Supporting Information: Implementing a dynamic representation of fire and harvest including subgrid-scale heterogeneity in the tile-based land surface model CLASSIC v1.45

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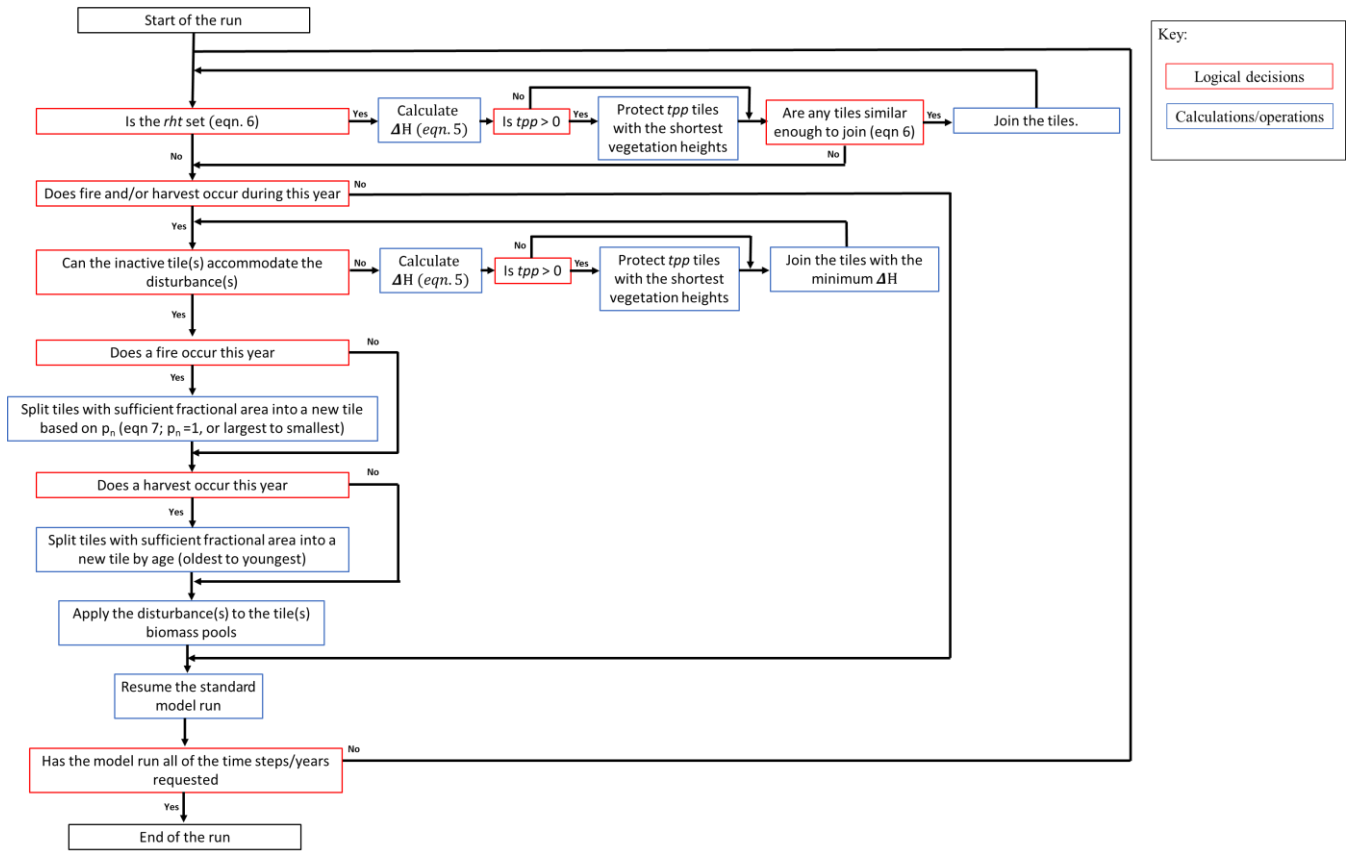


Figure S1: Logical flow chart of tile management during the model run.

