Supporting tables:

The excel file Supplementary_tables_López-Urzúa_et al. contains supplementary data of the manuscript in Biogeosciences entitled " Quantifying the agricultural footprint on the silicon cycle: Insights from silicon isotopes and Ge/Si ratios" by López-Urzúa et al. It consists of three spreadsheets:

- Table S1: Compilation of δ^{30}Si and Ge/Si ratios reported in literature for relevant to the studied catchment, including plagioclase, muscovite and quartz.
- Table S2: Results over 22 years for the calculated Si export as dissolved species, erosion, and harvest as determined by the Si mass balance model.
- Table S3: Dataset of mineralogical and chemical parameters used to calculate $h^{Si}_{regolith}$. The table includes primary and secondary mineral contributions, their stoichiometry as well as the SiO_2 and TiO_2 concentration and the normalized values after the quartz correction. The table includes the calculations for the parameters in Eq. (9) such as τ^{Si}_{prim}, CDF, e^{Si}_{sec}, and e^{Si}_{org}. Parameters were determined through chemical and mineralogical analyses, with statistical summaries in green and outliers in red

Supporting figures:

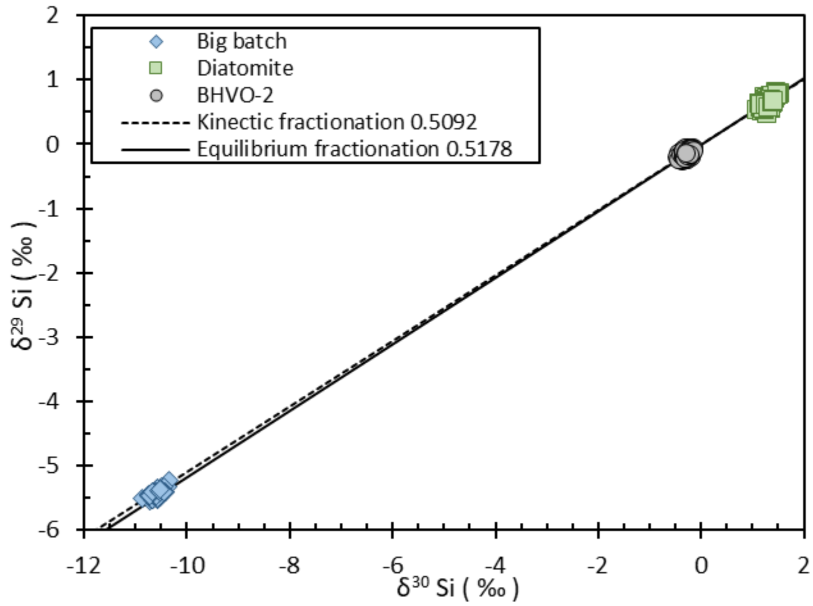

Figure S1. "Three-isotope" plot of Si for the three reference materials BHVO-2, Big Batch and Diatomite measured in the course of this study. Our data fall along a mass-dependent fractionation line with a slope of 0.5120 ± 0.0426 (standard error) which is consistent with the slopes of the theoretical mass-dependent fractionation lines, i.e., 0.5092 and 0.5178 for kinetic and equilibrium fractionation, respectively.

References:

Aguirre, A. A., Derry, L. A., Mills, T. J., and Anderson, S. P.: Colloidal transport in the Gordon Gulch catchment of the B oulder C reek CZO and its effect on C-Q relationships for silicon, Water Resources Research, 53, 2368–2383, https://doi.org/10.1002/2016WR019730, 2017.

Chmeleff, J., Horn, I., Steinhoefel, G., and Von Blanckenburg, F.: In situ determination of precise stable Si isotope ratios by UV-femtosecond laser ablation high-resolution multi-collector ICP-MS, Chemical Geology, 249, 155–166, https://doi.org/10.1016/j.chemgeo.2007.12.003, 2008.

Douthitt, C. B.: The geochemistry of the stable isotopes of silicon, Geochimica et Cosmochimica Acta, 46, 1449–1458, https://doi.org/10.1016/0016-7037(82)90278-2, 1982.

