Project2 Final Specification

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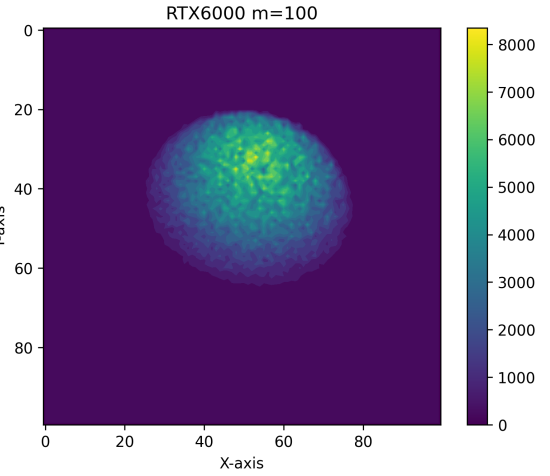

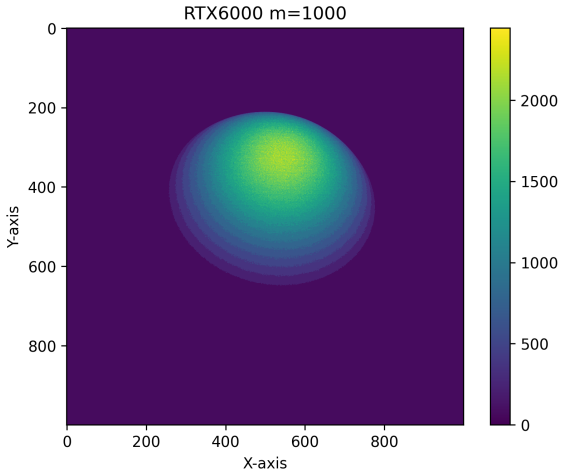

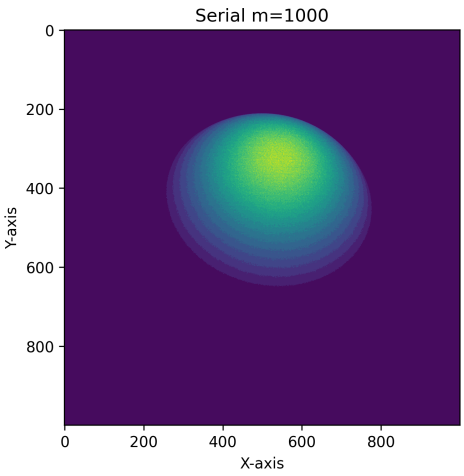

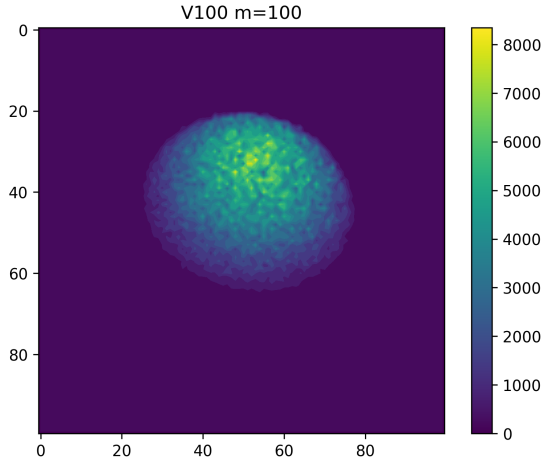

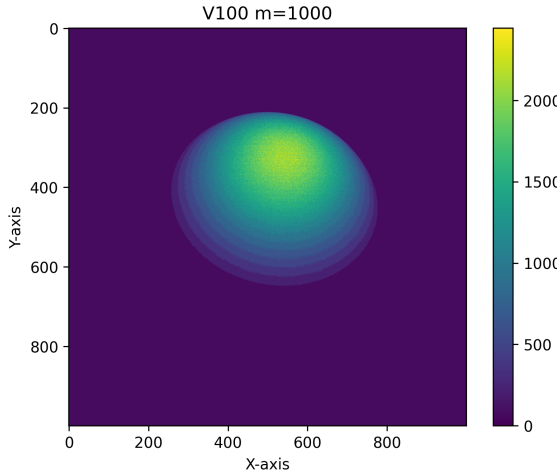

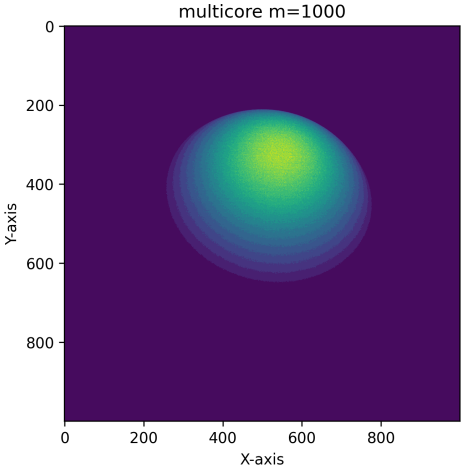

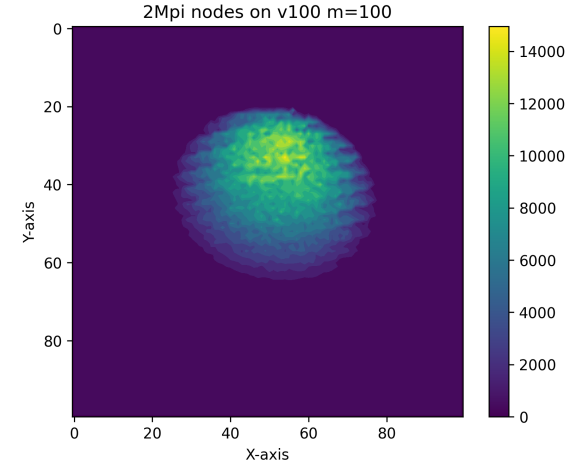

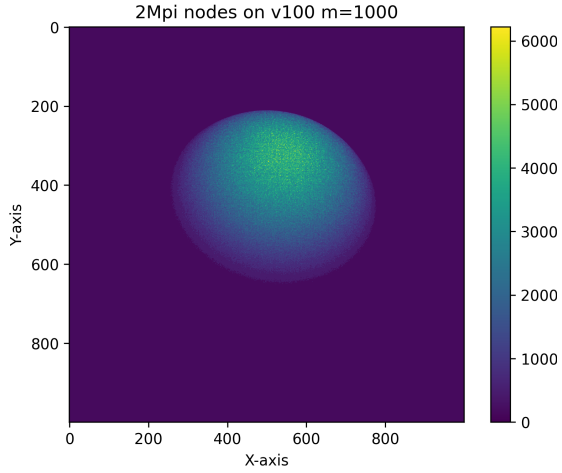

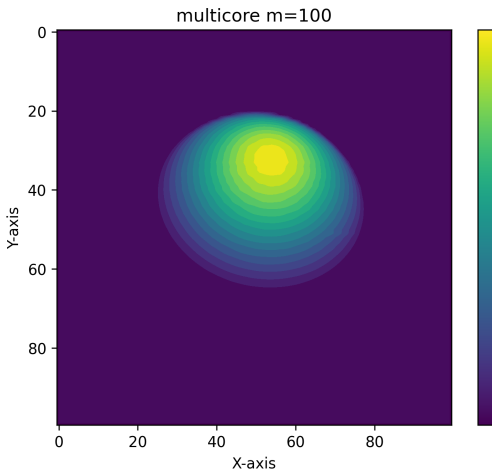

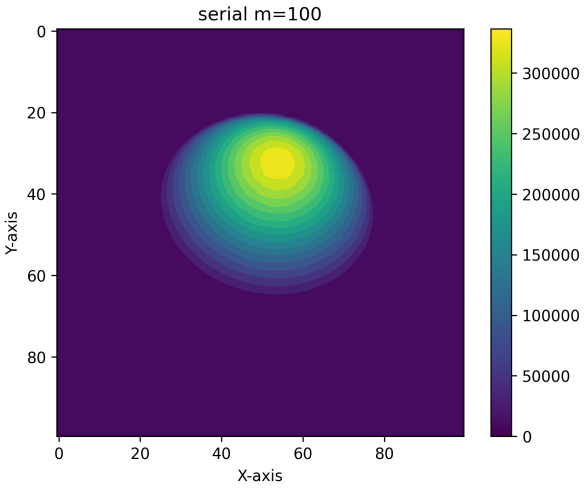

Proc	Grid	Time SP	KTime SP	Time DP	KTime DP	Blk/TPB	Cores	Samples	Optimization
A100	1000								
A100	100								
V100	1000	5.985896s,	5.749016s,	6.095882s,	5.858402s,	16384/256	1	7476175491	I tried different BLK and TPB values And I found when TPB=256, and BLK =16384, the performance is best. In this project, I keep grdidim equal to 2**31–1.

Proc	Grid	Time SP	KTime SP	Time DP	KTime DP	Blk/TPB	Cores	Samples	Optimization
V100	100	5.717555s,	5.713936s	5.838079s	5.834381s	16384/256	1	7476175491	
RTX6000	1000	10.357529s	10.352617s	22.25s	22.02s	16384/256	1	7476175491	Same as v100
RTX6000	100	11.759323s	11.754943s	22.065539s	22.061836s	16384/256	1	7476175491	
CPU_Serial	1000	330	NA	334	NA	NA	1	7471214465	
CPU_Serial	100	330	NA	334	NA	NA	1	7462139011	
CPU_Omp	1000	103	NA	107.7	NA	NA	8	7053694331	I padded data between variables to avoid false sharing. And it works.
CPU_Omp	100	103	NA	107.7s	NA	NA	8	7053694331	
>1 GPU*	1000	2.891023s	2.888723s	3.14746s	2.923443	16384/256	1	7507456560	I increased node number to decrease computing time
>1 GPU*	100	2.962909s	2.858987s	3.026911	2.927375	16384/256	1	7507456560	

– the Mpi/multiple GPU case configuration is 2 mpi nodes on v100.
– As A100 is unavailable now, I leave the A100 rows blank.

– I observed that the total number of sample will change if I use mpi.