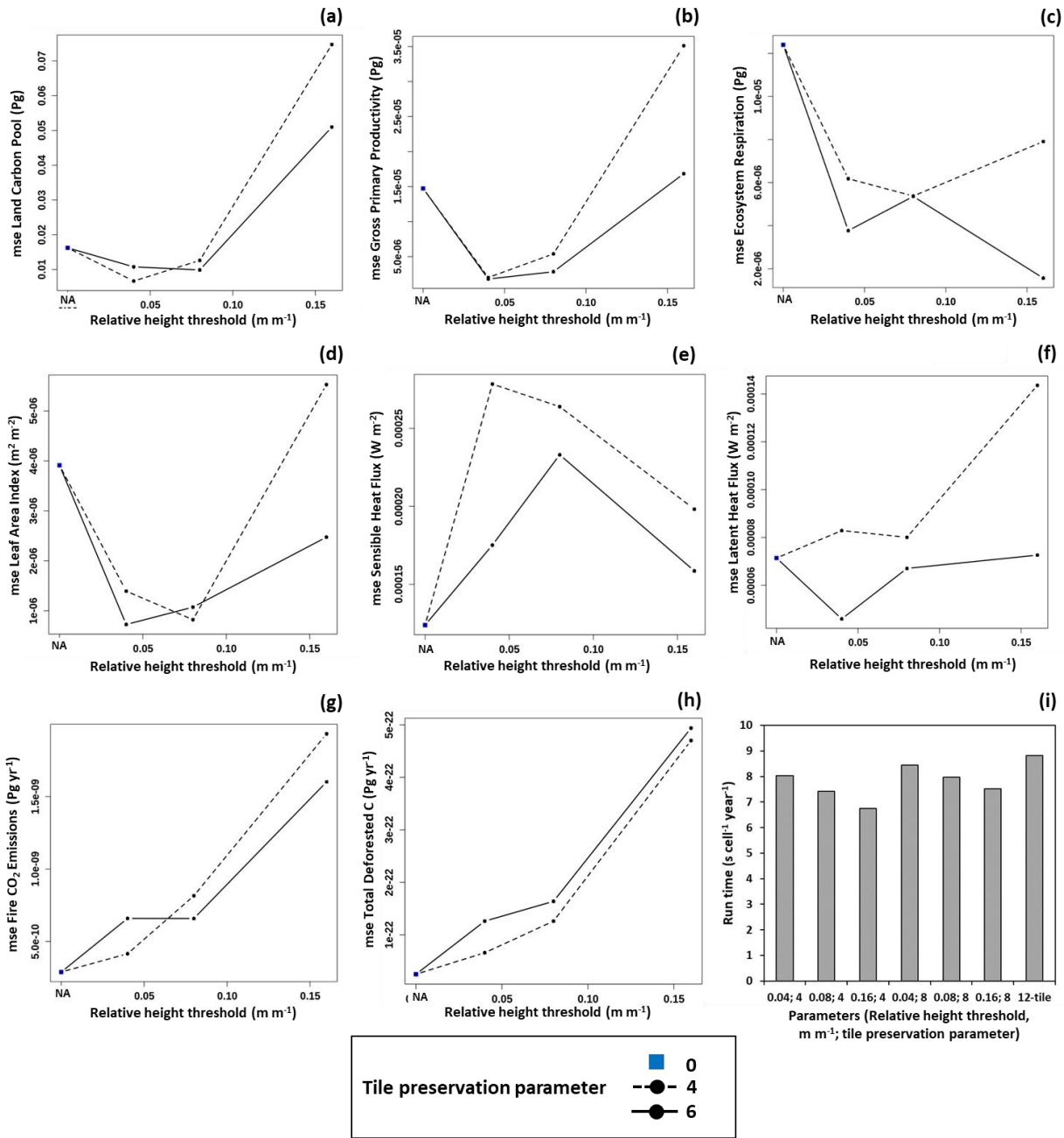



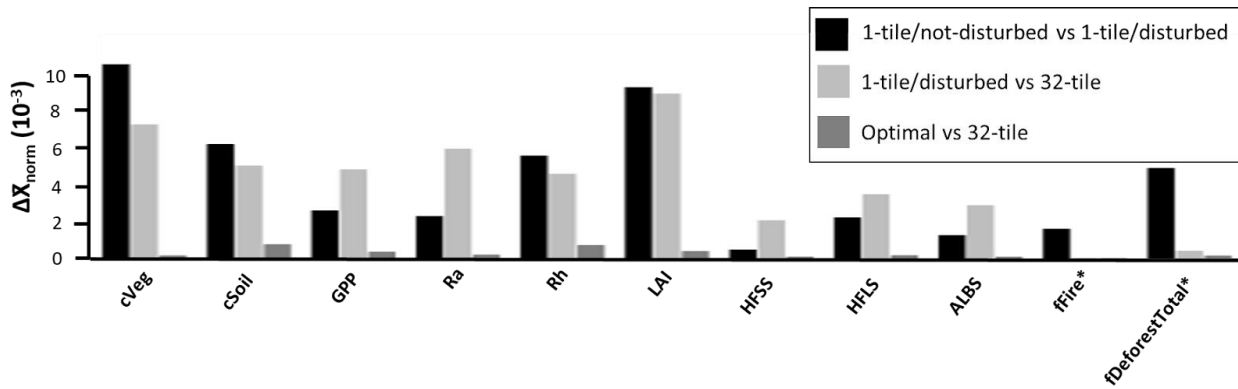
Figure S2: Plots of the total mean squared error (mse; 1985 – 2017; Eqn 11) for a) the land carbon pool, b) gross primary productivity (GPP), c) ecosystem respiration (ER), d) leaf area index (LAI), e) sensible heat flux (HFSS), f) latent heat flux (HFLS), g) fire emissions (fFire), and h) total deforested C (fDeforestTotal) for model runs with varying relative height thresholds (*rht*; NA, 0.04 – 0.16 unitless) and tile preservation parameters (*tpp*; 0 - 6 tiles) compared against the run with the largest number of tiles (32-tile; not shown). i) The run time for each configuration. All runs include disturbance.

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Figure S3: a) Plot of the normalized response metric ($\Delta \bar{X}_{norm}$; Eqn 12) for 1-tile/not-disturbed versus 1-tile/disturbed, 1-tile/disturbed versus 32-tile, and 32-tile versus optimal for vegetation carbon (cVeg), soil carbon (cSoil), gross primary productivity (GPP), autotrophic respiration (Ra), heterotrophic respiration (Rh), leaf area index (LAI), sensible heat flux (HFSS), latent heat flux (HFLS), albedo (ALBS), fire emissions (fFire) and total deforested carbon (fDeforestTotal). All runs using >1 tile include disturbance. A normalized response of zero indicates that there are no differences between the runs. *denotes disturbance-related fluxes that are omitted in the 1-tile/not-disturbed model run.

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