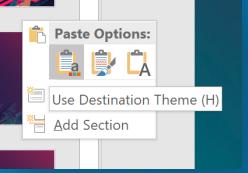


How to apply this template to existing slides

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2. Copy all relevant slides from previous presentation to this template. Paste using Destination Theme.
3. Going slide by slide, copy the Standard Background image of your choice.
4. Paste and send to back. Windows shortcut: `Ctrl+Shift+[`
5. Delete any remaining pieces left from the old background.
6. For other backgrounds (Title, Section Divider, Demo Intro, and Walkaway) use the provided slides in this template.
7. Check your fonts. The default font is Arial to maintain consistency across the enterprise. If you used Avenir previously, consider switching to Arial to avoid unknown font substitution by other users. [Instructions for changing font themes.](#)

Which background to use?



Title

Standard Background
Suitable for **Less Content**

Standard Background
Suitable for **More Content**

Section Divider

Demo Intro

—
Use behind Images

Walkaway



ArcGIS API For Python

Managing Your Content

Andrew Chapkowski - @achapkowski

David Vitale

ESRI USER CONFERENCE

The ArcGIS API for Python

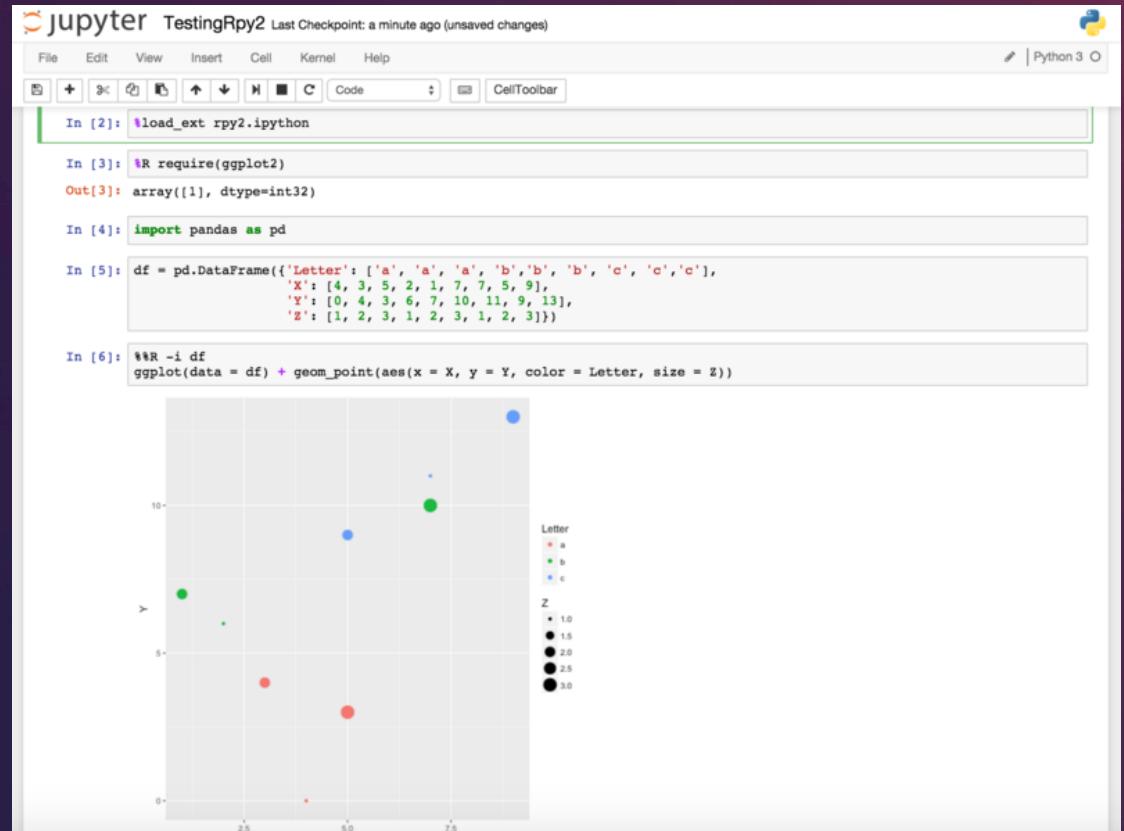
- Python library for working with maps and geospatial data, powered by web GIS
- Provides simple and efficient tools:
 - vector and raster analysis
 - geocoding
 - content presentation
 - routing
 - managing organizations
 - user, content, group management



robo-shark.deviantart.com

Frequently Asked Questions

- Do I have to code in Jupyter Notebooks?
- What is Jupyter Notebooks?
- Should I use Python 3?



