SUPLEMENTARY MATERIAL

Assessing different imaging velocimetry techniques to measure shallow runoff velocities during rain events using an urban drainage physical model

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S1. Complementary results for the sensitivity analysis

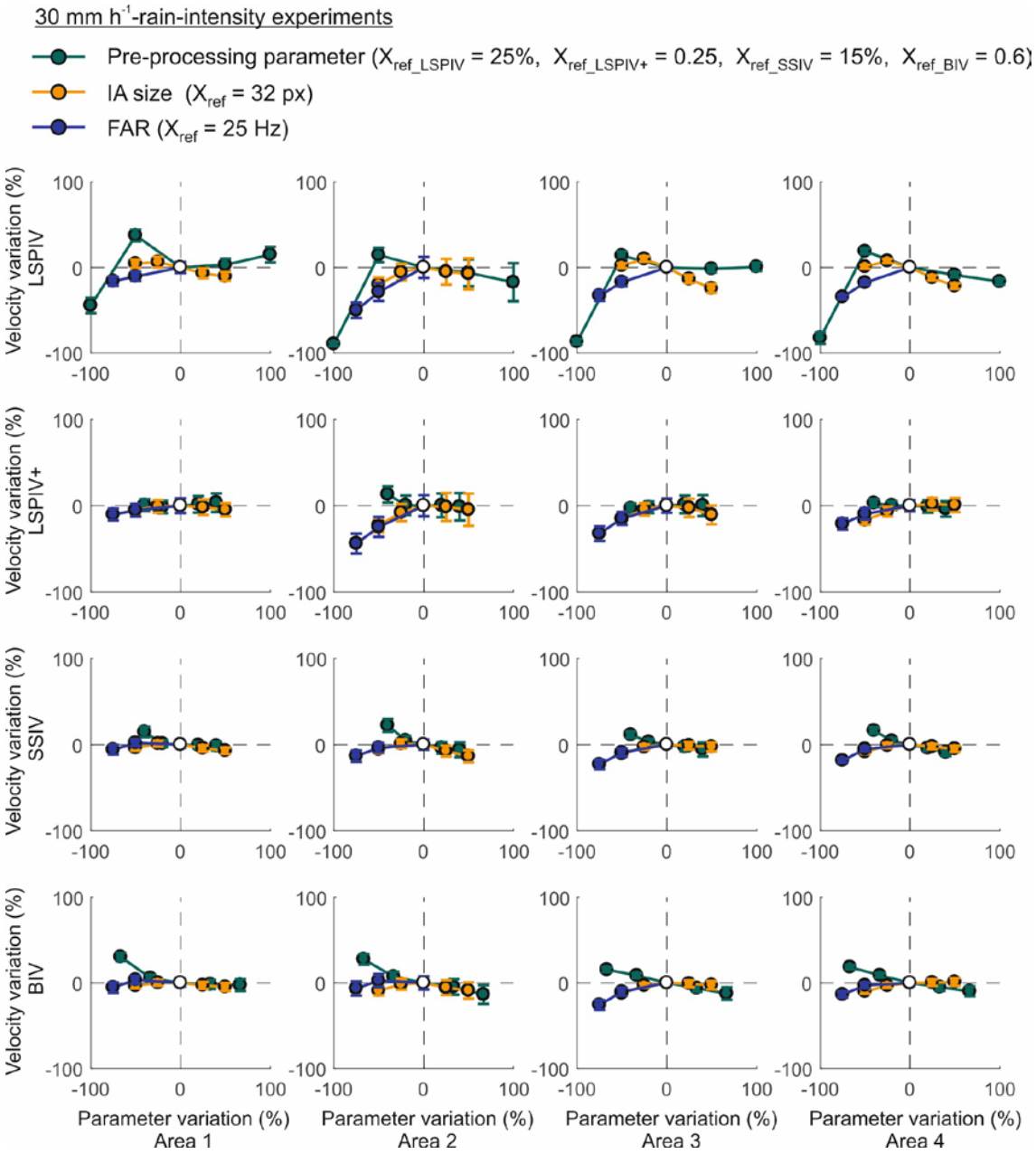

Figure S1: Percentage of variation in the mean velocities when varying parameters of the analysis for the four studied areas (columns) and the four imaging velocimetry techniques considered (rows) in the case of 30 mm h^{-1} rainfall. Mean velocity variability for the different pairs of frames analyzed are included using whiskers.

