

What are the principal earth-sun relationships? Why are they important?

For any given point on the earth's surface (say Denton, Texas or The Artic Circle), what is the position of the sun on June 21? On December 21? Approximately how long is the day on each date in each location? What is total range of travel of the sun's position from noon on Dec. 21 to noon on June 21?

What determines the amount of insolation that heats the surface? What is albedo and why is it so very important to the heating process?

What is the earth's radiation budget? What happens to light as it cascades through the atmosphere? How does heat energy leave the earth and its atmosphere? What is counter-radiation, exactly?

Why must energy coming in equal energy going out over the long term?

What is Ozone, CO₂? Why is each important?

What are the principal gasses and the percentage of each?

What are the forces that affect atmospheric motion?

How does air circulate around high pressure and low pressure in the northern hemisphere? In the southern hemisphere?

What is a simple thermal circulation cell? How does it work? How does it relate to the general circulation and the Asian Monsoon?

What are the principal features of the general circulation of the earth's atmosphere? Pressure cells and wind systems? Where are they? How do they change with the seasons?

What, exactly, is high pressure? Low pressure? How do they relate to ridge and trof? What type of weather is associated with each?

Why are vertical motions so important in the atmospheric sciences? (HINT: think bout the gas laws).

What are the principal air masses? Where does each originate? In what season(s)? How does each affect our weather here in North Texas? Which one do we never see here? What happens when different air masses are brought into contact? How is this done?

What are the basic meteorological variables? (HINT: temp, pressure etc.) And how is each measured?