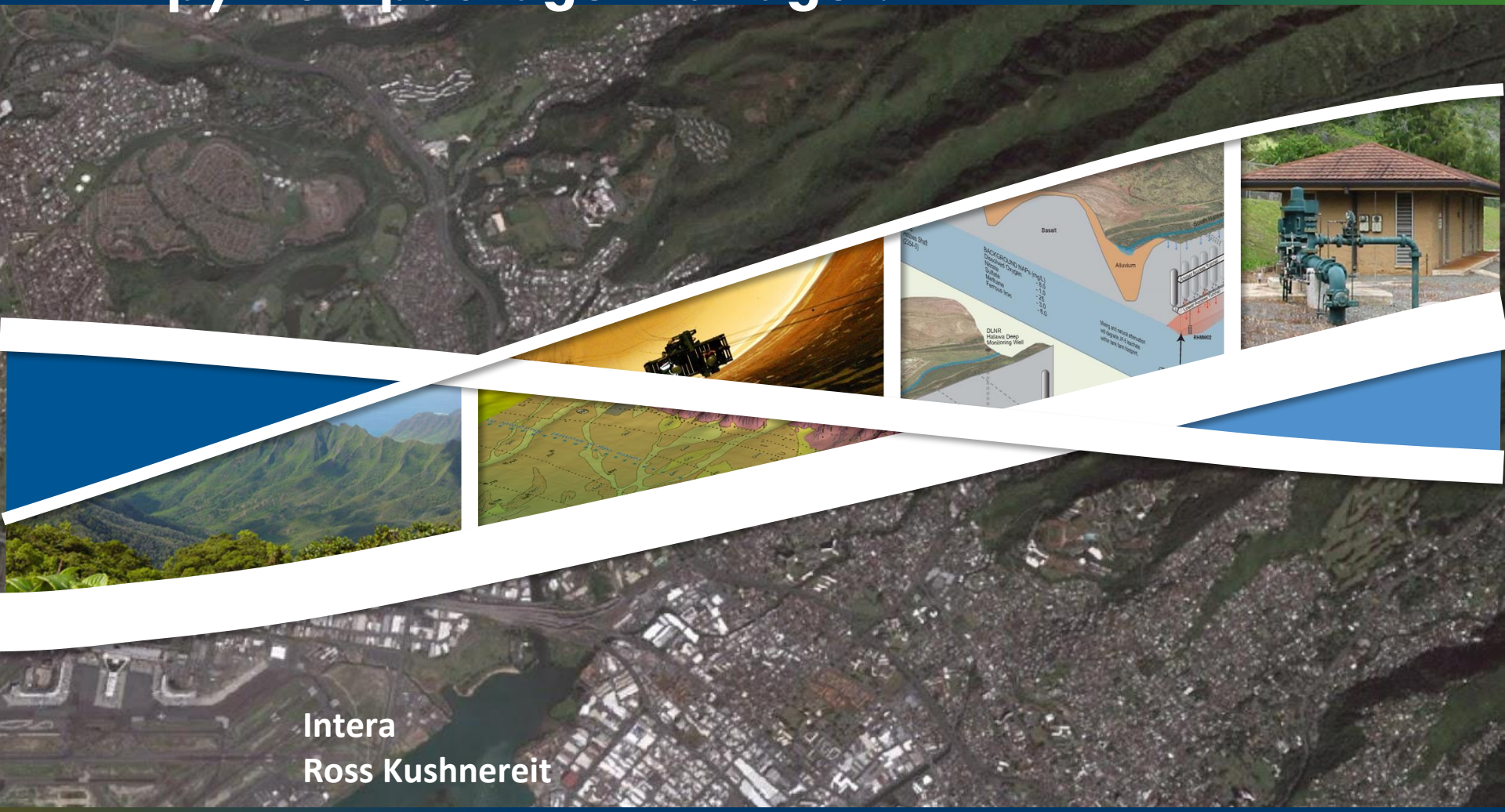
My Anaconda don't, want version control issues…
A python package manager.



Intera
Ross Kushnereit

What is Anaconda?

- Anaconda is the most popular python package distribution and manager for data science
- Anaconda grants you the ability to use limitless possibilities of python versions and python packages
- Anaconda easily allows for sharing of environments and package versions.
- "Made with love in Austin, Texas"
  - Conda website

What is a distribution manager?

