

Biweekly MSc Thesis Progress Presentation – Lukas Strebel

September 5, 2018



CSCS

Centro Svizzero di Calcolo Scientifico
Swiss National Supercomputing Centre

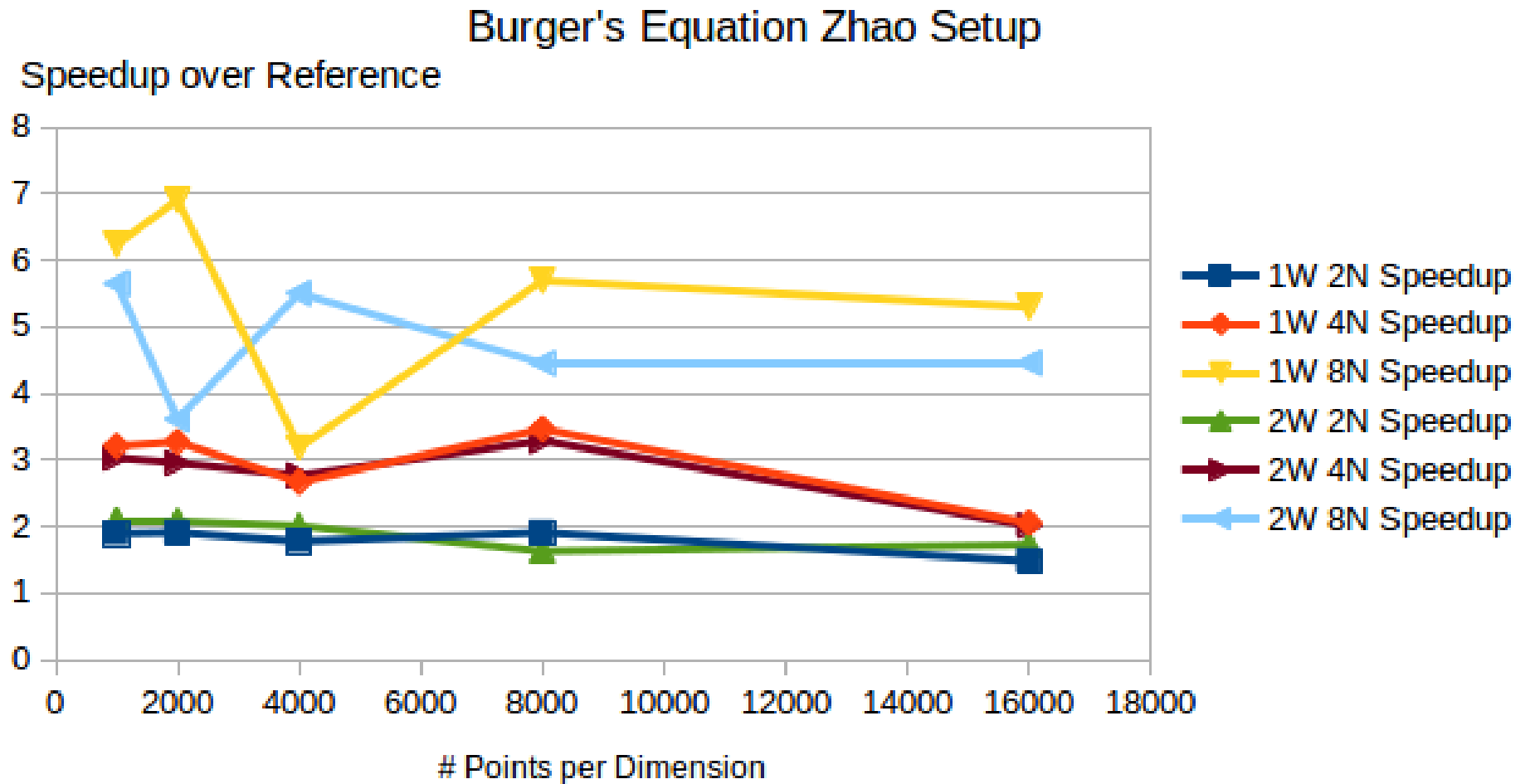


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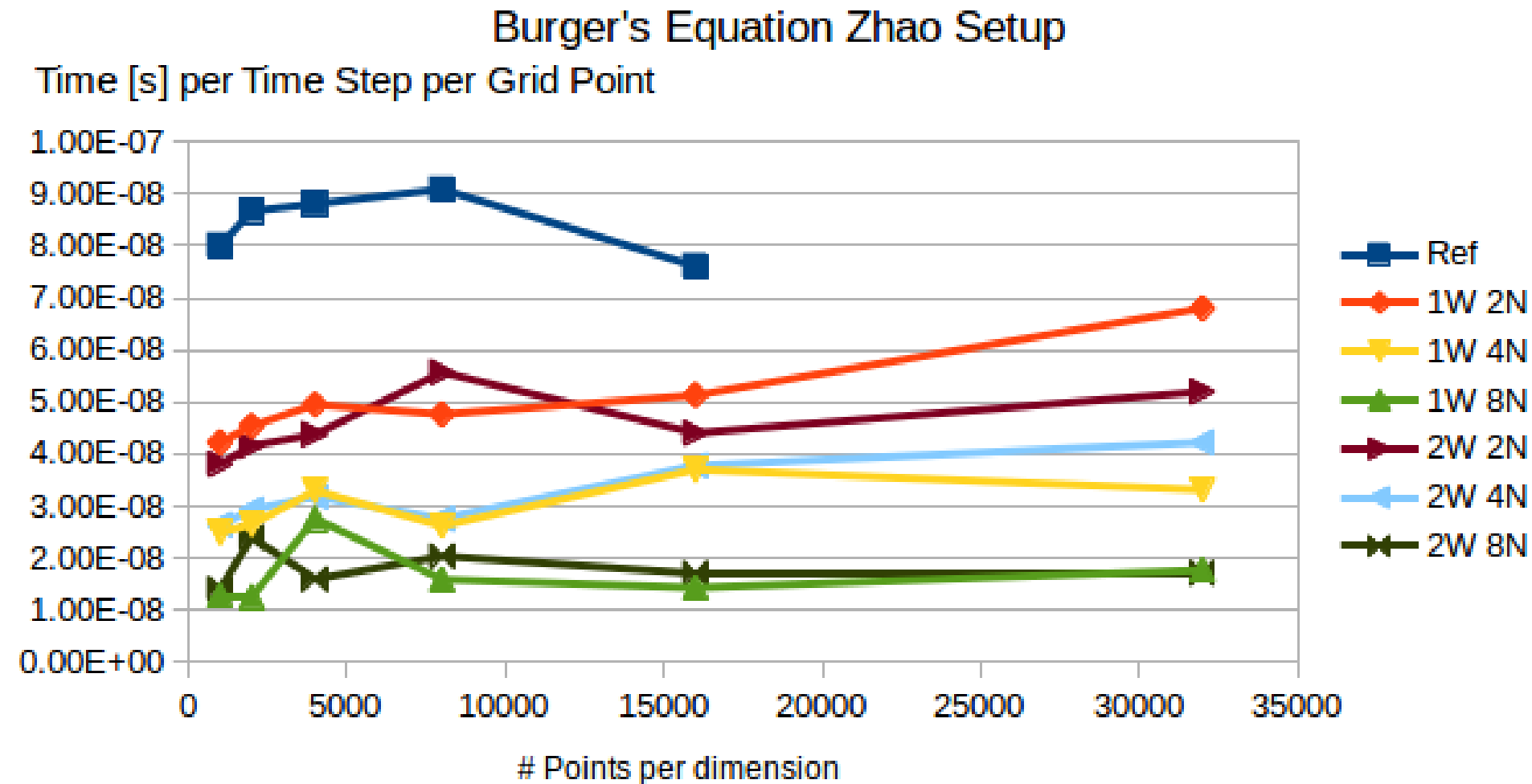
Updates from Last time

- MPI One Sided
 - Get() always returned zero – Synchronization problem.
 - Could not find the Problem – Changed to Put() instead – Worked immediately.
- Shallow Water Equation on a Sphere
 - Changed to version without pole treatment (limit band to -85° to 85°).
 - Advection only looks okay.
 - Lax-Wendroff-Scheme with and without diffusion, still problems
 - Had to change domain slightly to handle periodic correctly (values at 2π = values at 0)
 - Multiple stencils (Lax-Wendroff and Diffusion) in sequence on same fields requires copy of field?

