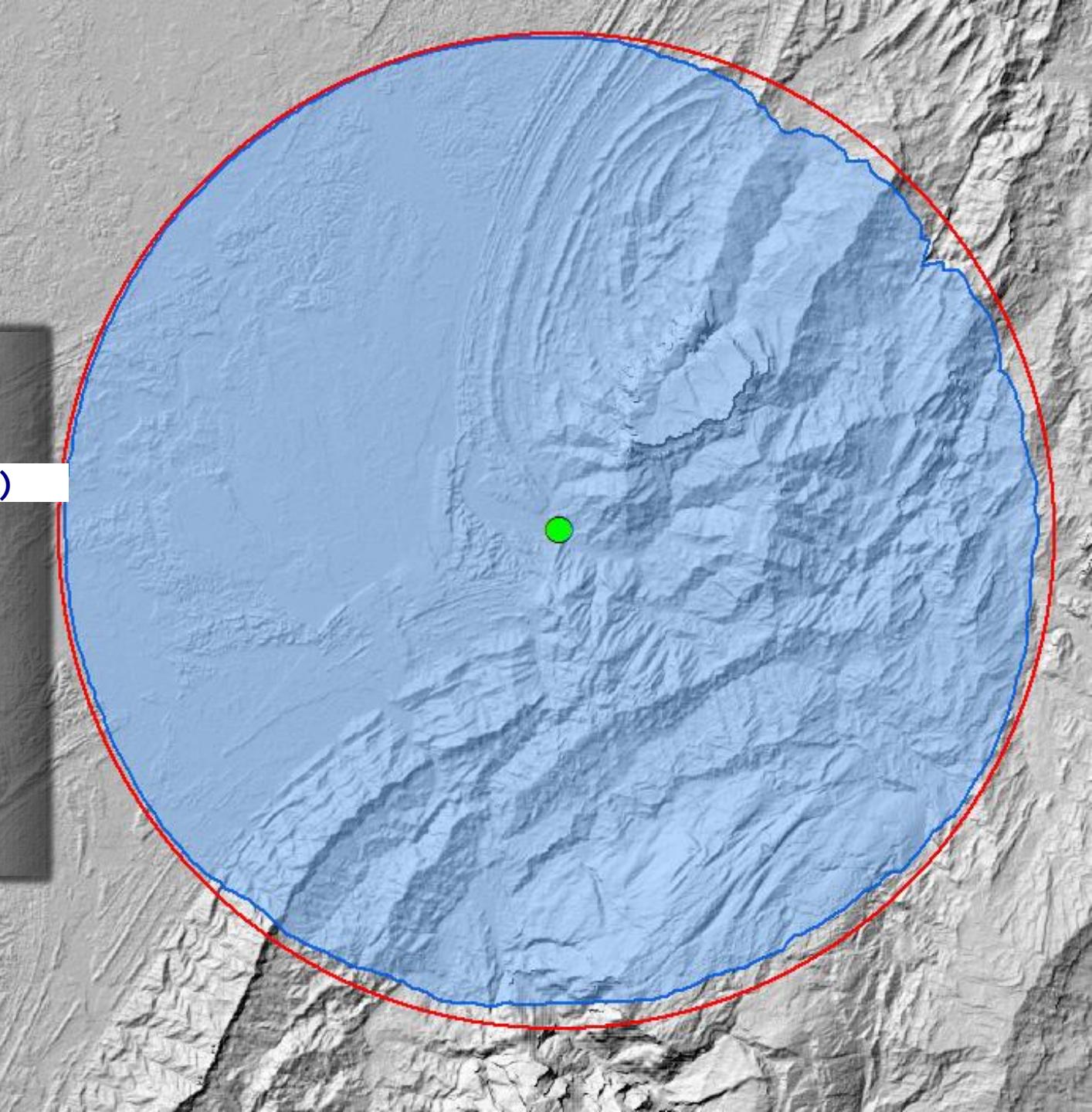


<https://geonet.esri.com/thread/120482>

Calcular un buffer incluyendo superficie

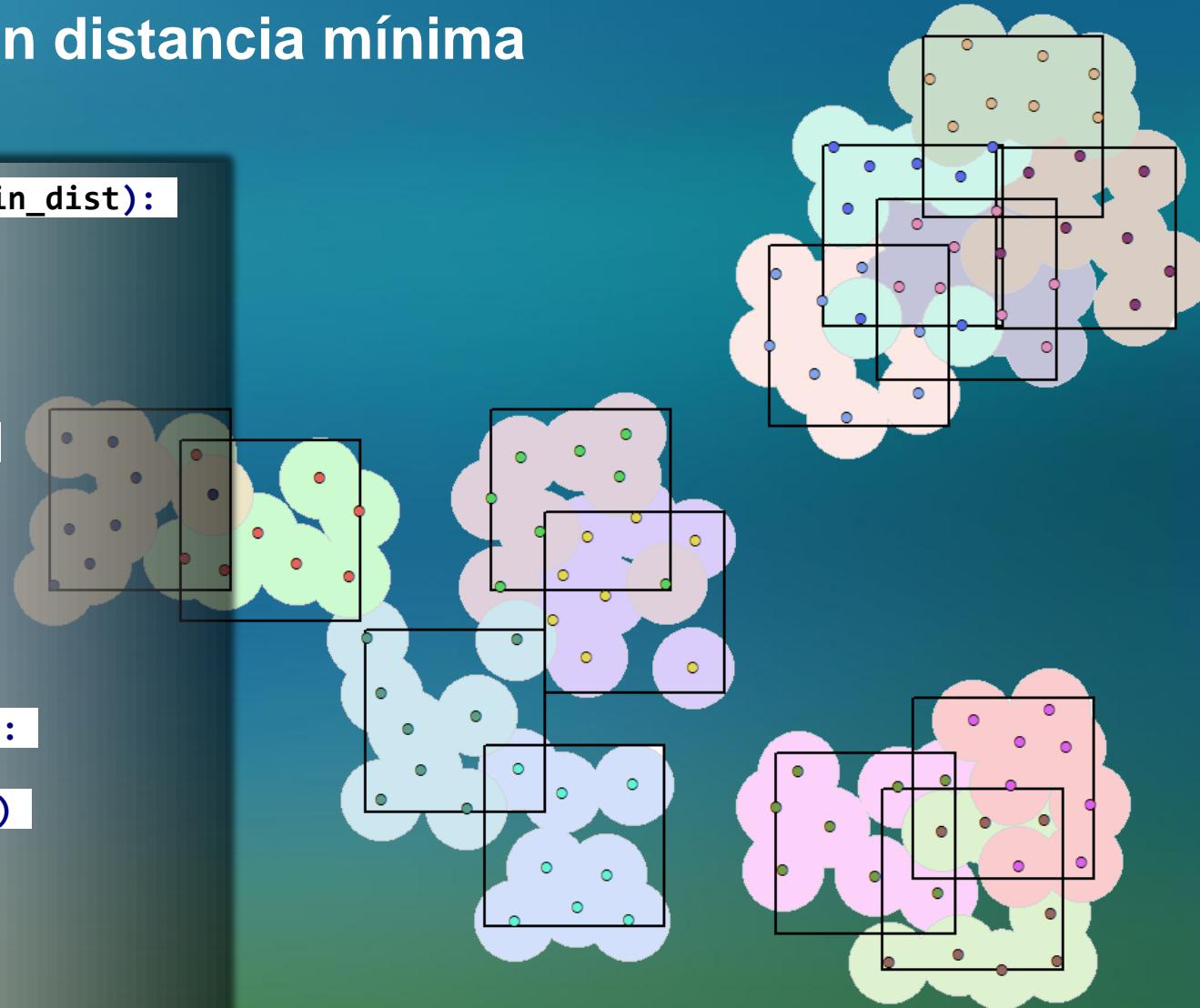
```
...
h1 = lst[2]
h_dif = abs(h1-h0)
dist3D = math.sqrt((h_dif**2) + (pixsize**2))
slope = h_dif * 100.0 / pixsize
distcum += dist3D
lst[3] = slope
lst[4] = distcum
dct_vals[val_id] = lst
h0 = h1
if distcum <= max_dist:
    dct_res[line_id] = val_id
...

