James Walsh* (jawalsh@oberlin.edu). An ODE-based climate modeling course.

Conceptual models of climate provide for a host of interesting and relevant mathematical modeling experiences for undergraduates. After recounting my incorporation of climate modeling into the sophomore-level ODE course, I will discuss successes and failures encountered when I recently offered a junior-level mathematical modeling of climate course. As a group we carefully analyzed two models—a surface temperature-ice sheet coupled model and a model of the Atlantic Overturning Circulation—while introducing topics from the qualitative theory of ODEs as needed (and relying fairly heavily on Mathematica). Students devoted the latter part of the semester to independent research projects, culminating in both a paper and a presentation.

Colleagues from each of the Physics and Chemistry departments at Oberlin kindly gave guest lectures. I also benefited from discussions with a colleague in our Geology Department. It is not difficult to envision a course such as this evolving into a team-taught enterprise, to the benefit of students and to each participating faculty member. (Received August 23, 2015)