

Adcirc on HPC cluster:

What is Adcirc?

ADCIRC is a highly developed computer program for solving the equations of motion for a moving fluid on a rotating earth. These equations have been formulated using the traditional hydrostatic pressure and Boussinesq approximations and have been discretized in space using the finite element (FE) method and in time using the finite difference (FD) method.

ADCIRC can be run either as a two-dimensional depth integrated (2DDI) model or as a three-dimensional (3D) model. In either case, elevation is obtained from the solution of the depth-integrated continuity equation in Generalized Wave-Continuity Equation (GWCE) form. Velocity is obtained from the solution of either the 2DDI or 3D momentum equations. All nonlinear terms have been retained in these equations.

The full documentation for Adcirc is found in the following links:

[Official Website](#)

[Command Line Options](#)

[Examples](#)

Versions Available:

- Adcirc -v51.52.29

How to load a version of Adcirc?

To load a version of Adcirc on the HPC, use the following command:

```
module load bio/adcirc
```

Verify by using this command:

```
module list
```

This program can be run with MPI on many nodes. So, it should load an MPI module which gives access to `mpiexec` binary to launch program on many nodes.

Important binaries loaded with Adcirc module:

- `adcirc`
- `adcprep`
- `aswip`
- `padcirc`
- `padcswan`

How to use Adcirc on the cluster?

The Script :

To run a slurm job, the user must prepare input files. For this example, get input files with,

```
#Download the input test file from Adcirc website
curl -L -o test.zip https://www.dropbox.com/s/twnwtbsiinr0gn4/c1_KG-
LS_IM-121221.zip?dl=0

#Unzip test files
unzip test.zip && rm test.zip

# Make a script one directory above
touch ../adcirc.sbatch
```

Use the following script as a template,

```
#!/bin/bash
#SBATCH -J Test
#SBATCH --ntasks=20
#SBATCH --mem-per-cpu=2g
#SBATCH -p main
#SBATCH --qos main
#SBATCH -e err.txt
#SBATCH -o out.txt

# Load the adcirc module
module load math/adcirc

#Move to test directory
cd $SLURM_SUBMIT_DIR

# Input is the directory containing input files
mpiexec adcirc -I input/
```

Schedule the job with the following sbatch command.

```
sbatch script.sbatch
```

All the processed files will be generated in the same directory as the script. Log file will be in input directory.

Where to find help?

If you are stuck on some part or need help at any point, please contact OIT at the following address.

<https://ua-app01.ua.edu/researchComputingPortal/public/oitHelp>

