Supplement of Geosci. Model Dev., 10, 4539–4562, 2017
https://doi.org/10.5194/gmd-10-4539-2017-supplement

Geoscientific Model Development
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Supplement of

Coupling a three-dimensional subsurface flow and transport model with a land surface model to simulate stream–aquifer–land interactions (CP v1.0)

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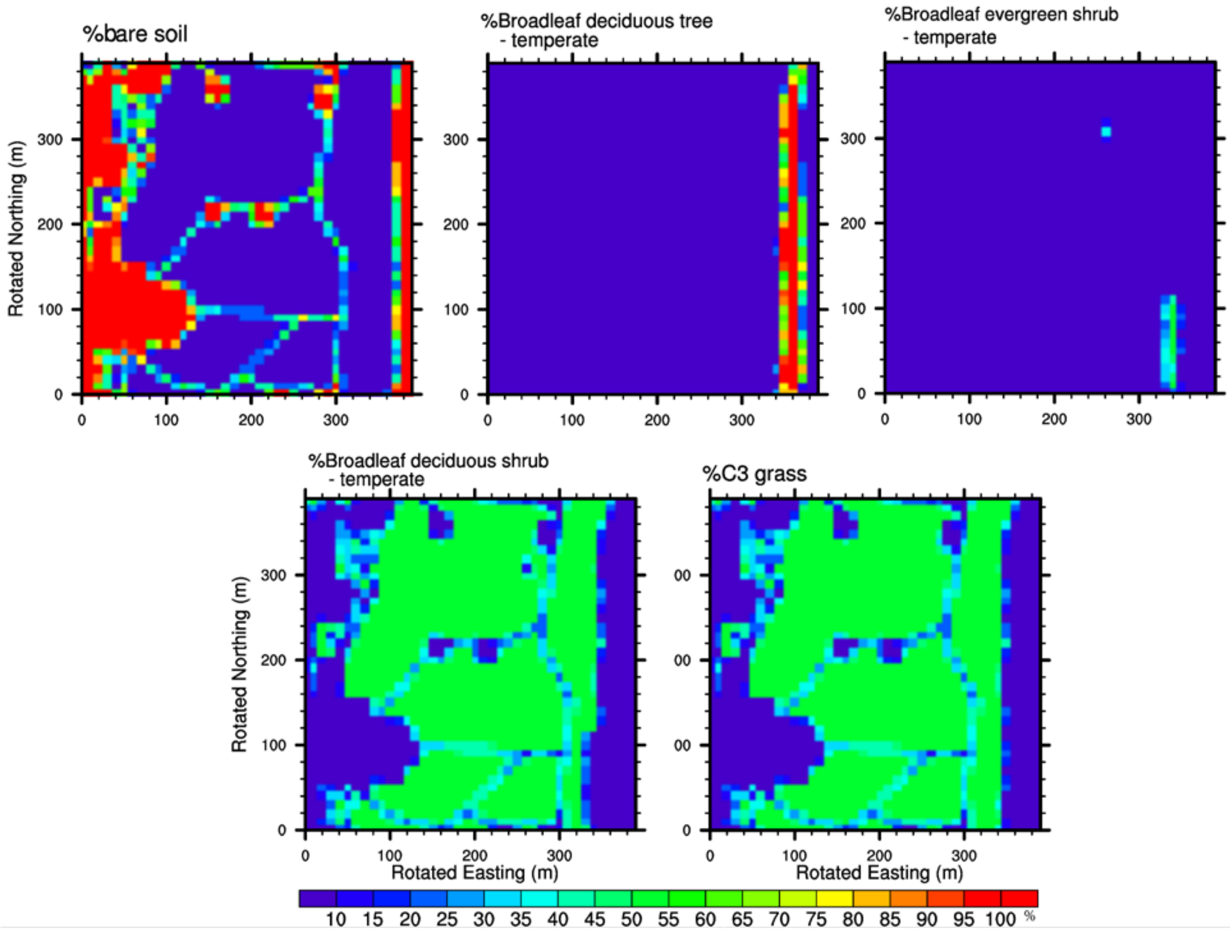