```

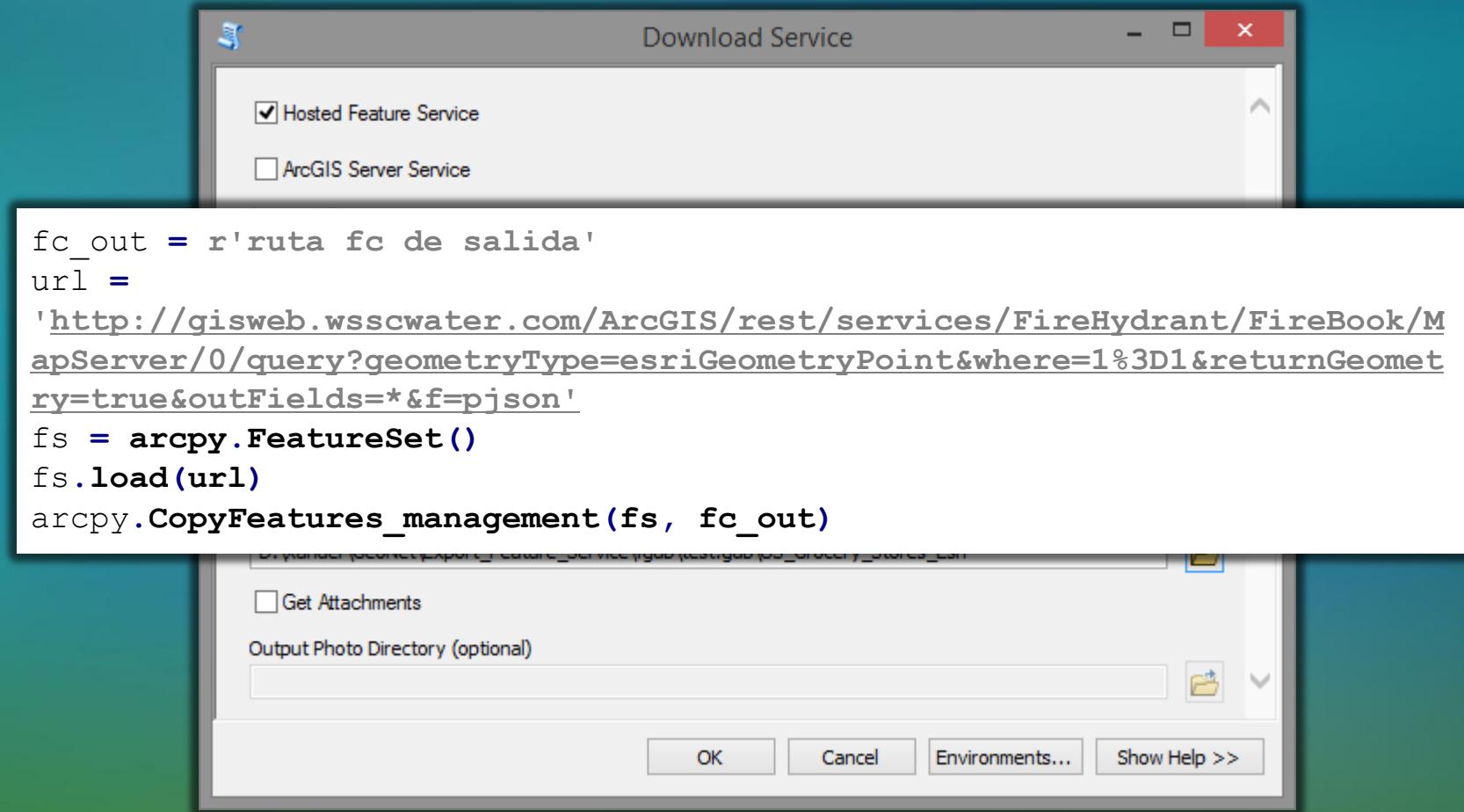


Puntos aleatorios dentro polígono con distancia mínima

```
def add_random_point(in_points, all_points, polygon, min_dist):
    """Randomly disperse points inside a polygon.
    Parameters:
        in_points: list points in current polygon
        all_points: list points in all polygons
        polygon: arcpy.Polygon() geometry
        min_dist: minimum distance between all points
    """
    pnt = get_random_point_inside_polygon(polygon)
    cnt = 0
    bln_ok = True
    chk_points = all_points
    chk_points.extend(in_points)
    while get_min_distance(chk_points, pnt) < min_dist:
        cnt += 1
        pnt = get_random_point_inside_polygon(polygon)
        if cnt > 250:
            bln_ok = False
            break
    if bln_ok:
        in_points.append(pnt)
    return in_points, bln_ok
```

