

## Supporting Information for:

# “Implications of laterally varying scattering properties for subsurface monitoring with coda wave sensitivity kernels: application to volcanic and fault zone setting”

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## Contents of this file

N/A

## Additional Supporting Information (Files uploaded separately)

1. Captions for Movies S1 to S6

**Introduction** As supporting information, we provide a total of six movies in which the travel-time, decorrelation and scattering sensitivity kernels are shown with increasing lapse-time for a volcanic (S1-S3) and fault zone setting (S4-S6).

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**Movie S1.** Travel-time sensitivity kernel,  $K_{tt}$ , for volcanic setting. The volcano is depicted as a circle with radius 6 km and a scattering mean free path  $\ell_v = 2$  km, outside the volcano  $\ell = 150$  km. The source-detector distance is approximately 47 km. The kernels are normalised with respect to the maximum value.

**Movie S2.** Decorrelation sensitivity kernel,  $K_{dc}$ , for volcanic setting. The volcano is depicted as a circle with radius 6 km and a scattering mean free path  $\ell_v = 2$  km, outside the volcano  $\ell = 150$  km. The source-detector distance is approximately 47 km. The kernels are normalised with respect to the maximum value.

**Movie S3.** Scattering sensitivity kernel,  $K_{sc}$ , for volcanic setting. The volcano is depicted as a circle with radius 6 km and a scattering mean free path  $\ell_v = 2$  km, outside the volcano  $\ell = 150$  km. The source-detector distance is approximately 47 km. The kernels are normalised with respect to the maximum value. The color bar is symmetric around 0.

**Movie S4.** Travel-time sensitivity kernel for fault zone setting with both sources on one side of the fault (dashed lines). The width of the fault zone is 6.25 km. The scattering mean free path in and outside the fault zone are  $\ell_{FZ} = 10$  km and  $\ell = 150$  km, respectively. The distance between the two sources is approximately 93 km. All kernels are normalised with respect to the maximum value.

**Movie S5.** Scattering sensitivity kernel for fault zone setting with both sources on one side of the fault (dashed lines). The width of the fault zone is 6.25 km. The scattering mean free path in and outside the fault zone are  $\ell_{FZ} = 10$  km and  $\ell = 150$  km, respectively.

The distance between the two sources is approximately 93 km. All kernels are normalised with respect to the maximum value. The color bar is symmetric around 0.

**Movie S6.** Decorrelation sensitivity kernel for fault zone setting with both sources on one side of the fault (dashed lines). The width of the fault zone is 6.25 km. The scattering mean free path in and outside the fault zone are  $\ell_{FZ} = 10$  km and  $\ell = 150$  km, respectively. The distance between the two sources is approximately 93 km. All kernels are normalised with respect to the maximum value.