Figure S1. Plant function types at 10-m resolution as inputs for CLM4.5

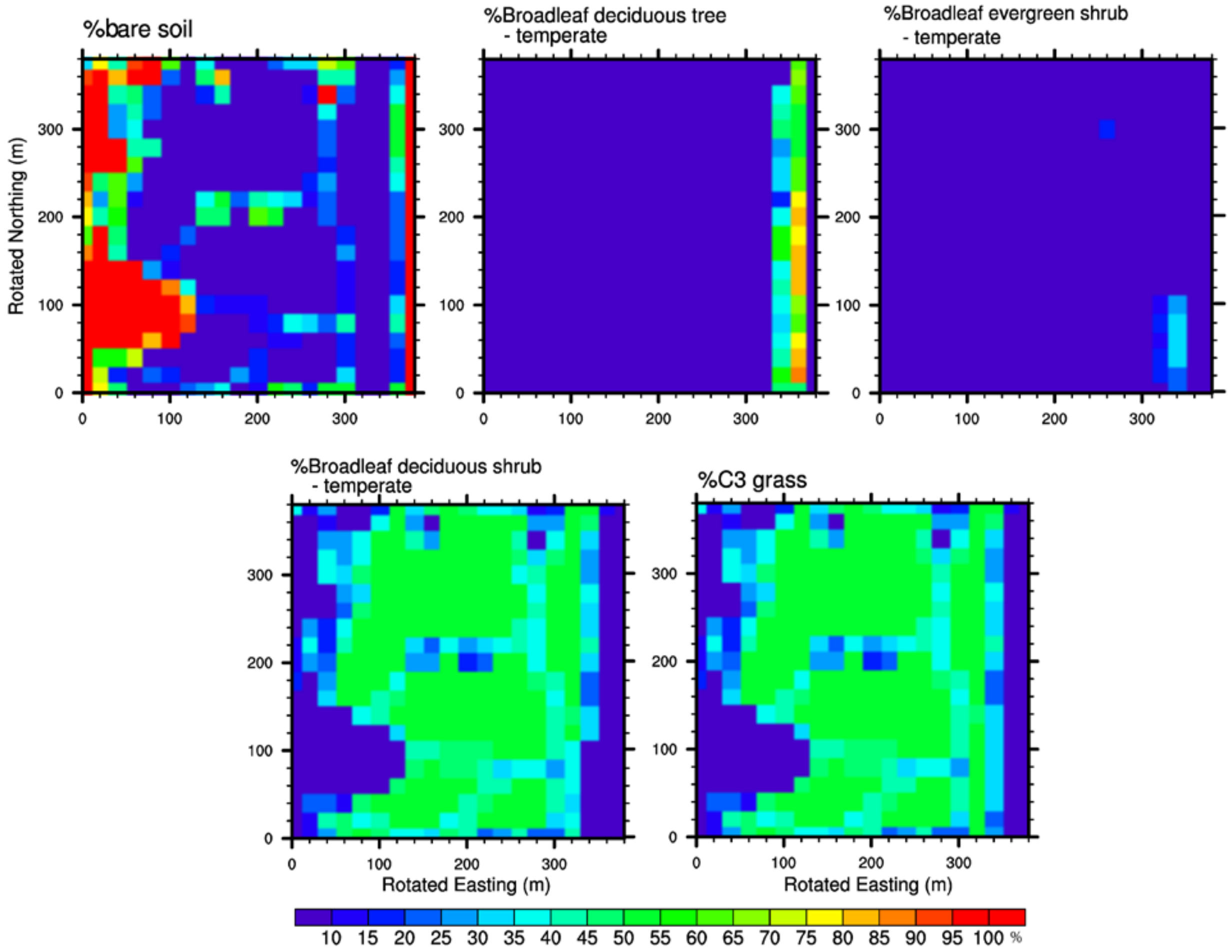

Figure S2. Plant function types at 20-m resolution as inputs for CLM4.5

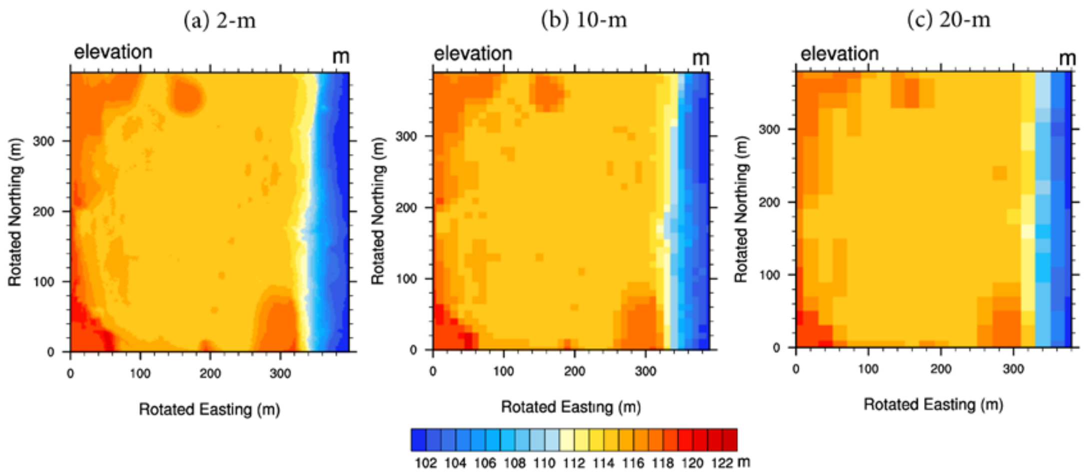

