

	Covariance length scale (unit: km)	Prior biosphere fluxes	Prior boundary conditions	Uncertainty of boundary conditions	Uncertainty of biosphere fluxes	Model–data mismatch <sup>1</sup> (unit: ppm)	Observations used
Base	750	SiBCASA	CT2013B	2.0	–	3	All
MULT <sup>2</sup>	750	SiBCASA	CT2013B	2.0	–	3	All
CL1	300	SiBCASA	CT2013B	2.0	–	3	All
CL2	500	SiBCASA	CT2013B	2.0	–	3	All
CL3	1000	SiBCASA	CT2013B	2.0	–	3	All
CL4	1250	SiBCASA	CT2013B	2.0	–	3	All
B1	750	SiB3	CT2013B	2.0	–	3	All
B2	750	CT2013B	CT2013B	2.0	–	3	All
B2'	750	CT2013B-avg	CT2013B	2.0	–	3	All
BX1	750	SiBCASA-F1	CT2013B	2.0	–	3	All
BX2	750	SiBCASA-F2	CT2013B	2.0	–	3	All
BX3	750	SiBCASA-F3	CT2013B	2.0	–	3	All
BX4	750	SiBCASA-F4	CT2013B	2.0	–	3	All
BX5	750	SiBCASA-F5	CT2013B	2.0	–	3	All
BC1	750	SiBCASA	CTE2014	2.0	–	3	All
BC2	750	SiBCASA	EMP	2.0	–	3	All
Pbc1	750	SiBCASA	CT2013B	1.0	–	3	All
Pbc2	750	SiBCASA	CT2013B	3.0	–	3	All
Q1	750	SiBCASA	CT2013B	2.0	50 % of default	3	All
Q2	750	SiBCASA	CT2013B	2.0	150 % of default	3	All
R1	750	SiBCASA	CT2013B	2.0	–	2	All
R2	750	SiBCASA	CT2013B	2.0	–	4	All
Obs	750	SiBCASA	CT2013B	2.0	–	3	excl. STR & WGC