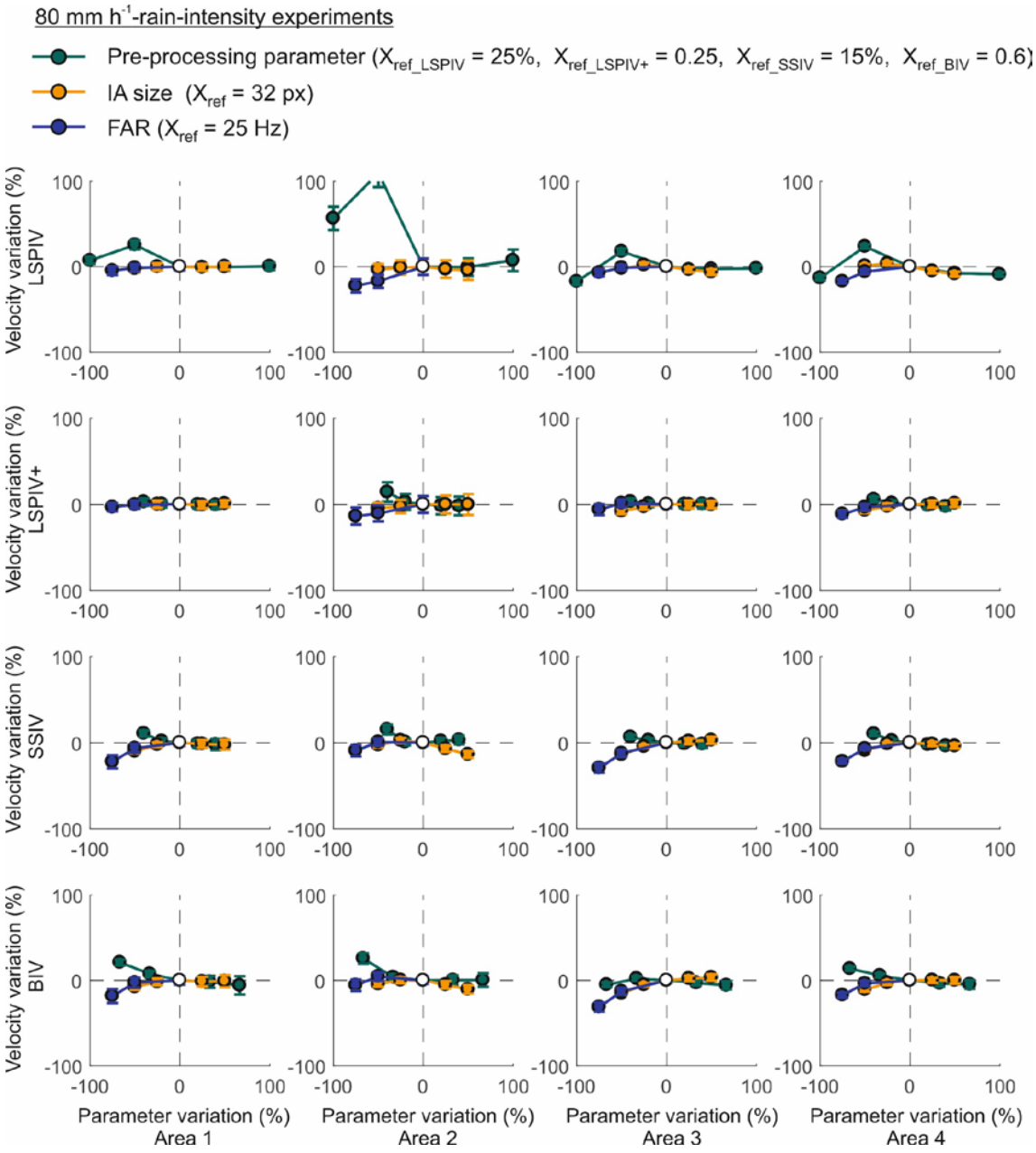

Figure S2: Percentage of variation in the mean velocities when varying parameters of the analysis for the four studied areas (columns) and the four imaging velocimetry techniques considered (rows) in the case of 80 mm h^{-1} rainfall. Mean velocity