

Running Titan2D on VICTOR

Additional details available in the user [guide](#)

1. Log into VICTOR at `victor.2i2c.cloud`. We suggest using the second smallest machine for this workflow.
2. Open a Terminal window, enter `'victor setup'` and then enter the number associated with TITAN2D.
3. Open `titan2d.ipynb` inside the new folder that has been created within your home directory.
4. Run the import cells to ensure you have the necessary tools to run the model.
5. Using the information in the notebook, make a selection (True/False) for the output options.
6. Set the initial parameters, including DEM format (ex: `gis_format='GDAL'`) and file path.
 - a. `length_scale` is an estimate of the expected order of magnitude of the flow length (m)
 - b. `max_iter` and `max_time` determine the maximum number of timesteps or seconds to run a simulation, respectively. We recommend restricting the model by runtime (`max_time`) instead of by number of timesteps (`max_iter`), as well as checking that the average flow velocity approaches 0 at the final time steps
 - c. Specify an output format using `vizoutput`, noting that “`xdmf`” is recommended for use with ParaView (available on VICTOR desktop)
 - d. Choose a value for `dtime` to determine the number of output intervals. Be cautious of making this too small, as many output files will be created

7. Set numerical parameters to determine the desired specificity of the model.
 - a. Changing `order` to “second” is recommended if using a coarser DEM file
8. Enter rheological parameters (different frameworks will require different inputs to be set).
 - a. Default `model` is set to “Coulomb, ” but lahars can be simulated using “TwoPhases-Pitman-Le ”
 - b. Note that the model is very sensitive to topography and changing the friction angle will have a dramatic impact on the result
9. Optionally add a pile, event (flux), and/or discharge plane by setting flags to `True` and providing the necessary parameters.
11. Run cells to create an input file and specify the number of threads.
12. Run the model, noting that it may take some time to complete.
13. Specify a time step to analyze and then plot results.