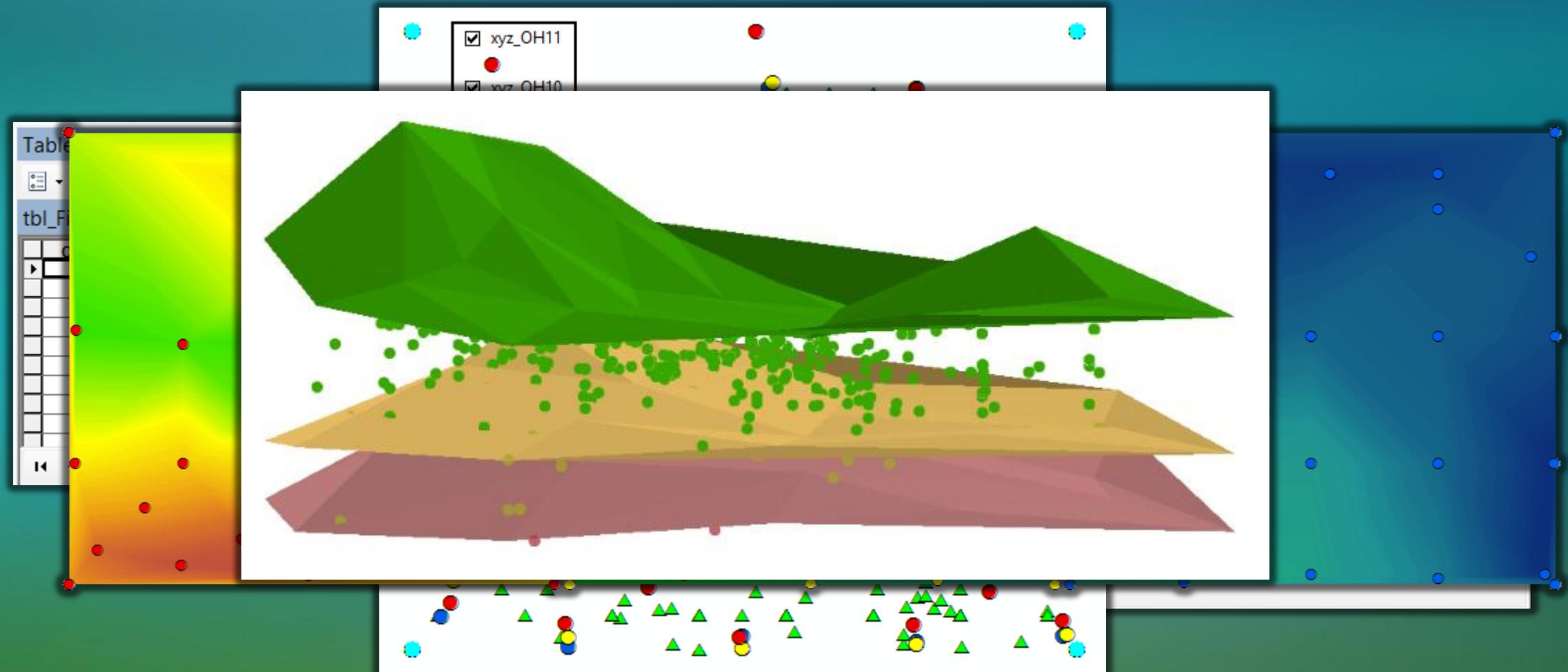


Bajar servicios de ArcGIS for Server usando una consulta REST



<http://epro.maps.arcgis.com/home/item.html?id=16e5cc64178941839eca62837f168ec9>

Asignar la capa de (sub)suelo a elementos arqueológicos



https://geonet.esri.com/people/xander_bakker/blog/2015/02/24/modeling-archaeological-layers



