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My research lies at the intersection between ecology, geology, and biogeochemistry, and focuses primarily on understanding differences in nutrient cycling across tropical landscapes. The tropics are undergoing the fastest population growth and land use change on the planet, and as we add three billion people to the world (mainly in the tropics) over the coming century, we need to understand a great deal more about how these systems will respond to anthropogenic changes. I have two main research foci: intact tropical forests and the consequences of their conversion to agriculture. Intact tropical rainforests, the jewels of biological diversity on land, are currently undergoing almost unimaginably fast destruction. Despite the importance of these systems from a whole host of perspectives, we know relatively little about how tropical forests work biogeochemically, how nutrients and energy flow through them, and what constraints there are on plant growth, forest regeneration, and sustainable land conversion. In this context, I try to identify biogeochemical patterns across landscapes, to understand how these patterns may affect the function and services of ecosystems, and to consider how to incorporate this variation into models for predicting the response of ecosystems to anthropogenic changes. To do this my lab combines field work (shooting leaves with a slingshot is a must-learn skill!), chemical and isotopic analyses, GIS and remote sensing. We are also working to understand how agriculture, particularly industrial-scale, highly mechanized agriculture, will influence adjacent forests, and what happens in remnant forests that are left in a matrix of farmland.