

Exercise in domain decomposition

Tools:

- mpp_domains.tgz: Compressed tar file containing a run script, test executable and sample output.
- run_layouts.csh: a shell script to run the test_mpp_domains.x executable
- Worksheet for the exercises
- HaloEx.pdf: Solution to the exercises

Exercise setup:

1) copy and unpack the test case

```
ssam> module load gcp (if it's not already loaded)
ssam> cd $CSCRATCH/$USER (you must run in the fast scratch file system)
ssam> mkdir updates
ssam> cd updates
ssam/updates> gcp /lustre/lufs/scratch/Jeffrey.Durachta/ssam/mpp_domains.tgz .
ssam/updates> tar xvfz mpp_domains.tgz
```

You should see output.sample/, run_layouts.csh, input.nml and test_mpp_domains.x

Ex1. Obtain an interactive session. From a window on a gaea login node

```
ssam/updates> msub -I -X -l partition=c2,size=64,walltime=00:30:00
```

Ex2. Run the test cases. Either use the script provided or execute the aprun commands by hand. For example

```
ssam/io> ./run_layouts.csh
```

or

```
ssam/io> aprun -n 6 ./test_mpp_domains.x |& tee test6.out
```

Of course if run by hand you will need to move each run output out of the way as a subsequent run will overwrite it.

Ex3. Look for patterns in the communication sizes vs the MPI rank. Use the worksheet to help keep track of the results. See if you can predict which ranks will have similar patterns from their placement on the grid.