variability for the different pairs of frames analyzed are included using whiskers.

S2. Complementary results for the velocity results comparison

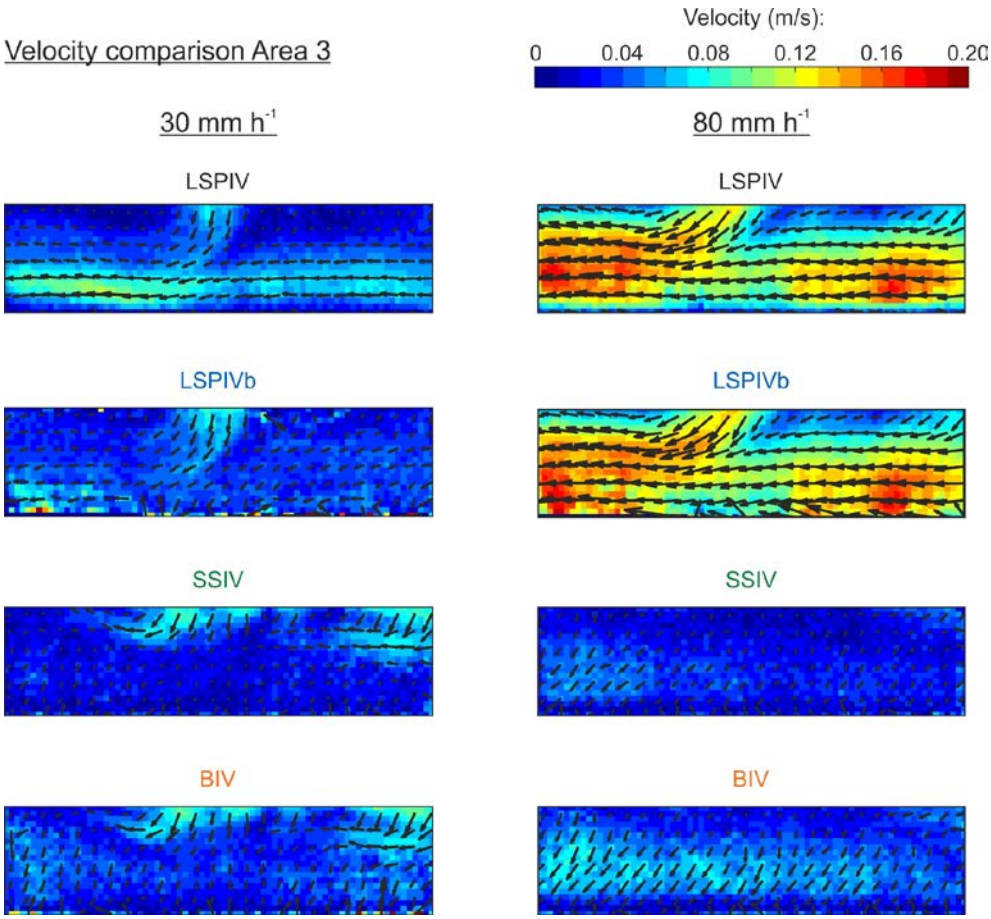

Figure S3: Velocity fields obtained for the cases of 30 mm h^{-1} and 80 mm h^{-1} in Area 3.

