5-13-2026 2D Modeling Webinar on **Accelerating 2D Hydraulic Modeling: GPU enabled SRH-2D in SMS**

Chat pod comments, live responses, and some post webinar responses

- Are sediment and hydraulic results identical between the two processor choices?
    - Yes

- For a large mesh (~100,000 cells), the result graphics showed as "jagged" even with reduced time steps. Assuming GPU processed the model, what is the best way to demonstrate the model has achieved the required accuracy or the results are good?
    - The best way to demonstrate a good and stable solution is to review the simulation plots (Net Q, Mass Balance, Wet Elements, and Monitoring Lines/Points). Monitoring points are recommended upstream of every structure and other areas of interest to verify stable solutions.

- Beyond computational speed, were there any improvements to solver robustness or error handling (like sediment mas conservation error) introduced during the GPU development process?
    - It should be about the same as the CPU version.

- What's the practical sweet spot — by mesh size and runtime — where GPU starts beating CPU MPI for typical stream restoration / fish passage models with sediment transport?
    - This will be computer and CPU specific, but in general, the benefits of GPU become beneficial for meshes larger than 50,000 elements.

- Would this change the number of simulations that can be run simultaneously?
    - This will be system dependent. Running multiple concurrent GPU simulations does slow the computation speed.

- All the GPU cards tested are consumer grade, which are probably the most commonly available to engineers. It will be interesting to do some benchmarking on high-end, data-center grade GPU card, such as A100 and H100. You can get those from cloud computing providers such as AWS.

- Does hard drive type affect the computational times? Is there a recommended type?
    - Yes, I/O time does impact the speed. We recommend a solid state drive. NVMe drives are even faster.

- You mentioned the 'sweet spot' GPU for SRH-2D — can you confirm the specific card and pricing? And for a solo practitioner doing reach-scale fish passage work (30K–80K cells), with occasional Barrier Bundle batch runs of 10–20 sites — would you still recommend the same sweet spot, or step up?
    - Price range in Nvidia's website. 5090 ranges from $2599 to $4199.
    - Many laptops come with low to mid-level video cards

- Does it matter if the model is stored on the hard drive versus on a network server?
    - Yes, running a model located on a local drive is faster than on a network drive. Ideal is NVMe drive
    - This can be important as network speed can be very very slow :)

- Will GPUs improve SMS performance with large scatter sets?
    - The GPU speedup does not impact SMS at this time. If the scatter is very large, we recommend that you convert it to a raster, which is much faster.

- With the new GPU simulation capability, is the plan to implement 3D Flow simulation (CFD) in SRH-2D at the bridge opening at some point?
    - SRH-3D is in the works, but there is not a planned schedule.