1086-H5-2178 **Andrew E. Long*** (longa@nku.edu), 495 Rossford Ave., Ft. Thomas, KY 41075. *Global Climate Destabilization: Optimal Opportunity for the Mathematics of Planet Earth.* Preliminary report.

Charles Keeling's CO2 data is a beautiful example of a terrifying graph. It gracefully ascends, oscillating in concert with the breathing of the forests of the northern hemisphere, and on target to reach 450 ppm within the next 20 years or so. The last time the Earth was at 450 ppm, the Earth was ice-free.... Climate change data and models provide a beautiful context for many concepts in mathematics. Planetary motions were in the driver's seat for climate change (before we humans took over the controls). Conic sections, spherical geometry, Fourier analysis, parametric curves: all these find a natural niche in climate change studies. With climate change come movements of plants and animals across the ecological landscape, as they seek to find their old niches in a new world. Dynamical systems, non-linear dynamics and feedbacks, statistical distributions, correlation and causation: so many ways to turn your favorite mathematics into an application within the context of climate change.

I will present more of my vision of how to integrate the math and science of climate change in a course being developed at Northern Kentucky University for sophomore-level STEM majors. (Received September 25, 2012)