Reviewer #2 (Vincent Fortin):

This paper presents a detailed evaluation of an upgrade to the NASA LIS. The paper is well written and should be useful to LIS users.

Response: We thank the reviewer for the positive feedback and the constructive comments, which help to improve our manuscript quality. We have addressed all the comments point by point below.

Comments:

1. When summarizing the results, I suggest adding a table, in the form of a scorecard (with a stratification per variable, season and domains), that summarizes the magnitude and significance of the changes in the results obtained for the two LIS versions that are evaluated in the paper.

Response: Thank you for the suggestions. We have added multiple tables to summarize model biases for each of the evaluated variables across different seasons and regions, with both the bias magnitude and significance of the resulting changes included in the tables. In addition, we also included a scorecard-type figure using the ILAMB evaluation tool. These tables and figures and relevant discussions have been added to Section 5 of the revised manuscript and supplement. Below are the added figure and tables.

Table 1. Model evaluation metrics for LIS/Noah-MPv4.0.1 and LIS/Noah-MPv5.0 simulations driven by the USAF forcing averaged during 2018-2022 on the global and regional scale. The values are the annual mean model bias (LIS/Noah-MP simulations minus reference datasets). The statistically significant difference between LIS/Noah-MP v4.0.1 and LIS/Noah-MPv5.0 simulations ($p < 0.05$ using a t-test for daily time series) are marked as bold font. The values in the parentheses are the mean absolute model biases. The seasonal biases are shown in Tables S1-S4.

	Global		low latitude (30°S - 30°N)		northern mid-latitudes (30 - 60°N)		northern high-latitudes (>60°N)		southern mid-latitudes (30 - 60°S)		southern high-latitudes (>60°S)	
LIS/Noah-MP	v4.0.1	v5.0	v4.0.1	v5.0	v4.0.1	v5.0	v4.0.1	v5.0	v4.0.1	v5.0	v4.0.1	v5.0
Surface soil moisture (m^3/m^3 compared to SMAP)	**0.003 (0.076)**	**0.008 (0.078)**	**-0.009 (0.065)**	**-0.002 (0.066)**	**0.020 (0.079)**	**0.025 (0.082)**	**-0.013 (0.093)**	**-0.009 (0.094)**	**0.028 (0.081)**	**0.036 (0.086)**	-	-
Surface Soil moisture (m^3/m^3 compared to ISMN)	**0.062 (0.078)**	**0.067 (0.082)**	**0.027 (0.061)**	**0.036 (0.067)**	**0.062 (0.079)**	**0.068 (0.082)**	0.119 (0.121)	0.121 (0.123)	0.049 (0.062)	0.051 (0.062)	-	-
Latent heat flux (W/m^2 compared to GLEAM3.8a)	**0.992 (6.802)**	**-0.386 (7.273)**	**2.105 (10.740)**	**-2.759 (11.601)**	0.752 (7.994)	-0.608 (8.127)	-4.122 (5.541)	-3.784 (5.731)	**1.469 (9.369)**	**-0.271 (9.627)**	**2.992 (3.105)**	**3.668 (3.692)**
Snow water equivalent (mm compared to ERA5-Land)	**-10.123 (22.444)**	**-13.237 (22.328)**	**-0.845 (0.951)**	**-0.878 (0.966)**	**0.715 (16.267)**	**-1.349 (15.898)**	**-45.177 (71.928)**	**-56.181 (72.276)**	-10.804 (16.494)	-10.471 (16.311)	-	-

Snow depth (m compared to ERA5-Land)	-0.059 (0.076)	-0.061 (0.079)	**-0.003 (0.003)**	**-0.003 (0.003)**	-0.019 (0.051)	-0.019 (0.052)	-0.231 (0.255)	-0.245 (0.268)	-0.040 (0.050)	-0.037 (0.050)	-	-
Snow cover fraction (compared to MODIS)	**0.112 (0.113)**	**0.069 (0.090)**	**0.001 (0.003)**	**0.000 (0.002)**	**0.149 (0.151)**	**0.118 (0.122)**	**0.234 (0.235)**	**0.108 (0.183)**	**0.020 (0.027)**	**0.015 (0.023)**	-	-
Surface albedo (compared to MODIS)	**-0.018 (0.061)**	**-0.033 (0.067)**	**-0.016 (0.047)**	**-0.017 (0.046)**	**0.032 (0.052)**	**0.021 (0.045)**	**0.016 (0.052)**	**-0.024 (0.072)**	**0.017 (0.034)**	**0.013 (0.032)**	**-0.084 (0.089)**	**-0.100 (0.102)**

Table 2. Model evaluation metrics for LIS/Noah-MPv4.0.1 and LIS/Noah-MPv5.0 simulations driven by the NLDAS-2 forcing averaged over the CONUS during 2018-2022. The values are the mean model bias (LIS/Noah-MP simulations minus reference datasets). The statistically significant difference between LIS/Noah-MP v4.0.1 and LIS/Noah-MPv5.0 simulations ($p < 0.05$ using a t-test for daily time series) are marked as bold font. The values in the parentheses are the mean absolute model biases.