- Simply put, these add environments to your computer that allows you to reach a python executable and packages to run code.
- Other examples you may have heard of:
  - Canopy
  - PyPy
  - WinPython
  - Docker

How a conda environment looks

Paste shortcut | to | to | folder | History | Invert selection

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This PC › Home (H:) › anaconda3 › envs

Name	Date modified	Type	Size
arcgispro-py3	6/7/2019 8:18 AM	File folder	
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api-ms-win-core-console-l1-1-0.dll	4/20/2018 8:28 AM	Application extens...	19 KB
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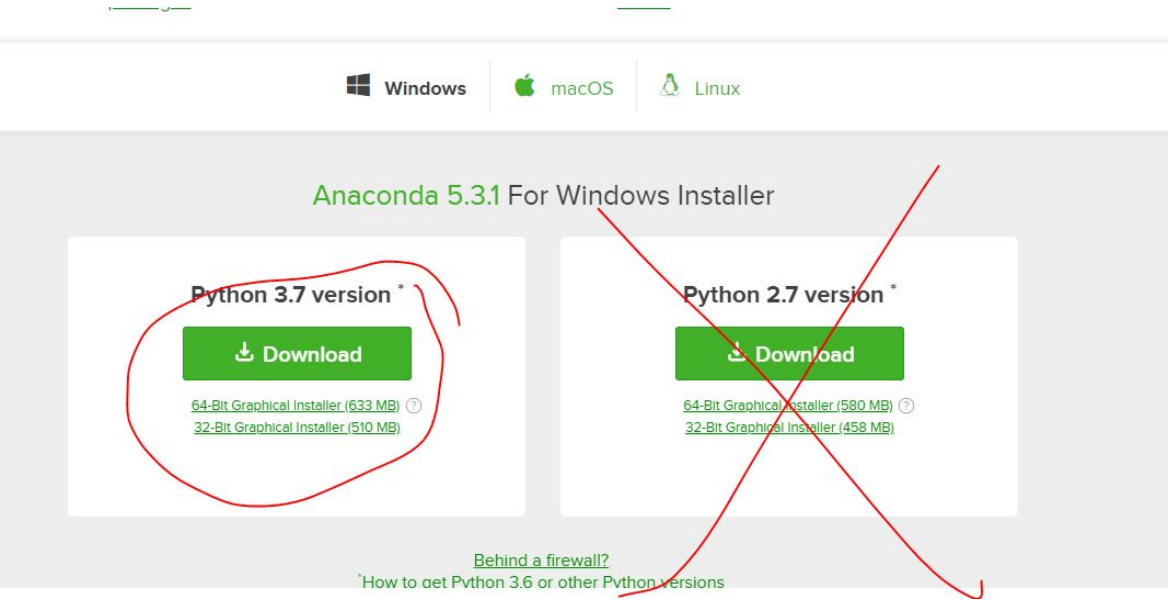
api-ms-win-core-file-l1-2-0.dll	4/20/2018 8:37 AM	Application extens...	19 KB
api-ms-win-core-file-l2-1-0.dll	4/20/2018 8:37 AM	Application extens	19 KB

