NOTES\_KERNELS\_SPATIAL\_DISTRIBUTION

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You planted stations at several position in the medium. Then you record signal which will be used to compute the Kernel at each point in space (each point where you placed a rcv)

* The **file “Stations.m”** creates the STATION file that SPECFEM2D can read to place the receivers in the desired way/pattern.

Then, you compute kernel on space:

File **“1\_Kernel\_spaceNEW\_Avgt.m”** does the following:

* Reads data from Sim1 and Sim2 (Output from SPECFEM2D) over each receiver location (total rcv=70\*70+3=4903).
* Then, computes its intensity (raw intensity, based on env^2(signal)).
* It also computes a smoothed intensity by averaging over time each intensity: Avgt(I).
* It saves both: Raw and smoothed intensities for each receiver location.
* Finally, computes Kernel using only smoothed intensities and save them.
* Then it repeats the whole procedure over the next Vmodel.

I observed better plots when using only Raw intensity. Then, the kernel I’m actually plotting is computed in the code: **“2\_AvgI\_M\_andPlot\_Kernels\_Space.m”**. This code does the following:

* For each Vmodel, load Raw intensities of all rcv positions.
* At each rcv position, average the intensities over all Vmodels.
* Save the mean Intensities obtained.
* With this mean intensities, compute sensitivity Kernels over each rcv positions.
* Using the same geometry when creating the stations, it places each kernel value at the corresponding rcv location. The geometry is this: use 70 rcv lines (rows in the matrix), and in each line I used 70 rcvs (columns). The stations 1,2 and 3 from the OUTPUT\_FILES, corresponds to **r’**, **r** and **s** positions respectively. However, I didn’t place this positions explicitly, I just use 70x70 when plotting.
* Plot 70x70 kernels values over the space for a given travel time (than can be specified in the code).