	Annual		DJF		MAM		JJA		SON	
LIS/Noah-MP	v4.0.1	v5.0	v4.0.1	v5.0	v4.0.1	v5.0	v4.0.1	v5.0	v4.0.1	v5.0
Surface soil moisture (m^3/m^3 compared to SMAP)	**0.000 (0.062)**	**0.008 (0.065)**	**0.025 (0.077)**	**0.035 (0.085)**	**0.003 (0.067)**	**0.008 (0.069)**	**0.006 (0.062)**	**0.013 (0.065)**	**-0.010 (0.058)**	**-0.001 (0.062)**
Surface Soil moisture (m^3/m^3 compared to ISMN)	**0.041 (0.065)**	**0.047 (0.068)**	**0.041 (0.075)**	**0.051 (0.080)**	**0.024 (0.066)**	**0.029 (0.067)**	**0.043 (0.069)**	**0.049 (0.072)**	**0.047 (0.069)**	**0.054 (0.074)**
Latent heat flux (W/m^2 compared to GLEAM3.8a)	**-0.207 (9.135)**	**-2.302 (9.286)**	**-5.864 (7.014)**	**-5.126 (6.385)**	**-0.575 (14.912)**	**-3.498 (14.413)**	**9.476 (17.752)**	**3.209 (14.815)**	-4.017 (7.147)	-3.865 (7.904)
Snow water equivalent (mm compared to SNODAS)	**-4.173 (6.422)**	**-4.959 (6.369)**	**-5.083 (10.148)**	**-6.715 (9.961)**	-10.246 (13.924)	-11.309 (14.061)	**-0.700 (1.221)**	**-0.961 (1.051)**	**-0.643 (1.018)**	**-0.843 (0.930)**
Snow depth (m compared to SNODAS)	-0.013 (0.020)	-0.015 (0.020)	-0.016 (0.036)	-0.020 (0.035)	-0.032 (0.040)	-0.033 (0.040)	**-0.002 (0.003)**	**-0.002 (0.002)**	-0.004 (0.005)	-0.004 (0.005)
Snow cover fraction (compared to MODIS)	**0.055 (0.058)**	**0.028 (0.037)**	**0.221 (0.227)**	**0.117 (0.137)**	**0.045 (0.049)**	**0.026 (0.046)**	-0.003 (0.003)	-0.003 (0.003)	**0.018 (0.026)**	**0.004 (0.018)**
Surface albedo (compared to MODIS)	**0.031 (0.038)**	**0.023 (0.033)**	**0.072 (0.083)**	**0.030 (0.056)**	**0.022 (0.032)**	**0.016 (0.029)**	**0.024 (0.033)**	**0.023 (0.033)**	**0.031 (0.041)**	**0.026 (0.037)**

Table S1. Model evaluation metrics for LIS/Noah-MPv4.0.1 and LIS/Noah-MPv5.0 simulations driven by the USAF forcing averaged over December-January-February (DJF) during 2018-2022 on the global and regional scale. The values are the mean model bias (LIS/Noah-MP simulations minus reference datasets). The statistically significant difference between LIS/Noah-MP v4.0.1 and LIS/Noah-MPv5.0 simulations ($p < 0.05$ using a t-test for daily time series) are marked as bold font. The values in the parentheses are the mean absolute model biases.

	Global		Low latitude		Northern midlatitude		Northern high latitude		Southern midlatitude		Southern high latitude	
LIS/Noah-MP	v4.0.1	v5.0	v4.0.1	v5.0	v4.0.1	v5.0	v4.0.1	v5.0	v4.0.1	v5.0	v4.0.1	v5.0
Surface soil moisture (m^3/m^3 compared to SMAP)	**0.020 (0.080)**	**0.027 (0.083)**	**-0.004 (0.070)**	**0.004 (0.072)**	**0.059 (0.095)**	**0.066 (0.100)**	-0.063 (0.158)	-0.062 (0.157)	**0.035 (0.082)**	**0.043 (0.087)**	-	-
Surface Soil moisture (m^3/m^3 compared to ISMN)	**0.052 (0.078)**	**0.059 (0.084)**	**0.013 (0.053)**	**0.022 (0.059)**	**0.055 (0.081)**	**0.062 (0.086)**	0.096 (0.099)	0.096 (0.099)	0.065 (0.068)	0.068 (0.070)	-	-
Latent heat flux (W/m^2 compared to GLEAM3.8a)	**2.414 (8.184)**	**1.466 (8.297)**	**2.141 (16.165)**	**-3.752 (14.870)**	**-2.962 (4.229)**	**-2.449 (4.016)**	**-0.113 (0.894)**	**-0.190 (0.916)**	**12.486 (21.025)**	**6.452 (18.489)**	**7.447 (7.659)**	**9.338 (9.442)**
Snow water equivalent (mm compared to ERA5-Land)	**-6.051 (26.573)**	**-7.823 (26.321)**	**-0.853 (0.984)**	**-0.883 (1.000)**	7.218 (23.983)	5.418 (23.245)	**-37.503 (78.639)**	**-42.473 (79.038)**	-8.938 (12.807)	-8.728 (12.370)	-	-
Snow depth (m compared to ERA5-Land)	**-0.073 (0.102)**	**-0.066 (0.100)**	-0.003 (0.004)	-0.004 (0.004)	**-0.023 (0.083)**	**-0.015 (0.083)**	**-0.293 (0.324)**	**-0.272 (0.315)**	-0.031 (0.039)	-0.030 (0.037)	-	-
Snow cover fraction (compared to MODIS)	**0.266 (0.267)**	**0.202 (0.206)**	**0.004 (0.006)**	**0.003 (0.004)**	**0.386 (0.389)**	**0.311 (0.317)**	**0.516 (0.516)**	**0.366 (0.373)**	**0.005 (0.009)**	**0.004 (0.009)**	-	-
Surface albedo (compared to MODIS)	**-0.009 (0.091)**	**-0.031 (0.093)**	**-0.018 (0.051)**	**-0.020 (0.051)**	**0.094 (0.130)**	**0.056 (0.102)**	**0.005 (0.121)**	**-0.053 (0.172)**	**0.011 (0.033)**	**0.009 (0.032)**	**-0.086 (0.090)**	**-0.101 (0.103)**

