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Supplementary Material

Interpolation framework to speed up near-surface wind simulations for data-driven wildfire applications

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The digital terrain model for the eight scenarios used to validate the interpolating framework are represented in Fig. S1.

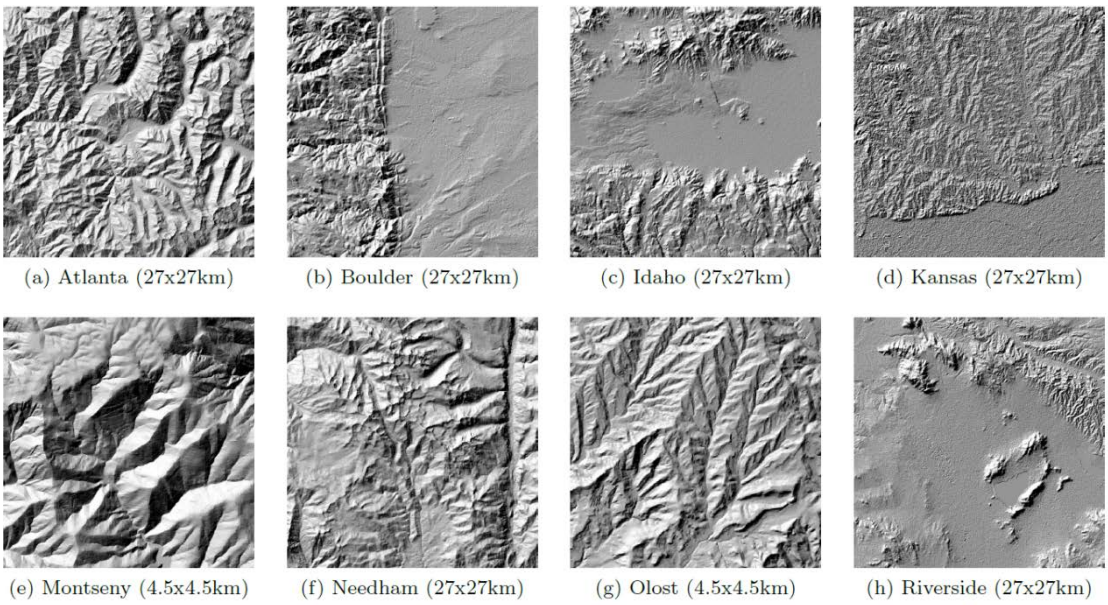

Fig. S1. Hillshade maps of the eight digital elevation models (DEM) used to perform the validation. DEM sources and detailed information are stated in table 2.

Figs 9 and 10 show the MAE for 15 m and 90 m DEM resolution. The following Figs S2, S3 and S4 show the MAPE (mean absolute percentage error) to fundament the discussions made in the paper. The principal wind speed (U_b) is also set to 11 m s^{-1} and same directional sets are used (see captions).

