

Storms and Lightning Fact Sheet

Sometimes storms can occur with little warning and can be very hazardous if you are outdoors without adequate shelter. Storms can have elements of wind, rain, snow, and lightning that can cause the following:

Falls

Getting lost

Injury from flying debris

Hypothermia

Injury from lightning (burns, concussive trauma, cardiac arrest, etc.)

PERSONAL PROTECTIVE EQUIPMENT

- Water and wind resistant clothing appropriate to the weather conditions
- Rubber Soled Shoes
- Lightning detector (optional)
- Shovel-for blizzard potential
- Device with weather information (e.g., radio, InReach)

PREPARATION AND TRAINING

- It is essential that you monitor the weather before and during travel.
- It is recommended you take a course in:

Basic First Aid

GENERAL SAFETY

- Know typical weather patterns for area (e.g., storm clouds form after 3 p.m. on mountains).
- Watch for cloud formation and changes in wind direction that may indicate a developing storm.
- Tides can be much higher and rougher during storms, so avoid doing any work near large bodies of water.
- If you are going to be in low-lying areas, such as canyons or river valleys, be aware of the potential for flash floods, especially in desert environments. They can occur on a sunny day if there is rain farther upstream.
- Obey mandatory evacuations for storms, floods, and other natural disasters.

EMERGENCY RESPONSE

- Seek shelter and do not continue to perform field work in storm conditions. Shelters could be cars or enclosed buildings.
- Try to stay dry. Both blizzards and rainstorms can cause the onset of hypothermia, especially if clothes become wet.

Thunderstorm

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- Obey the 30/30 rule which is if there is 30 seconds between a flash of lightning and the roll of thunder seek shelter and remain in that shelter until 30 minutes have elapsed after the last roll of thunder.
- Avoid open areas, summits, or isolated trees and rocks. Do not seek shelter in small caves or rock overhangs (lightning can jump the gap from the roof to the ground through you).
- Do not seek shelter in a tent in a thunderstorm as the metal poles may attract a lightning strike.
- If you are above the treeline, move to lower elevation as soon as you recognize a storm coming.
- If you are below the treeline, stay near a lower stand of trees. Avoid tall, isolated trees or other tall objects.
- If you are unable to find shelter, minimize your contact with the ground and minimize your height. Crouching down on the balls of your feet placed close together with your head tucked down. If you have a metal framed pack, leave it at least 100 feet from where you intend to stand.
- Stay at least 50 feet away from another person to minimize injuries in the case of a strike.
- If someone has been struck by lightning, identify if they are breathing. If they are not breathing, perform CPR.
- Treat for shock and burns. Burns generally occur in the extremities and areas that contact metal jewelry or objects.
- Every person injured by lightning requires immediate medical attention.

Blizzard

- In whiteout conditions, stay put, as the reduced visibility could cause you to miss hazardous obstacles or become disoriented.
- Try to shelter in an area out of the wind. If there is no shelter, make a shelter out of snow by digging a pit or a trench.
- Stay warm. Keep your body covered. Be careful when moving to warm yourself, as sweating can trigger hypothermia.
- Stay hydrated. Melt snow before drinking to avoid lowering your body temperature.

Flooding

- Listen to radio and television for weather updates; check the Internet and social media for information and updates.
- If you live in a flood prone area or are camping in a low lying area, get to higher ground immediately.
- If told to evacuate, do so immediately. If you have time, disconnect utilities and appliances.
- Don't go into a basement, or any room, if water covers the electrical outlets or if cords are submerged. If you see sparks or hear buzzing, crackling, snapping or popping noises--get out!
- Don't walk through flood waters. It only takes 6 inches of moving water to knock you off your feet. If you are trapped by moving water, move to the highest possible point and call 911 if possible.

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- Do NOT drive into flooded roadways or around a barricade; Water may be deeper than it appears and can hide hazards such as sharp objects, washed out road surfaces, electrical wires, chemicals, etc. 12 inches of water can float a car or small SUV, 18 inches of water can carry away large vehicles.

REFERENCES AND ADDITIONAL RESOURCES

National Outdoor Leadership School: [Lightning Safety Guidelines](#)

[National Weather Service](#)

National Weather Service [During a Flood](#)

Center of Excellence for Electrical Safety [Before Lightning Strikes](#)

Illness, injury and close call events shall be reported by submitting an [SU-17](#).

If you have questions or need support, contact EH&S's Field Safety Program at [ehs field safety support@lists.stanford.edu](mailto:ehs_field_safety_support@lists.stanford.edu).

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