Table S2. Same as Table S1 but for March-April-May (MAM) averages.

	Global		Low latitude		Northern midlatitude		Northern high latitude		Southern midlatitude		Southern high latitude	
LIS/Noah-MP	v4.0.1	v5.0	v4.0.1	v5.0	v4.0.1	v5.0	v4.0.1	v5.0	v4.0.1	v5.0	v4.0.1	v5.0
Surface soil moisture (m^3/m^3 compared to SMAP)	**0.013 (0.077)**	**0.016 (0.078)**	**-0.006 (0.069)**	**0.000 (0.070)**	**0.033 (0.082)**	**0.036 (0.084)**	0.009 (0.081))	0.008 (0.081)	**0.021 (0.077)**	**0.030 (0.083)**	-	-

Surface Soil moisture (m^3/m^3 compared to ISMN)	**0.048 (0.075)**	**0.051 (0.077)**	**0.032 (0.063)**	**0.040 (0.066)**	**0.048 (0.075)**	**0.051 (0.077)**	0.106 (0.116)	0.107 (0.117)	0.054 (0.060)	0.057 (0.058)	-	-
Latent heat flux (W/m^2 compared to GLEAM3.8a)	**-1.614 (8.272)**	**-2.609 (8.499)**	**-0.028 (13.243)**	**-4.268 (14.196)**	-2.284 (12.144)	-3.301 (12.521)	**-6.919 (8.214)**	**-5.205 (7.419)**	-1.425 (6.665)	-0.836 (7.569)	**0.448 (1.295)**	**0.557 (1.306)**
Snow water equivalent (mm compared to ERA5-Land)	**-8.642 (29.319)**	**-15.069 (30.461)**	**-1.064 (1.272)**	**-1.116 (1.291)**	**2.464 (26.332)**	**-1.265 (27.002)**	**-41.038 (87.507)**	**-65.033 (92.067)**	**-9.468 (11.037)**	**-9.000 (10.882)**	-	-
Snow depth (m compared to ERA5-Land)	**-0.068 (0.096)**	**-0.078 (0.107)**	**-0.004 (0.004)**	**-0.004 (0.004)**	-0.026 (0.075)	-0.027 (0.080)	**-0.265 (0.308)**	**-0.313 (0.354)**	**-0.032 (0.035)**	**-0.031 (0.035)**	-	-
Snow cover fraction (compared to MODIS)	**0.129 (0.131)**	**0.064 (0.121)**	**0.001 (0.003)**	**0.000 (0.002)**	**0.160 (0.162)**	**0.126 (0.146)**	**0.291 (0.291)**	**0.075 (0.274)**	**0.005 (0.016)**	**0.002 (0.014)**	-	-
Surface albedo (compared to MODIS)	**-0.023 (0.064)**	**-0.048 (0.081)**	**-0.020 (0.048)**	**-0.021 (0.048)**	**0.029 (0.059)**	**0.014 (0.056)**	**-0.054 (0.092)**	**-0.152 (0.180)**	**0.018 (0.036)**	**0.015 (0.035)**	**-0.063 (0.069)**	**-0.072 (0.075)**

Table S3. Same as Table S1 but for June-July-August (JJA) averages.