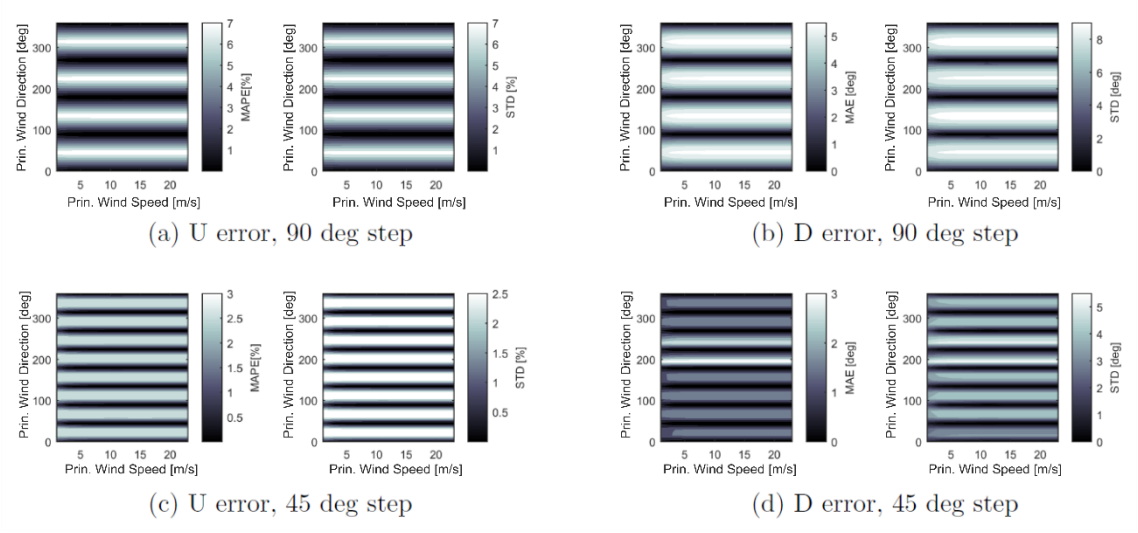

Fig. S2. MAPE for 90m resolution scenarios. $U_b = 11ms^{-1}$ for all cases.

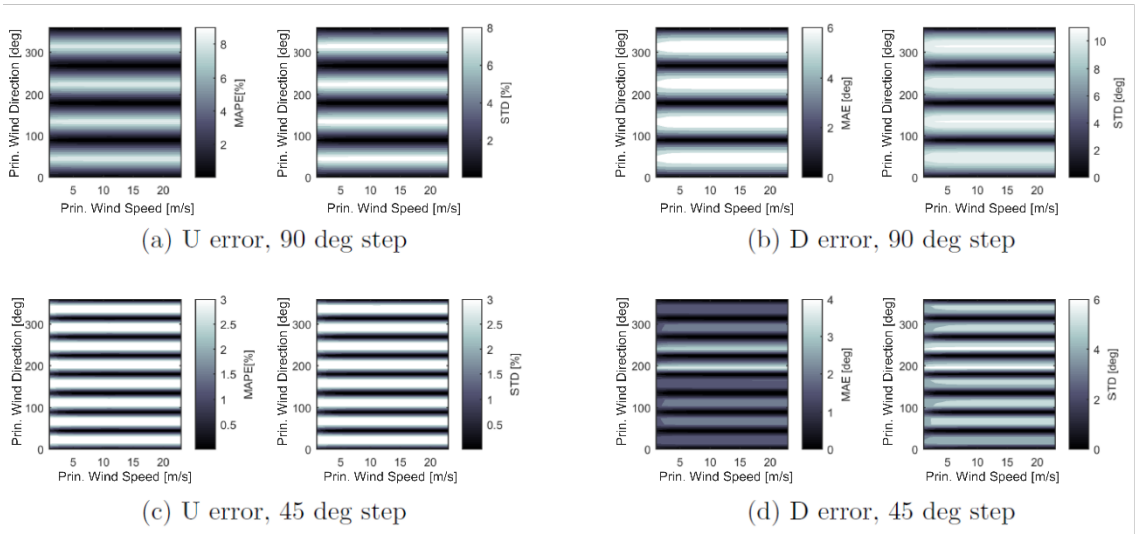

Fig. S3. MAPE for 30m resolution scenarios. $U_b = 11\ m\ s^{-1}$ for all cases.