Figure S3. Topography at (a) 2-m; (b) 10-m; (c) 20-m resolutions over the study domain

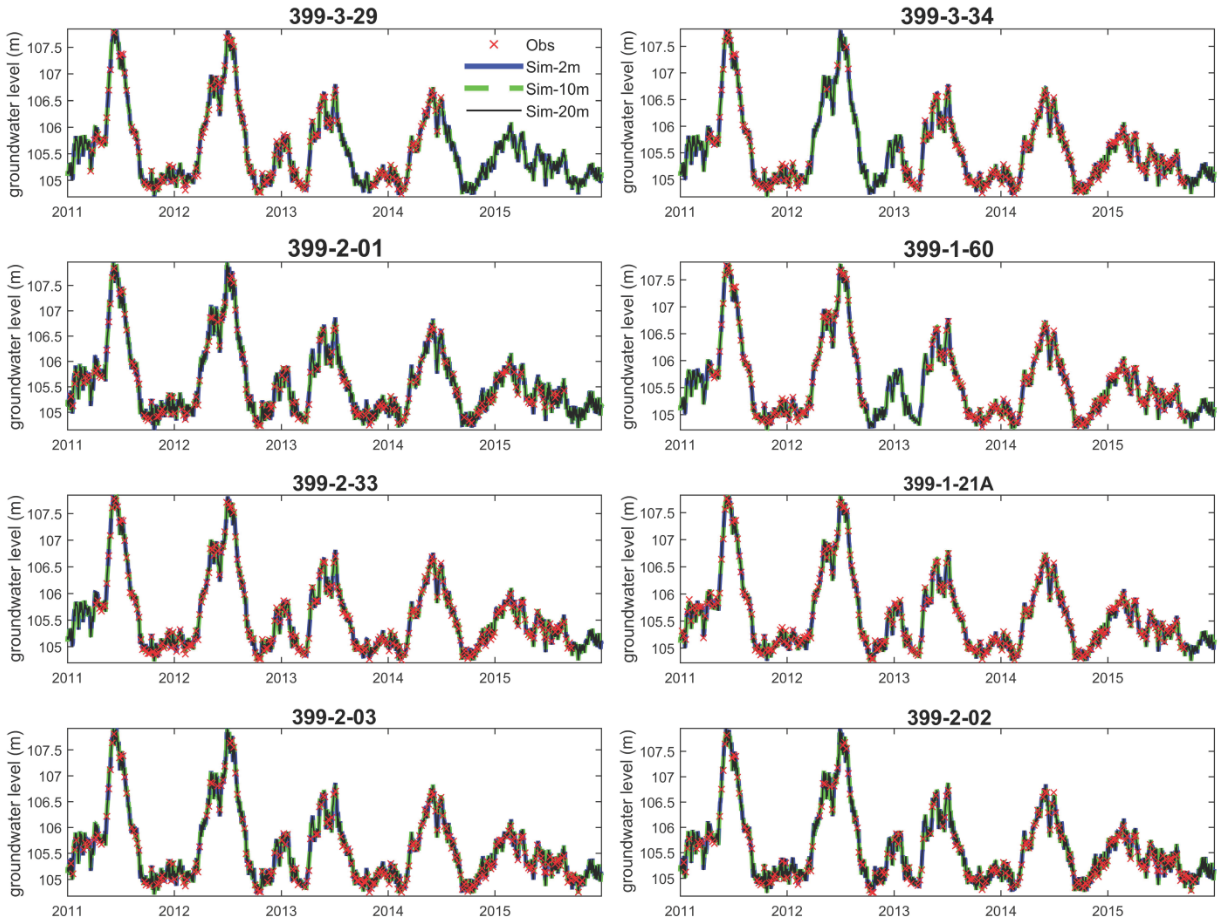

Figure S4. Comparison between simulated and observed water table levels at selected wells shown in the bottom panel of Figure 3.