	Global		Low latitude		Northern midlatitude		Northern high latitude		Southern midlatitude		Southern high latitude	
Noah-MP	v4.0.1	v5.0	v4.0.1	v5.0	v4.0.1	v5.0	v4.0.1	v5.0	v4.0.1	v5.0	v4.0.1	v5.0
Surface soil moisture (m^3/m^3 compared to SMAP)	**-0.005 (0.078)**	**0.000 (0.079)**	**-0.016 (0.071)**	**-0.010 (0.071)**	**0.012 (0.078)**	**0.017 (0.081)**	**-0.023 (0.091)**	**-0.019 (0.091)**	**0.022 (0.090)**	**0.031 (0.096)**	-	-
Surface Soil moisture (m^3/m^3 compared to ISMN)	**0.067 (0.085)**	**0.072 (0.088)**	**0.024 (0.070)**	**0.034 (0.075)**	**0.069 (0.084)**	**0.074 (0.088)**	0.127 (0.131)	0.129 (0.132)	0.039 (0.071)	0.039 (0.070)	-	-
Latent heat flux (W/m^2 compared to GLEAM3.8a)	**2.927 (11.336)**	**0.472 (10.599)**	**4.066 (17.233)**	**-0.412 (16.601)**	**10.697 (17.801)**	**5.522 (14.889)**	-5.468 (12.165)	-6.020 (12.962)	**-4.440 (7.092)**	**-3.425 (6.825)**	0.959 (1.286)	1.012 (1.313)
Snow water equivalent (mm compared to ERA5-Land)	**-13.131 (17.021)**	**-15.966 (17.519)**	**-0.740 (0.813)**	**-0.772 (0.821)**	**-3.316 (8.360)**	**-5.265 (7.901)**	**-52.729 (59.916)**	**-62.524 (63.347)**	-10.688 (18.101)	-10.761 (18.218)	-	-
Snow depth (m compared to ERA5-Land)	**-0.047 (0.054)**	**-0.053 (0.056)**	**-0.003 (0.003)**	**-0.003 (0.003)**	**-0.014 (0.024)**	**-0.018 (0.023)**	**-0.184 (0.197)**	**-0.206 (0.208)**	-0.043 (0.061)	-0.041 (0.062)	-	-
Snow cover fraction (compared to MODIS)	**0.017 (0.030)**	**0.006 (0.034)**	**0.000 (0.002)**	**-0.001 (0.002)**	**0.001 (0.012)**	**-0.003 (0.011)**	**0.060 (0.093)**	**0.024 (0.112)**	**0.057 (0.071)**	**0.039 (0.055)**	-	-

Surface albedo (compared to MODIS)	**0.005 (0.045)**	**-0.001 (0.045)**	**-0.018 (0.049)**	**-0.019 (0.049)**	**0.011 (0.037)**	**0.010 (0.036)**	**0.027 (0.050)**	**0.009 (0.051)**	**0.032 (0.044)**	**0.023 (0.038)**	**-0.036 (0.045)**	**-0.053 (0.059)**

Table S4. Same as Table S1 but for September-October-November (SON) averages.

	Global		Low latitude		Northern midlatitude		Northern high latitude		Southern midlatitude		Southern high latitude	
Noah-MP	v4.0.1	v5.0	v4.0.1	v5.0	v4.0.1	v5.0	v4.0.1	v5.0	v4.0.1	v5.0	v4.0.1	v5.0
Surface soil moisture (m^3/m^3 compared to SMAP)	**0.008 (0.080)**	**0.014 (0.082)**	**-0.010 (0.065)**	**-0.004 (0.065)**	**0.020 (0.080)**	**0.027 (0.084)**	**0.014 (0.108)**	**0.019 (0.110)**	**0.036 (0.090)**	**0.042 (0.093)**	-	-
Surface Soil moisture (m^3/m^3 compared to ISMN)	**0.066 (0.083)**	**0.073 (0.088)**	**0.026 (0.071)**	**0.034 (0.074)**	**0.067 (0.083)**	**0.074 (0.088)**	0.120 (0.120)	0.121 (0.121)	0.061 (0.082)	0.061 (0.079)	-	-
Latent heat flux (W/m^2 compared to GLEAM3.8a)	**0.301 (6.785)**	**-0.681 (7.228)**	**2.243 (12.533)**	**-2.624 (13.228)**	-2.550 (6.536)	-2.259 (6.910	-3.766 (4.360)	-3.522 (4.166)	**-0.550 (10.947)**	**-3.173 (11.249)**	**3.204 (3.237)**	**3.879 (3.883)**
Snow water equivalent (mm compared to ERA5-Land)	**-12.029 (17.559)**	**-13.400 (17.511)**	**-0.698 (0.729)**	**-0.718 (0.743)**	-3.228 (7.672)	-3.980 (7.407)	**-47.344 (63.135)**	**-52.270 (63.555)**	**-12.553 (22.812)**	**-12.550 (22.978)**	-	-
Snow depth (m compared to ERA5-Land)	-0.045 (0.060)	-0.046 (0.061)	**-0.002 (0.003)**	**-0.003 (0.003)**	-0.014 (0.028)	-0.014 (0.028)	-0.175 (0.215)	-0.180 (0.221)	-0.044 (0.065)	-0.043 (0.065)	-	-
Snow cover fraction (compared to MODIS)	**0.114 (0.116)**	**0.077 (0.082)**	**0.000 (0.001)**	**-0.001 (0.001)**	**0.111 (0.116)**	**0.084 (0.090)**	**0.297 (0.298)**	**0.189 (0.195)**	**0.023 (0.029)**	**0.020 (0.027)**	-	-
Surface albedo (compared to MODIS)	-0.012 (0.065)	-0.025 (0.063)	**-0.018 (0.046)**	**-0.019 (0.046)**	**0.034 (0.056)**	**0.025 (0.048)**	**0.057 (0.066)**	**0.022 (0.047)**	**0.013 (0.031)**	**0.010 (0.029)**	**-0.088 (0.091)**	**-0.102 (0.103)**

