Supplementary Table S1. Data for Figure 1 highlighted in bold and described as 'estimate 1' when multiple flux data estimates are available in the literature. Alternate estimates are described as 'estimate 2' and italicized. The references for the flux and reservoir data are cited below Table S1. References for the $\delta^{30}Si$ are indicated in the figure caption for Figure 1. Variability in the silicon isotope composition (represented here as $\delta^{30}Si$) and silicon flux data is represented as an uncertainty of 1 sigma and are denoted by +/- in both cases.

	$\delta^{30}Si$ (‰)				Flux (Tmol yr^{-1})		Reservoir size	References	References
	Average	+/-	Min	Max	Average	+/-	(Tmol)	Flux data	Reservoir data
Extra-terrestrial (Box 1)									
Extra-terrestrial	**-0.46**	**0.12**	**-0.82**	**-0.20**					
Continental (Box 2)									
Vegetation/phytolith production	**0.54**	**1.36**	**-1.70**	**6.10**	**84**	**29**	**8 250**	(1)	(6)
Vegetation/phytolith dissolution					**2.3**			(2)	
Hydrothermal (e.g. springs)	**0.23**	**0.23**	**-0.20**	**0.62**					
Primary minerals	**-0.22**	**0.28**	**-0.90**	**1.40**					
Bulk Soils	**-1.08**	**0.77**	**-2.66**	**2.51**			**133x10^6**		(7)
Secondary minerals	**-1.07**	**1.02**	**-2.95**	**2.50**					
Sinters and other precipitates	**-1.97**	**1.71**	**-7.52**	**0.90**					
Soil and pore waters	**0.75**	**0.79**	**-2.05**	**2.24**					
Rivers and Lakes (Box 3)							**11 310**		(6)
Diatoms	**-1.40**		**-1.80**	**-0.96**	**9.3**		**3.6**	(2)	(6)
Dissolved Si	**1.25**	**0.69**	**-0.14**	**4.66**	**6.3**			(2)	
-Lake dissolved Si							**9.1**		(4,8)
-Freshwater dissolved Si							**0.21**		(4,8)
Sedimentary $bSiO_2$	**0.63**	**0.56**	**-1.33**	**2.17**	**1.50**		**1 416**	(3)	(6)
Ocean (Box 4)									
Groundwater (estimate 1)	**0.19**	**0.95**	**-1.50**	**2.07**	**0.65**	**0.54**	**4 040**	(4)	(4,8)
Groundwater (estimate 2)					*0.60*	*0.60*		(5)	
River water (DSi) (estimate 1)	**1.26**	**0.68**	**-0.14**	**4.66**	**6.33**	**0.36**		(4)	
River water (DSi) (estimate 2)					*6.20*	*1.80*		(5)	
Lake water (DSi)	**1.81**	**0.50**	**0.53**	**3.18**					
River water ($bSiO_2$)	**-1.40**		**-1.80**	**-0.96**	**1.10**	**0.20**		(5)	
Estuarine removal$^+$ (estimate 1)	**0.10**				**-0.63**			(4)	
Estuarine removal$^+$ (estimate 2)	**0.10**				*-1.50**	*0.50*		(5)	
Dissolution of Dust (estimate 1)	**-0.65**	**0.43**			**0.3**	**0.20**		(4)	
Dissolution of Dust (estimate 2)					0.5	0.50		(5)	
Diatoms	**1.11**	**0.80**	**-0.70**	**3.05**			**71.4**	(5)	(6)

DSi (surface)	**1.56**	**0.37**	**1.10**	**4.36**	**135**		**262.2**	(5)	(6)
DSi (deep)	**1.25**	**0.23**	**0.97**	**1.93**	**26.2**		**96 188**	(5)	(6)
DSi from deep to DSi in surface					**99.3**				
Seafloor (Box 5)									
Sponge $bSiO_2$	**-2.07**	**1.30**	**-5.72**	**0.87**	**3.60**	**3.70**	**460**	(5))	(6)**
Sedimentary $bSiO_2$	**0.44**	**0.60**	**-1.49**	**2.18**	**6.30**	**3.60**	**52 925**	(5)	(6)
Oceanic Crust (Box 6)							**0.15 x10^{24}**		(9)
Hydrothermal	**0.17**	**0.28**	**0.40**	**0.62**	**0.60**	**0.40**		(4,5)	

[+] Reverse Weathering

[++] Low temperature alteration of oceanic crust

*Includes $bSiO_2$ trapping in estuaries.

**Note: This may include other organisms than sponge opal

References for fluxes and reservoir size are:

(1) Carey and Fulweiler, 2012

(2) Laruelle et al., 2009

(3) Frings et al., 2014a

(4) Frings et al., 2016

(5) Tréguer and De La Rocha, 2013

(6) Laruelle et al., 2009

(7) Shangguan, W., T. Hengl, J. Mendes de Jesus, H. Yuan, and Dai Y. (2017). Mapping the global depth to bedrock for land surface modeling, J. Adv. Model. Earth Syst., 9, 65–88, doi:10.1002/2016MS000686. Based on global mean depth to bedrock of 13 m (Shangguan et al. 2017), a UCC SiO_2 content of 67%, an assumed soil/regolith Si depletion of 10% (approximate order of magnitude, based on compilation of 'tau' data), and assuming a mean soil/regolith density of 2 g/cm3, and global land surface area 510 x106 km^2

(8) Based on global water volume for lakes sourced from Igor Shiklomanov's chapter "World fresh water resources" in Peter H. Gleick (editor), 1993, Water in Crisis: A Guide to the World's Fresh Water Resources (Oxford University Press, New York). Accessed here: https://water.usgs.gov/edu/gallery/global-water-volume.html

(9) Schubert, G. and Sandwell, D. (1989). Crustal volumes of the continents and of oceanic and continental submarine plateaus. Earth and Planetary Science Letters, 92, 234-246. Schubert and Sandwell (1989) give the volume of the continental crust as 7424 x10^6 km3 - at a density 2.7 g/cm3 and UCC composition of 67% SiO2, that makes 334 x10^21 mol. Continental crust is ca. 70% of total, by volume - so that gives 3181 x10^6 km3 ocean crust, which is closer to 50% SiO2 and 2.9 g/cm3, so that equates to 0.15 x10^{24} mol.