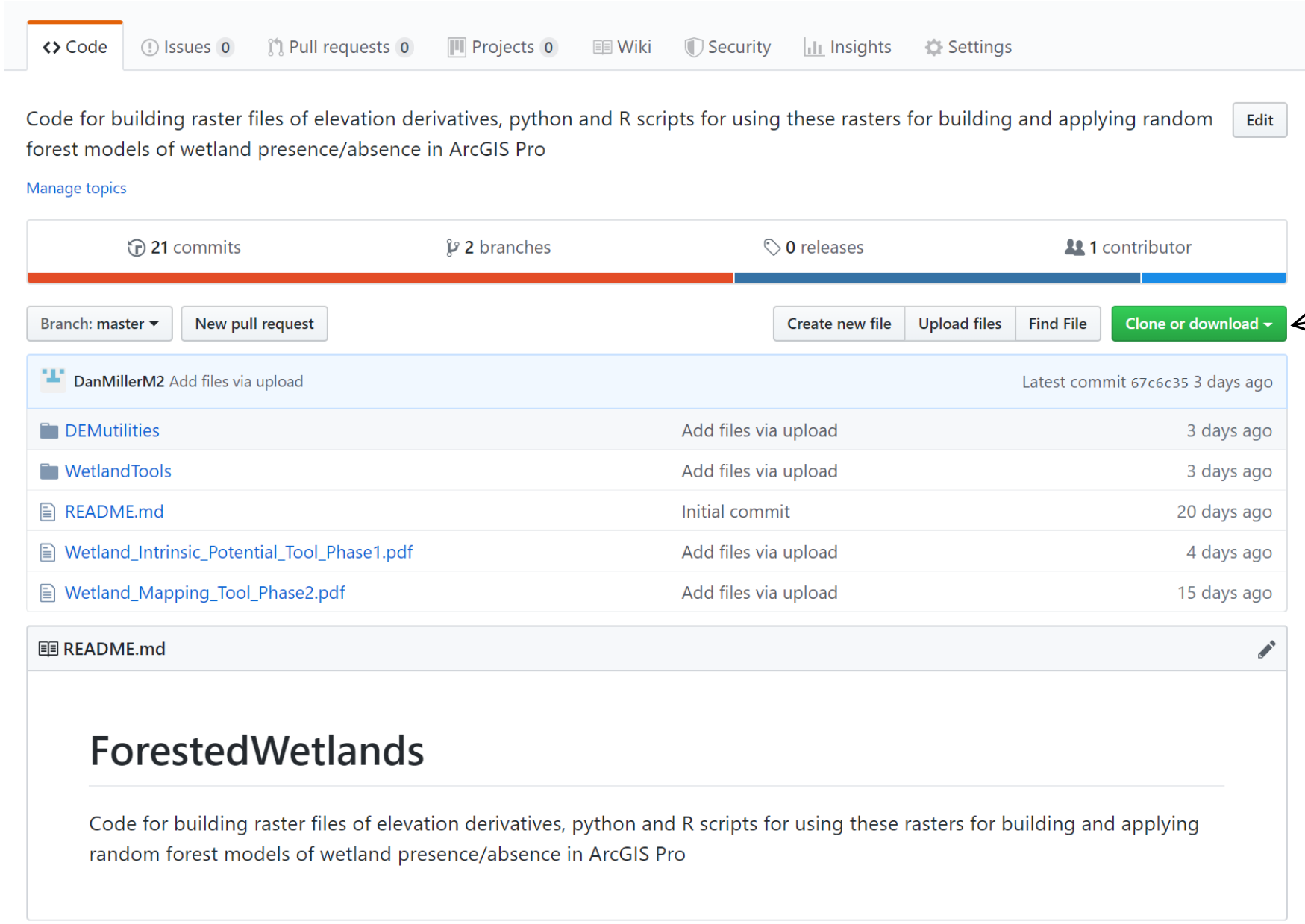
Wetland Mapping Tool

1. **Works with ArcGIS Pro.**
   (can potentially be modified to also work with ArcGIS 10)

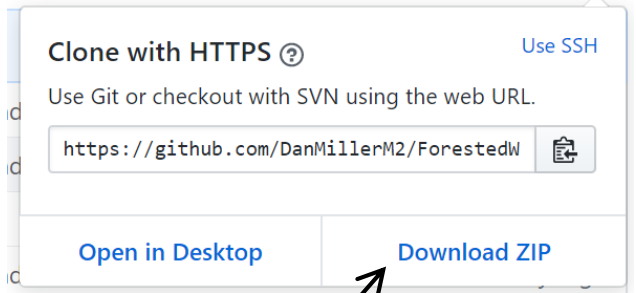
2. **Requires python and R computer languages.**
   Python and R are widely used, open-source computer languages. The R language implements a large range of statistical analyses (https://www.r-project.org/). ArcGIS provides capabilities to run scripts (programs) written in python and in R to perform custom analyses. We have used both R and python scripts for the wetland mapping tools. Python is included as part of ArcGIS; R must be installed separately.