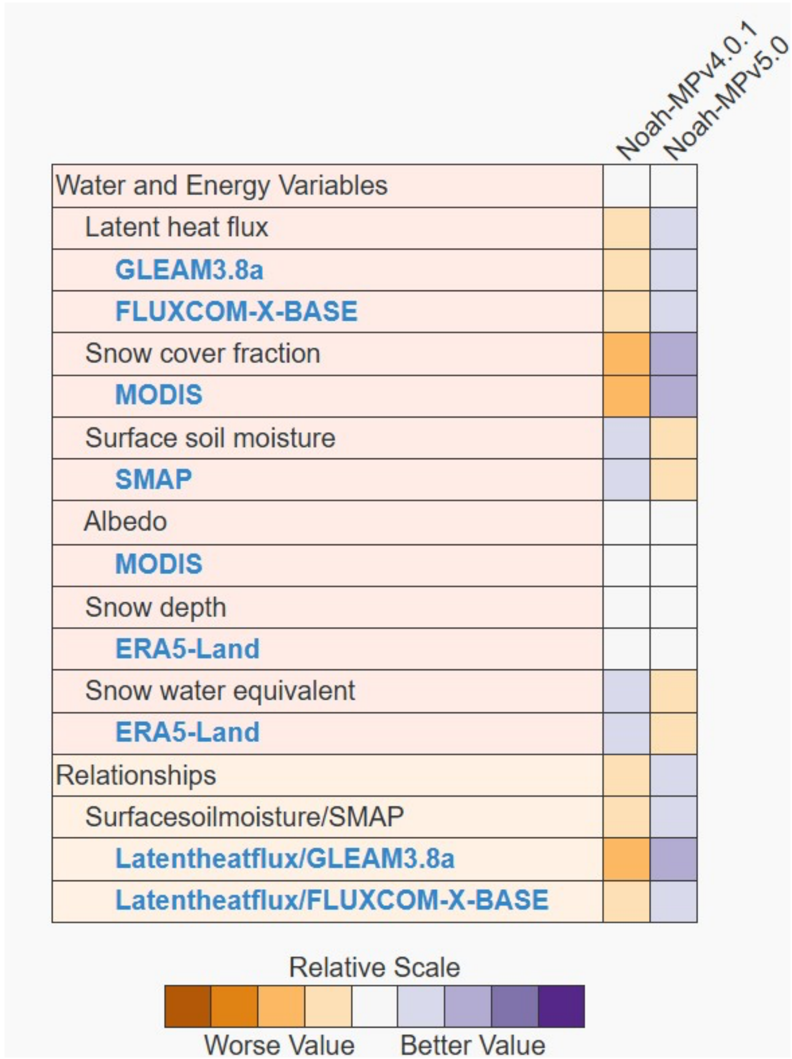

Figure 18. Scorecard-type comparison for LIS/Noah-MPv4.0.1 and LIS/Noah-MPv5.0 model performance in simulating key surface variables evaluated against the reference datasets used in this study based on the ILAMB tool.

2. I would also suggest that more details be provided on the use of the Github submodule mechanism to streamline synchronization, or at least a reference on how this works and helps keeping versions in sync.

Response: Thank you for the suggestion. The detailed description of the GitHub submodule process is here: https://gist.github.com/gitaarik/8735255. We have also included additional brief explanations in Section 2.2 as follows:

"*The GitHub submodule mechanism (https://gist.github.com/gitaarik/8735255) allows (1) separated source code maintenance and updates for Noah-MP (by the Noah-MP team) and LIS (by the NASA/LIS team), and (2) convenient updates of Noah-MP inside LIS by updating the submodule link to a newer Noah-MP GitHub tag/branch version.*"

3. In many figures, grids with statistically significant differences are shown with gray dots. However, the technique used to assess whether the differences are statistically significant is not explained in the text. Please provide more details on the method used.

Response: Thank you for the suggestion. We applied the t-test to daily time series over each grid to compute statistical significance based on the widely-used SciPy python package (https://docs.scipy.org/doc/scipy/reference/generated/scipy.stats.ttest_ind.html). We have included this explanation in all figure captions where necessary as follows:

"*Grids with statistically significant differences ($p < 0.05$) are shown with gray dots in panels (d)-(f). The statistical significance over each grid is computed using daily time series and the t-test method.*"

4. Finally, I have read the comments made by Anonymous Referee #1 and agree that the discrepancy between model differences for soil moisture and LH needs to be investigated further. For the CONUS domain, I suggest looking at each season separately, as well as separating the evaporation and transpiration components of evapotranspiration if this is possible in LIS. Even if a comparison to observations of the two components is not possible, it could provide useful information as to the origin of the differences.