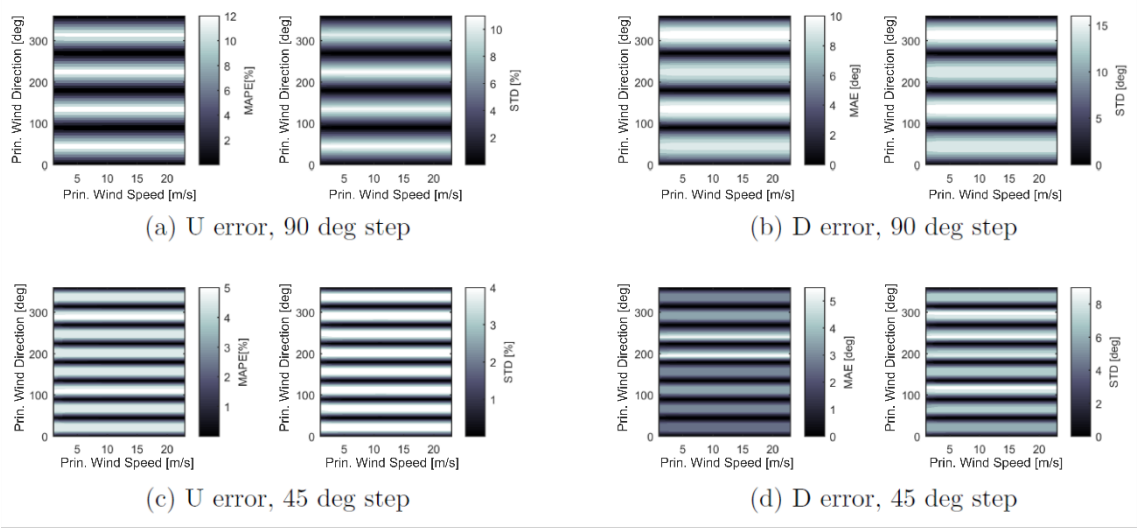

Fig. S4. MAPE for 90 m resolution scenarios. U_b = 11 m s^{-1} for all cases.

Fig. 11 showed isochrones every 2 min for a 30 min of fire spread. The comparison between the two interpolating cases (90 deg step and 45 deg step) and the homogeneous wind run might be hard to discern due to line overlapping. Isochrones unfolding plots (i.e. a pair of isochrones at a time) are displayed in Figs S5, S6 and S7 to help visualise the comparison.

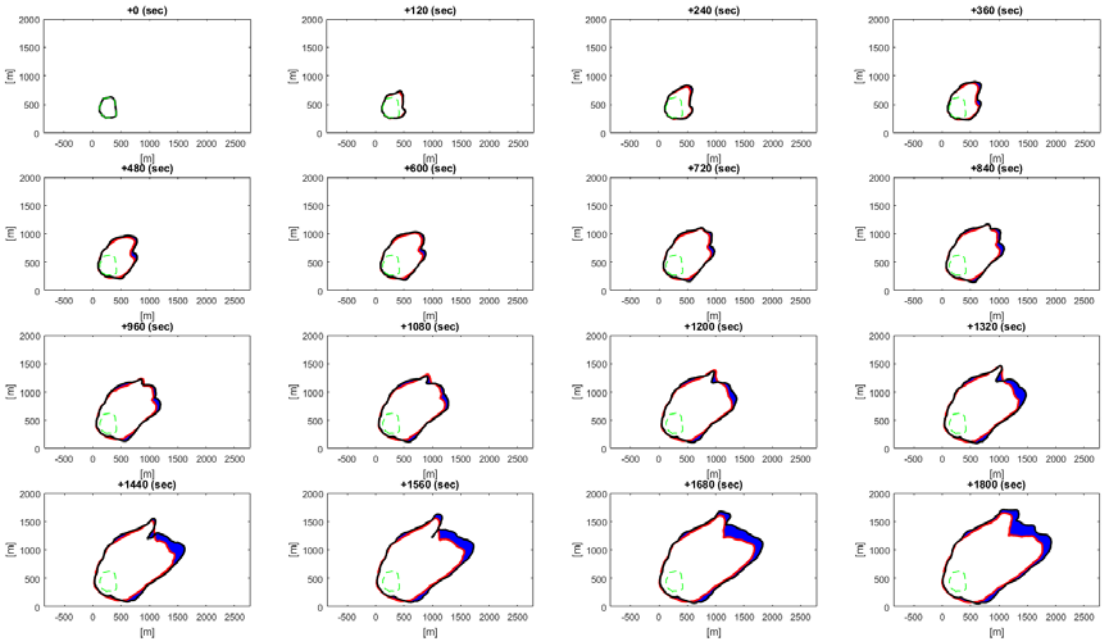

Fig. S5. WindNinja interpolation vs WindNinja original front-by-front areal comparison. Simulation performed with 90 deg step set. Blue area highlight discrepancy between curves.