Where to get Help?

The screenshot shows a web browser displaying the ArcGIS API for Python documentation. The URL in the address bar is <https://developers.arcgis.com/python/>. The page has a dark blue header with the ArcGIS logo and navigation links for ArcGIS for Developers, Get Started, Documentation, Features, Pricing, and Support. A search icon and a sign-in link are also present. Below the header, there's a large banner with a map background featuring the title "ArcGIS API for Python" and a "Install the API" button. To the right of the banner, there are two images: one showing a code editor with Python script snippets and another showing a map application with data points. At the bottom, there's a navigation bar with links for Home, Guide, Sample Notebooks, API Reference, and Community.

Secure | <https://developers.arcgis.com/python/>

ArcGIS for Developers | Get Started | Documentation | Features | Pricing | Support | [Sign In](#)

Scripting and Automation / [ArcGIS API for Python \(1.4.2\)](#)

ArcGIS API for Python

[Install the API](#)

Version 1.4.2 · June 2018

Home | [Guide](#) | [Sample Notebooks](#) | [API Reference](#) | [Community](#)

A powerful Python library for spatial analysis,
mapping and GIS

How to get More Help?

- Use the github page:

<https://github.com/Esri/arcgis-python-api>

- Contact Esri Support!

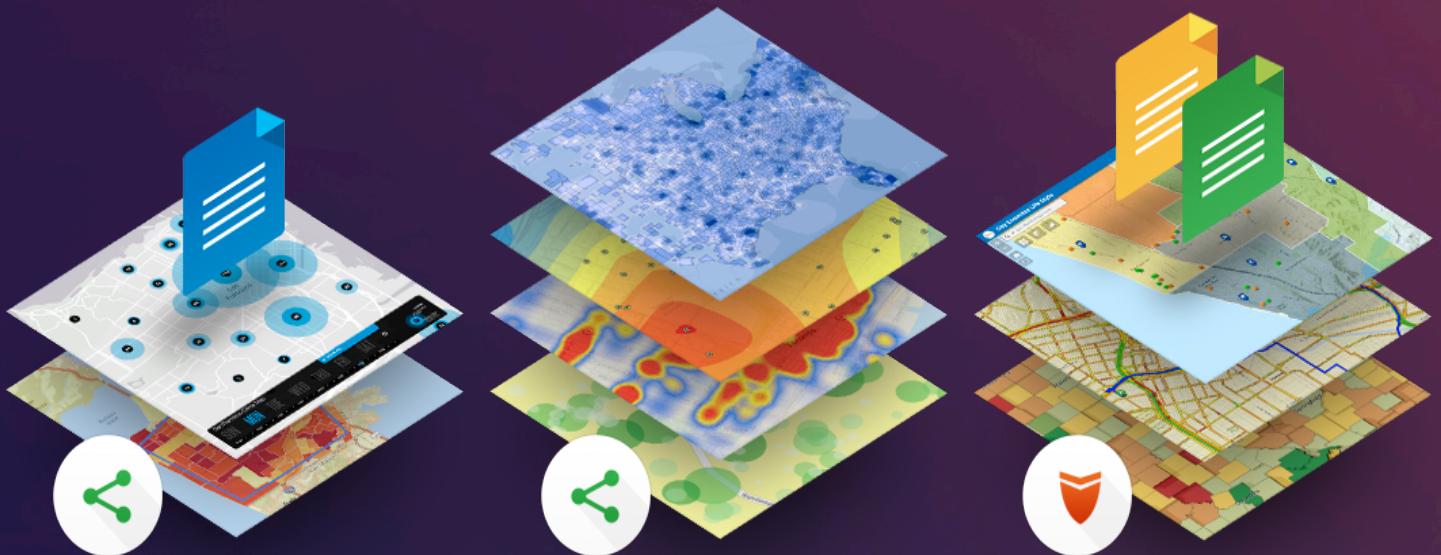
- Twitter

Help Demo

What is Content?

What is Content?

- The things that are held or included in something. (Webster dictionary)
- ArcGIS sees content as a collection of maps, scenes, layers, analytics, and apps.



Getting Started

- The GIS class provides access into the enterprise
- The GIS checks what you can and cannot do
- The GIS class allows administrators to manage other users, content and servers

```
from arcgis.gis import GIS
```

Basic Login ¶

```
gis = GIS(username='AndrewSolutions')
```

Creating Profiles

- Allow for the storage of credentials

```
gis = GIS(url="https://python.playground.esri.com/portal",
           username='arcgis_python',
           password='amazing_arcgis_123',
           profile='python_playground_prof')
playground_gis = GIS(profile='python_playground_prof')
```

```
playground_gis.users.me
```



[arcgis python](#)

Bio: None

First Name: arcgis

Last Name: python

Username: arcgis_python

Joined: April 27, 2017

Managing the GIS

- API gives access to:
 - Content
 - Servers
 - Users
- Managers can control users so they don't get out of control
- Control user's content, roles and abilities to effect the system



Source: the oatmeal

Where is my Content!



