



SACRAMENTO STATE

Department of Physics & Astronomy Spring 2009

## ***Physics Colloquium Series***

### ***“Do I Believe in CLAW?”***

*Is it possible that the earth can maintain its own temperature, despite man's best efforts to fill the atmosphere with greenhouse gasses? In 1987, the CLAW hypothesis, named for its authors (Carlson, Lovelock, Andrea and Warren) proposed one possible negative feedback mechanism by which living organisms (phytoplankton) could influence the temperature of the planet. Marine phytoplanktons are the primary source of dimethyl sulfide (DMS) in the marine troposphere, and DMS is a major source of cloud condensation nuclei (CCN) in that same region. The idea of the CLAW hypothesis is that phytoplankton productivity is likely to increase with a warming ocean resulting in a corresponding increase in surface water DMS concentration. The increased surface water DMS would increase the flux of DMS from the ocean to the atmosphere which would lead to an increase in the number of cloud condensation nuclei available, resulting in brighter, more persistent clouds. Ultimately, this process could affect the planetary albedo resulting in more shortwave radiation being reflected out of the earth-atmosphere system, leading to a reduction in surface temperature. This talk begins with an introduction to earth's energy budget and temperature history followed by new research into the fate of DMS in the remote marine atmosphere.*

***Stephen Conley***

**UC Davis, Department of Atmospheric Sciences**

**Thursday, April 30, 2009**

**4:00-5:20 PM - MND 1015**

**Open & Free to all Students, Faculty & Public**