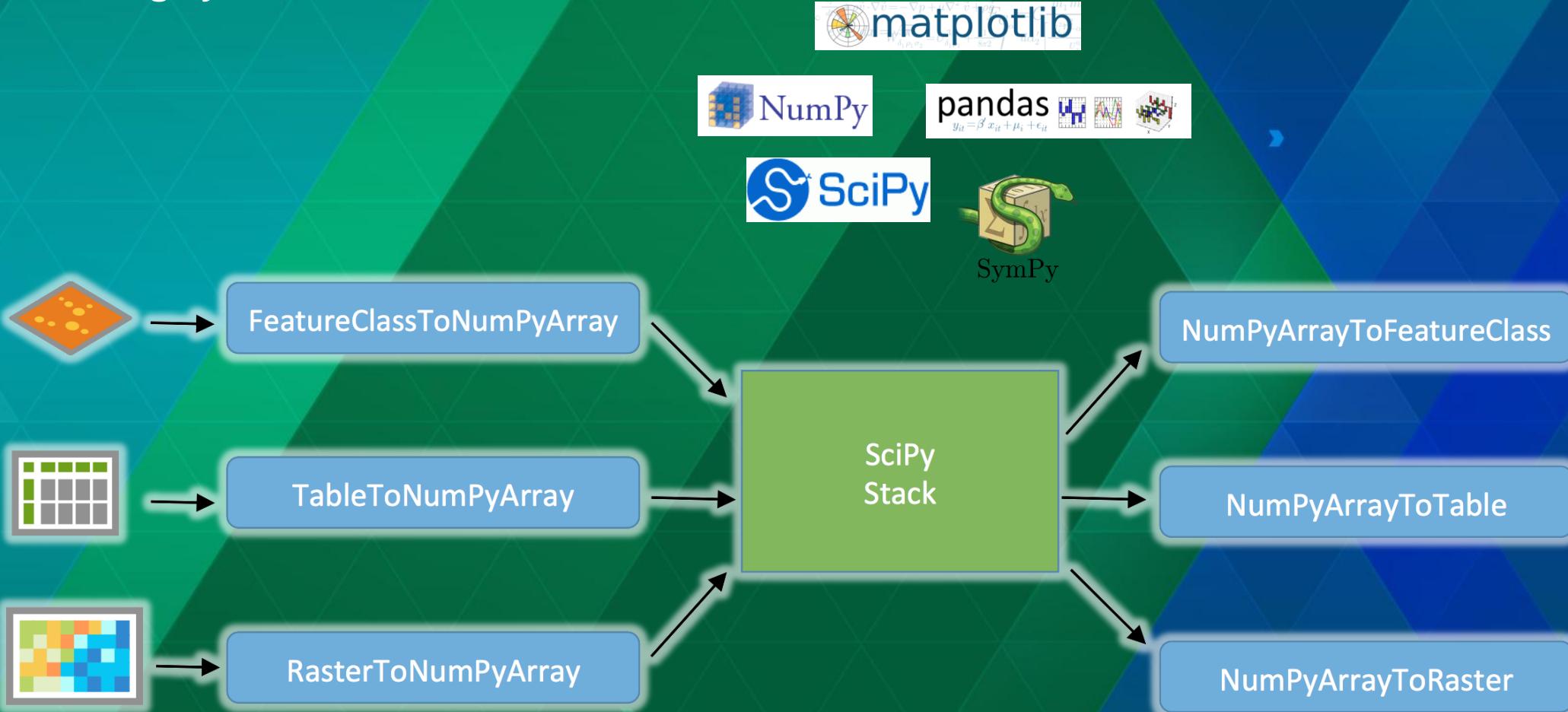
Presentaciones DevSummit



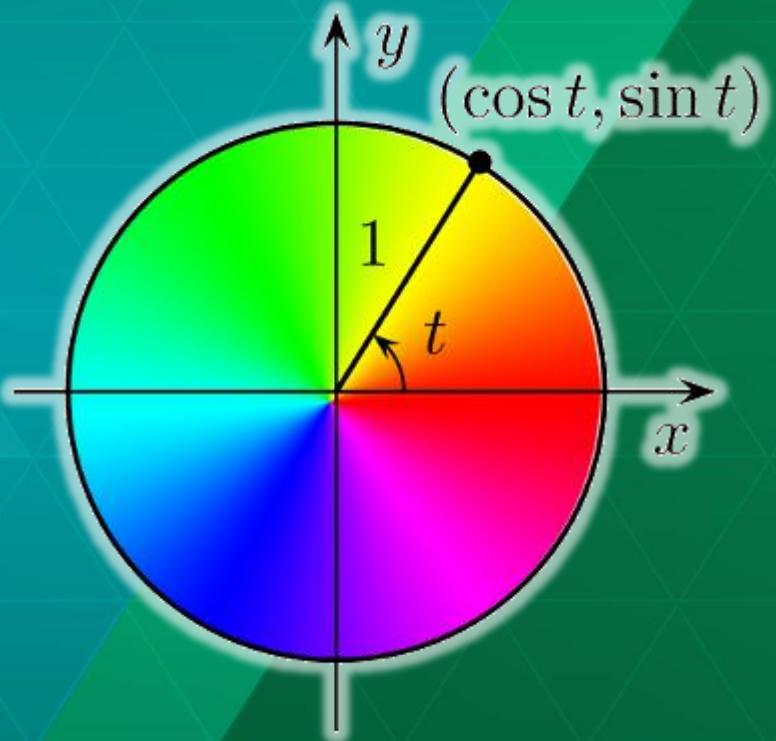
<http://video.esri.com/series/227/2015-esri-developer-summit-tech-sessions>

