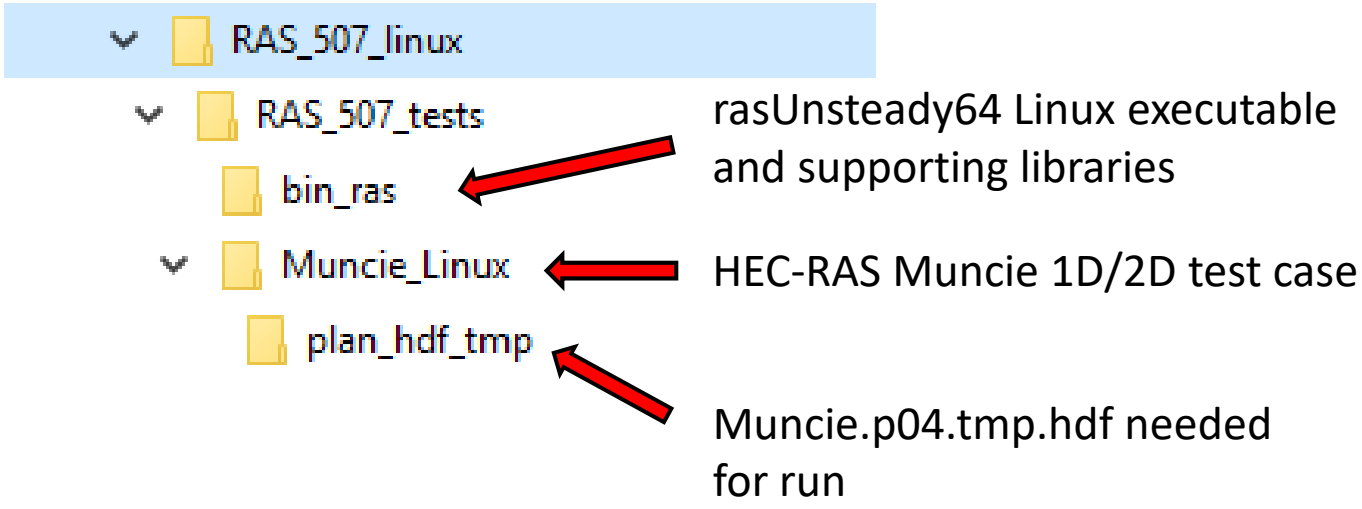
HEC-RasUnsteady64 for Linux and test case

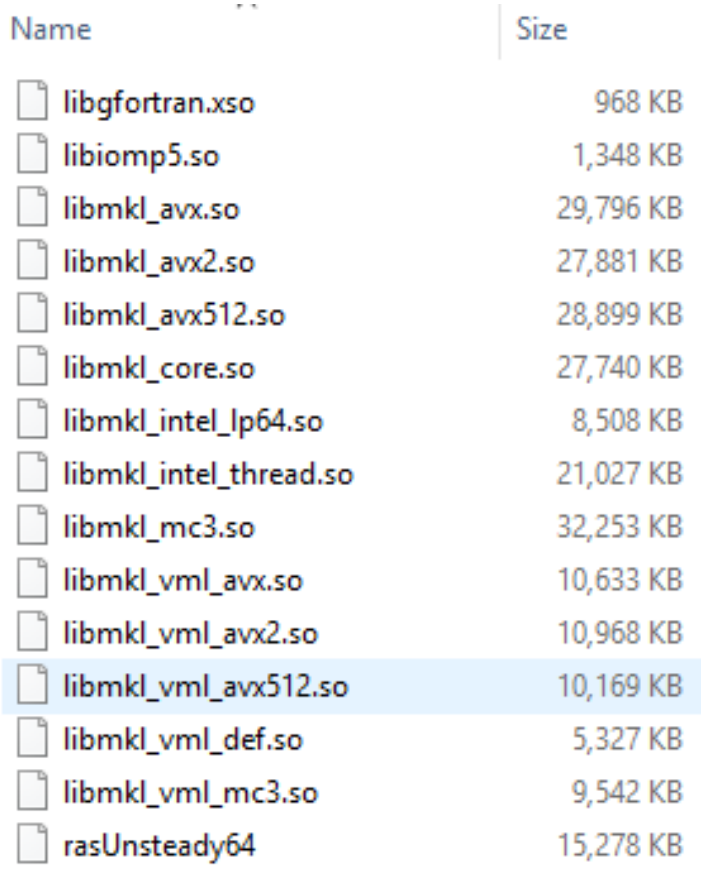
2 April 2019

The HEC-RAS_507_linux.zip contains the rasUnsteady64 Linux executable, supporting libraries and an example HEC-RAS test case.