Searching



```
from arcgis.gis import GIS
gis = GIS()
items = gis.content.search(query="restaurant", item_type='Feature Layer',
                           outside_org=True, sort_field="relevance",
                           sort_order='desc')

for item in items:
    display(item)
```



[Naperville_Restaurants](#)
Naperville Restaurants

📍 Feature Layer Collection by ybevis
Last Modified: July 21, 2016
0 comments, 4,066 views

[001restaurants](#)
GIS 001 - PPGIS lab for collecting information about Auburn restaurants

📍 Feature Layer Collection by srr0030_AuburnUniversity
Last Modified: October 19, 2017
0 comments, 938 views



[Naperville_Restaurants](#)
Naperville restaurants

📍 Feature Layer Collection by EsriTrainingSvc
Last Modified: January 11, 2018
0 comments, 89,829 views

[Restaurants_CampusMap](#)
UCR Restaurants

Searching – What did we do?

- Accessed Content Manager
- Provided a Query String
- Set a sort order
- Set a sort field
- Listed results



Web Layers



What is a Web Layer?

- Web Layers are a logical collections of geographic data that are used to create maps and scenes; they are also the basis for geographic analysis.



How to add a Layer?



Adding Content

```
item = gis.content.add(data="abnb.zip",
                       item_properties={'title' : 'AirBnB_Regions',
                                         'type' : 'File Geodatabase'})
```



[AirBnB_Regions](#)

 File Geodatabase by AndrewSolutions
Last Modified: June 19, 2018
0 comments, 0 views



Publishing Content



Publishing Content

- Publishers can create:
 - Feature Layer Collection
 - Tiled Map Services
- CSV, XLSX, shapefiles, File Geodatabases, SD files, and packages can be published

```
pitem = item.publish()  
pitem
```



[AirBnB_Regions](#)

 Feature Layer Collection by AndrewSolutions
Last Modified: June 19, 2018
0 comments, 0 views

Updating Content



```
item.update(data='abnb.zip')
```

```
True
```

```
item
```



[AirBnB_Regions](#)

File Geodatabase by AndrewSolutions
Last Modified: June 19, 2018
0 comments, 0 views

Other Important Operations

Deleting an Item

```
item.delete()  
True
```

Export a Published Item

```
fgdb_item = pitem.export(title="export_fgdb",  
                          export_format='File Geodatabase')  
fgdb_item
```



[export_fgdb](#)

File Geodatabase by AndrewSolutions
Last Modified: June 19, 2018
0 comments, 0 views

Sharing an Item

```
item.share(everyone=True)  
{'notSharedWith': [], 'itemId': 'f865c2d0663942e78accb372d0bb0080'}
```

Updating Tile Services

- Locate the Item
- Update the data source
- Specify the levels to update

```
gis = GIS(profile='agol_uc_demo')
item = gis.content.get("3e83a7e7278c46148b0764795759daff")
item
```

[NYC_Test](#)



Map Image Layer by AndrewSolutions
Last Modified: July 02, 2018
0 comments, 0 views

```
item.update(data=r"NYC_test.tpk")
```

True

```
lyr = item.layers[0]
mgr = lyr.container.manager
mgr.update_tiles(levels="9,10,11,12,13,14,15,16,17,18,19,20")
```

```
{'id': 'b618f1fa0781abdb',
'name': 'NYC_Test',
'url': None,
'status': 'success',
'itemId': '78b6210a1cd241e7b467b13455552ef3',
'type': 'Map Service',
'jobId': 'b5e5f13a882f9c53',
'message': 'success'}
```



Service Management Demo

And now
for something
completely different...