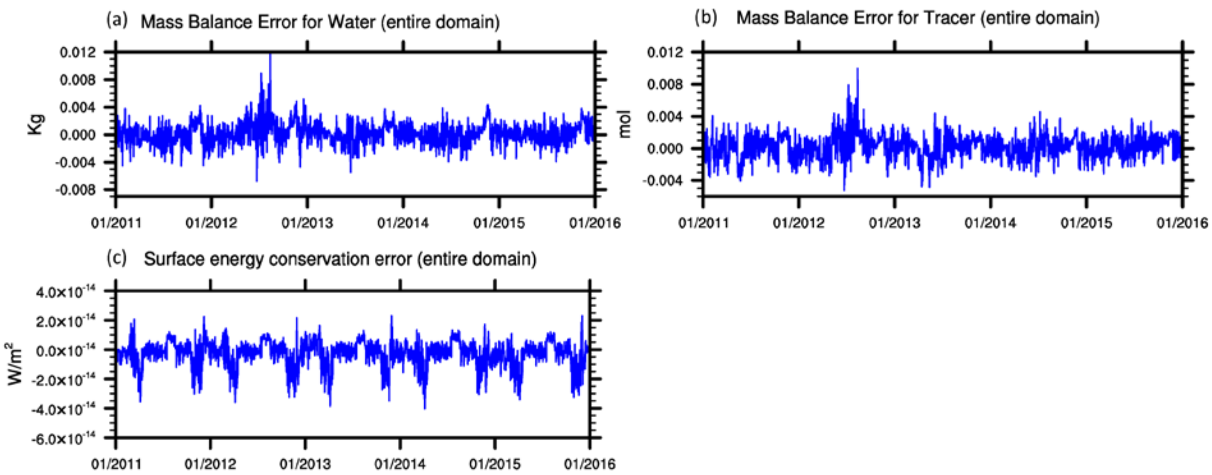

Figure S5. Mass conservation errors for (a) Water; (b) Tracer; (c) Surface Energy budget in the SE_{2m}. The magnitudes of the surface energy budget terms are shown in Figure S10. The magnitudes of the mass storage pools and fluxes are shown in Figure S11.

