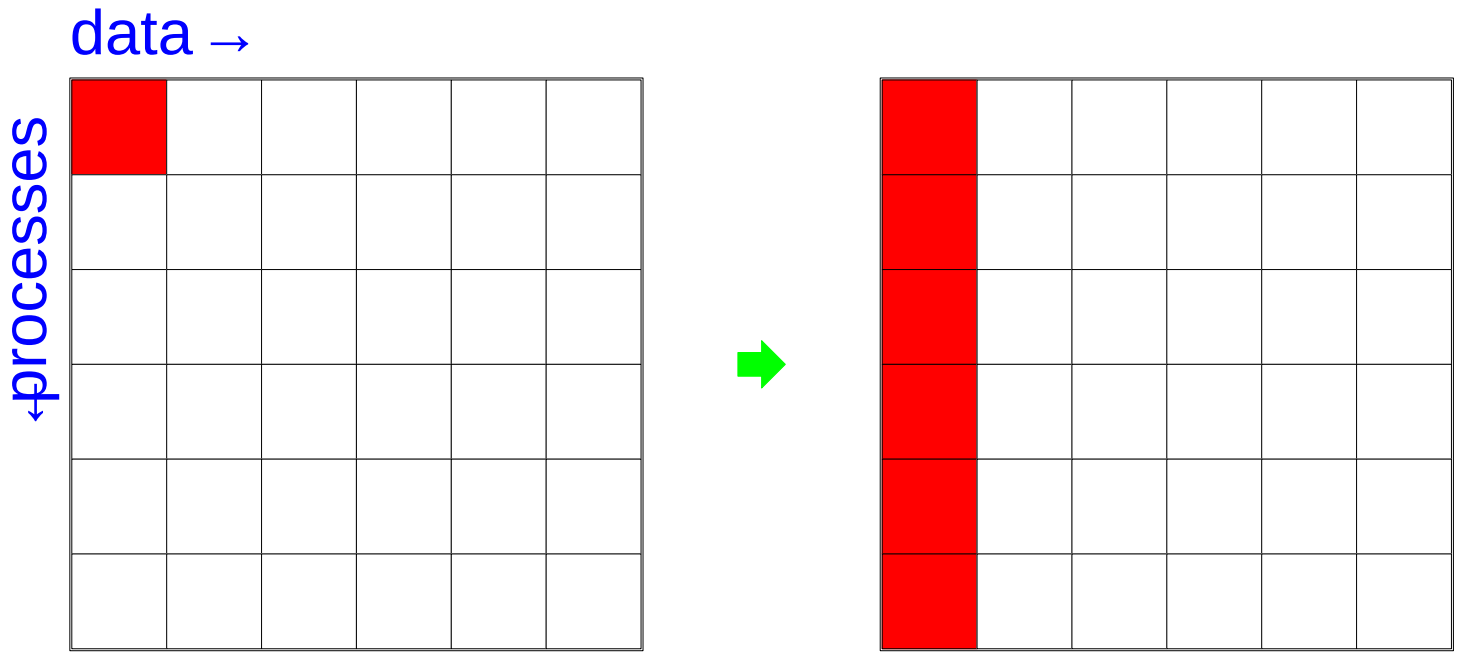
MPI

So far: point-to-point communication

This time: collective communication

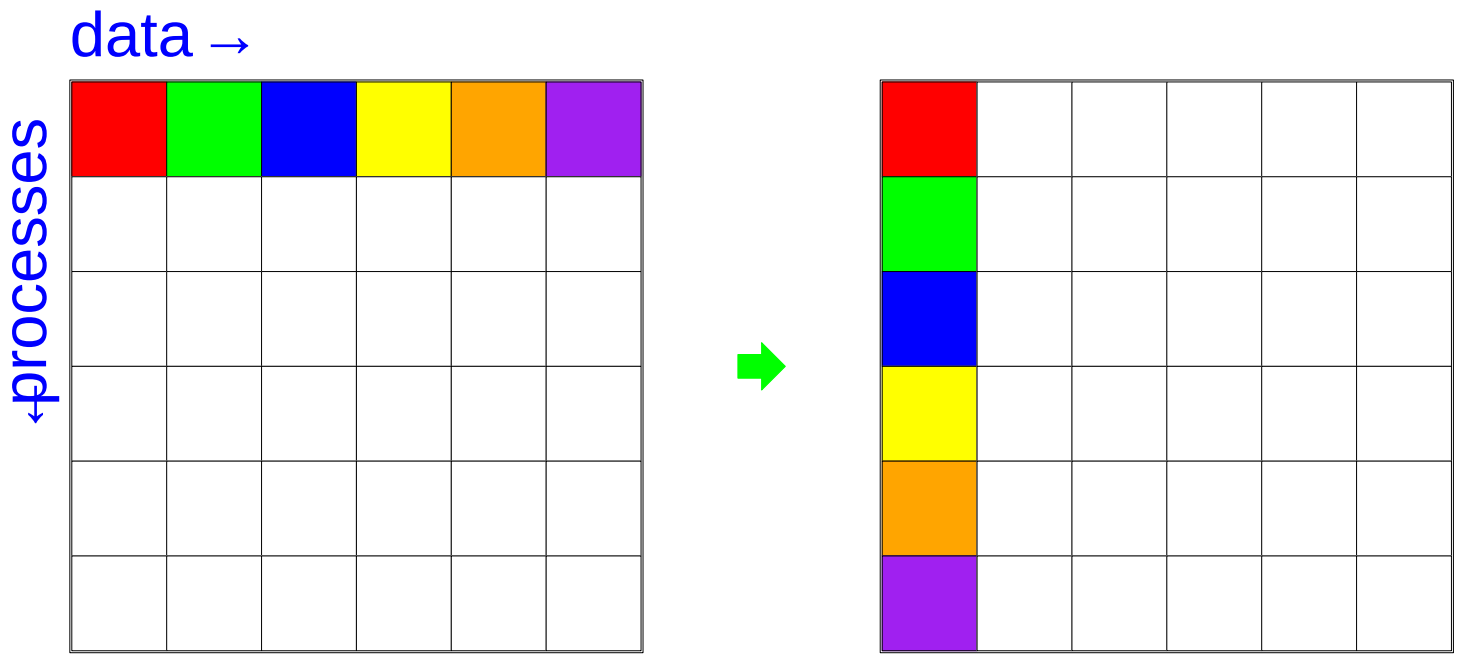
Broadcast

```
int MPI_Bcast(void *buffer,
              int count,
              MPI_Datatype datatype,
              int root,