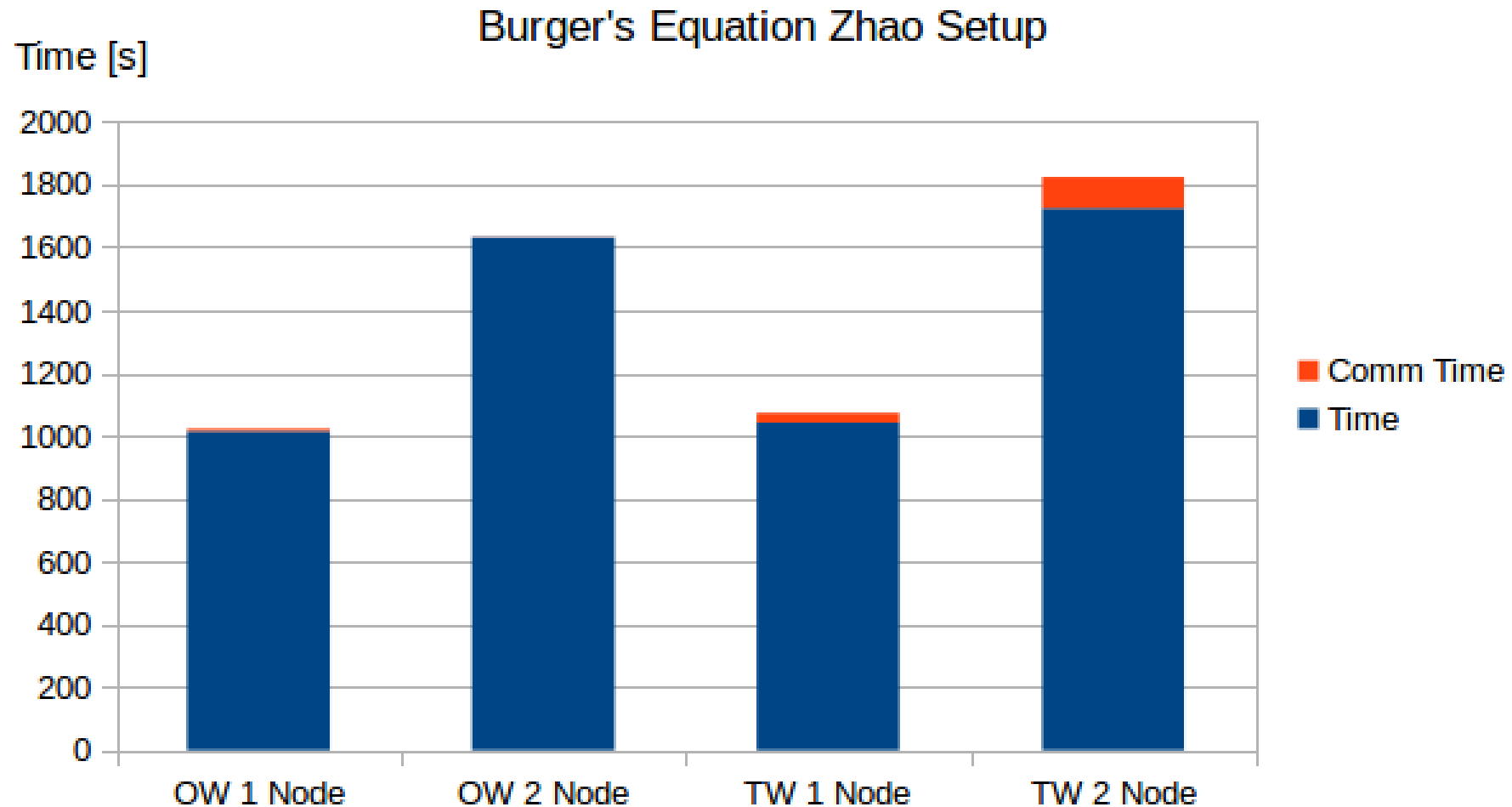
Experiments on Greina – Speed up for Increasing Grid size