Contents of HEC-RAS_507_linux.zip



Contents of /bin_ras



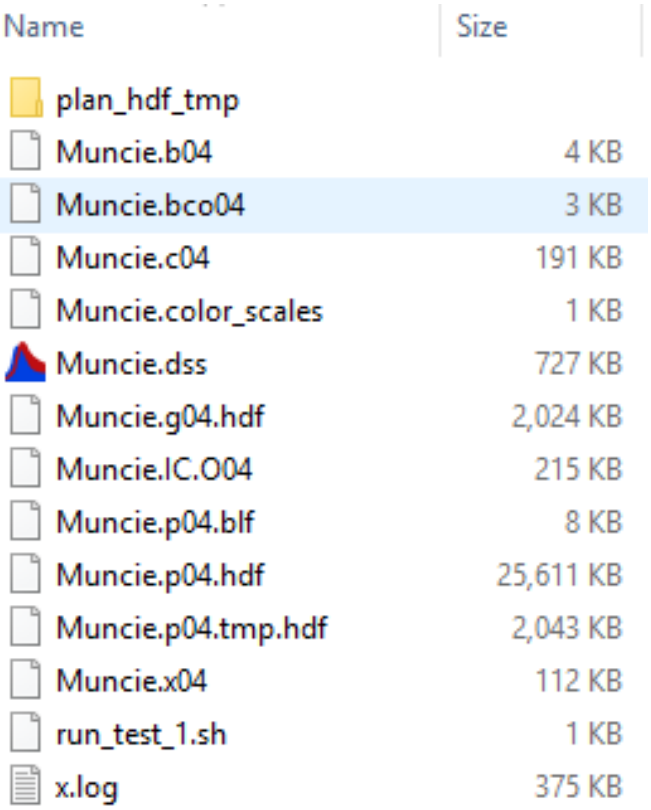
Name	Size
libgfortran.xso	968 KB
libiomp5.so	1,348 KB
libmkl_avx.so	29,796 KB
libmkl_avx2.so	27,881 KB
libmkl_avx512.so	28,899 KB
libmkl_core.so	27,740 KB
libmkl_intel_lp64.so	8,508 KB
libmkl_intel_thread.so	21,027 KB
libmkl_mc3.so	32,253 KB
libmkl_vml_avx.so	10,633 KB
libmkl_vml_avx2.so	10,968 KB
libmkl_vml_avx512.so	10,169 KB
libmkl_vml_def.so	5,327 KB
libmkl_vml_mc3.so	9,542 KB
rasUnsteady64	15,278 KB

Will need gfortran library if not installed. (Rename extension)

Intel Fortran supporting Libraries

rasUnsteady64 Linux executable

Contents of /Muncie_Linux
- Runs the standard HEC-RAS Muncie test case



Unsteady input text file

Binary geom file from Geometry Preprocessor

DSS output file

Input geometry HDF file

Plan HDF file with 2D results

Trimmed plan HDF file for run input

Input geometry text file

Script for running test case

Required files, generated by HEC-RAS Windows GUI

Result Files generated by Linux Compute

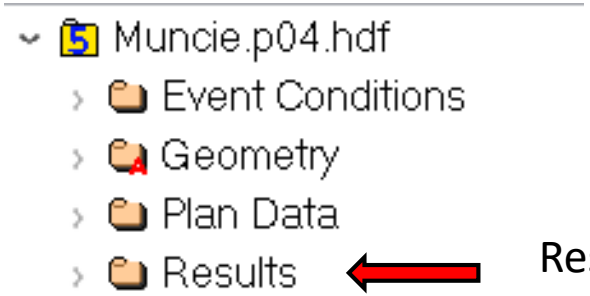
Files needed from HEC-RAS GUI run

The HEC-RAS GUI will need to be run to provide a base set of the input files for the Linux compute. Text based files will need to have the ending carriage return character stripped to be Linux compatible (.x04 and b04).

Muncie.c04 Muncie.x04 Muncie.g04.hdf	Geometry based files
Muncie.b04	Unsteady BCs for 1D part of grid
Muncie.p04.tmp.hdf	Unsteady BCs applied to 2D part of grid

Input Plan HDF file (e.g. Muncie.p04.tmp.hdf)

The Muncie.p04.tmp.hdf is derived from an HEC-RAS GUI compute that produces the file Muncie.p04.hdf. The computed file includes bcs, plan and geometry data, and the results. The RasUnsteady64 compute requires a file named Muncie.p04.tmp.hdf for input. The Muncie.p04.hdf cannot simply be renamed to Muncie p04.tmp.hdf



Results group must be deleted from the file

Input Plan HDF file (e.g. Muncie.p04.tmp.hdf)

Below is a python script which copies all data groups but "Results" from the Muncie.p04.hdf into Muncie.p04.tmp.hdf

remove_HDF5_Results.py

```
'''
Created on Mar 29, 2019

@author: scott
'''
import h5py
import sys
from shutil import copyfile
import os

filename = sys.argv[1]

fsource = h5py.File(filename, 'r')
fdest = h5py.File(os.path.splitext(filename)[0] + '.tmp.hdf', 'w')

# copy attributes
for fattr in  fsource.attrs.keys() :
    fdest.attrs[fattr]= fsource.attrs.get(fattr)

# copy groups, except Results
for fg in  fsource.keys() :
    if fg != "Results" :
        fsource.copy( fg, fdest )

fdest.close()
fsource.close()
```

Muncie test case

The script, run_test_1.sh, runs the rasUnsteady64 for the Muncie example. At the end of the compute, the Muncie.p04.tmp.hdf is renamed to Muncie.p04.hdf

Before running the test, remove the existing Muncie.p04.hdf from the directory. Also be sure there is the suitable Muncie.p04.tmp.hdf file. A copy of the file can be obtained from the Muncie_Linux/plan_hdf_tmp directory.

Muncie test case, *.b04 file

The Muncie.b04 file contains the 1D boundary conditions and most the run parameters for the unsteady compute.

Of note in the provided example is line 45, the DSS output file path. The line generated from the HEC-RAS GUI has a typical Windows OS pathname:

```
44    Write DSS File          =         T
45   g:\Ras_507_test\Muncie\Muncie.dss
```

This will need to be modified to the right path on the Linux environment. For the test case provided, the path was shortened to Muncie.dss to output in the test directory.