Response: Thank you for the suggestion. We have added analyses of modeled ET component (soil evaporation, plant transpiration, and canopy evaporation of intercepted water) for each season and their comparison with GLEAM data. For other discussions related to the soil moisture and LH issue, please see our responses to the comments by Referee #1 for details. In particular, we would like to highlight that the ET observational data products have large uncertainty which would confound the model evaluation. For example, our additional model evaluation against FLUXCOM-X-BASE data product shows opposite signs of model LH biases over many regions compared to the results evaluated against GLEAM. Here, to respond to the ET component evaluation over the CONUS domain raised by this specific comment, we have added the following figures and discussions in the Discussion section (Section 5) as follows:

"*The modeled LH and soil moisture assessments in Section 4 indicate a slightly higher soil moisture but lower LH over some mid-latitude (e.g., the eastern U.S.) and the tropics in LIS/Noah-MPv5.0 compared to LIS/Noah-MPv4.0.1. To investigate this seemingly contradictory signals, we conducted a series of tests and analysis. … In addition, we quantified the differences in each of the modeled ET components between the two model versions and their biases by comparing with the GLEAM data. Using the CONUS region as an example, we find that the lower LH in LIS/Noah-MPv5.0 over the eastern U.S. is mainly caused by the lower plant transpiration and soil evaporation compared to LIS/Noah-MPv4.0.1, which exceed the higher canopy-intercepted water evaporation (Figures S13-S15). The slightly lower LH in LIS/Noah-MPv5.0 over the western U.S. is dominated by the lower plant transpiration and canopy-intercepted water evaporation, which outweigh the higher soil evaporation. These patterns are generally consistent throughout the seasons (Figures S16-18), with stronger signals for plant transpiration and soil evaporation in spring and summer due to warmer temperature and higher solar radiation. Thus, the slightly higher soil moisture appears to be a result of the lower total ET in LIS/Noah-MPv5.0 compared to LIS/Noah-MPv4.0.1.*"

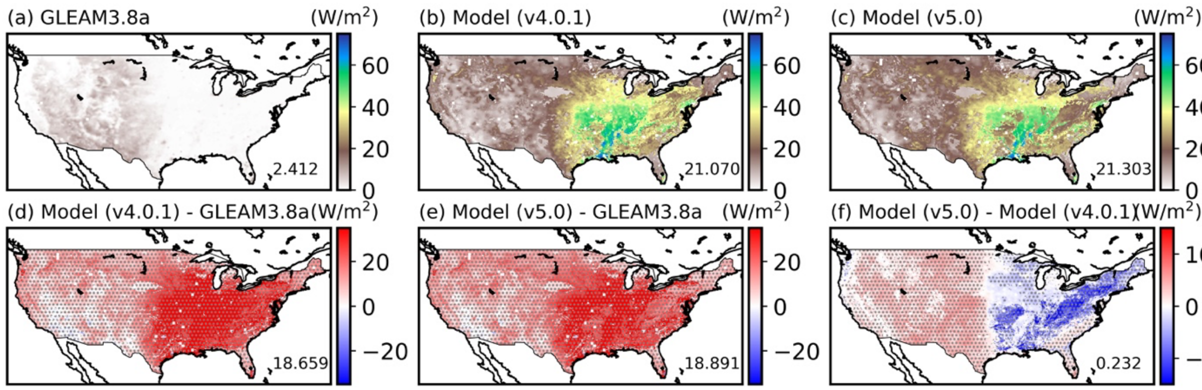

Figure S13. Comparison of latent heat flux (W/m^2) due to soil evaporation between the GLEAM data and LIS/Noah-MP simulations driven by the NLDAS-2 forcing over the CONUS averaged during 2018-2021: (a) GLEAM3.8a data, (b) LIS/Noah-MPv4.0.1 simulation, (c) LIS/Noah-MPv5.0 simulation, (d) LIS/Noah-MPv4.0.1 biases (model minus GLEAM), (e) LIS/Noah-MPv5.0 biases (model minus GLEAM), and (f) differences between LIS/Noah-MPv5.0 and LIS/Noah-MPv4.0.1 simulations. Grids with statistically significant differences ($p < 0.05$) are shown with gray dots in panels (d)-(f). The statistical significance over each grid is computed using daily time series and the T-test method. The global mean value is also provided in the lower right of each panel. See Figure S16 for seasonal plots.