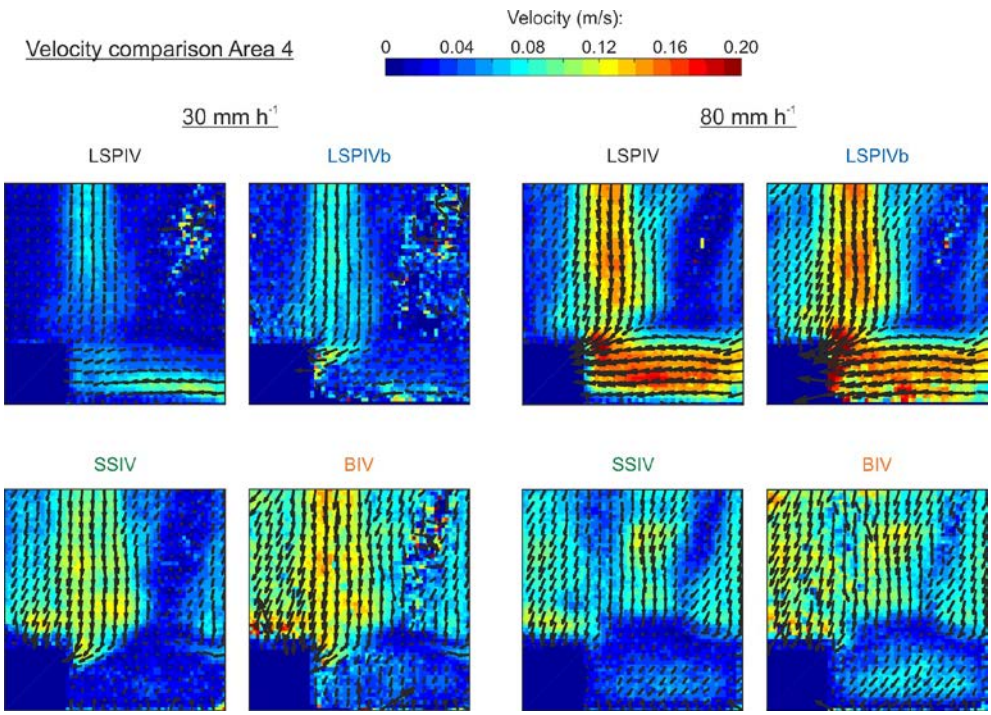

Figure S4: Velocity fields obtained for the cases of 30 mm h^{-1} and 80 mm h^{-1} in Area 4.