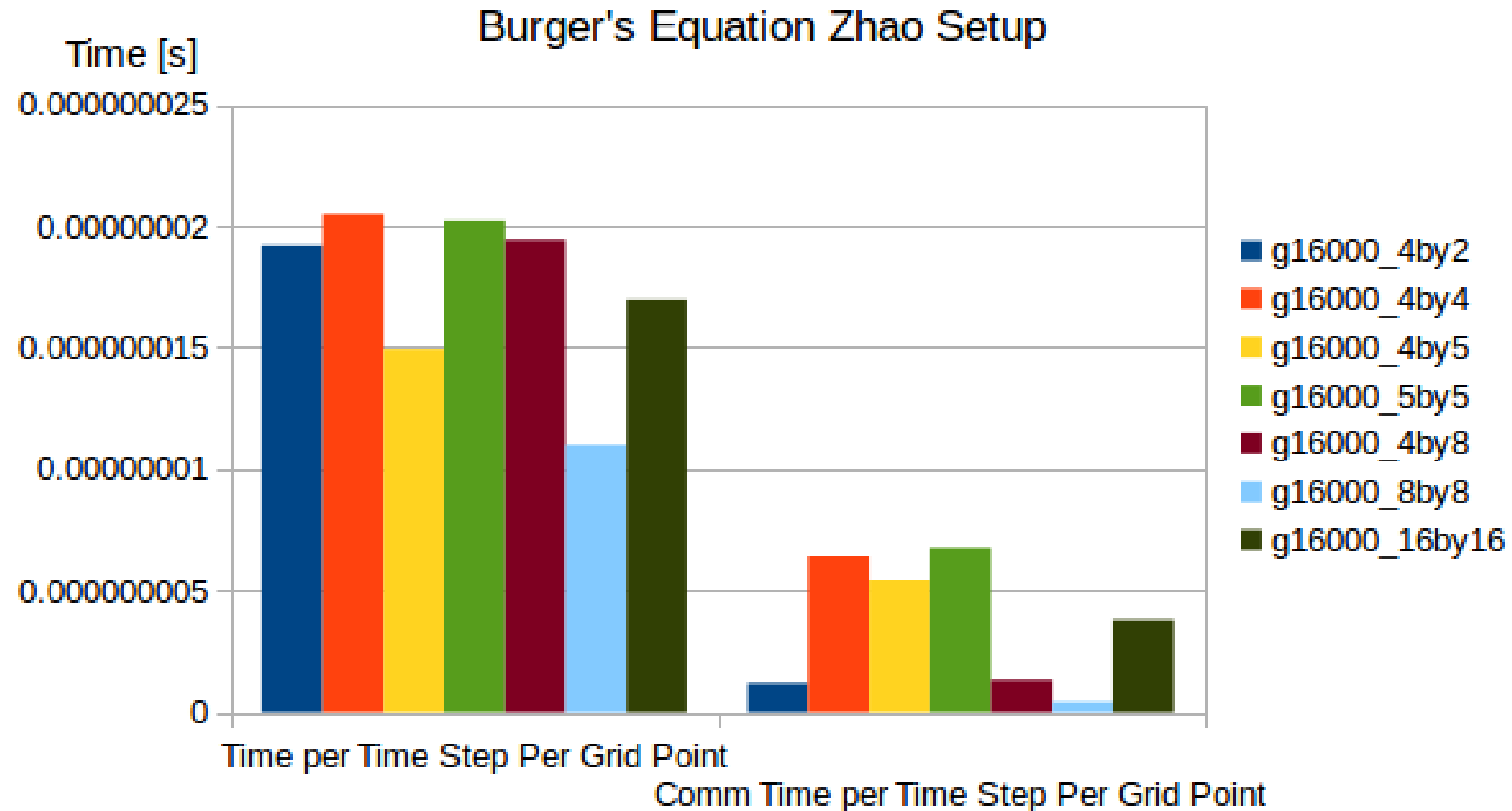
Experiments on Greina – Increasing Grid size and 1W / 2W MPI Comparison



Experiments on Greina – Communication Time – 16k by 16k Grid – 2 Tasks on 1 or 2 Nodes



Experiments on Greina – Different Partitionings – 16k x 16k Grid / 4 Tasks per Node on 2 Nodes



Next Milestone – September 15

- Complete Implementation
- All benchmarks and optimizations

After that:

October 1 – Complete Thesis for reviews

October 15 – Complete Thesis document incl. reviews.

October 20 – Thesis text submission to Thomas Schulthess

November 13 – Thesis text submission to ETH (Deadline)