              MPI_Comm comm)
```



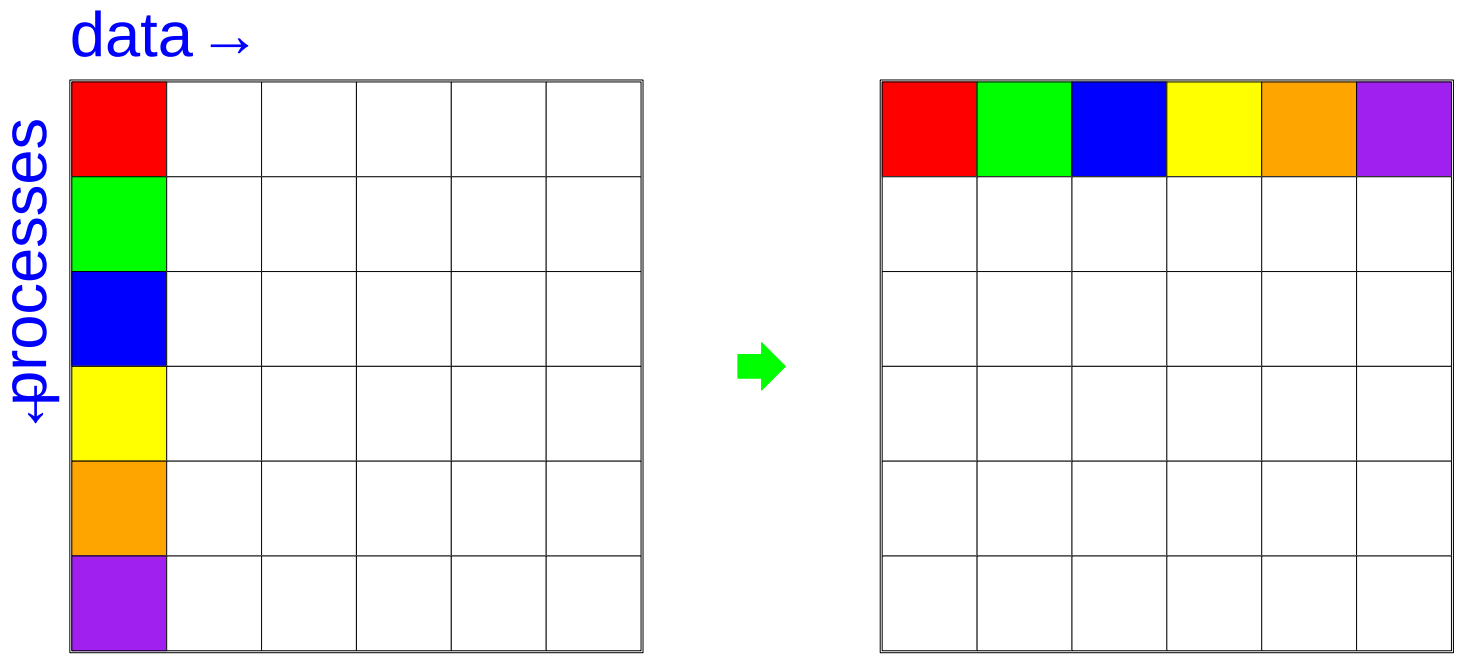
Scatter

```
int MPI_Scatter(void *sendbuf, int sendcount,
                MPI_Datatype sendtype,
                void *recvbuf, int recvcount,
                MPI_Datatype recvtype,
                int root, MPI_Comm comm)
```