S3. Complementary results for the convergence study

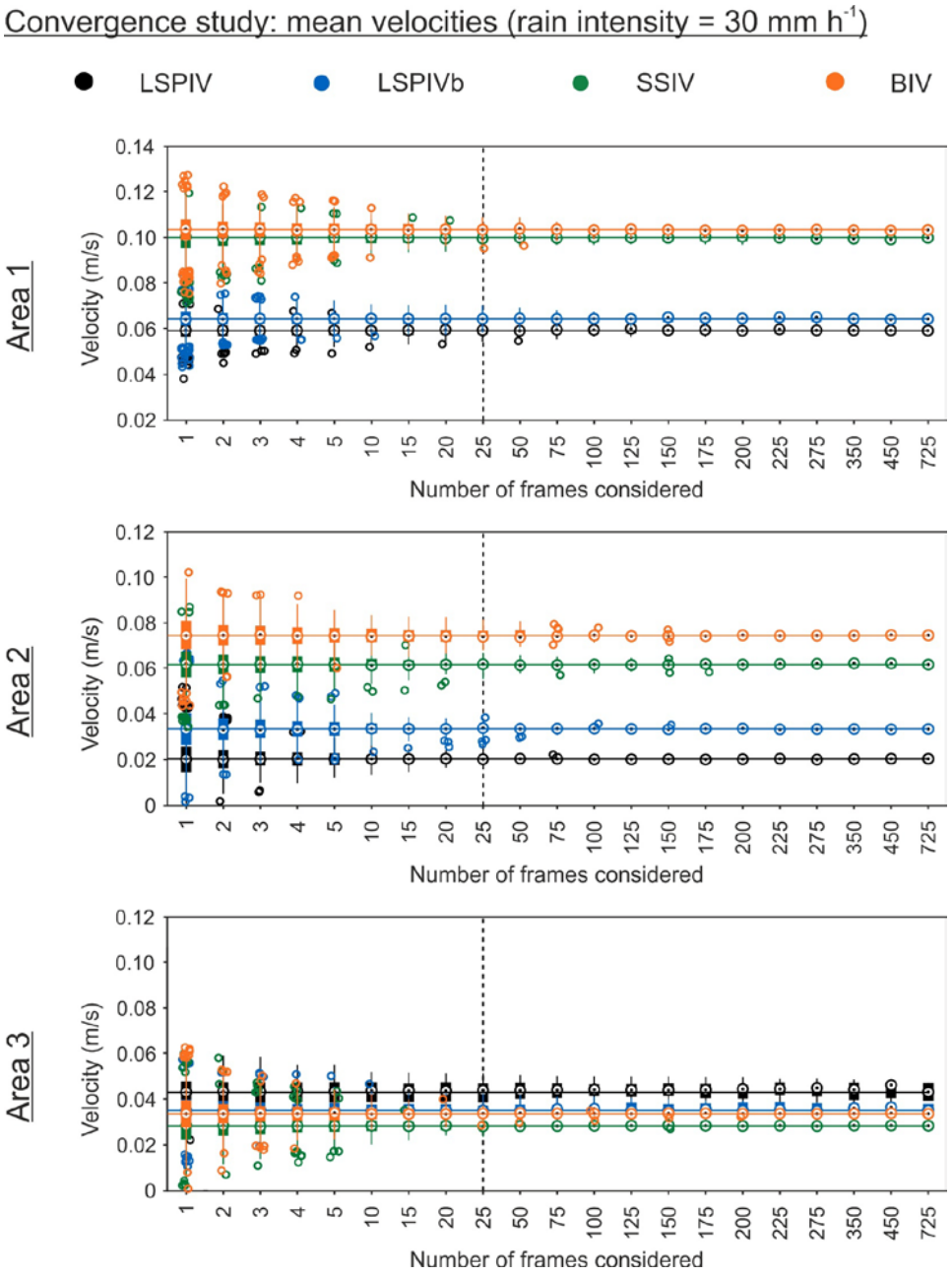

Figure S5: Mean velocity convergence study for rain intensity of 30 mm h^{-1} and Areas 1, 2, and 3. The horizontal line represents the mean velocity considering all the frames available (1500) for LSPIV (black), LSPIVb (blue), SSIV (green) and BIV (orange) techniques. Then, the variability in the mean velocity when the frames are divided into groups of different numbers of frames was represented by boxplots.