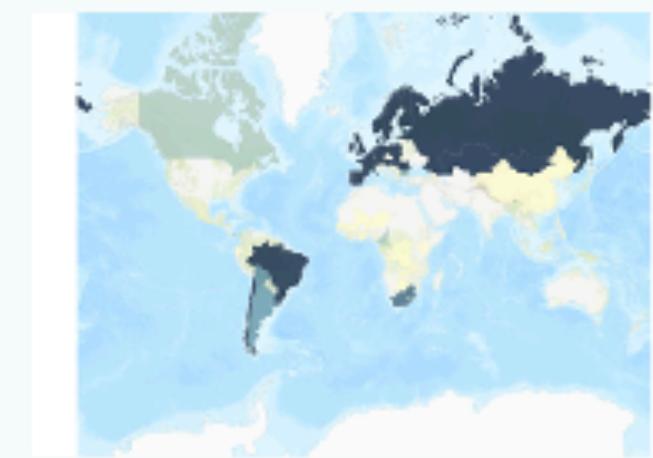


WebMap Management

```
In [7]: from arcgis.gis import GIS  
gis = GIS(username="DavidJVitale")  
webmap_item = gis.content.get('alc02dbc5dd7414687eb0a2147af726f')  
webmap_item
```

Enter password:

Out[7]:



[Will update later](#)

a



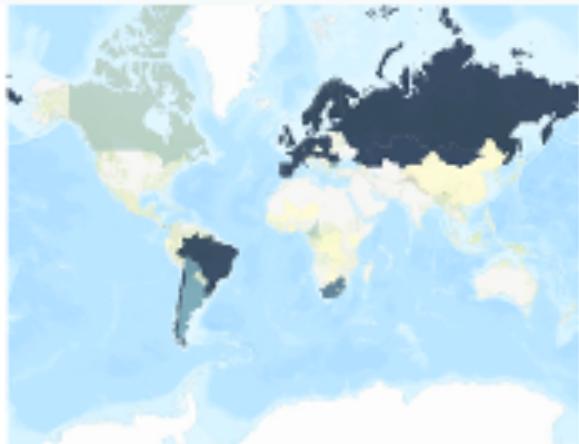
Web Map by DavidJVitale

Last Modified: July 03, 2018

0 comments, 2 views

```
In [9]: webmap_item.update({'title' : 'Children affected by social protection',
                           'snippet' : 'visualize the relationship between \
                           child labor rates and child poverty.'})
webmap_item
```

Out[9]:



[Children affected by social protection](#)

Visualize the relationship between child labor rates and child poverty.



[Web Map by DavidJVitale](#)

