A collection of educational java applets from unit conversion to basic models.

The intended use of this Wiki page is for collaborative development of lesson plans. Stable revisions will be displayed on our collection’s lesson plan page. Our current lesson plans include:

1. An Introduction to Wind Chill
2. An Exercise in Air Pressure
3. Drawing Contour Plots
4. Investigating Clouds
5. Understanding Cloud Radar
6. Making a Cloud
7. A Cloud Base Model
8. A Snowflake Model
9. (Distance of Lightning)
10. (A Simple Greenhouse Model)
11. (A Radiation Budget Model)
12. (Planet Emission Temperature Climate Model)

The mathematical model allows students to investigate series solutions, approximate solutions, stability, fractals and chaos.

The National Science Digital Library Atmospheric Visualization Collection (NSDL AVC) has been sharing atmospheric data with a wide of students and faculty through special workshops and meetings. These activities have allowed new users access to the data and to experience data manipulation and investigation using the Quicklooks interface.

Keith Andrew, Chris Klaus, Tim McCollum, Troy Gobble

Effingham Girl-Scouts prepare to collect data as part of a camping expedition.

Elementary school students investigate atmospheric pressure.

The nonlinear mathematical model allows students to investigate series solutions, approximate solutions, stability, fractals and chaos.

The Mathematical Model

\[
\begin{align*}
\frac{\partial}{\partial x} (\rho u) + \frac{\partial}{\partial y} (\rho v) &= -\frac{\partial P}{\partial x} + f\omega \\
\frac{\partial}{\partial x} (\rho u^2) + \frac{\partial}{\partial y} (\rho u v) &= -\frac{\partial P}{\partial y} - f\omega v \\
\frac{\partial}{\partial x} (\rho u h) + \frac{\partial}{\partial y} (\rho v h) &= -\frac{\partial Q}{\partial y} \\
\frac{\partial}{\partial x} (\rho h v) + \frac{\partial}{\partial y} (\rho h v) &= -\frac{\partial Q}{\partial y} \\
\end{align*}
\]

Find \((h, \rho, P)\) at \((x, y, z)\).