MPI Communicators

All the processors are divided into 3 layers of mpi communication groups :

- simultaneous run group
- domain decomposition
- sweeping parallelization with shared memory model

grobal mpi comm properties

n processes : world_nprocs
my rank : world_rank
communicator : MPI_comm_WORLD

simultaneous run group communication

n processes : sim_nprocs
my rank : sim_rank
communicator : sim_comm

inter-simultaneous run group communication

n processes : n_sims
my rank : --- (id_sim)
communicator : inter_sim_comm

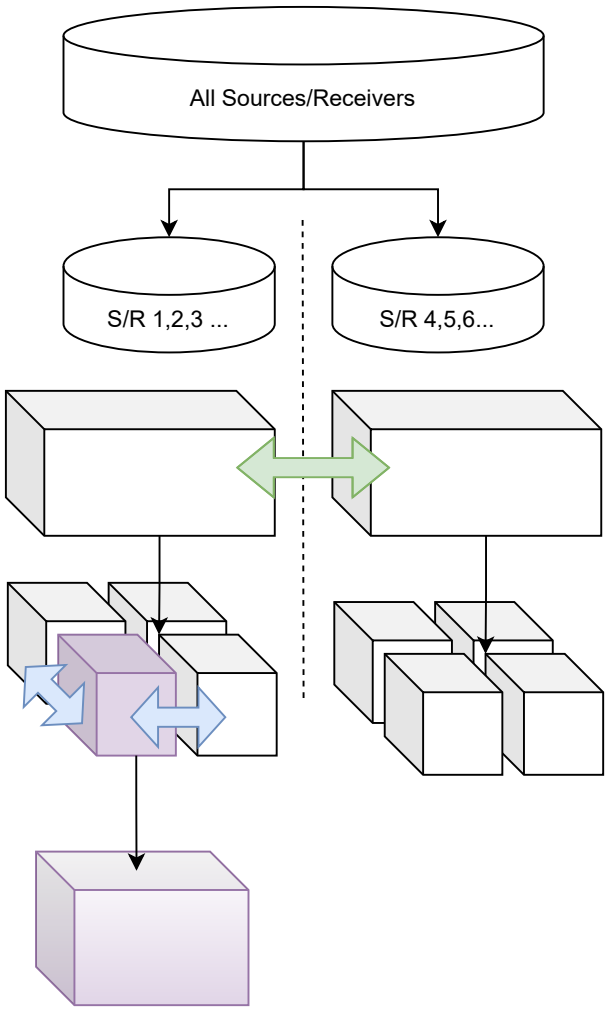
inter-subdomain communication

n processes : inter_sub_nproc
my rank : inter_sub_rank
communicator : inter_sub_commm

Communications are done by subdom_main == true

in each subdomain

n processes : sub_nprocs
my rank : sub_rank
communicator : sub_comm
subdomain id : id_subdomain



Divide into simultaneous run groups (**parallel/n_sims** in input_params.yml)

Each simultaneous run group has its own memory space for grid.

Subdomain decomposition (**parallel/ndiv_rtp** in input_params.yml)

Memory space is separated in each subdomain

Sweep parallelizatoin (**parallel/nproc_sub** input_params.yml)

Memory space is shared among the subprocesses in the same subdomain (Shared memory)