Last Modified: July 03, 2018

0 comments, 6 views

```
In [99]: from arcgis.mapping import WebMap  
webmap = WebMap(webmap_item)  
webmap
```



```
In [86]: wm_data = webmap_item.get_data()
wm_data
```

```
Out[86]: {'operationalLayers': [{id: 'SI_COV_CHLD_131_2017Q2G01_2473',
    layerType: 'ArcGISFeatureLayer',
    url: 'https://services7.arcgis.com/gp50Ao2knMlOM89z/arcgis/rest/services/SI_COV_CHLD_131_2017Q2G01/FeatureServer/0',
    visibility: False,
    opacity: 1,
    title: 'SI_COV_CHLD_131_2017Q2G01 - Indicator 1.3.1: Proportion of children covered by social protection, total (%)',
    popupInfo: {'title': 'Indicator 1.3.1: Proportion of children covered by social protection, total (%): {geoAreaName}'},
    fieldInfos: [{fieldName: 'series_release',
        label: 'Series Release',
        isEditable: True,
        tooltip: '',
        visible: True,
        stringFieldOption: 'textbox'},
     {'fieldName: 'series_code',
        label: 'Series Code',
        isEditable: True,
        tooltip: '',
        visible: True,
        stringFieldOption: 'textbox'},
     {'fieldName: 'series_description',
        label: 'Series Description',
        isEditable: True,
        tooltip: '',
        visible: True,
        stringFieldOption: 'textbox'},
     {'fieldName: 'geoAreaCode',
        label: 'Geographic Area Code',
        isEditable: True,
        tooltip: '',
        visible: True,
        stringFieldOption: 'textbox',
        format: {'places': 0, 'digitSeparator': True}},
     {'fieldName: 'X',
        label: 'X',
        isEditable: True,
        tooltip: '',
        visible: True,
        stringFieldOption: 'textbox',
        format: {'places': 2, 'digitSeparator': True}},
     {'fieldName: 'Y',
        label: 'Y',
        isEditable: True,
        tooltip: '',
        visible: True,
        stringFieldOption: 'textbox',
        format: {'places': 2, 'digitSeparator': True}}]}
```

```
'stringFieldOption': 'textbox'},
{'fieldName': 'sliceId',
 'label': 'Sliceid',
 'isEditable': True,
 'tooltip': '',
 'visible': True,
 'stringFieldOption': 'textbox',
 'format': {'places': 0, 'digitSeparator': True}},
{'fieldName': 'Freq',
 'label': 'Frequency',
 'isEditable': True,
 'tooltip': '',
 'visible': True,
 'stringFieldOption': 'textbox'},
{'fieldName': 'Units',
 'label': 'Units',
 'isEditable': True,
 'tooltip': '',
 'visible': True,
 'stringFieldOption': 'textbox'},
{'fieldName': 'F2014',
 'label': '2014',
 'isEditable': True,
 'tooltip': '',
 'visible': True,
 'stringFieldOption': 'textbox',
 'format': {'places': 2, 'digitSeparator': True}},
{'fieldName': 'F2016',
 'label': '2016',
 'isEditable': True,
 'tooltip': '',
 'visible': True,
 'stringFieldOption': 'textbox',
 'format': {'places': 2, 'digitSeparator': True}},
{'fieldName': 'last_5_years_mean',
 'label': 'Mean of the Last 5 Years',
 'isEditable': True,
 'tooltip': '',
 'visible': True,
 'stringFieldOption': 'textbox',
 'format': {'places': 2, 'digitSeparator': True}}.
```

```
        'description': None,
        'showAttachments': True,
        'mediaInfos': []}},
{'id': 'Children_3_859',
 'layerType': 'ArcGISFeatureLayer',
 'url': 'https://services7.arcgis.com/JEWYeAy2cc8q0e3o/arcgis/rest/services/Children_3/FeatureServer/0',
 'visibility': True,
 'opacity': 0.8,
 'title': 'Children_3',
 'itemId': '0f4d62b5c57646fb89e7ab98f6cf41a9',
 'layerDefinition': {'drawingInfo': {'renderer': {'visualVariables': [{  
'type': 'colorInfo',
 'field': 'latest_value',
 'valueExpression': None,
 'stops': [{value: 20,
 'color': [255, 252, 212, 255],
 'label': '< 20'},
 {'value': 39, 'color': [177, 205, 194, 255], 'label': None},
 {'value': 58.7, 'color': [98, 158, 176, 255], 'label': '58.7'},
 {'value': 78, 'color': [56, 98, 122, 255], 'label': None},
 {'value': 98, 'color': [13, 38, 68, 255], 'label': '> 98'}]}},
 {'type': 'sizeInfo',
 'target': 'outline',
 'expression': 'view.scale',
 'valueExpression': '$view.scale',
 'stops': [{size: 1.5, value: 20125139},
 {size: 0.75, value: 62891060},
 {size: 0.375, value: 251564240},
 {size: 0, value: 503128479}]}],
 'authoringInfo': {'visualVariables': [{type: 'colorInfo',
 'minSliderValue': 2.20779,
 'maxSliderValue': 100,
 'theme': 'high-to-low'}]},
 'type': 'classBreaks',
 'field': 'latest_value',
 'minValue': -9007199254740991,
 'classBreakInfos': [{symbol: {color: [170, 170, 170, 255],
 'outline': {color: [194, 194, 194, 64],
 'width': 0.375,
 'type': 'esriSLS',
```

```
In [70]: for layer in wm_data['operationalLayers']:
    print(layer['id'])
```

```
SI_COV_CHLD_131_2017Q2G01_2473
World_Countries_Generalized_2442
Children_affected_by_social_protection_7108
Children_2_9096
Children_3_859
```

```
In [71]: for layer in wm_data['operationalLayers']:
    print("{} - {}".format(layer['id'], layer['url']))
    print("-----")
SI_COV_CHLD_131_2017Q2G01_2473 - https://services7.arcgis.com/gp50Ao2knMlOM89z/arcgis/rest/services/SI_COV_CHLD_131_2017Q2G01/FeatureServer/0
-----
World_Countries_Generalized_2442 - https://services.arcgis.com/P3ePLMYs2RVChkJx/arcgis/rest/services/World_Countries_(Generalized)/FeatureServer/0
-----
Children_affected_by_social_protection_7108 - https://my-onpremise-portal-that-no-longer-exists.com/arcgis/rest/services/Children_affected_by_social_protection/FeatureServer/0
-----
Children_2_9096 - https://services7.arcgis.com/JEwYeAy2cc8q0e3o/arcgis/rest/services/Children_2/FeatureServer/0
-----
Children_3_859 - https://services7.arcgis.com/JEWYeAy2cc8q0e3o/arcgis/rest/services/Children_3/FeatureServer/0
-----
```

```
In [72]: import urllib.request  
def get_response_code_for(url):  
    try:  
        conn = urllib.request.urlopen(url)  
    except urllib.error.HTTPError as e:  
        # Return code error (e.g. 404, 501, ...)  
        return e.code  
    except urllib.error.URLError as e:  
        # Not an HTTP-specific error (e.g. connection refused)  
        # ...  
        return -1  
    else:  
        # 200 or other 'good' code  
        return conn.code
```

```
In [73]: get_response_code_for("https://arcgis.com")
```

```
Out[73]: 200
```

```
In [74]: get_response_code_for("https://arcgis.com/thisurlpagedoesntexist/ok")
```

```
Out[74]: 404
```

```
In [75]: get_response_code_for("https://thisdomaindoesntexist.com")
```

```
Out[75]: -1
```

```
In [76]: import urllib
def test_layer_urls_for(wm_data):
    for layer in wm_data['operationalLayers']:
        layer_url = layer['url']
        response_code = get_response_code_for(layer_url)
        if response_code >= 200 and response_code < 300:
            print("✓ Layer '{}' is OK".format(layer['id']))
        else:
            print("✗ Layer '{}' is unreachable".format(layer['id']))
test_layer_urls_for(wm_data)
```