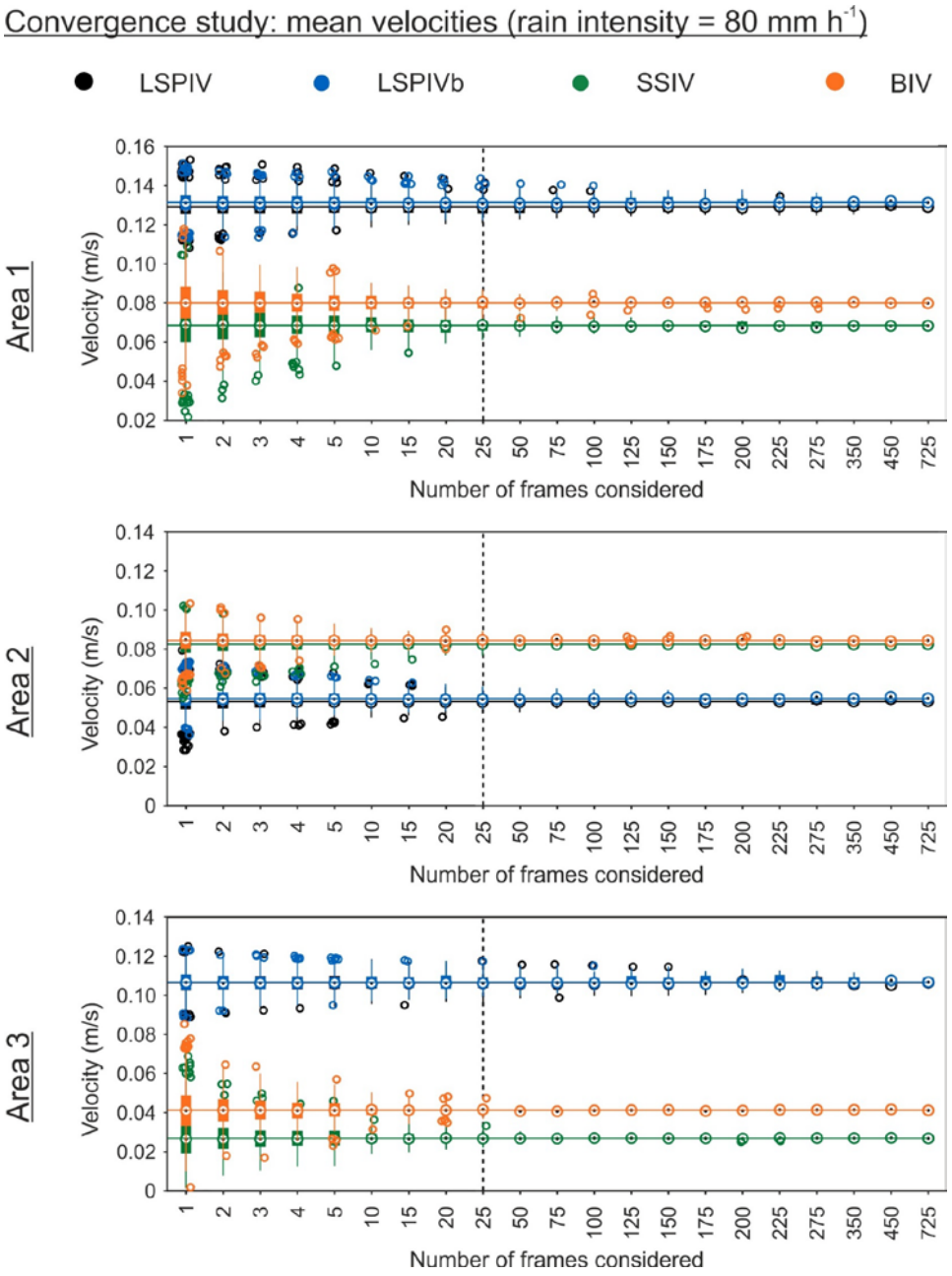

Figure S6: Mean velocity convergence study for rain intensity of 80 mm h^{-1} and Areas 1, 2, and 3. The horizontal line represents the mean velocity considering all the frames available (1500) for LSPIV (black), LSPIVb (blue), SSIV (green) and BIV (orange) techniques. Then, the variability in the mean velocity when the frames are divided into groups of different numbers of frames was represented by boxplots.