Installation of Anaconda

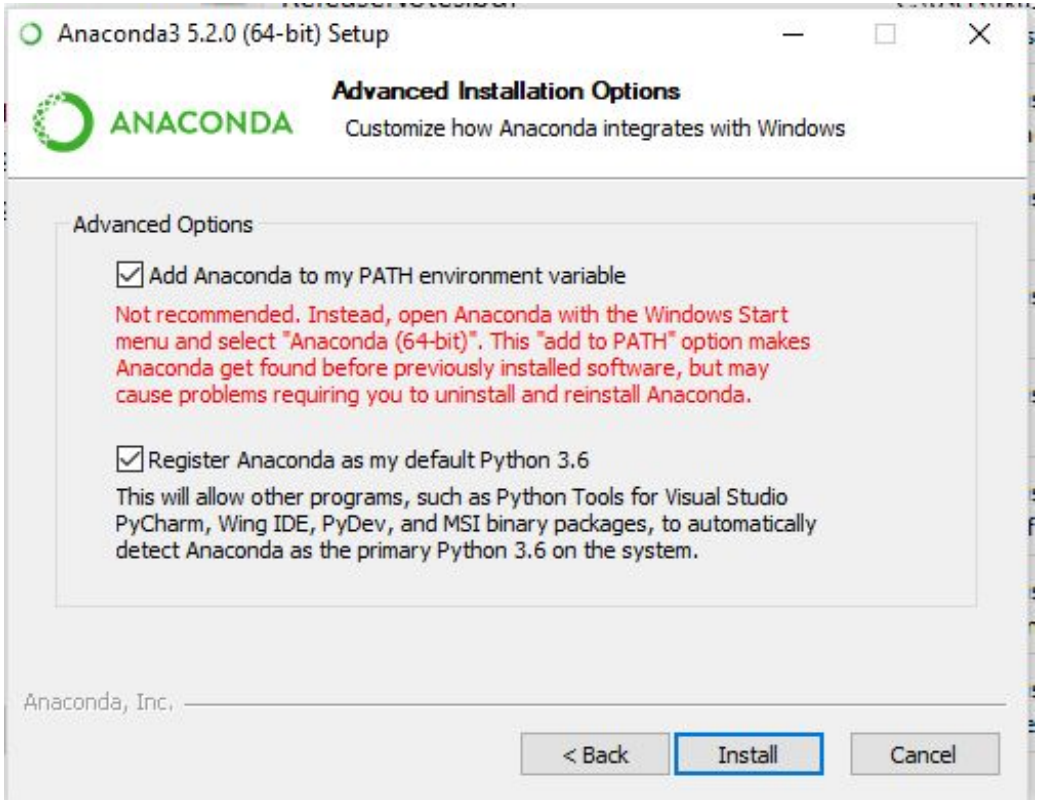
- https://www.anaconda.com/download/
  - Download the latest version



Don't worry we will talk about 2.7

Installation of Anaconda

- IMPORTANT!
  - For windows users:
  - When you reach this part you would like to “Add Anaconda to my PATH”
  - This allows for you to simply call conda from anywhere on your computer
  - Very tricky to add later
  - Could mess up other python path environments so use at own risk



After installation

- You should be able to call conda from anywhere on your computer
- I recommend a linux based command prompt,
  - I use git bash, but Cygwin should work too

Some basic conda examples

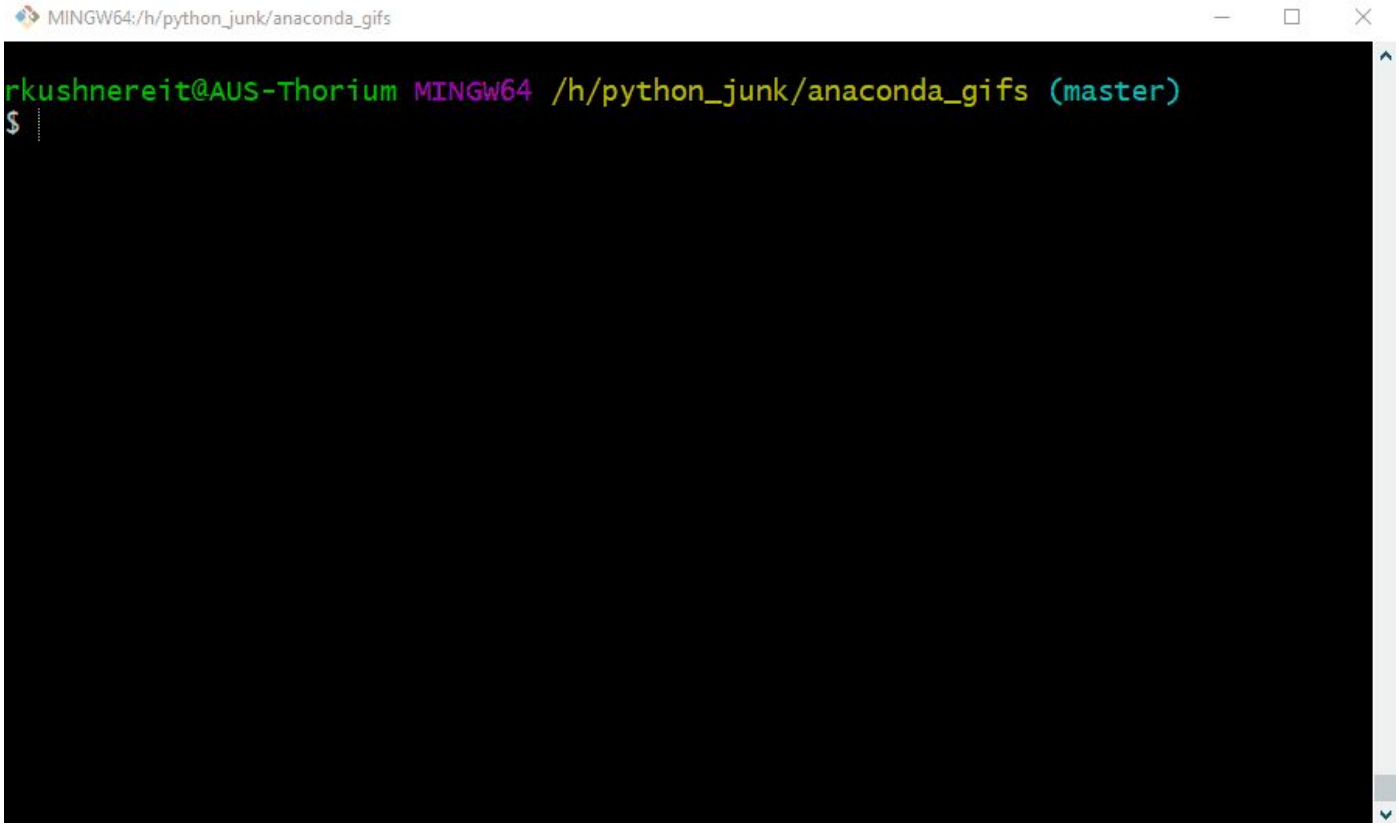
- To use anaconda simply call conda and the command you'd like to use:
- Examples; list, install <package>, --version

