

## 11 Supplementary

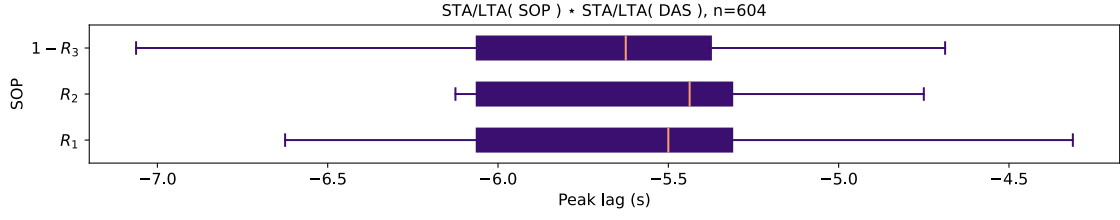


Figure 1: Computed peak lags of SOP/DAS cross-correlations on 604 DAS events spanning three months. Each box extends from the 1st quartile to the 3rd quartile, with caps indicating the maximum/minimum data point falling within 1.5 the interquartile range. The yellow line indicates the median peak lag, i.e.,  $-5.5$  s for  $R_1$ ,  $-5.4$  s for  $R_2$ , and  $-5.6$  s for  $1 - R_3$ . The average median lag across all SOP channels is  $-5.5$  s. A negative lag implies that SOP perturbations are detected prior to DAS perturbations.

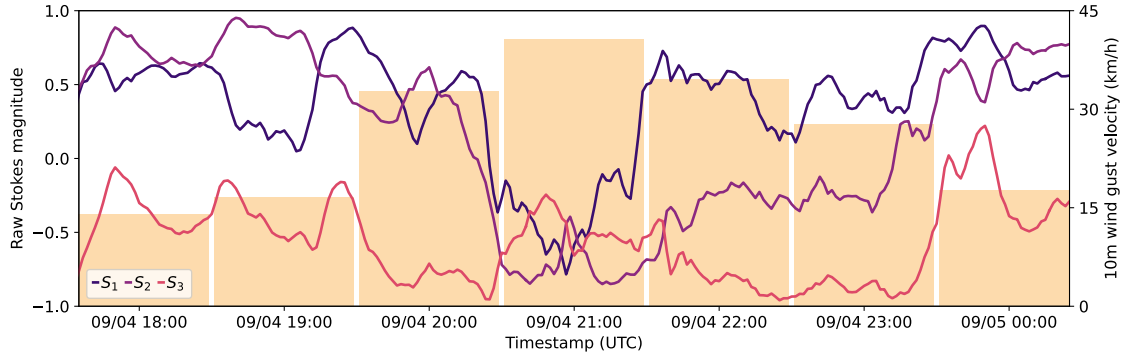


Figure 2: High-intensity wind gusts, measured 10 m in the air, correlated with SOP fluctuations. The wind gusts shake the aerial portions of the optical fiber, generating similar SOP perturbations to those caused by seismic surface wavefronts. Taken together, this strengthens our hypothesis that the seismic wavefront has a significant impact on aerial sections of the fiber.