

SECTION 3

Enrichment

Thermals

Convection is responsible not only for major wind systems that affect the entire Earth but also for small-scale air movements that affect only a small part of Earth's surface. Land and sea breezes are an example of small-scale air movements, or local winds. These small-scale movements are the result of differences in temperature over land and sea.

Small Scale Movement

Thermals are another type of small-scale movement. Thermals develop over only a few hundred square meters of land and last less than an hour. The formation of thermals is illustrated in the pictures below.

Figure 1 shows the thermal beginning as a rising column of air at Earth's surface.

In Figure 2, a cap develops at the top. Eventually, the cap breaks off and increases in size as it continues to be forced upward (Figures 3 and 4). At higher altitudes, the thermal develops a "donut shape" before it dissipates in the cooler air (Figure 5).

Thermals may develop where Earth's surface is warm and the overlying air is cool. This may occur anywhere on Earth. The amount of heating at the surface varies, depending upon the amount of solar radiation absorbed by that part of Earth's surface.

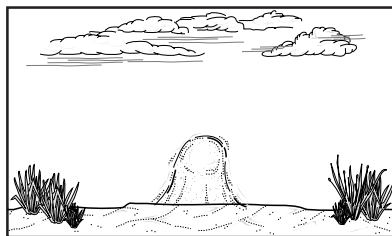


Figure 1

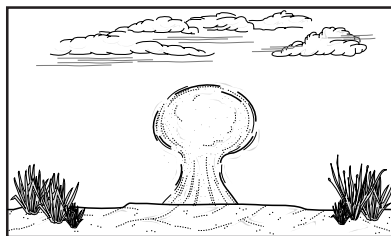


Figure 2

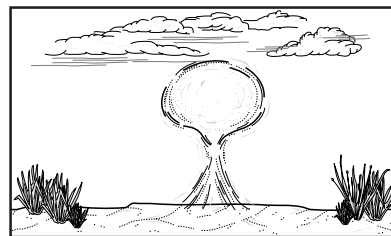


Figure 3

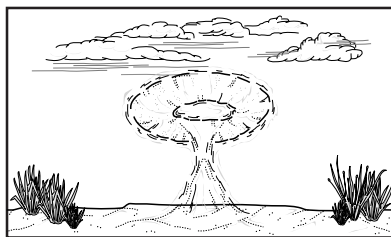


Figure 4

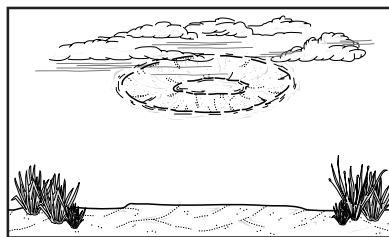


Figure 5

- Thermals occur as a result of hot and cold air movements: _____ air rises and _____ air sinks.
- What eventually causes a thermal to dissipate? _____

- Vultures and hawks sometimes "glide the thermals." What do you think this means? Why do you think they do it? _____