Version control and sharing

- So the main reason Anaconda is good for the work we do is that we can create a new environment for whatever project you are working on and share it with others.

Creating a new environment

- conda create –n myenv
  - You can specify any python version you want here



Conda envs

- conda env list
  - Will let you see all your conda envs

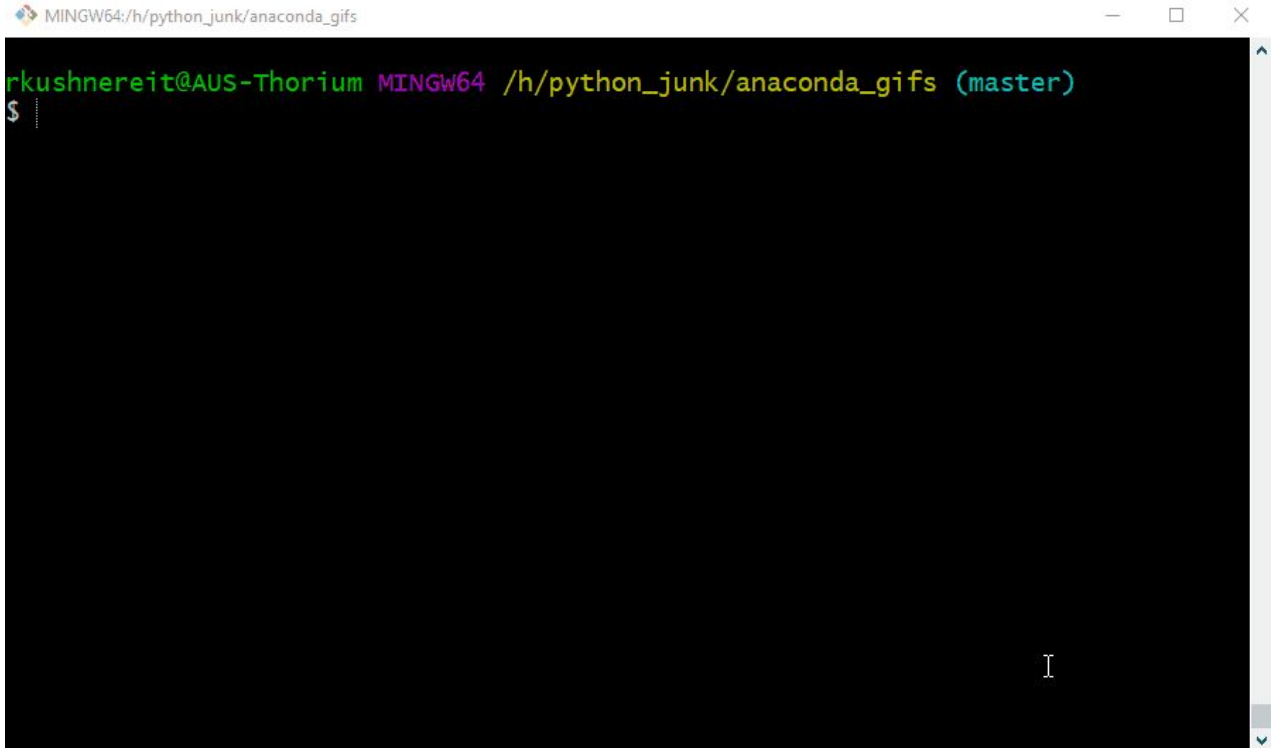
MINGW64:/h/python_junk/anaconda_gifs

```
rkushnereit@AUS-Thorium MINGW64 /h/python_junk/anaconda_gifs (master)
$ conda env list
# conda environments:
#
base                  *  H:\Miniconda3
27arcpy64                H:\Miniconda3\envs\27arcpy64
arcpy64                  H:\Miniconda3\envs\arcpy64
dev_tester               H:\Miniconda3\envs\dev_tester
geo_test                 H:\Miniconda3\envs\geo_test
modpath_qa               H:\Miniconda3\envs\modpath_qa
modpath_qa_test          H:\Miniconda3\envs\modpath_qa_test
new_env37                H:\Miniconda3\envs\new_env37
py27                     H:\Miniconda3\envs\py27
qgis27_test              H:\Miniconda3\envs\qgis27_test
trash                    H:\Miniconda3\envs\trash


rkushnereit@AUS-Thorium MINGW64 /h/python_junk/anaconda_gifs (master)
$ |
```

