Supplementary Material

Evaluations of the CoLM model's ability to simulate surface heat fluxes in the Tibetan Plateau

1. SH

As only observations of SH from Ms3637, Ms3478, and AnDuo are available, evaluations about the three sites are conducted. Figure S1 shows time series of the simulated and observed SH. It can be seen that the CoLM model can capture the diurnal cycle of SH well. However, at Ms3637 and Ms3478 sites, simulations in the afternoon are greater than observations. At AnDuo site, simulations in the evening are greater than observations.

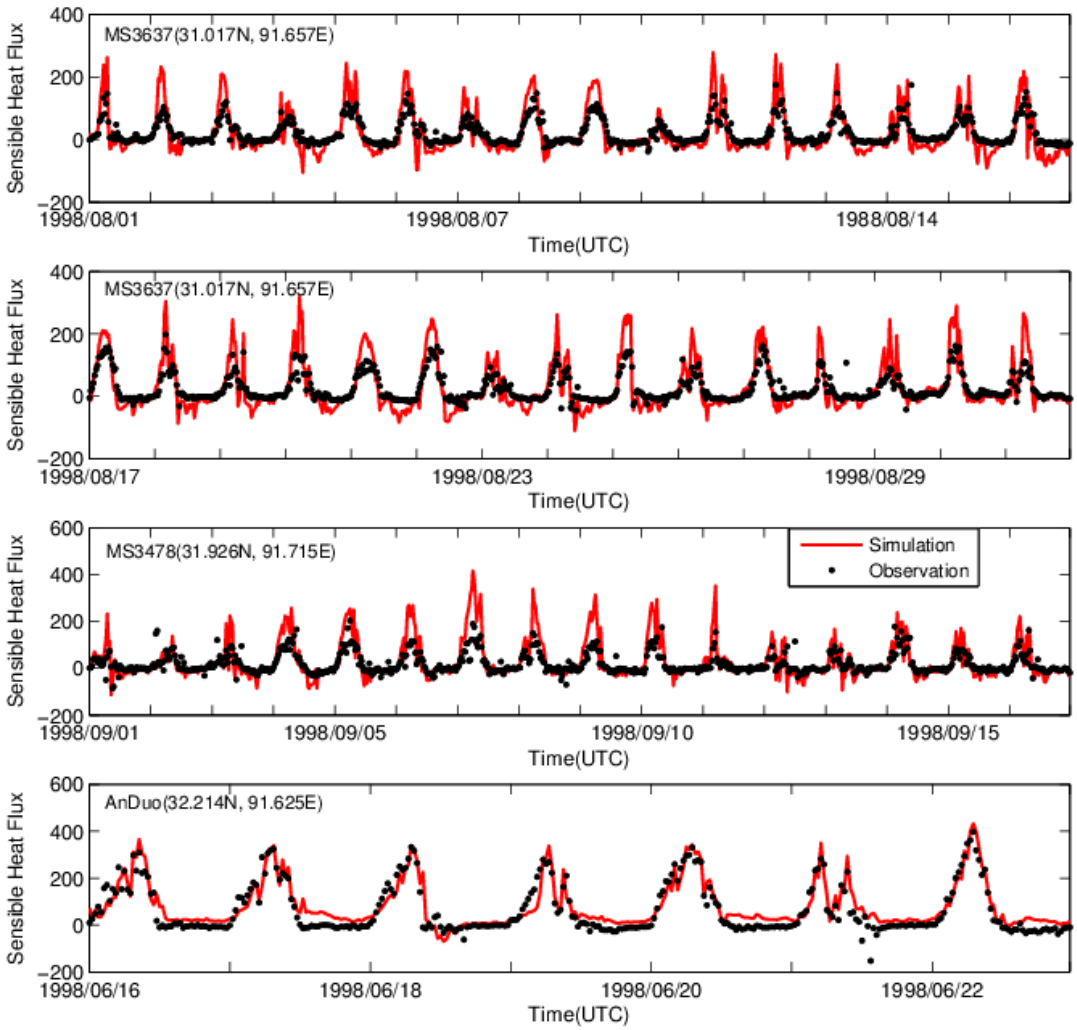

Figure S1. Comparisons of half-hourly SH (W m^{-2}) between observations and simulations from the CoLM model at Ms3637 site in the study period of 1998.08.01–08.31, at Ms3478 site in the study

period of 1998.09.01–09.16, and at AnDuo site in the study period of 1998.06.16–06.22.

