**Q&A Report: Flood Simulation Optimisation and Cloud Computing**

| # | Question | Answer | Answer Name |
|---|---|---|---|
| 1 | How sensitive is flood modelling to manning's roughness coefficient for vegetation (specifically on floodplains)? | The sensitivity will vary with flow depth and the characteristics of the flow. If there are ponded areas without much conveyance, the results may be relatively insensitive to the selected roughness. In rain on grid models, the roughness can affect the amount and timing of the flow that reaches channels, and the effects on local hydraulics can counteract each other. See AWS free webinar on Mannings Roughness here: https://www.youtube.com/watch?v=JhlPDFwA5UU | Krey Price |
| 2 | In some cases it is not neccesary to model flooding using the full shallow water equations. Is it possible to use simpler governing equations in TUFLOW, such as a diffusion wave model? | TUFLOW only supports the full SWE. We don't offer a diffusive wave option. | Chris Huxley |
| 3 | what is Sub-Grid Sample? | Here is a link to a video explaining it: https://www.tuflow.com/library/videos/#sgs_spotlight | Chris Huxley |
| 4 | hey chris, will TUFLOW release any excel plugin updates that might make spot checks on control numbers a little less CPU intensive? the number of datapoints often crunches excel and sometimes freezes when trying to view so much data. | We haven't got an excel tool for this. If you are exceeding the file size limits of excel, have you considered using Python. PyTUFLOW should be really helpful | Chris Huxley |
| 5 | can you provide a link to how to select the cell size | https://awschool.com.au/training/webinar-2d-cell-size-for-modelling/ | Samantha Watt |
| 6 | the 20m model appears to have the lowest water level compared to the 5m - so while it's more efficient to run, are we not conserned it may not be the most conservative? - i guess this is where the nature/risk of the project comes in to play. | The difference was less than 0.05m differnce. That small value is within the range of uncertainy of the modelling overall, so I was happy selecting it. There would probably be greater uncertainty around the hydology assumption (losses, event timing etc.) | Chris Huxley |
| 7 | I looked into TUFLOW on the cloud, and due to licensing couldn't understand what the benefit is over running it on your own machine, if you need a license for each virtual machine anyway.<br><br>Could you please explain that? | the benefit is if you need to upscale your compute ability because you have exceeded your inhouse compute resources. for example, if you have to run a 1000 simulations though onlly one desk top, spinning up multiple (10 to 100's) of virtual machines will help you complete your modelling quicker (hopefully meeting your project deadlines sucessfully) | Chris Huxley |
| 8 | Dows Flood Platform work within an organization’s private cloud instance? | Not just yet.. stay tuned! | Sophia Buchanan |
| 9 | What are the risks associated with depending on external, offsite providers for this service (in terms of stability/accessability) if there is some form of an attack or those providers simply decide to bump up their servicing fees once everyone's depedent on them?<br><br>we've seen this happen across almost every subscription service. | I guess this is a risk with any service of this type, not specific to cloud. You'll just have to decide what you’re personally comfortable with. Regarding cloud simulation costs, there are no guarantees but higher usage typically results in larger discounts. The more successful Flood Platform is, the larger discount we can pass on to our users. | Chris Huxley |
| 10 | When running a long simulation, are the graphics cards and compute resources ‘reserved’ for the duration of the simulation? Or is there a risk that cloud providers could reclaim the compute resources for higher-paying customers (as is sometimes the case with spot pricing of cards from cloud providers)? | live answered | AWS Admin |
| 11 | How does the data transfer work? You set it up initially on cloud or you set it up on local machine and then run it on cloud? Then you need to bring in the output int local machine? Do you have to pay for the cloud storage? What the transfer rate can be? | Flood Platform does not replace the typical model build and test workflow. Once you are ready to run simulations (or just store the models) you zip up the model and any available results and upload them. | Sophia Buchanan |
| 12 | How far upstream and downstream should we consider if we are doing hydraulic analysis to replace the existing culvert ? I think this information will be helpful to reduce the size of the model and increase simulation time. Secondly, if tributaries to creek is only 300m far upstream or downstream of proposed culvert/bridge, should we consider that tributary? | Upstream and downstream boundaries should be places far enough away to not interfere with the model results. Distance is location and project specific. | Sophia Buchanan |
| 13 | Apart from the model aspects that Chris explained, what are key technical/IT aspects of a model that modellers should pay attention to specifically when running on the cloud? Should different technical choices be made in a TUFLOW configuration? Are there specific technical recommendations to modellers (TUFLOW or otherwise) from a Flood Platform perspective? | Flood Platform has been developed around common TUFLOW model configurations and should generally work with standard configurations. The only thing we have found to be problmeatic is the use of full stops or spaces in the naming conventions of simulations. | Sophia Buchanan |
| 14 | A colleague who couldn't make it wants to know if there are data size limitations for Flood Platform? | Great question. Sometimes a simulation requires more RAM than our default hardware which means you need a more expensive option. We haven't hit limits on model storage that should be technically unlimited | Sophia Buchanan |
| 15 | Is it possible to try ANUGA model on Flood Platform | Currently only Flood modeller & TUFLOW is supported | Sophia Buchanan |