# Instructions for Downloading, Compiling, and Running sphereCLAW by J.A. Rossmanith

**DISCLAIMER:**



**Step 1.** Download CLAWPACK (version 4.3) source code:

http://depts.washington.edu/clawpack/clawpack-4.3/

Detailed instructions can be found at

https://depts.washington.edu/clawpack/users/index.html

**Step 2.** Download sphereCLAW source code:

http://dogpack-code.org/clawpack/sphereCLAW/

**Step 3.** Configure and compile sphereCLAW main library:

- Create a path to sphereCLAW. For example in bash you would modify your .bashrc file by adding a line of the following form:

  export sphereCLAW = /XXXX/YYYYY/sphereCLAW

  where XXXX and YYYY need to be replaced by the correct sub-directories.
- Move into sphereCLAW library directory: cd $sphereCLAW/lib/
- Compile by typing: make

**Step 4.** Compile and run one of the examples:

- Change directories to one of the examples. For example type:

  cd $sphereCLAW/advection/solid_body_rot/

- Compile by typing: make
- Run by typing: ./xclaw
- After completion the code will have created several output files in the sub-directory output/

**Step 5.** Plot the results. For each example a MATLAB script entitled `plotq.m` is provided. If the software package MATLAB (`http://www.mathworks.com`) is available to you:

- Open MATLAB and move into the correct `sphereCLAW` example directory.
- Add the following directory to your MATLAB path by typing the following in a MATLAB window:

  `path(path,'/XXXX/YYYY/sphereCLAW/matlab')`,

  where `XXXX` and `YYYY` need to be replaced by the correct sub-directories.
- Execute the plotting script by typing: `plotq`

**Step 6.** Modify the input files. There are two main input files that can be modified for your specific problem:

`claw2ez.data` – Set number of points, CFL number, ... (see `CLAWPACK` instructions for more details)

`setprob.data` – Set parameter values to turn on/off parallel transport and orthonormalization and set gravitational and Coriolis constants

For more information we refer you to the article:

J.A. Rossmanith, A wave propagation method for hyperbolic systems on the sphere, *Journal of Computational Physics*, Volume **213**, pp. 629–658, 2006.