

1135-C5-1839 **Chris Oehrlein*** (cdoehrlein@gmail.com) and **Jessica Oehrlein**. *First and Second-Order Models of Vertical Motion of Dry Air Parcels*.

Using basic thermodynamic principles as the foundation, Atmospheric Physics contains many relationships that Introductory Differential Equations students can model. Assuming no exchange of heat as a dry air parcel rises leads to a separable equation relating the parcel's temperature to its pressure. Comparing the atmosphere's natural change in temperature due to altitude to a dry air parcel's same rate of change leads to a second order linear equation modeling the change in vertical position of the air parcel. Collaborating with a graduate student in Applied Math and Atmospheric Science, a differential equations instructor now has a couple of homework problems that are very unique when compared with applications in standard Differential Equations textbooks. (Received September 25, 2017)