3. **Install R and the arcgisbinding package**.
   This is required for ArcGIS to use R scripts. Instructions for installing R and the package are available here: https://github.com/R-ArcGIS/R-Bridge-Tutorial-Notebooks/blob/master/R-bridge-install-and-setup.ipynb

4. **Get the DEMutilities and WetlandTools scripts**. They are available on a github repository: https://github.com/DanMillerM2/ForestedWetlands. This link takes you here

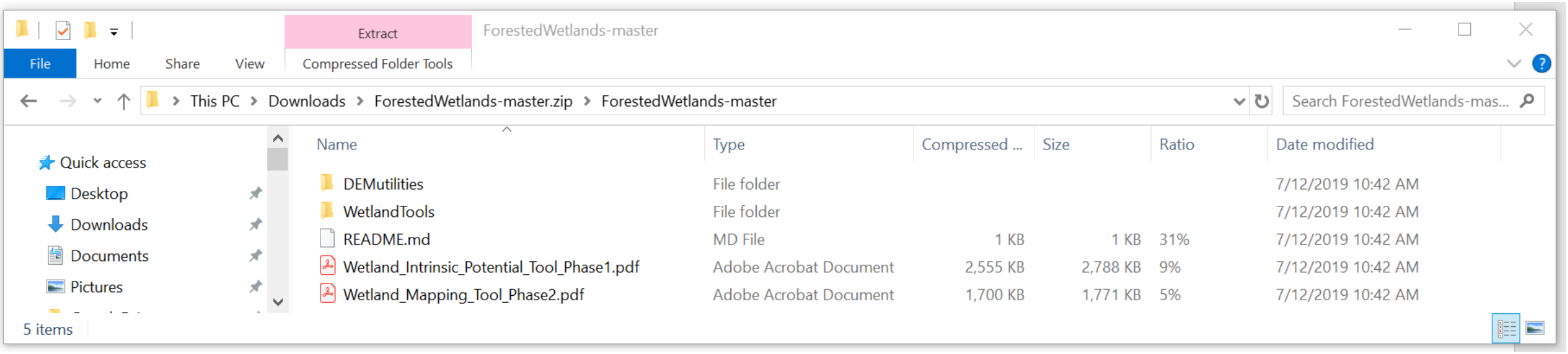


Click here to download a zip archive with all the files.



This puts the ForestedWetlands-Master.zip file into your downloads directory.

Here are the contents of that zip archive:



DEMutilities is a folder containing the files needed to install the DEMutilities toolbox in ArcGIS Pro.

WetlandTools is a folder containing the files needed to install the WetlandTools toolbox in ArcGIS Pro.

"Wetland_Intrinsic_Potential_Tool_Phase1.pdf" is the final report for Phase 1 of the project, and includes the user manual for the Phase 1 Wetland Intrinsic Potential Tool.

"Wetland_Mapping_Tool_Phase2.pdf" is the report for Phase 2.

Unzip the DEMutilities and WetlandTools folders to where you want them on your computer.

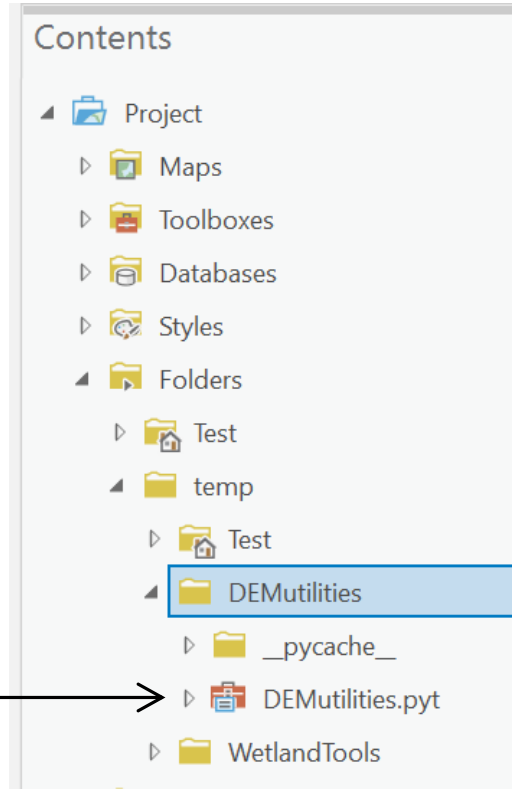
Within the DEMutilities folder is another zip file, ExecutableFiles.zip. It contains 3 files:

i. MakeGrids.exe
ii. LocalRelief.exe.
iii. Libiomp5mp.dll

Unzip these into the DEMutilities folder.