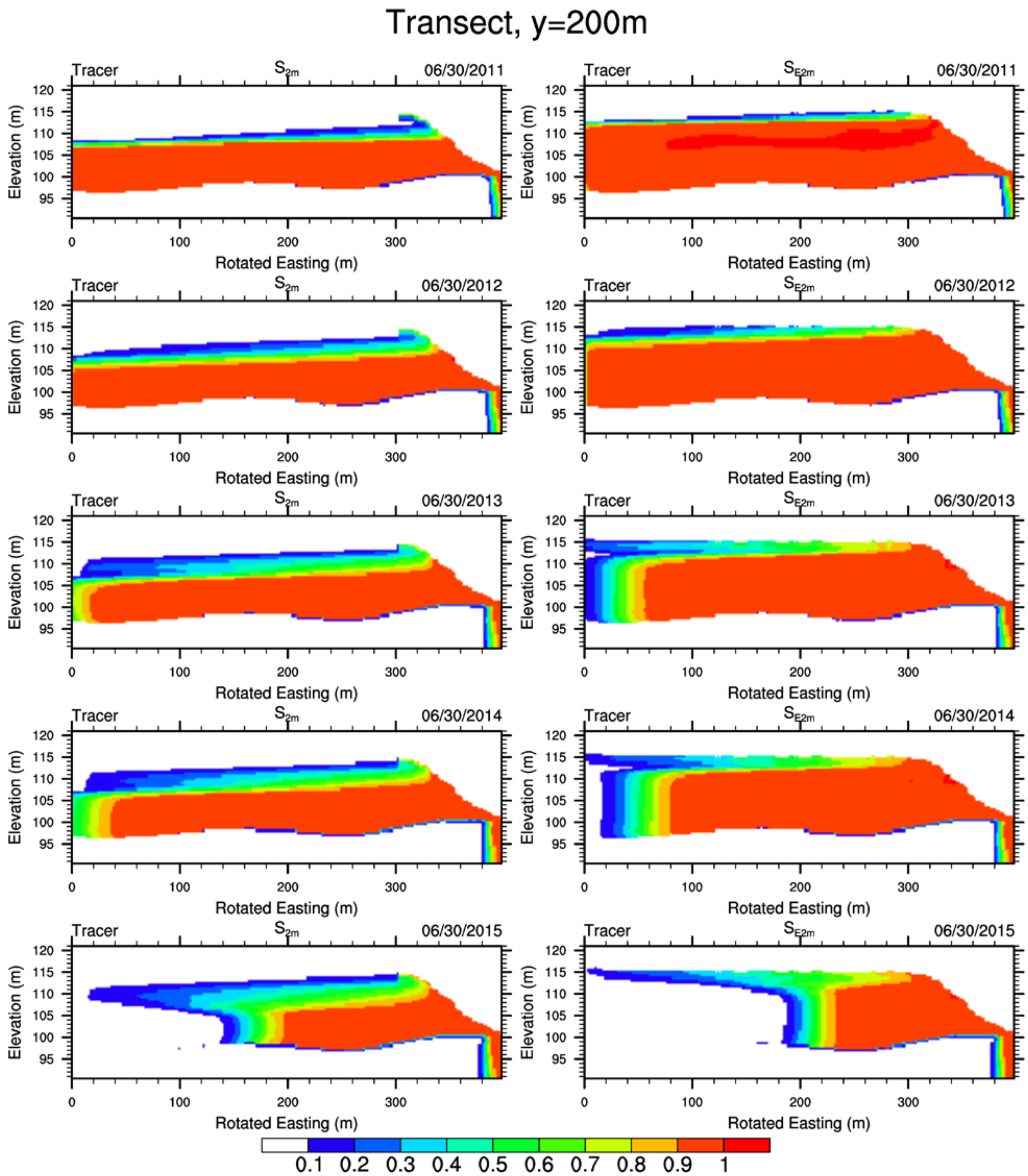

Figure S6. Mole fraction of river-water tracer across a transect perpendicular to the river (y=200 m) on 30 June of each year in study period from S_{2m} (left panels) and SE_{2m} (right panels)

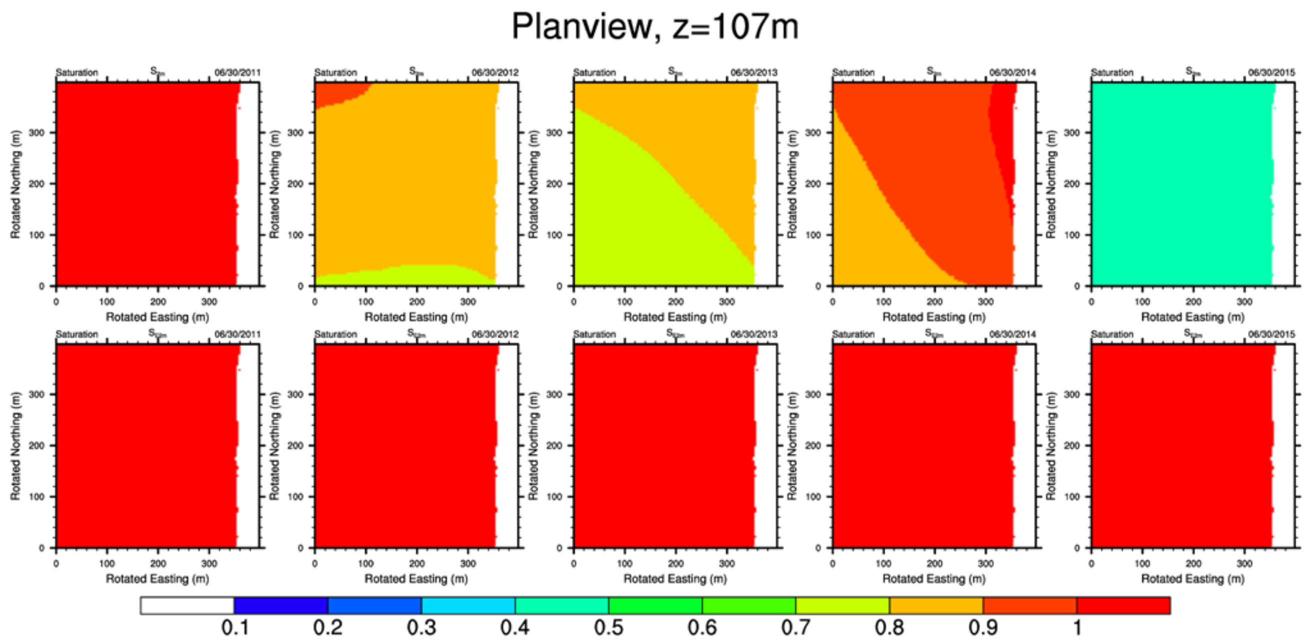

Figure S7. Liquid saturation levels (unitless) at elevation 107 m on 30 June of each year in the study period from S_{2m} (upper panels) and S_{E2m} (lower panels)

