Initially in my program process 0 does two immediate sends repeatedly to each process besides itself. I used an immediate send here because each process required a different set of image data. The first send sent all the dimensions of the data. The second sent the actual data. I used immediate sends because we didn't need to wait for the other processes to receive before sending to other ones.

I then had each process receive the data. I had to use two blocking receives. The first blocking received had the size for the second blocking receive. The data in the second receive was then immediately used to allocate the histograms. The blocking receives were necessary since we could not do the code following without having the received data first.

After creating the histograms, I used an Allgather call. The Allgather call made it easy to collect all the different histograms from all the other processes onto each process. I used the blocking version because I immediately start using the data after the allgather.

I then used a blocking gather for collecting all the different ranks' similar picture rank. The gather was used because I needed to aggregate all the data onto one process: process 0. Since I needed to print immediately after in process 0, I used the blocking gather.