

Data source		Simulation with default $f_d$			Simulation with optimal $f_d$		
		Bias	RMSE	ILAMB score	Bias	RMSE	ILAMB score
LH	FLUXNET	10.1 (W m <sup>-2</sup> )	21.0 (W m <sup>-2</sup> )	0.68	9.5 (W m <sup>-2</sup> )	21.3 (W m <sup>-2</sup> )	0.68
	GBAF	7.1 (W m <sup>-2</sup> )	16.3 (W m <sup>-2</sup> )	0.81	6.3 (W m <sup>-2</sup> )	16.3 (W m <sup>-2</sup> )	0.81
SH	FLUXNET	6.7 (W m <sup>-2</sup> )	22.5 (W m <sup>-2</sup> )	0.66	7.1 (W m <sup>-2</sup> )	22.8 (W m <sup>-2</sup> )	0.65
	GBAF	6.9 (W m <sup>-2</sup> )	21.2 (W m <sup>-2</sup> )	0.71	7.6 (W m <sup>-2</sup> )	21.7 (W m <sup>-2</sup> )	0.70
TWSA	GRACE	1.3 (cm)	7.8 (cm)	0.48	3.0 (cm)	9.6 (cm)	0.48
Runoff	Dai and Trenberth (2002)	-0.26 (kg m <sup>-2</sup> d <sup>-1</sup> )	0.91 (m <sup>-2</sup> m <sup>-2</sup> d <sup>-1</sup> )	0.52	-0.23 (kg m <sup>-2</sup> d <sup>-1</sup> )	0.88 (kg m <sup>-2</sup> d <sup>-1</sup> )	0.50