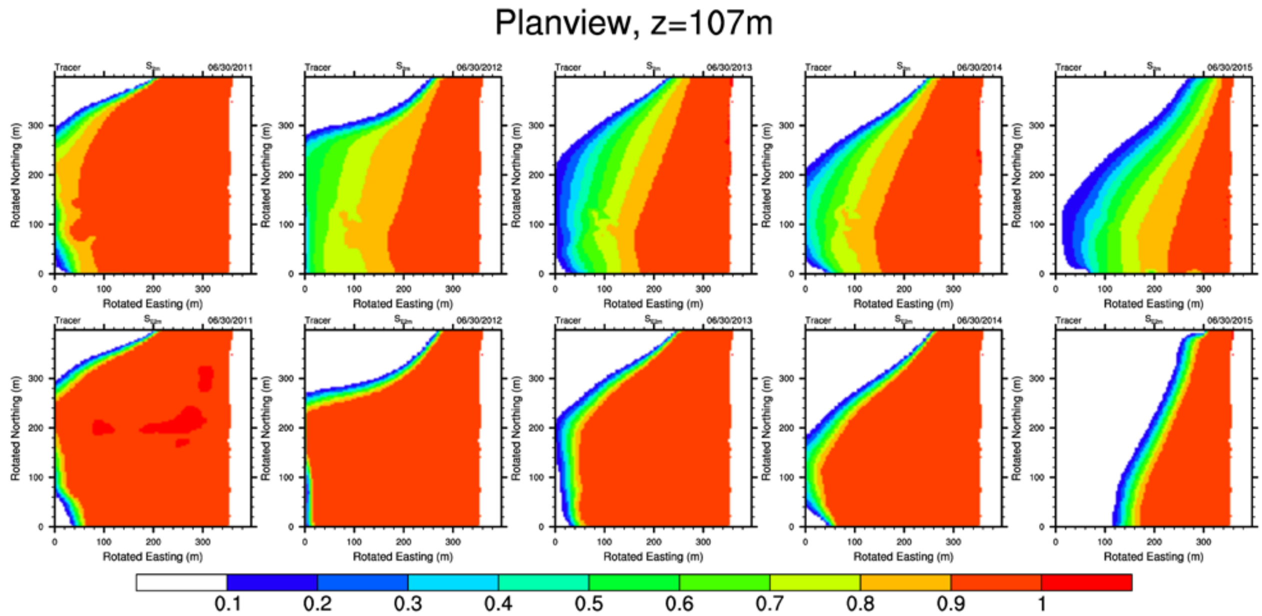

Figure S8. Mole fraction of river-water tracer at elevation 107 m on 30 June of each year in the study period from S2m (upper panels) and SE2m (lower panels)