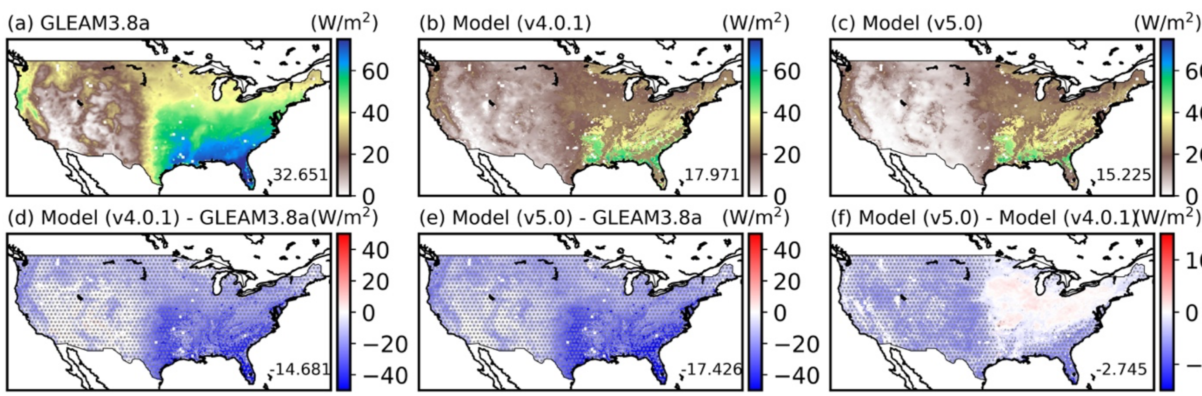

Figure S14. Same as Figure S13 but for plant transpiration. See Figure S17 for seasonal plots.

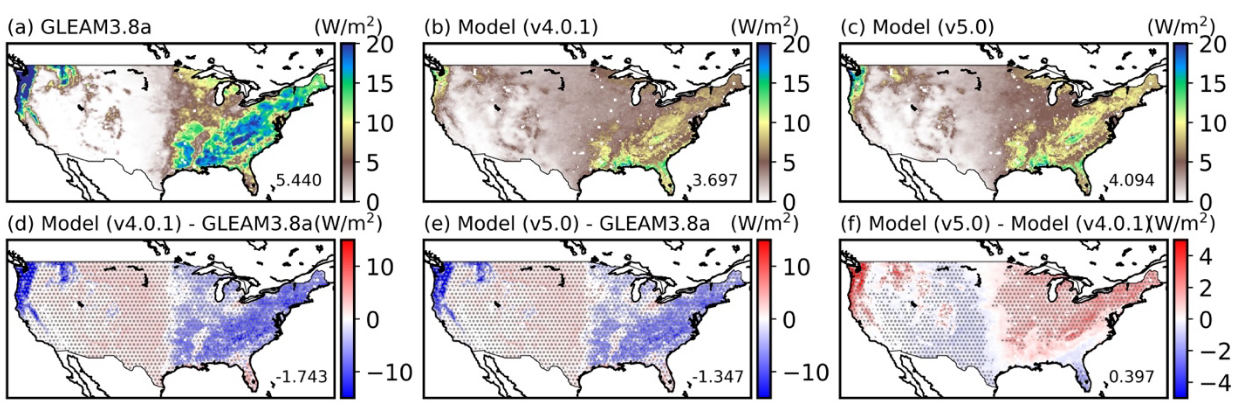

Figure S15. Same as Figure S13 but for canopy-intercepted water evaporation. See Figure S18 for seasonal plots.

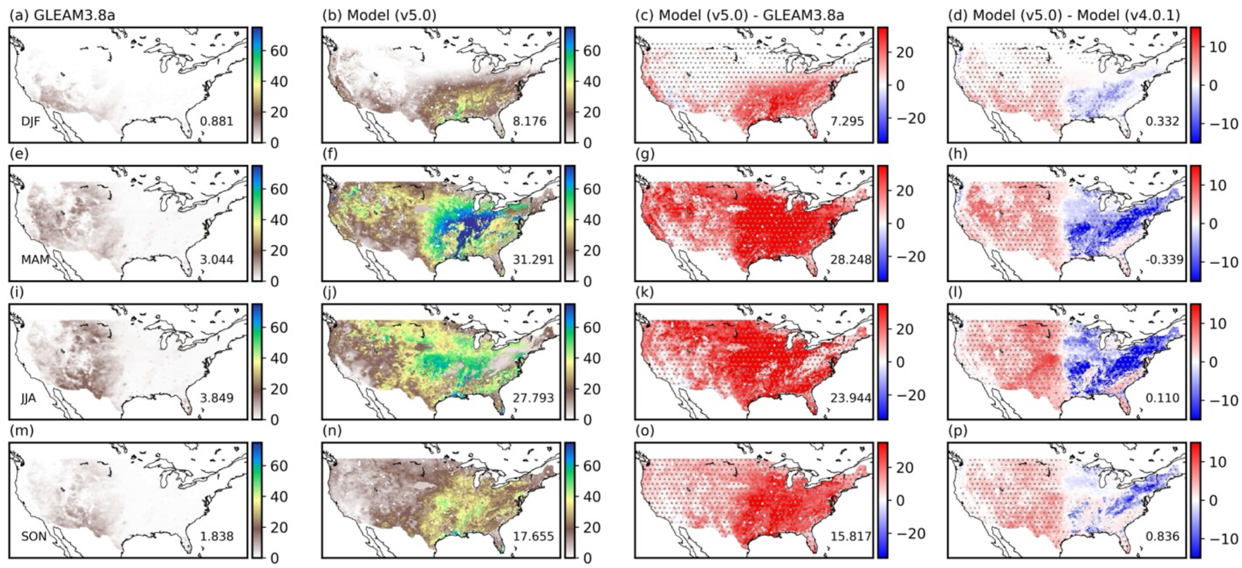

Figure S16. Same as Figure S13 but for seasonal results: (a-d) DJF, (e-h) MAM, (i-l) JJA, and (m-p) SON.