activate environment

- source activate new_env37
  - Will now activate the new conda env
  - (source may not be needed)



conda install

- In your new environment you can use conda and pip to install packages
  - Recommended to try conda before pip

```
rkushnereit@AUS-Thorium MINGW64 /h/python_junk/anaconda_gifs (master)
$ conda install numpy
Solving environment: ...working... done
```

```
rkushnereit@AUS-Thorium MINGW64 /h/python_junk/anaconda_gifs (master)
$ conda list
# packages in environment at H:\Miniconda3\envs\new_env37:
#
# Name                    Version                   Build  Channel
blas                      1.1                    openblas    conda-forge
certifi                   2018.11.29            py37_1000    conda-forge
libflang                  5.0.0          h6538335_20180525    conda-forge
llvm-meta                 5.0.0                         0    conda-forge
numpy                     1.15.4         py37_blas_openblash442142e_1000  [bla
_openblas]  conda-forge
openblas                  0.3.3             h535eed3_1001    conda-forge
openmp                    5.0.0                    vc14_1    conda-forge
pip                       18.1                  py37_1000    conda-forge
python                    3.7.1             hc182675_1000    conda-forge
setuptools                40.6.3                   py37_0    conda-forge
vc                        14                            0    conda-forge
vs2015_runtime            14.0.25420                    0    conda-forge
wheel                     0.32.3                   py37_0    conda-forge
wincertstore              0.2                   py37_1002    conda-forge
```

Sharing your environment

- conda env export > environment.yml
  - this creates a yml file that has the package versions in it

H:\python_junk\anaconda_gifs\environment.yml - Sublim

File Edit Selection Find View Goto Tools Project

environment.yml

```yml
name: new_env37
channels:
  - conda-forge
  - defaults
dependencies:
  - blas=1.1=openblas
  - certifi=2018.11.29=py37_1000
  - libflang=5.0.0=h6538335_20180525
  - llvm-meta=5.0.0=0
  - numpy=1.15.4=py37_blas_openblash442142e_1000
  - openblas=0.3.3=h535eed3_1001
  - openmp=5.0.0=vc14_1
  - pip=18.1=py37_1000
  - python=3.7.1=hc182675_1000
  - setuptools=40.6.3=py37_0
  - vc=14=0
  - vs2015_runtime=14.0.25420=0
  - wheel=0.32.3=py37_0
  - wincertstore=0.2=py37_1002
prefix: H:\Miniconda3\envs\new_env37
```