Evans, M. J. and Derry, L. A.: Quartz control of high germanium/silicon ratios in geothermal waters, Geol, 30, 1019, https://doi.org/10.1130/0091-7613(2002)030<1019:QCOHGS>2.0.CO;2, 2002.

Filippelli, G. M., Carnahan, J. W., Derry, L. A., and Kurtz, A.: Terrestrial paleorecords of Ge/Si cycling derived from lake diatoms, Chemical Geology, 168, 9–26, https://doi.org/10.1016/S0009-2541(00)00185-6, 2000.

Frings, P. J., Oelze, M., Schubring, F., Frick, D. A., and Von Blanckenburg, F.: Interpreting silicon isotopes in the Critical Zone, Am J Sci, 321, 1164–1203, https://doi.org/10.2475/08.2021.02, 2021.

Georg, R. B., Zhu, C., Reynolds, B. C., and Halliday, A. N.: Stable silicon isotopes of groundwater, feldspars, and clay coatings in the Navajo Sandstone aquifer, Black Mesa, Arizona, USA, Geochimica et Cosmochimica Acta, 73, 2229–2241, https://doi.org/10.1016/j.gca.2009.02.005, 2009.

He, D., Lee, C. A., Yu, X., and Farner, M.: Ge/Si Partitioning in Igneous Systems: Constraints From Laser Ablation ICP-MS Measurements on Natural Samples, Geochem Geophys Geosyst, 20, 4472–4486, https://doi.org/10.1029/2019GC008514, 2019.

Kurtz, A. C., Lugolobi, F., and Salvucci, G.: Germanium-silicon as a flow path tracer: Application to the Rio Icacos watershed, Water Resources Research, 47, https://doi.org/10.1029/2010WR009853, 2011.

Liu, Y. and Li, X.-H.: New Quartz And Zircon Si Isotopic Reference Materials For Precise And Accurate SIMS Isotopic Microanalysis, At.Spectrosc., 43, https://doi.org/10.46770/AS.2021.1110, 2022.

Lugolobi, F., Kurtz, A. C., and Derry, L. A.: Germanium–silicon fractionation in a tropical, granitic weathering environment, Geochimica et Cosmochimica Acta, 74, 1294–1308, https://doi.org/10.1016/j.gca.2009.11.027, 2010.

Mortlock, R. A. and Froelich, P. N.: A simple method for the rapid determination of biogenic opal in pelagic marine sediments, Deep Sea Research Part A. Oceanographic Research Papers, 36, 1415–1426, https://doi.org/10.1016/0198-0149(89)90092-7, 1989.

Novokahatskiy, I. P., Kalinin, S. K., and Zamyatina, G. M.: Germanium content of igneous and altered rocks of Kazakhstan, Geochemistry International USSR, 4, 1192–1196, 1967.

Savage, P. S., Georg, R. B., Williams, H. M., and Halliday, A. N.: The silicon isotope composition of the upper continental crust, Geochimica et Cosmochimica Acta, 109, 384–399, https://doi.org/10.1016/j.gca.2013.02.004, 2013.

Steinhoefel, G., Breuer, J., Von Blanckenburg, F., Horn, I., Kaczorek, D., and Sommer, M.: Micrometer silicon isotope diagnostics of soils by UV femtosecond laser ablation, Chemical Geology, S0009254111002270, https://doi.org/10.1016/j.chemgeo.2011.05.013, 2011.

Steinhoefel, G., Breuer, J., Von Blanckenburg, F., Horn, I., and Sommer, M.: The dynamics of Si cycling during weathering in two small catchments in the Black Forest (Germany) traced by Si isotopes, Chemical Geology, 466, 389–402, https://doi.org/10.1016/j.chemgeo.2017.06.026, 2017.

Ziegler, K., Chadwick, O. A., White, A. F., and Brzezinski, M. A.: δ30Si systematics in a granitic saprolite, Puerto Rico, Geol, 33, 817, https://doi.org/10.1130/G21707.1, 2005.