- ✓ Layer 'SI_COV_CHLD_131_2017Q2G01_2473' is OK
- ✓ Layer 'World_Countries_Generalized_2442' is OK
- ✗ Layer 'Children_affected_by_social_protection_7108' is unreachable
- ✓ Layer 'Children_2_9096' is OK
- ✓ Layer 'Children_3_859' is OK

```
In [77]: wm_data['operationalLayers'][2]
```

```
Out[77]: {'id': 'Children_affected_by_social_protection_7108',
  'layerType': 'ArcGISFeatureLayer',
  'url': 'https://my-onpremise-portal-that-no-longer-exists.com/arcgis/r
est/services/Children_affected_by_social_protection/FeatureServer/0',
  'visibility': False,
  'opacity': 1,
  'title': 'Children_affected_by_social_protection',
  'itemId': 'c8442dc928a748b2b6d7ade04655934e',
  'popupInfo': {'title': 'Children_affected_by_social_protection',
    'fieldInfos': [{ 'fieldName': 'OBJECTID',
      'label': 'OBJECTID',
      'isEditable': False,
      'tooltip': '',
      'visible': False,
      'stringFieldOption': 'textbox'},
     { 'fieldName': 'Join_Count',
      'label': 'Join_Count',
      'isEditable': False,
      'tooltip': '',
      'visible': False,
      'stringFieldOption': 'textbox'}]}}
```

```
In [78]: wm_data['operationalLayers'][2]['url']

Out[78]: 'https://my-onpremise-portal-that-no-longer-exists.com/arcgis/rest/services/Children_affected_by_social_protection/FeatureServer/0'
```

```
In [83]: wm_data['operationalLayers'][2]['url'] = 'https://arcgis.com/JEWYeAy2cc8q0e  
wm_data['operationalLayers'][2]
```

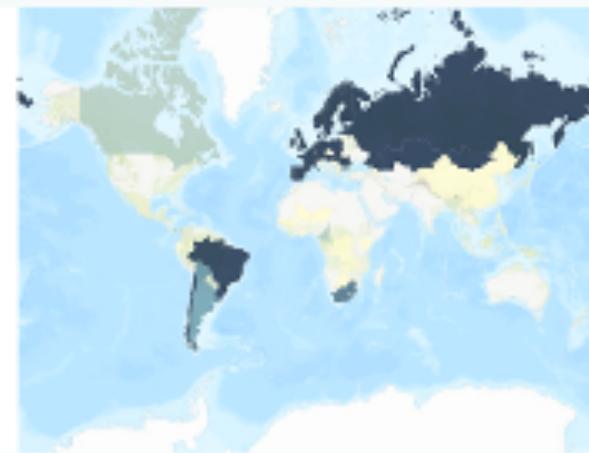
```
Out[83]: {'id': 'Children_affected_by_social_protection_7108',  
          'layerType': 'ArcGISFeatureLayer',  
          'url': 'https://arcgis.com/JEWYeAy2cc8q0e3o/arcgis/rest/services/Child  
ren_affected_by_social_protection/FeatureServer/0',  
          'visibility': False,  
          'opacity': 1,  
          'title': 'Children_affected_by_social_protection',  
          'itemId': 'c8442dc928a748b2b6d7ade04655934e',  
          'popupInfo': {'title': 'Children_affected_by_social_protection',  
                      'fieldInfos': [{  
                          'fieldName': 'OBJECTID',
```

```
In [87]: test_layer_urls_for(wm_data)
```

- ✓ Layer 'SI_COV_CHLD_131_2017Q2G01_2473' is OK
- ✓ Layer 'World_Countries_Generalized_2442' is OK
- ✓ Layer 'Children_affected_by_social_protection_7108' is OK
- ✓ Layer 'Children_2_9096' is OK
- ✓ Layer 'Children_3_859' is OK

```
In [102]: webmap_item.update({'text' : wm_data})  
webmap_item
```

Out[102]:



[Children affected by social protection](#)

Visualize the relationship between child labor rates and child poverty.



