

Condensation

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CHAPTER

1

Condensation

- Describe how condensation occurs.
- Relate dew point to condensation.
- Identify the role of condensation in the water cycle.



This beautiful beaded net is something very common in nature: a spider web. The “beads” on the spider web are actually drops of water. The drops of water are not raindrops, and they weren’t there on the previous day. Where did they come from?

From Gas to Liquid

The drops of water on the spider web are dewdrops. They formed overnight when warm moist air came into contact with the cooler spider web. Contact with the cooler web cooled the air. When air cools, it can hold less water vapor, so some of the water vapor in the air changed to liquid water. The process in which water vapor—or another gas—changes to a liquid is called **condensation**. Another common example of condensation is pictured in the **Figure 1.1**.

Dew Point

When air is very humid, it doesn’t have to cool very much for water vapor in the air to start condensing. The temperature at which condensation occurs is called the dew point. The dew point varies depending on air temperature and moisture content. It is always less than or equal to the actual air temperature, but warmer air and moister air have dew points closer to the actual air temperature. That’s why glasses of cold drinks “sweat” more on a hot, humid day than they do on a cool, dry day.

Q: What happens when air temperature reaches the dew point?

A: When air temperature reaches the dew point, water vapor starts condensing. It may form dew (as on the spider web in the opening image), clouds, or fog. Dew forms on solid objects on the ground. Clouds form on tiny particles in the air high above the ground. Fog is a cloud that forms on tiny particles in the air close to the ground.



FIGURE 1.1

This picture shows the contrail (condensation trail) left behind by a jet. Water vapor in its exhaust gases condensed on dust particles in the air.



FIGURE 1.2

Condensation and the Water Cycle

The water cycle continuously recycles Earth's water. Condensation plays an important role in this cycle. Find condensation in the water cycle **Figure 1.3**. It changes water vapor in the atmosphere to liquid water that can fall to Earth again. Without condensation, the water cycle would be interrupted and Earth's water could not recycle.

Q: In the water cycle, what happens to water after it condenses?

A: After water condenses, it may form clouds that produce precipitation such as rain.

Summary

- The process in which water vapor or any other gas changes to a liquid is called condensation.
- The temperature at which condensation of water vapor occurs is called the dew point. The dew point varies depending on air temperature and moisture content.
- Condensation plays an important role in the water cycle. Without it, Earth's water could not recycle.

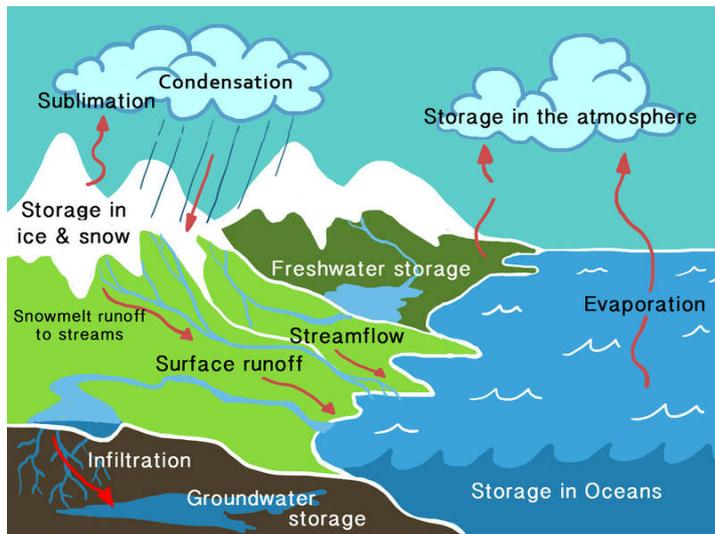


FIGURE 1.3

Review

1. What is condensation? Give an example.
2. Define dew point. What factors influence dew point?
3. In the water cycle, how does water vapor in the atmosphere change to liquid water on the ground?

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References

1. Richard Ashley. [Condensation trail behind a jet](#) . CC BY 2.0
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3. Laura Guerin. [Diagram of the water cycle](#) . CC BY-NC 3.0