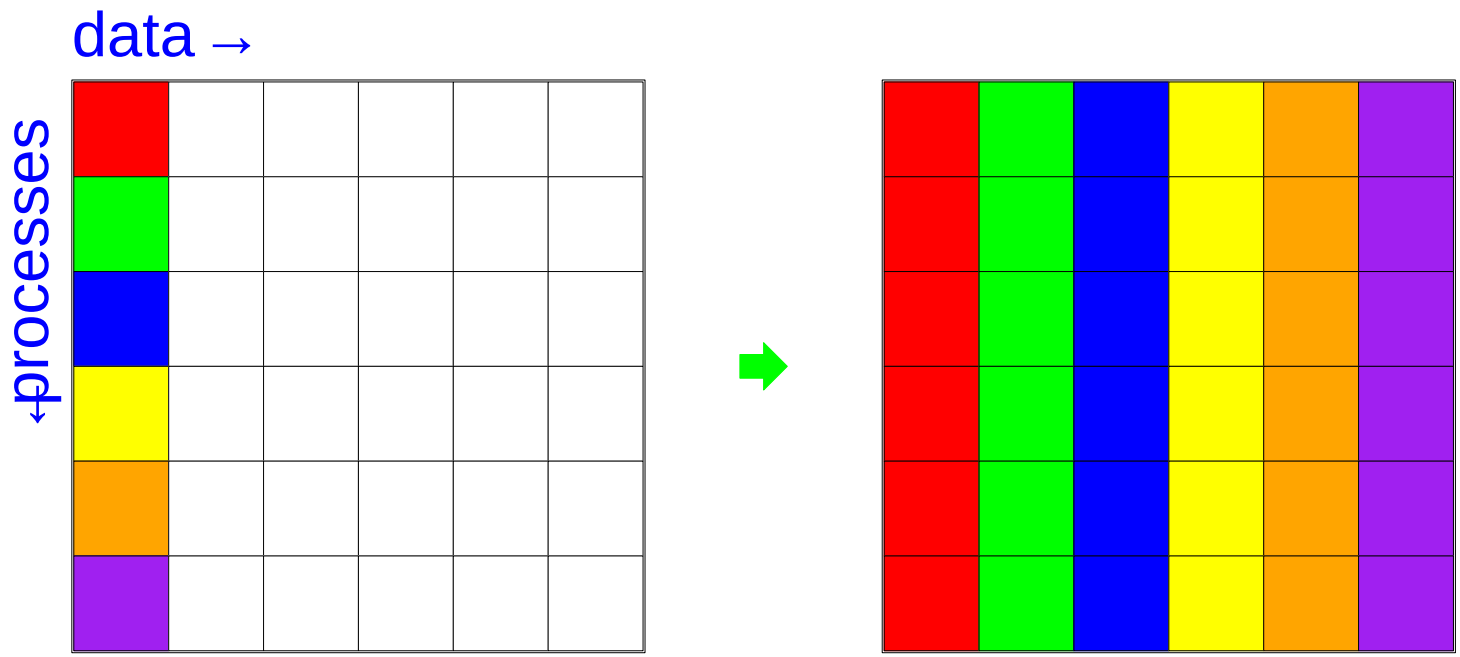
Gather

```
int MPI_Gather(void *sendbuf, int sendcount,
               MPI_Datatype sendtype,
               void *recvbuf, int recvcount,
               MPI_Datatype recvtype,
               int root, MPI_Comm comm)
```