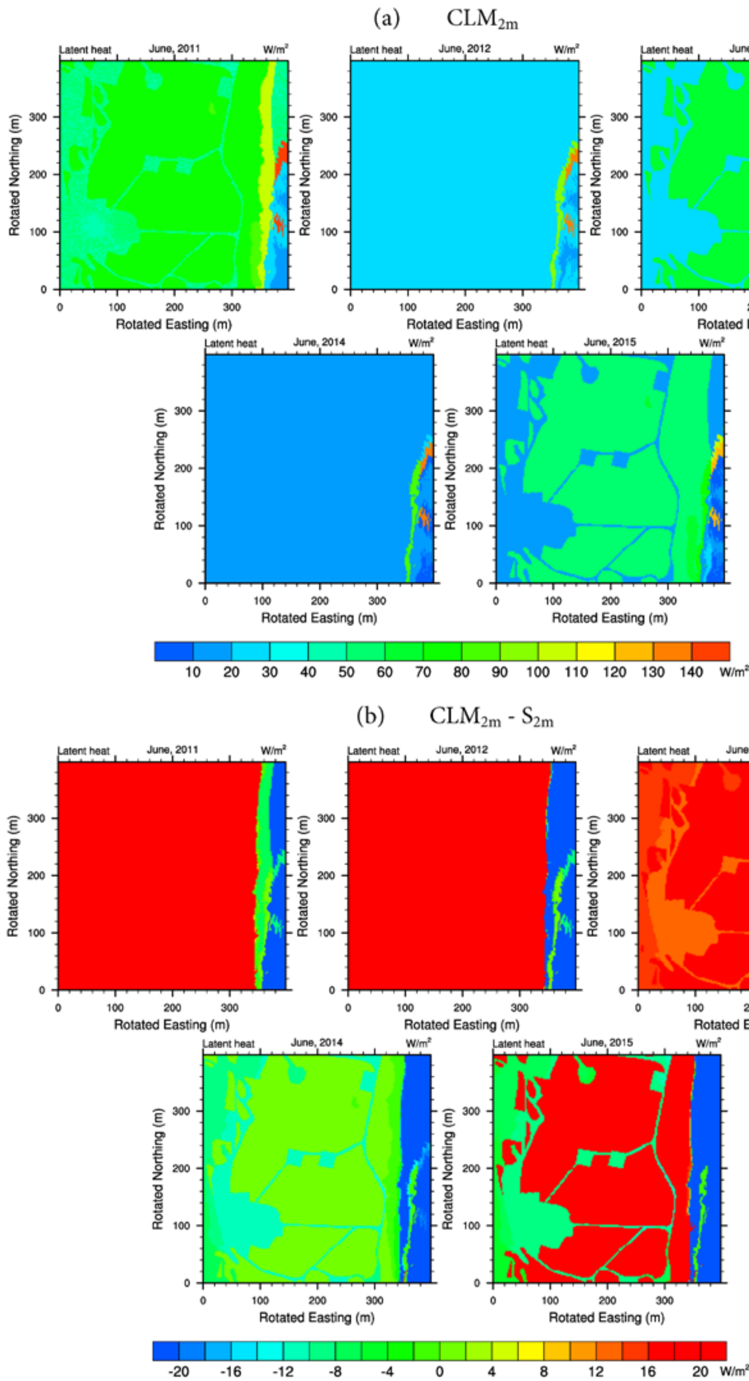

Figure S9. (a) Simulated latent heat fluxes in June from CLM_{2m}; and (b) the difference between CLM_{2m} and S_{2m} (i.e., $CLM_{2m} – S_{2m}$).

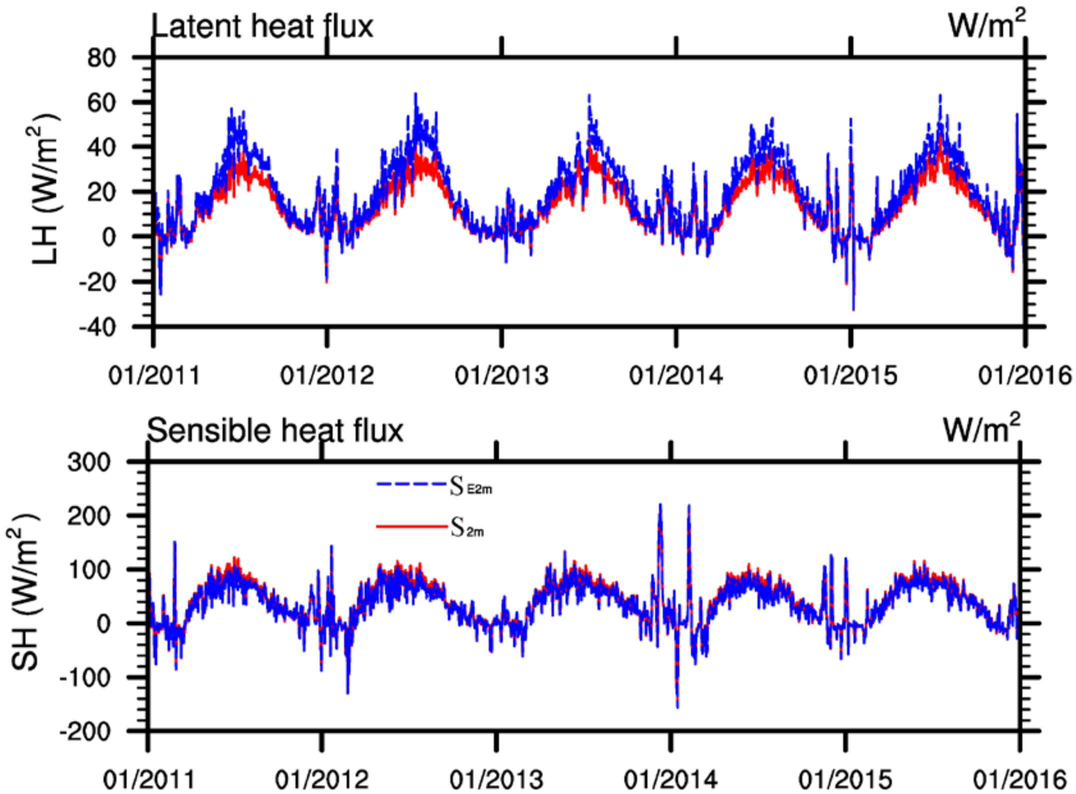

Figure S10. Simulated daily domain-averaged surface energy fluxes from S_{2m} (red) and S_{E2m} (blue)