[Web Map by DavidJVitale](#)

Last Modified: July 03, 2018

0 comments, 14 views

```
In [96]: new_webmap_dict = dict(webmap_item)
new_webmap_dict['text'] = wm_data
new_webmap_item = gis.content.add(new_webmap_dict)
new_webmap_item
```

Out[96]:



[Children affected by social protection](#)

Visualize the relationship between child labor rates and child poverty.

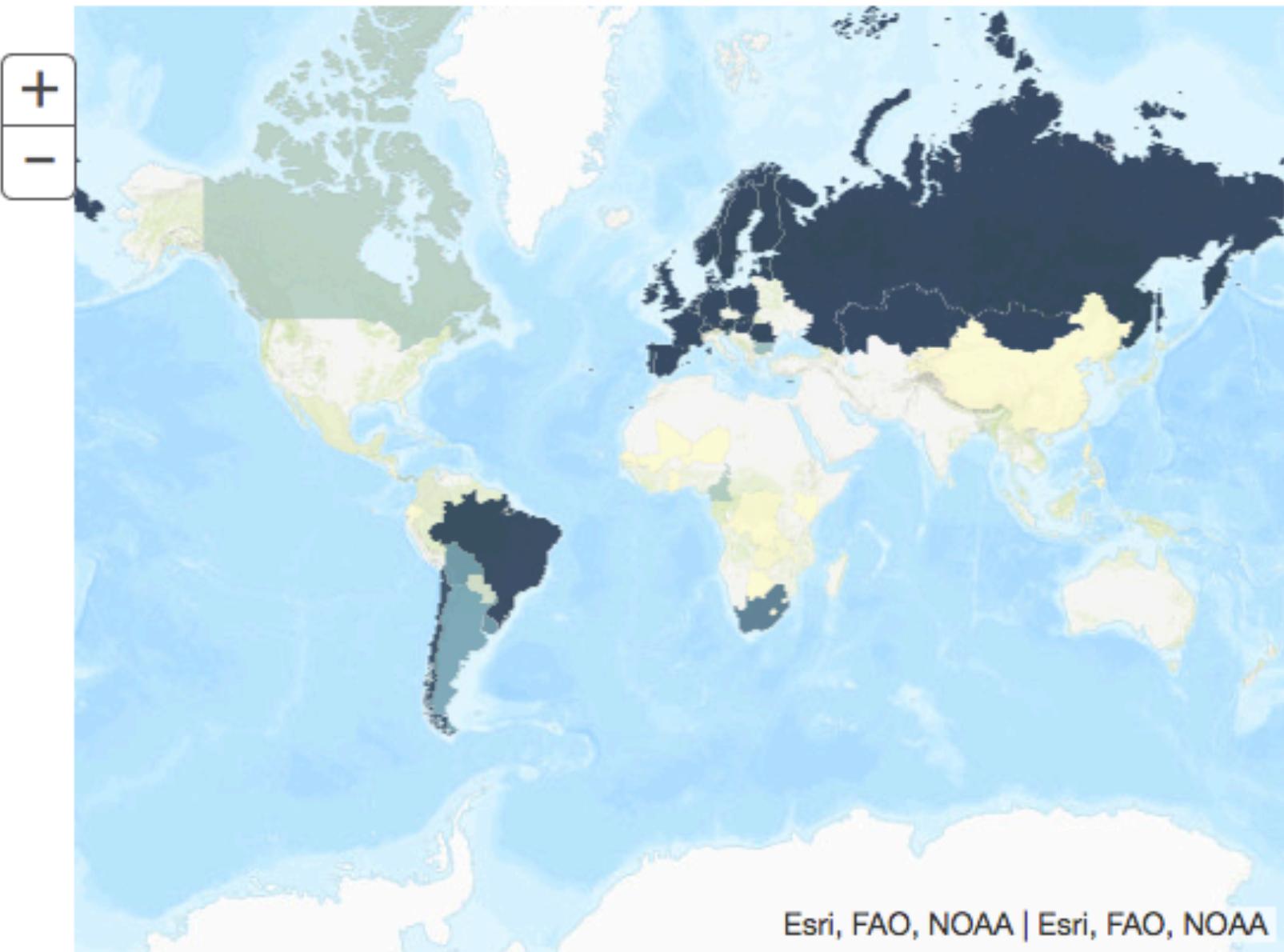


Web Map by DavidJVitale

Last Modified: July 03, 2018

0 comments, 0 views

```
In [100]: new_webmap = WebMap(new_webmap_item)  
new_webmap
```