Table S1. Observations and simulations for SH at Ms3637, Ms3478, and AnDuo sites averaged in respective study periods.

Sites	SH (unit: W m^{-2})		Study periods
	Observations	Simulations	
Ms3637	23.0	23.4	1998.08.01–08.31
Ms3478	19.8	35.7	1998.09.01–09.16
AnDuo	66.3	116.1	1998.06.16–06.22

2 LH

For LH, only observations from Ms3478 and AnDuo are available. Thus, evaluations about the two sites are implemented. From Figure S2, it can be seen that the CoLM model can capture the diurnal cycle of LH as well. At Ms3478 site, simulations are relatively close to observations. But, at AnDuo site, the peak values of LH are not simulated so well.

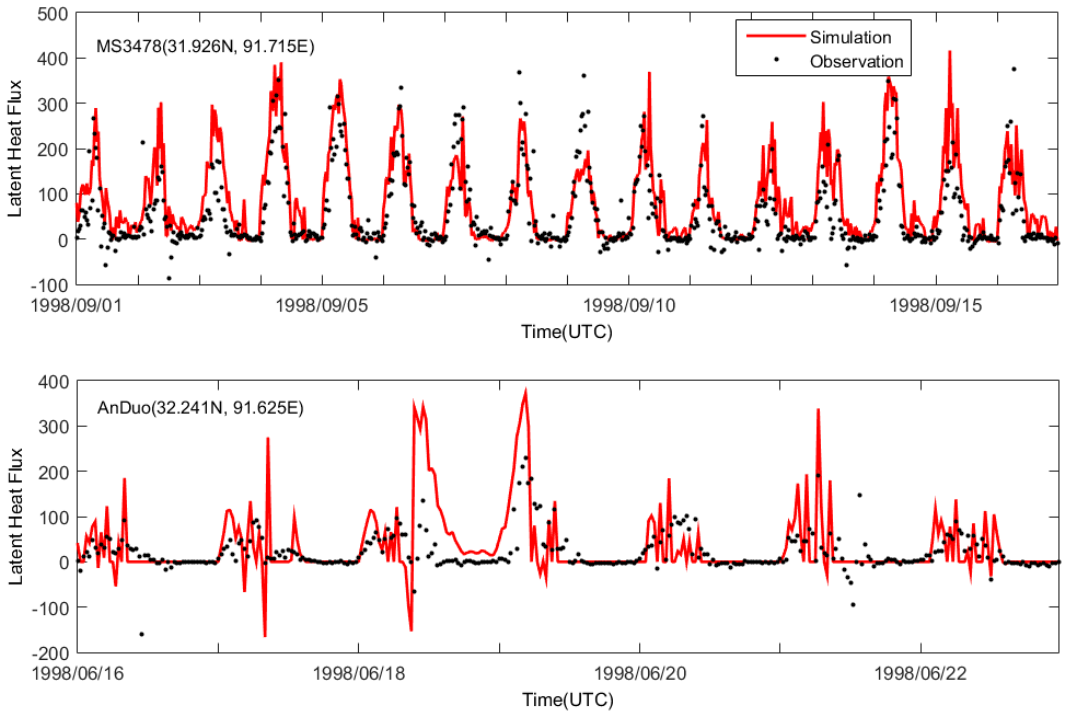

Figure S2. Comparisons of half-hourly LH (W m^{-2}) between observations and simulations from the CoLM model at Ms3478 site in the study period of 1998.09.01–09.16, and at AnDuo site in the study period of 1998.06.16–06.22.

Table S2. Observations and simulations for LH at Ms3478 and AnDuo sites averaged in respective study periods.

Sites	LH (unit: W m^{-2})		Study periods
	Observations	Simulations	
Ms3478	56.4	80.9	1998.09.01–09.16
AnDuo	21.1	42.1	1998.06.16–06.22

In summary, the CoLM model can basically capture surface heat fluxes (SH and LH) in the Tibetan Plateau. This can gain our confidence in the model setup and parameterization.