Python: Trabajar con Datos Científicos

Shaun Walbridge y Kevin Butler

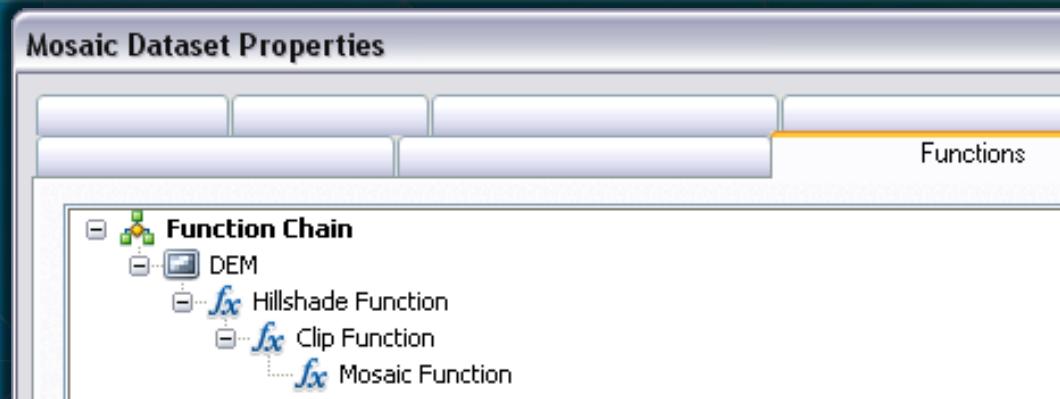


Ejemplo de SciPy



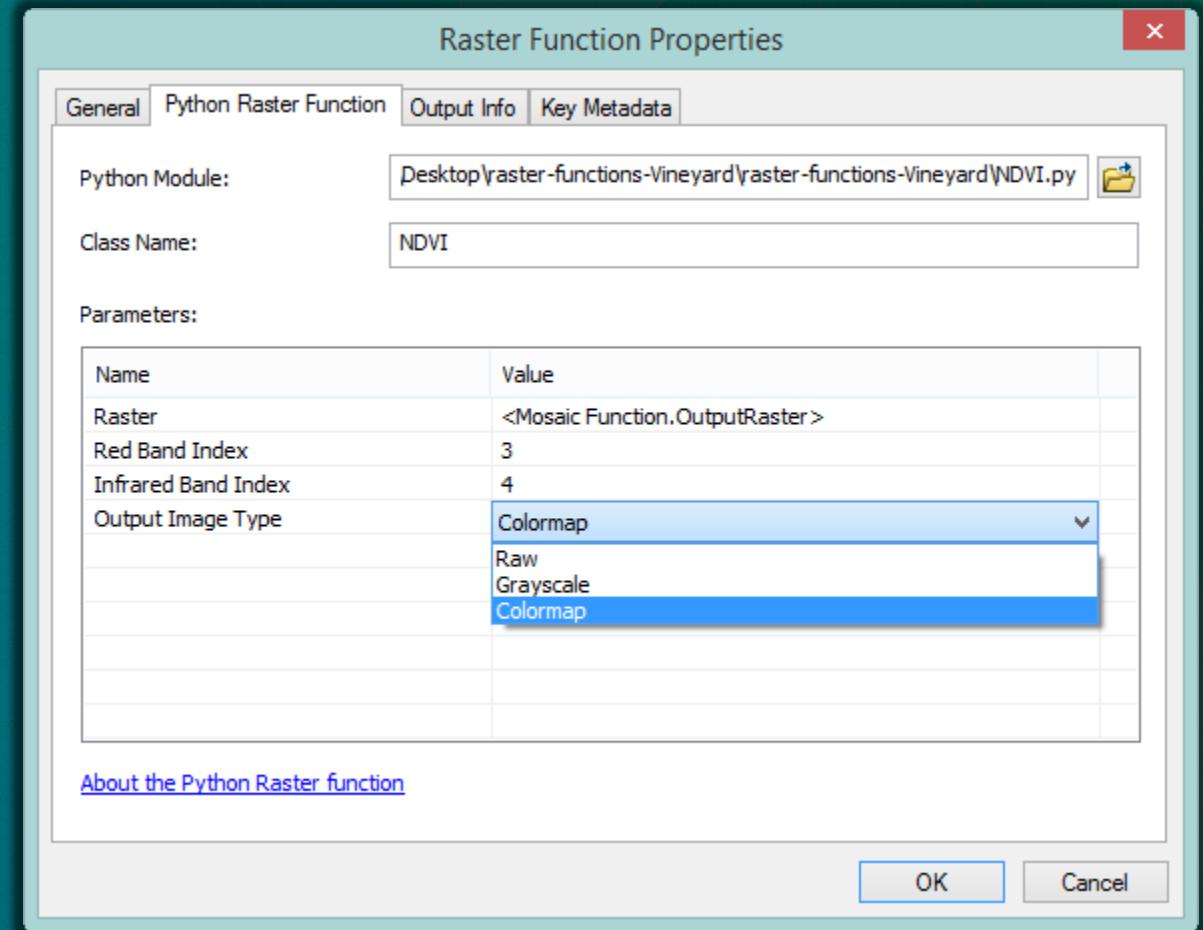
```
import scipy.stats.moresstats  
  
ras = "data/aspect_raster.tif"  
r = arcpy.RasterToArray(ras)  
  
moresstats.circmean(r)  
moresstats.circstd(r)  
moresstats.circvar(r)
```

Python Raster Functions



Aplicar funciones raster sobre la marcha en memoria.

*Hay más de 50 funciones estándar
(pendientes, aspectos, clip, modelo de sombras, ...)*



Preguntas?





esri Colombia