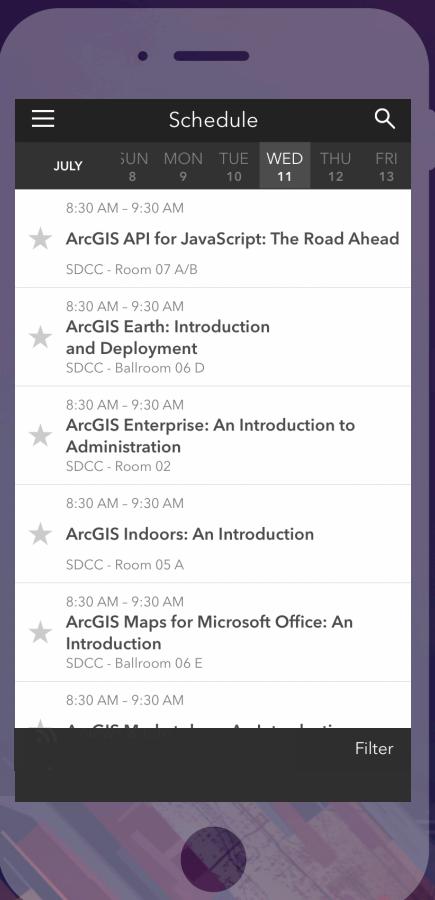


Please Take Our Survey on the App

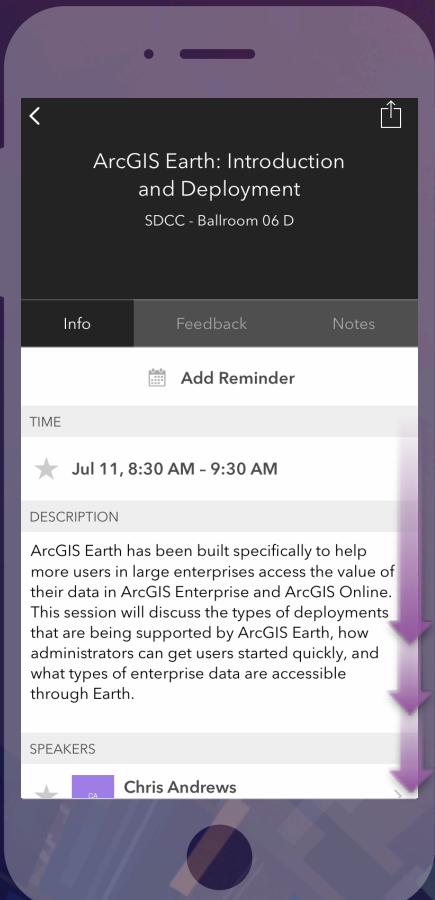
Download the Esri Events app and find your event



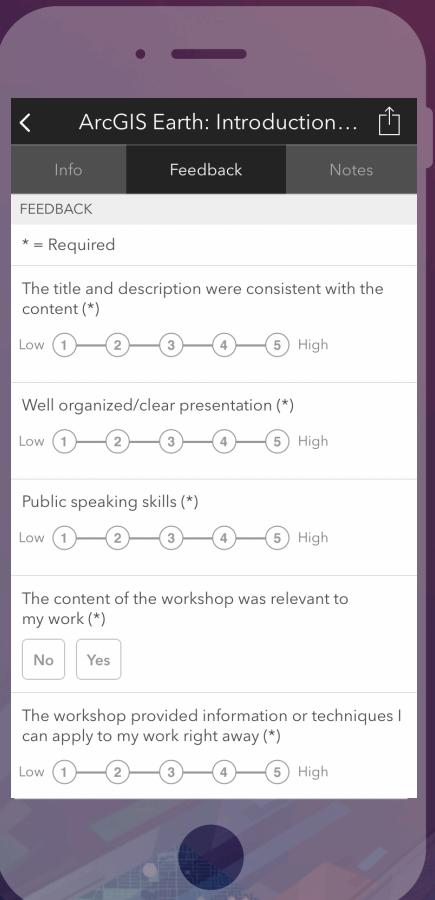
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Complete answers and select "Submit"



See Us Here

WORKSHOP

- ArcGIS API for Python: Advanced Scripting
- ArcGIS API for Python: Administering your Web GIS
- ArcGIS API for Python for Analysts and Data Scientists

LOCATION

- Room 05 A
- Room 15 B
- Room 30 C

TIME FRAME

- 7/12/2018 - 8:30 – 9:30 AM
- 7/12/2018 10:00 – 11:00 AM
- 7/12/2018 1:00 – 2:00 PM



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