Loading a yml

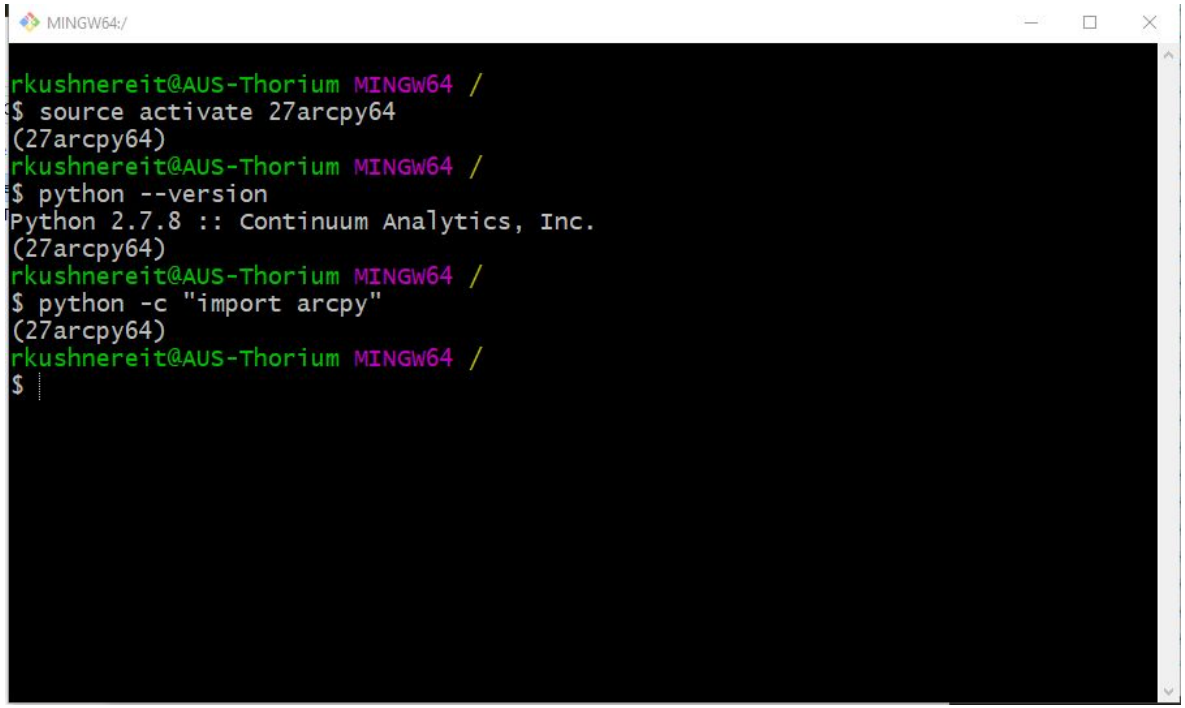
- Navigate to the yml file
- conda env create -f environment.yml
  - This will create the same environment from the dependencies in the yml file and you and your peers can sleep easy at night knowing that your code will play nice together

Adding arcpy to conda

- Create an environment with the same python version used with your arcmap. (Probably 2.7.8)
- Copy the DTBGGP64.pth file in From: C:\Program Files (x86)\ArcGIS\Desktop10.3\Support\Python\DTBGGP64.pth
  - To: H:\Anaconda3\envs\27arcpy64\Lib\site-packages
- This only works if arcmap is 64 bit and may reqiure some fine tunning

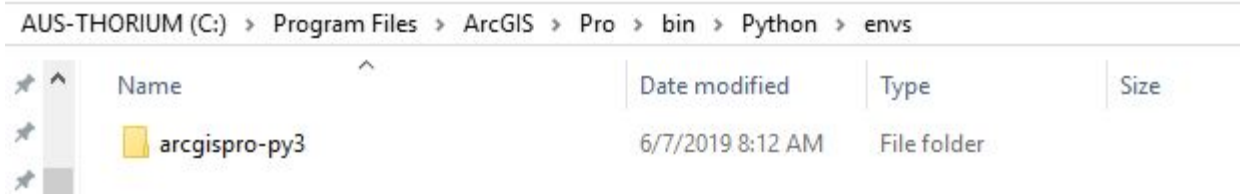
Adding arcpy to conda

- You should be able to run python commands from the terminal and import arcpy



ArcPro and Conda

- Arcpro is already using anaconda, however it comes with it's own version.
- MY recommendation is to install your own conda distro, then copy the env from arcpro's conda distro. (That way if you mess something up, you can easily replace it)



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ArcPro and Conda

MINGW64:/

```
rkushnereit@AUS-Thorium MINGW64 /
$ source activate arcgispro-py3
(arcgispro-py3)
rkushnereit@AUS-Thorium MINGW64 /
$ which python
/h/anaconda3/envs/arcgispro-py3/python
(arcgispro-py3)
rkushnereit@AUS-Thorium MINGW64 /
$ python -c "import arcpy"
(arcgispro-py3)
rkushnereit@AUS-Thorium MINGW64 /
$
```

Demos

- Bash on Ubuntu on Windows
- Cluster use