

Debugging and Profiling

Keegan Lensink
Seismic Laboratory for Imaging and Modeling

Debugging and Profiling

Debugging

- Debugging Overview
- MATLAB Example
- Julia Example

Profiling

- Profiling Overview
- MATLAB Example
- Julia Example

Debugging and Profiling

Start simple,
Start serial.

Debugging

What is it?

- Process of finding errors in a program
- MATLAB and Julia both provide interactive debuggers

Why do it?

- Bug fixing is inevitable, might as well do it well.
- Understand complex code

Debugging

Errors

Syntax Errors - Breaking errors, easy to debug

Logic Errors - Non - breaking errors, more difficult

Debugging

Breakpoints

A point or a condition, set inside of a program, that stops the program when it is hit.

Debugging

MATLAB Debugging

Debugging

MATLAB Debugging

Profiling

What is it?

- Identifying and quantifying expensive operations
- Tracking time, memory allocated, and memory allocations

Why do it?

- Key step in optimizing code is identifying the slow parts-
- Quantify performance benefits
- Avoid premature optimization

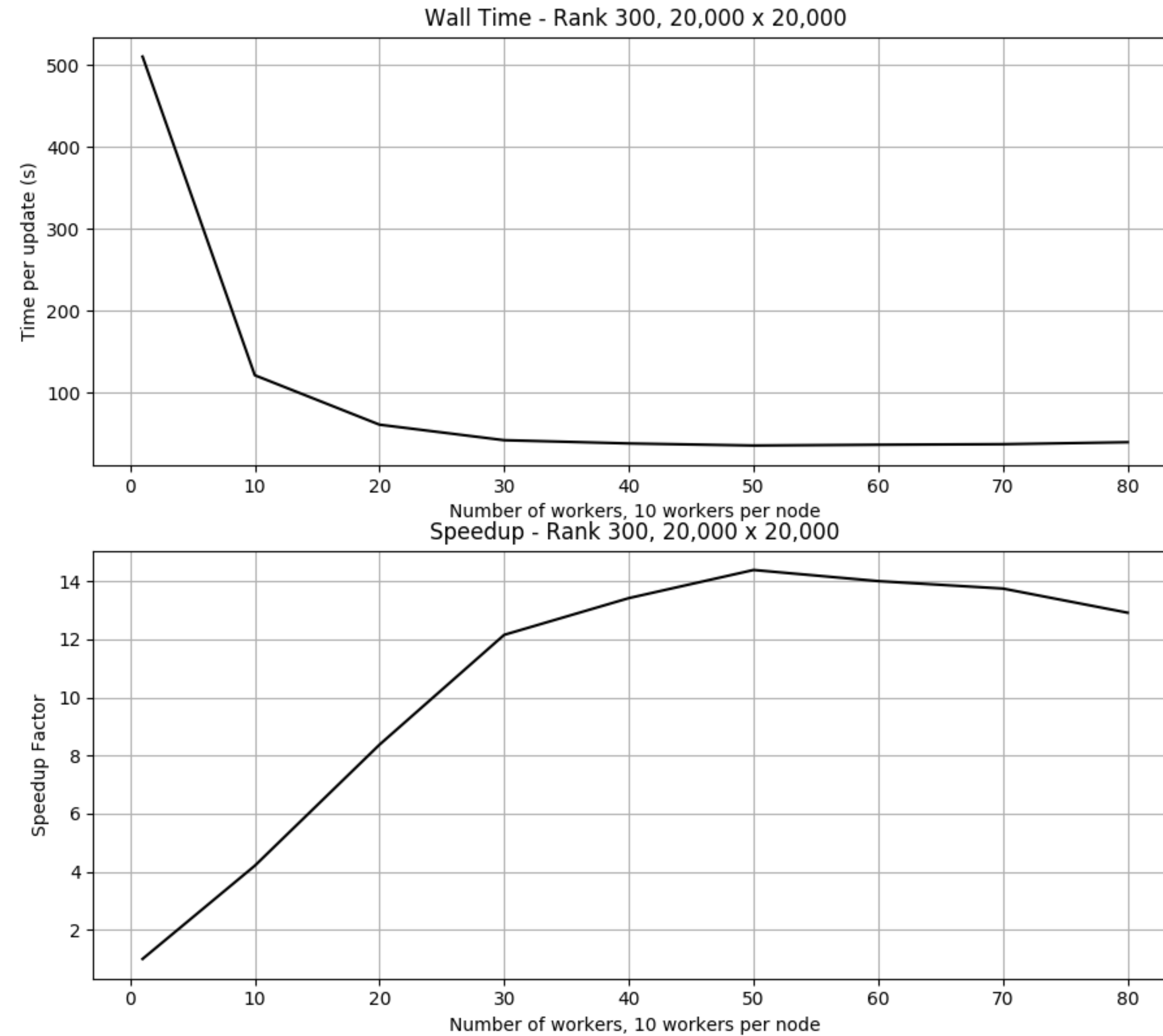
Profiling

MATLAB Profiling

Profiling

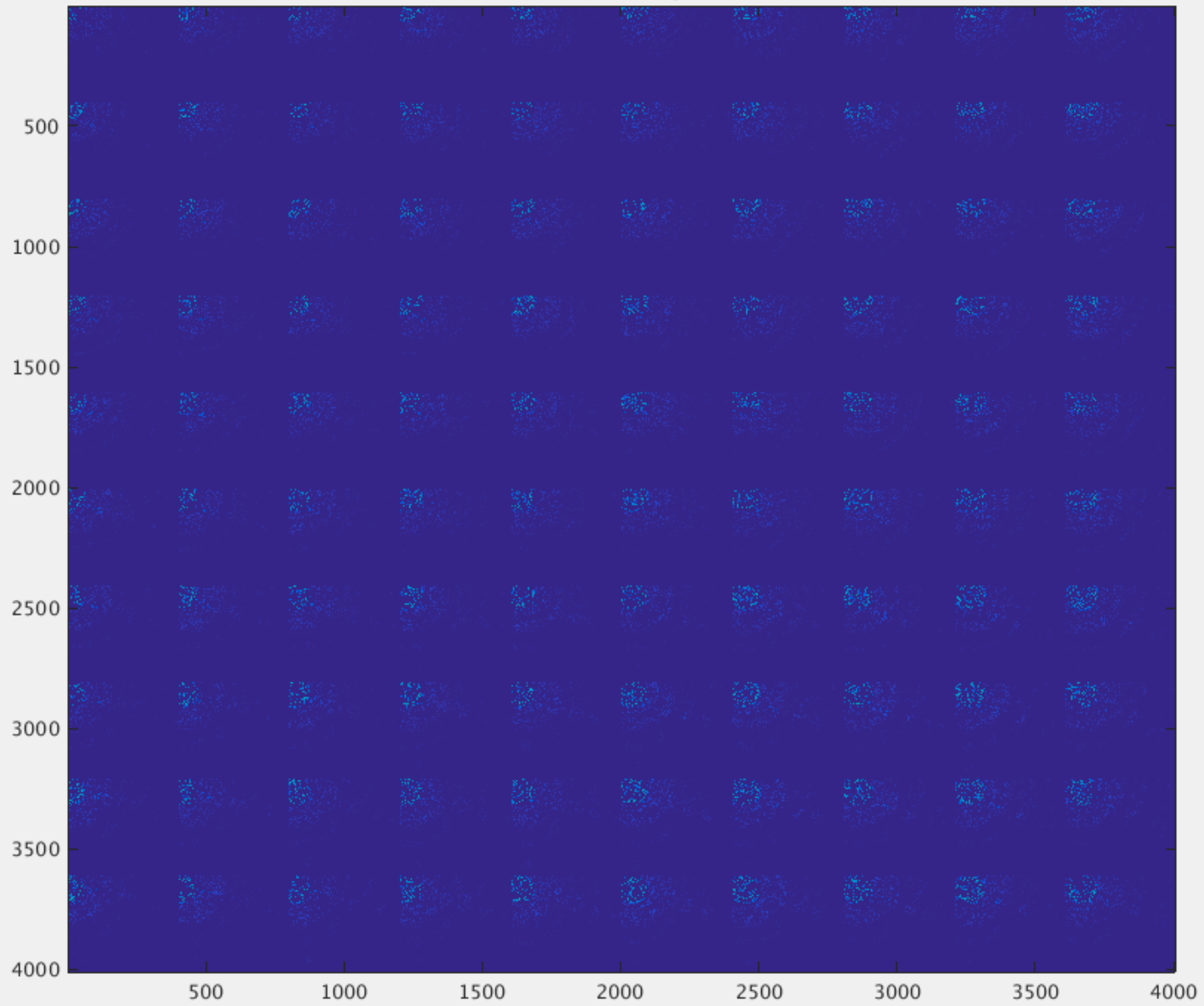
Julia Profiling

Profiling

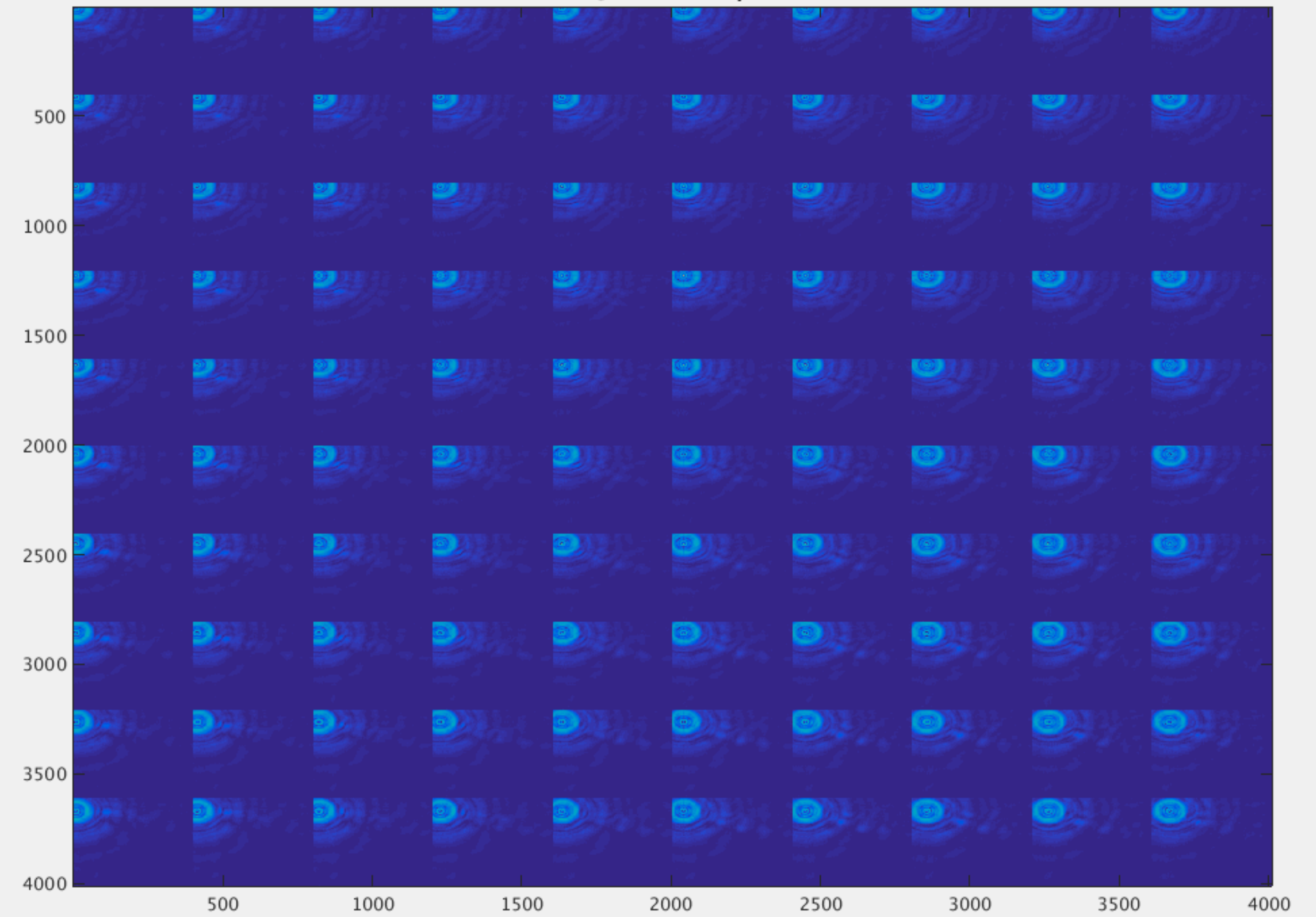


Profiling

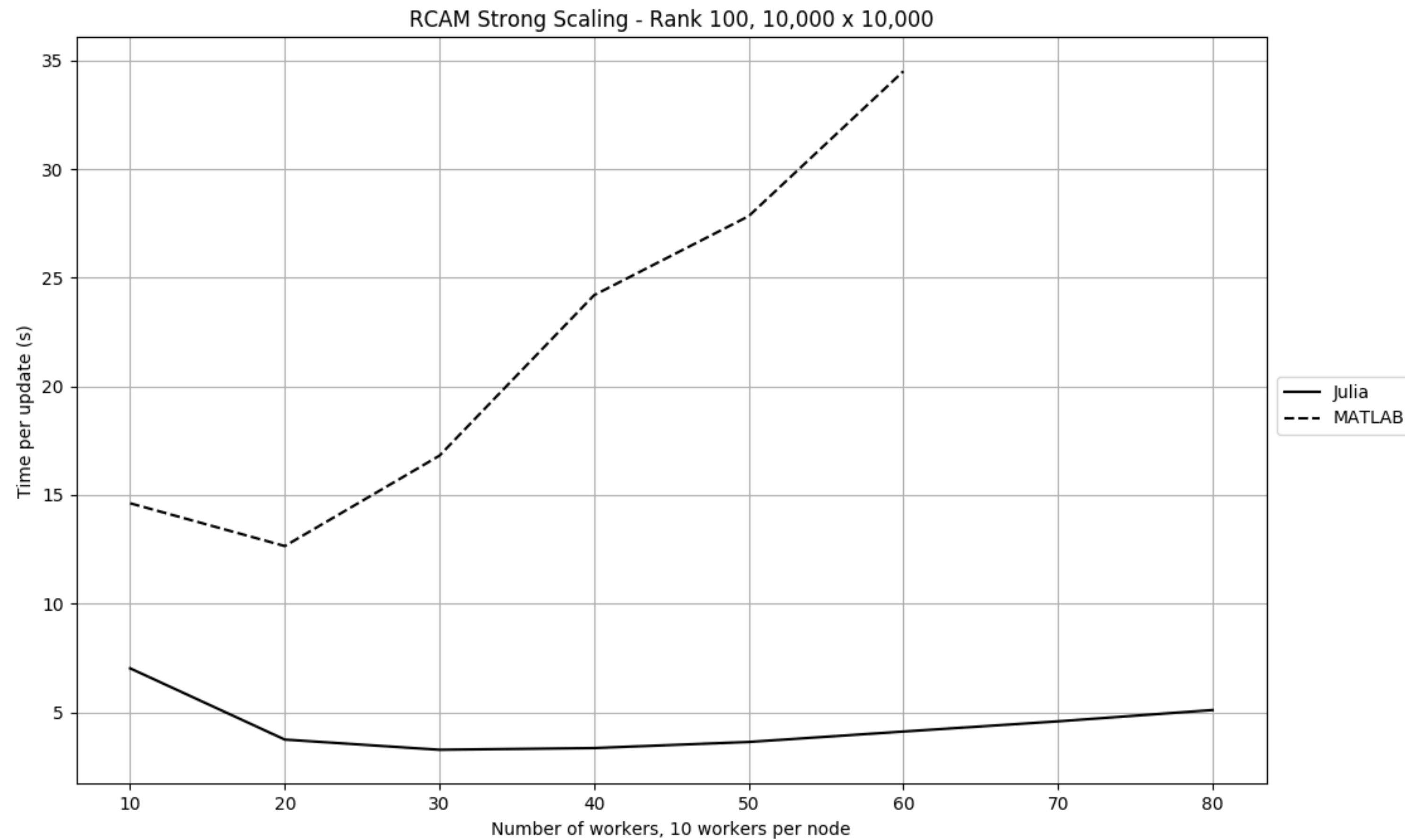
Julia Subsampled



Julia Recovery



Profiling



End

Thank you!

Keegan Lensink
Seismic Laboratory for Imaging and Modeling