Legacy of Global Ecosystem Model 'CASA' Recognized with H. Julian Allen Award

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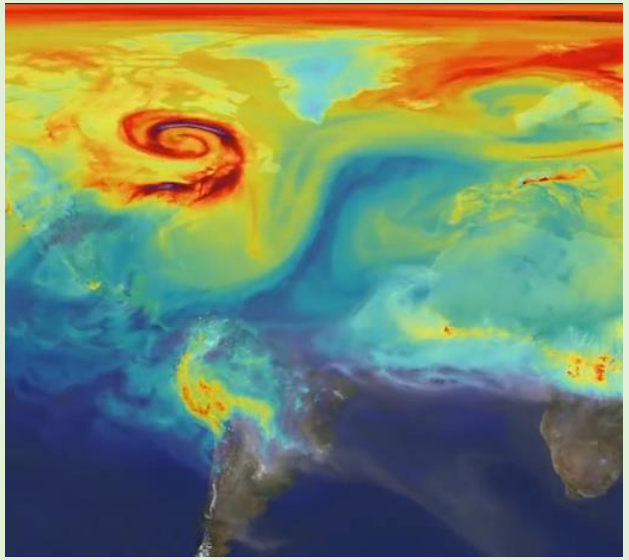
Background: During his career, Ames Research Center (ARC) biospheric scientist Christopher Potter has advanced the understanding of the Earth system, crowned by his 3-decades long leadership of the CASA ecosystem model. CASA, or the Carnegie-Ames-Stanford Approach, is a model that simulates seasonal carbon cycling: the patterns in plant carbon fixation, biomass and nutrient allocation, soil nitrogen mineralization, and microbial CO_2 emissions. CASA uses satellite imagery (e.g., Landsat), to estimate the yearly capture of CO_2 from the atmosphere by vegetation and the delivery of plant biomass to herbivores, decomposers, and to human populations.

Community Significance: Chris Potter was awarded the 2023 H. Julian Allen Award, one of NASA's highest honors, for his leading role in the seminal 1993 paper on the CASA model. Over the past 30 years, this paper has been cited over 3,500 times by other scholarly publications. The NASA-CASA model has become the most used and cited terrestrial carbon model in history, and it was the first such model to directly import NASA satellite imagery for carbon cycle estimates, including the NASA MODIS products for monthly inputs of plant production globally.

Impact: The CASA model paper by Potter et al. (1993) transformed the field of global biogeochemical research and secured a prominent role for satellite remote sensing in carbon cycle science going forward.

Potter, C. S., J. T. Randerson, C. B. Field, P. A. Matson, P. M. Vitousek, H. A. Mooney, S. A. Klooster. Terrestrial ecosystem production: A process model based on global satellite and surface data. *Global Biogeochemical Cycles*. December 1993. https://doi.org/10.1029/93GB02725



CASA Model Visualization. The CASA model is still used routinely at Goddard Space Flight Center (GSFC) and the Jet Propulsion Laboratory (JPL) as part of NASA's current Carbon Monitoring System (CMS), and as the key diagnostic terrestrial model for the science foundation of NASA's Orbiting Carbon Observatory-2 (OCO-2) mission.

Left: H. Julian Allen Award Seminar by Chris Potter. **Right:** ARC Chief Scientist Jacob Cohen presents Chris Potter with the H. Julian Allen Award.