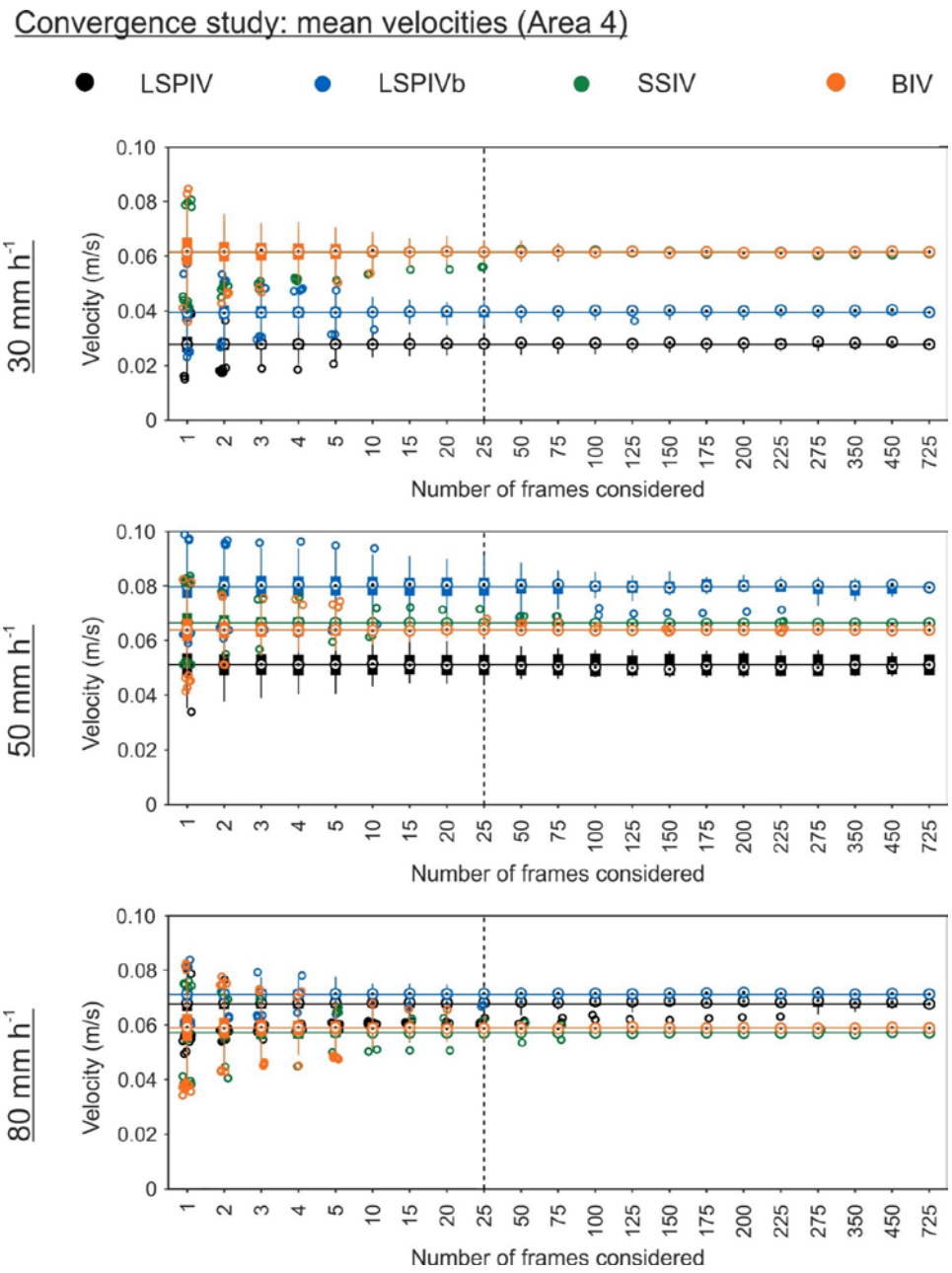

Figure S7. Mean velocity convergence study for Area 4 and rain intensities of 30, 50 and 80 mm h^{-1}. The horizontal line represents the mean velocity considering all the frames available (1500) for LSPIV (black), LSPIVb (blue), SSIV (green) and BIV (orange) techniques. Then, the variability in the mean velocity when the frames are divided into groups of different numbers of frames was represented by boxplots.