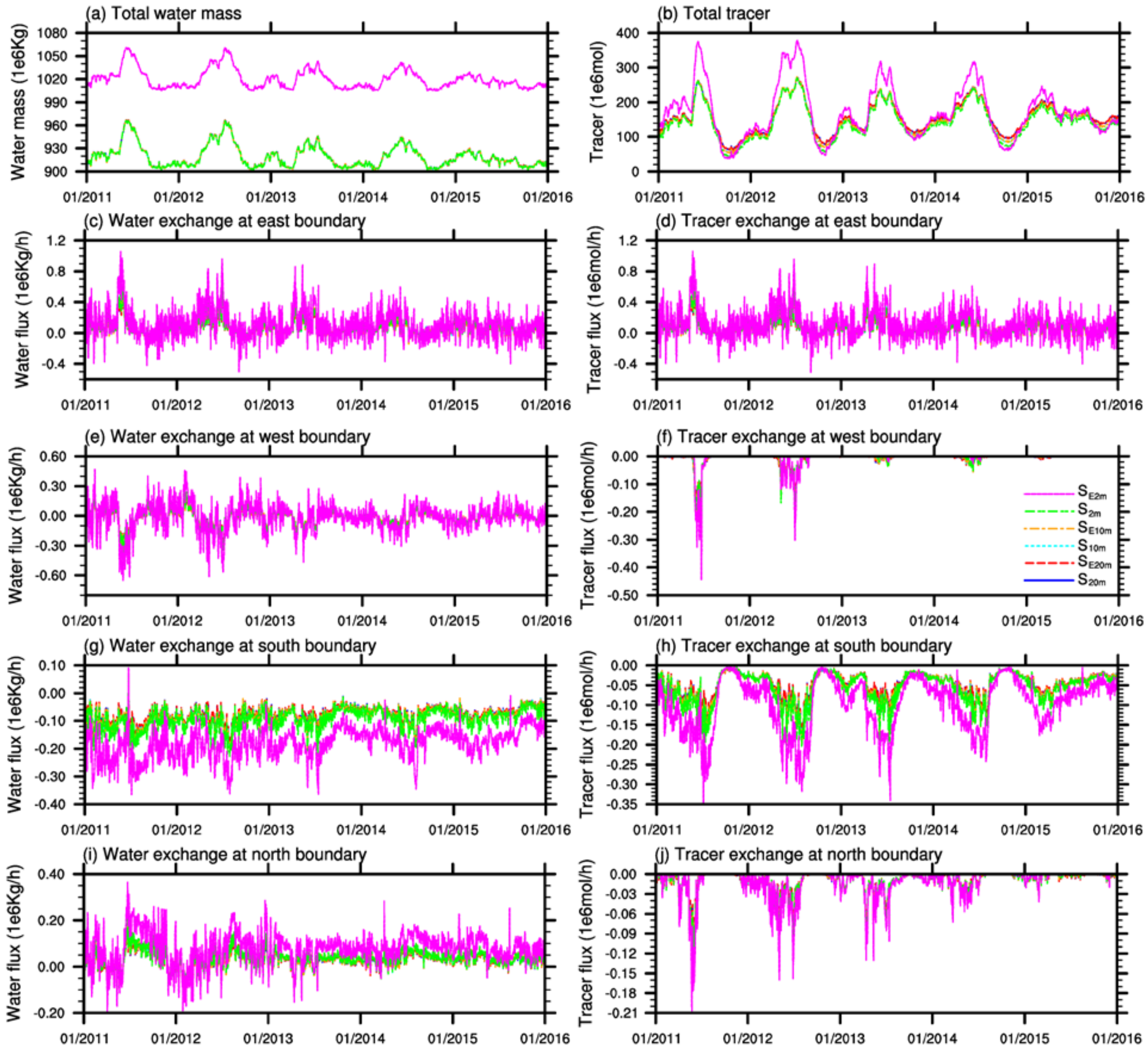

Figure S11. Total water mass, tracer amount, and exchange rates of water and tracer at four boundaries simulated by CP v1.0.