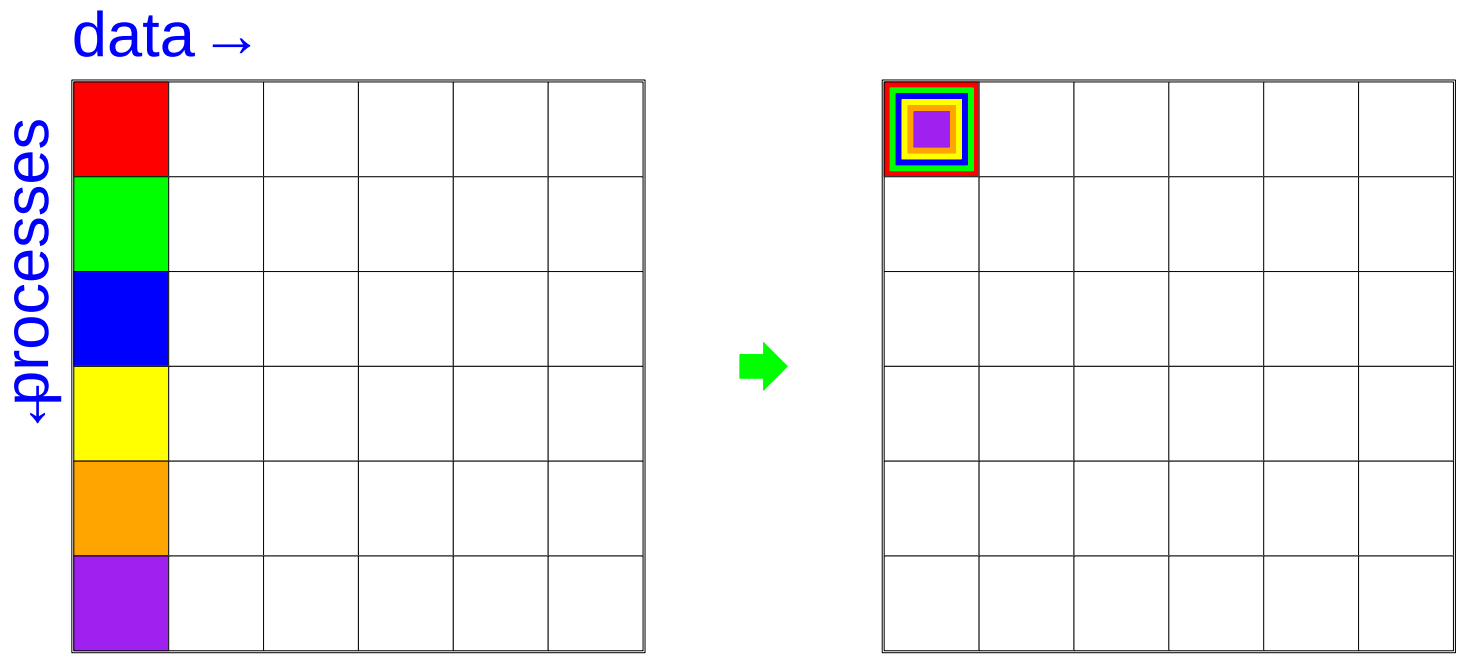
Gather + Broadcast

```
int MPI_Allgather(void *sendbuf, int sendcount,
                  MPI_Datatype sendtype,
                  void *recvbuf, int recvcount,
                  MPI_Datatype recvtype,
                  MPI_Comm comm)
```



Reduce

```
int MPI_Reduce(void *sendbuf, void *recvbuf,
               int count,
               MPI_Datatype type,
               MPI_Op op, // MPI_LOR, MPI_SUM, ...
               int root, MPI_Comm comm)
```



Reduce + Broadcast

```
int MPI_Allreduce(void *sendbuf, void *recvbuf,
                  int count,
                  MPI_Datatype type,
                  MPI_Op op,
                  MPI_Comm comm)
```