

CMI Best Paper Award for Doctoral Students

The **Robert H. Socolow CMI Best Paper Award for Doctoral Students** is presented annually to a CMI affiliated Ph.D. student selected for his or her contributions to an important CMI paper in the past two years.

Samantha Hartzell, Mark Bartlett and Amilcare Porporato. “Unified representation of the C₃, C₄, and CAM photosynthetic pathways with the Photo3 model,” published in *Ecological Modelling* (2018)

In addition to the basic photosynthetic pathway, called the C₃ pathway, there exist two additional pathways: C₄, which concentrates CO₂ to improve light-use efficiency in grasses and related plants, and CAM, which assimilates CO₂ at night and stores carbon to increase water-use efficiency in dryland plants and rainforest canopies. This work introduces the Photo3 model, which represents all three pathways in a consistent, integrated manner. This approach will enable incorporation of CAM plants in global climate models for the first time, enhancing the ability to analyze carbon and water fluxes in tropical and dryland ecosystems. Moreover, this facilitates quantification of water use and productivity tradeoffs between the three pathways.

