# EPA NMF Workflow (Google CoLab)

The new NMF workflow jupyter notebooks and code are able to be run using cloud based jupyter environments. The details provided here are for running the notebooks in google colab.

Google CoLab is freely available at <https://colab.research.google.com> (a basic free tier is available for use by anyone with a google account).

Once on google colab, follow these steps to run the workflow:

1. Upload the notebook by selecting upload from the new notebook prompt and dragging a local copy of the colab workflow notebook file. That will create a new active notebook from that file.
2. Next, select the folder icon on the left side of the screen.
3. Upload the nmf source files zip to the notebook instance. These files will only exist for the duration that this notebook instance is running.
4. In the notebook file, under the dataset path variables is a line ‘# !unzip /content/nmf\_py-main-\*\*\*\*.zip’. Uncomment this line (delete the starting hash symbol) and change the date on the zip file to the one uploaded in step 3, if the version is different.
5. Start running code, either by running all or by cell.
   1. Note: The pip install will potentially through an error, but as long as the installed package is added successfully (last line) we can ignore the error.
6. When running the NMF model in google colab, optimized must be set to False as this environment does not have a compatible compiled version of the Rust runtime.
   1. An error message saying that no module named nmf\_pyr will result in attempting to run optimized without the compiled Rust.
7. The resources available through the free version of CoLab are minimal. Running the displacement method on the Baton Rouge dataset with 6 factors will take just over an hour.

Other notebooks can be found in the source file directory, under notebooks. Most notebooks will no longer work and were intended for development and testing of ideas. The notebooks that are current and functional or document the workflow are:

* 1. Epa\_nmf-py\_algorithms.ipynb
  2. Epa\_nmf-py\_workflow\_01.ipynb

All notebooks will be removed or refactor in the next code refactor.