Parameters	Units	Prior values	Ranges	References
Adj_{SA}	Unitless	37	32–42	Parton et al. (1987)
Adj_{SP}	Unitless	29	24–34	Parton et al. (1987)
AvailCr	Unitless	0.0041	0.0021–0.0061	Blagodatskaya et al. (2014), Wang et al. (2013)
b	Unitless	0.01	0.0005–1	He et al. (2015), Wang et al. (2014)
BAr	Unitless	0.3	0–1	Wang et al. (2014)
CAE	Unitless	0.6	0.01–0.85	Schimel and Weintraub (2003), Six et al. (2006)
d_{ENZ}	h^{-1}	0.001	0.0005–0.016	Allison et al. (2010), Kaiser et al. (2014, 2015), He et al. (2015)
d_{MFT}	h^{-1}	0.002	0.0002–0.01	Allison et al. (2010), He et al. (2015), Kaiser et al. (2014)
FEr	Unitless	0.1	0.00001–1	This study
K_{BA}	Unitless	6	1–11	Wang et al. (2013)
K_{des}	h^{-1}	0.001	0.0001–0.01	Wang et al. (2013)
Ke	h^{-1}	0.00001	0.000005–0.0008	Allison et al. (2010), He et al. (2015)
Kr_{ref}	h^{-1}	0.002	0.0001–0.08	Kaiser et al. (2014), He et al. (2015)
KM_F	gC (kg soil)$^{-1}$	50	0.01–100	Wang et al. (2013), Allison et al. (2010), He et al. (2015)
KM_S	gC (kg soil)$^{-1}$	250	0.01–500	Wang et al. (2013), Allison et al. (2010), He et al. (2015)
KM_{uptake}	gC (kg soil)$^{-1}$	0.26	0.0026–26	Wang et al. (2013), Allison et al. (2010)
LtoSS	Unitless	0.02	0–0.5	Wieder et al. (2014), D'Odorico et al. (2003)
SEr	Unitless	0.1	0.00001–1	This study
$Adsorb_{max}$	g C (kg soil)$^{-1}$	1.35	0.5–4.8	Mayes et al. (2012)
$Vmax_{LM}$	g C (g ENZ C)$^{-1}$ h^{-1}	56	7–447	Wang et al. (2012)
$Vmax_{SS}$	g C (g ENZ C)$^{-1}$ h^{-1}	1	0.008–50	Wang et al. (2012, 2013)
$Vmax_{uptake,C}$	g C (g ENZ C)$^{-1}$ h^{-1}	0.24	0.0005–2	Wang et al. (2013), Zwietering et al. (1991), Weiger et al. (1995)