In ArcGIS Pro, go to the “View” tab and click “Catalog Pane”. In the table of contents, go to “Folders” and right-click to “Add Folder Connection”. Navigate to the location of the DEMutilities and WetlandTools folders and add that folder to the table of contents.

Click on the folder you just added to expand it in the table of contents, then click on the DEMutilities folder. You should see a python-tool icon for DEMutilities.pyt

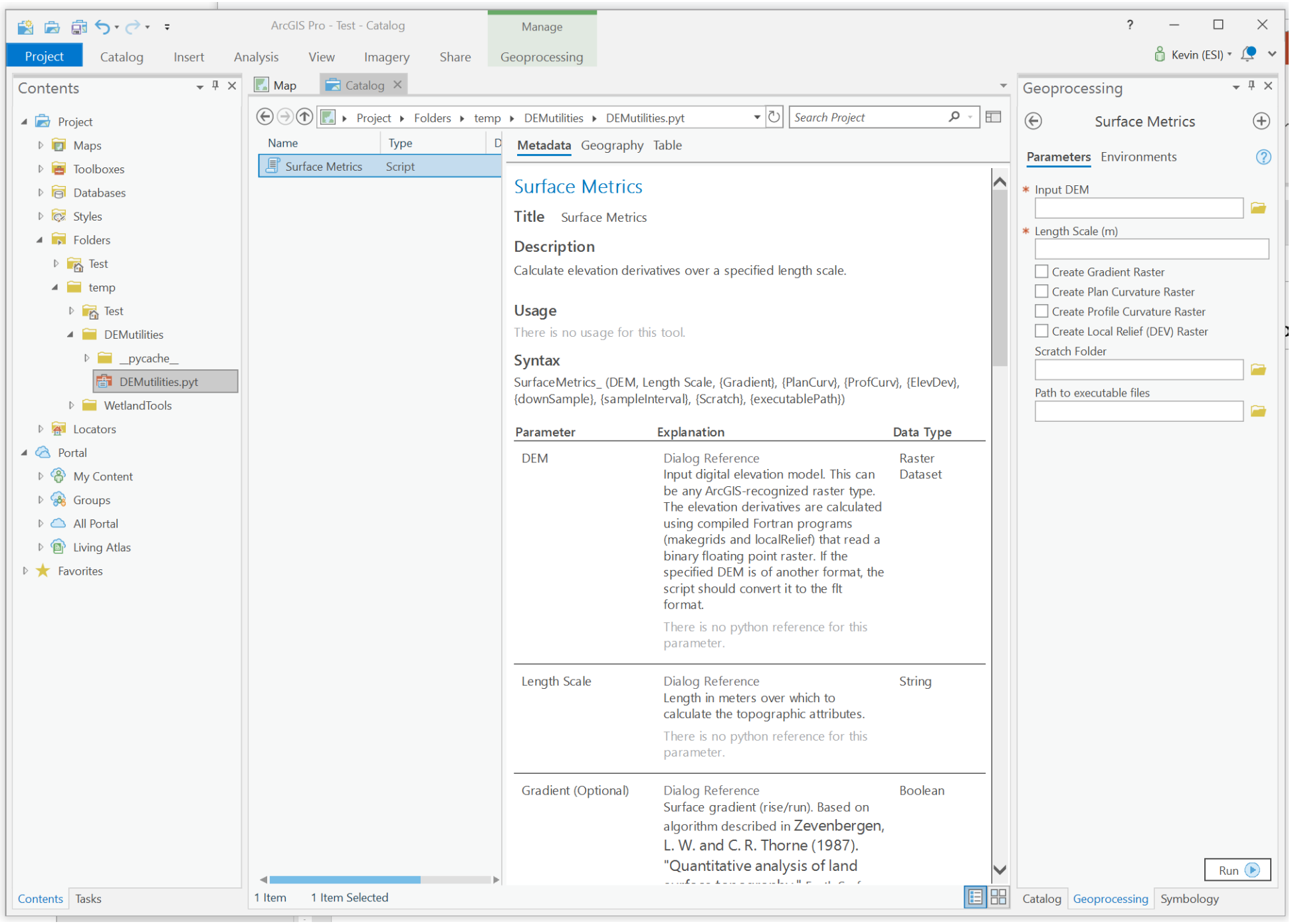


Within the DEMutilities.pyt toolbox is a single script: Surface Metrics.

Click on it to open the script in the Geoprocessing window and to show a description of the tool in the Metadata window.

Follow instructions in the metadata.

This tool creates new raster files of topographic attributes stored in binary floating point format. These raster files provide the input explanatory variables for the random forest model.



Similarly for the WetlandTools toolbox.

It contains two scripts:
Build Random Forest
Run Random Forest

Use the Build Random Forest script to train a model using point locations classified as wetland or upland (not wetland).

Use the Run Random Forest script to apply an existing random forest model – built with the Build Random Forest script – at new locations or to see how well the model works when compared to new field data.