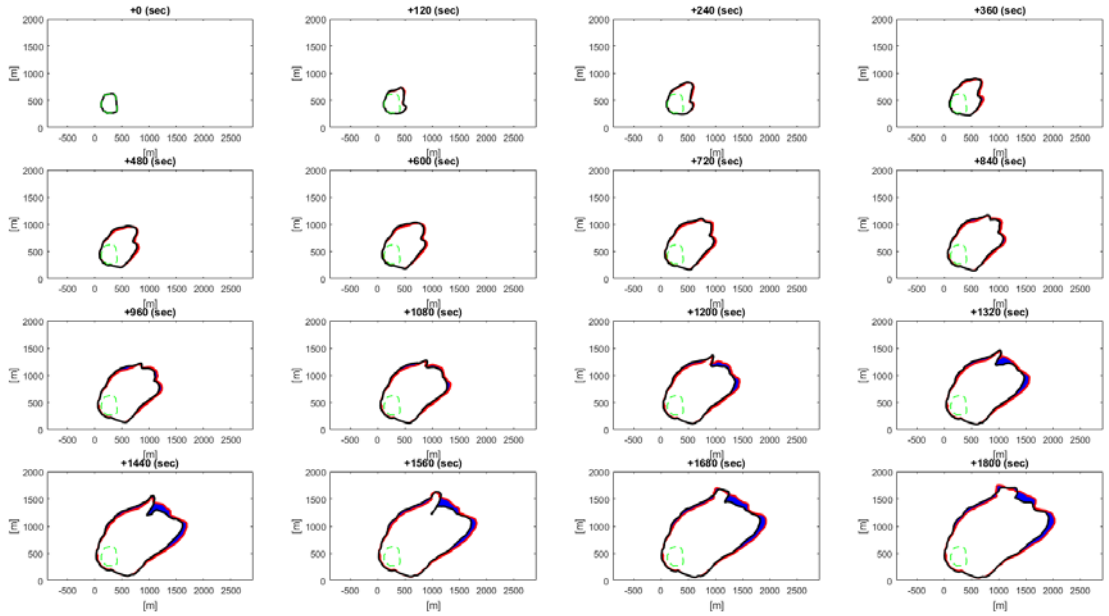

Fig. S6. WindNinja interpolation vs WindNinja original front-by-front areal comparison. Simulation performed with 45 deg step set. Blue area highlight discrepancy between curves.

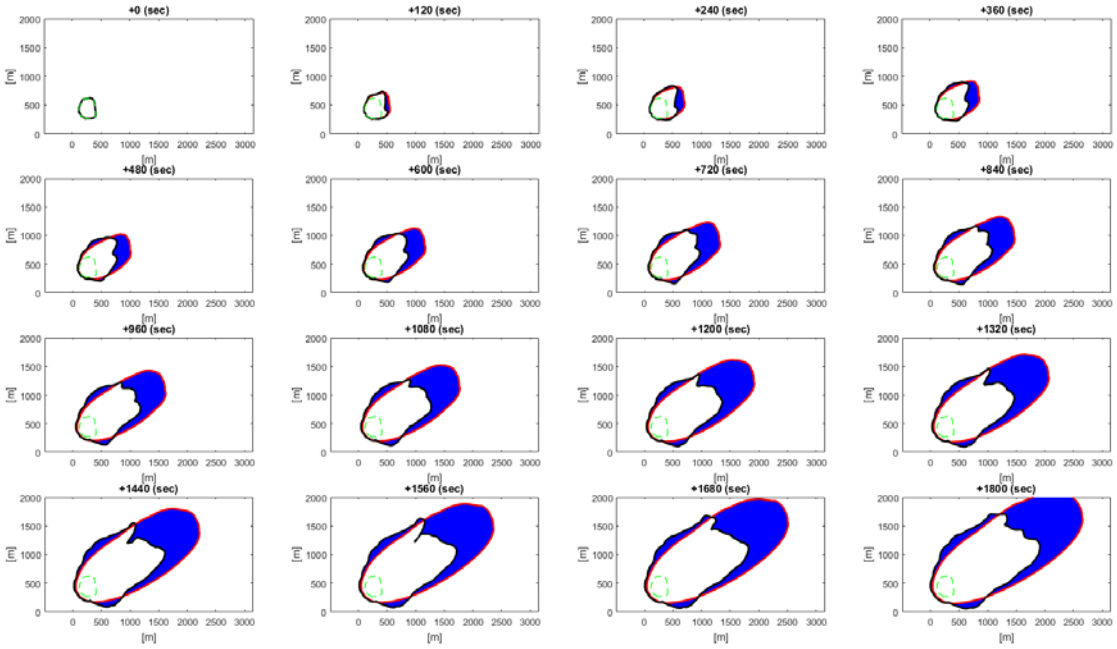

Fig. S7. Homogeneous wind vs WindNinja original front-by-front areal comparison. Blue area highlight discrepancy between curves.