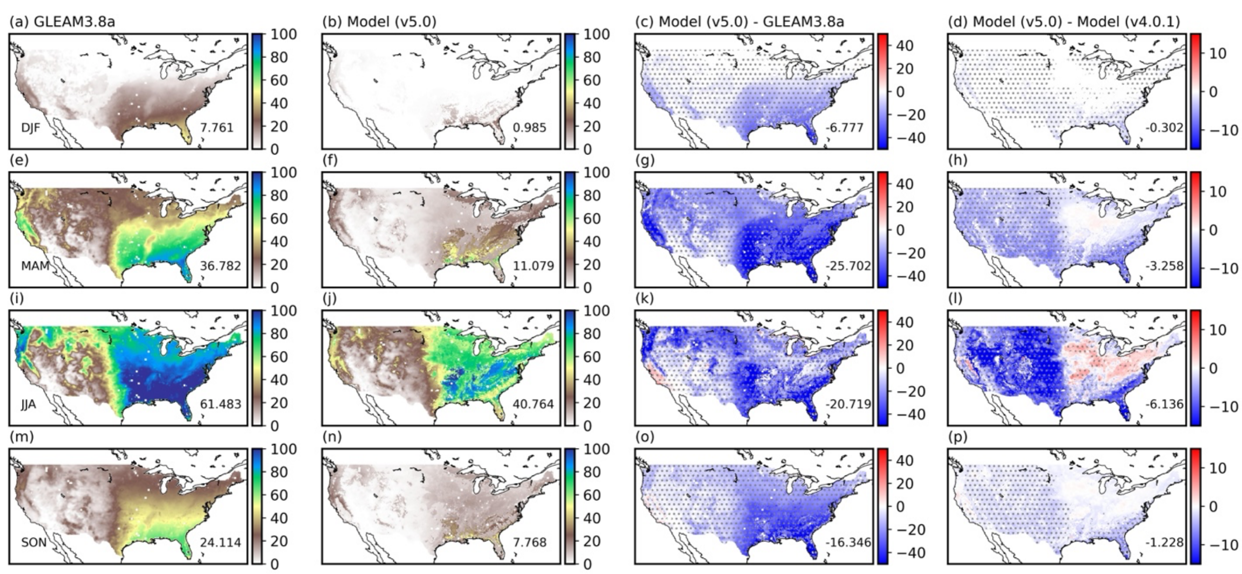

Figure S17. Same as Figure S14 but for seasonal results: (a-d) DJF, (e-h) MAM, (i-l) JJA, and (m-p) SON.

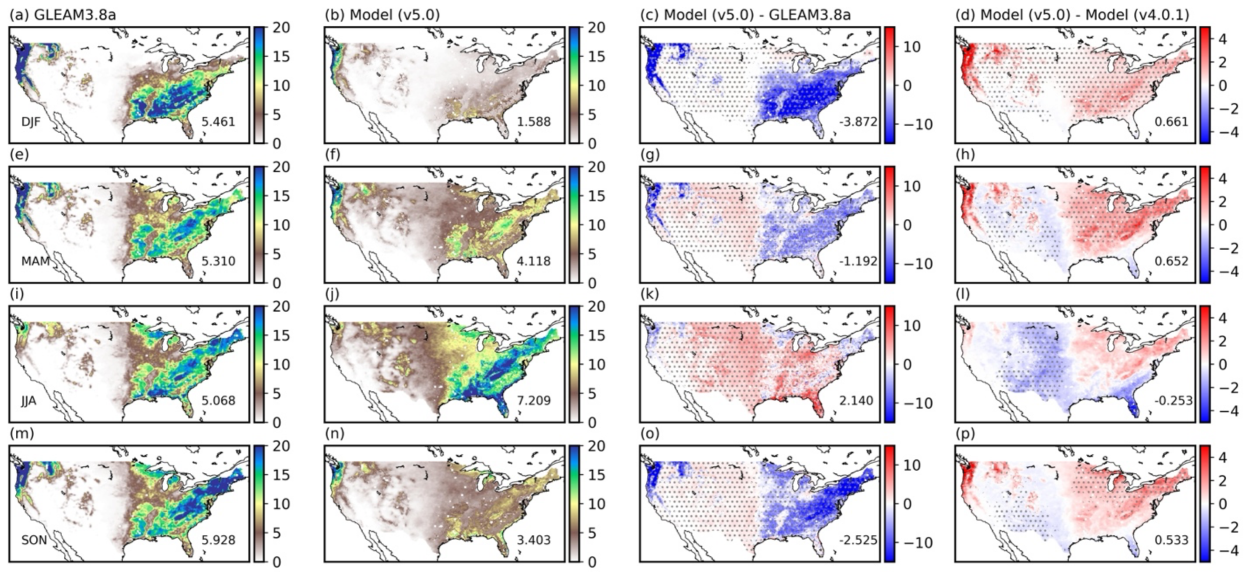

Figure S18. Same as Figure S15 but for seasonal results: (a-d) DJF, (e-h) MAM, (i-l) JJA, and (m-p) SON.