

WEATHER READING & STORM SURVIVAL GUIDE

Read the sky. Harden the camp. Move early.



CLOUDS

WIND

STORMS

HARDEN

KNOWLEDGE • SKILL • DISCIPLINE • SURVIVAL

Independent educational field guide • verify current laws, local conditions, and expert guidance

WEATHER IS AN OPERATING CONSTRAINT

Forecasts, observations and thresholds drive the work plan.

BUILD A WEATHER LOOP

Observe, verify, decide, act and log.

Field weather reading is not fortune-telling. Use official forecasts and alerts when available, combine them with direct observations, and make decisions from preplanned thresholds rather than optimism.

1 CORE PRINCIPLES

- Check the current forecast, alerts and regional hazard information before departure and whenever communication allows.
- Observe cloud development, wind, temperature, precipitation, water level and visibility on a fixed schedule.
- Treat field signs as clues, not precise forecasts. Confirm with several independent changes.
- Move early: stop exposed work, protect insulation and harden camp before the storm arrives.
- Write down conditions and decisions; memory becomes selective after a long, wet or cold day.

2 CAMP WEATHER PRIORITIES

- Choose a site outside flood channels, avalanche paths, exposed ridges and obvious falling-tree zones.
- Maintain drainage, roof tension, ventilation and a protected dry reserve.
- Secure loose tools, boats, tarps and fuel before wind rises.
- Protect sleep insulation and ignition materials in independent waterproof layers.
- Define lightning, high-water, wind, snow-load and cold-stress triggers in advance.

FIELD RULE

Weather does not need to be predicted perfectly. It needs to be recognized early enough to protect the person, the shelter and the dry reserve.

FIELD WEATHER CLUES

Patterns suggest risk; they do not guarantee timing or intensity.

READ CHANGES, NOT ONE CLOUD

Combine sky, wind, temperature and terrain.

The more rapidly several conditions change together, the more conservative the decision should become. Local terrain can accelerate wind, trap cold air and hide approaching weather.

FIELD CLUE	WHAT IT MAY INDICATE	IMMEDIATE ACTION
High thin clouds spreading and thickening	A large-scale weather system may be approaching; timing varies.	Review forecast, drying status, route exposure and overnight shelter.
Towering cumulus growing quickly	Increasing convective potential, gusty wind, heavy rain or lightning.	Leave exposed ridges and water early; identify substantial shelter options.
Dark advancing cloud base or shelf-like leading edge	Strong outflow wind and rapid weather change may precede precipitation.	Secure camp, stop tree work and move away from dead or damaged timber.
Wind shift with temperature drop	Front, outflow boundary or local terrain effect.	Reassess fire, water travel, shelter tension and clothing before conditions worsen.
Low cloud, fog or falling ceiling	Reduced visibility and navigation margin.	Shorten travel, delay crossings and protect the return route.
Rapid water rise, muddy surge or debris	Upstream heavy rain or flash-flood process.	Move to higher ground immediately; do not wait for rain at your location.
Persistent heavy snow or freezing rain	Loading, blocked ventilation, falling limbs and travel deterioration.	Clear shelter load safely, protect egress and reduce nonessential movement.

LIMIT OF FIELD SIGNS

Cloud names and traditional sayings cannot replace official warnings, radar, local knowledge or conservative thresholds. A beautiful sky can still produce ugly decisions.

STORM RESPONSE WORKFLOW

A short sequence that protects the margin before the first impact.

BUILD A REPEATABLE SEQUENCE

Act before the camp is under load

The best storm repair is the one completed while hands are warm, visibility is good and the shelter is not trying to leave.

1

OBSERVE AND VERIFY

Note the changes, check official information when available and identify the specific hazard: lightning, flood, wind, cold, snow or surf.

2

STOP EXPOSED WORK

End boating, ridge travel, tree work, open-water fishing and other tasks whose risk rises sharply in the hazard.

3

PROTECT THE DRY RESERVE

Move sleep insulation, fire kit, spare clothing and critical electronics into independent waterproof protection.

4

HARDEN THE CAMP

Tension shelter, clear drainage, secure tools and fuel, inspect overhead hazards and maintain safe ventilation.

5

SHELTER EARLY

Choose the safest available location before lightning, wind, floodwater, darkness or cold removes options.

6

MONITOR AND REASSESS

Track changes and secondary hazards. Do not resume normal work because the first lull feels reassuring.

LIGHTNING PRIORITIES

- Avoid exposed ridges, summits, isolated tall objects and open water.
- A substantial building or hard-topped vehicle is preferred when available.
- In remote terrain, reduce exposure early; no outdoor location is completely safe.
- Wait for the threat to pass according to current local weather guidance.

HAZARD MODULES

Different hazards demand different first moves.

ADAPT BEFORE CONDITIONS FORCE IT

Match the response to the hazard

Do not apply one generic storm plan. Lightning, floodwater, falling trees and cold injury can pull the safe choice in different directions.

1 LIGHTNING

- Leave peaks, ridgelines, open water and exposed shorelines before thunder is close.
- Avoid sheltering beneath an isolated tree or against a conductive rock face.
- Spread critical group equipment when appropriate so one strike does not remove every capability.
- Resume travel only after the threat has clearly moved away under current guidance.

2 HEAVY RAIN AND FLASH FLOOD

- Do not camp in dry washes, narrow drainages, floodplains or below unstable slopes.
- Move to higher ground at the first reliable sign of rapid rise or upstream surge.
- Never enter fast water to save gear.
- Recheck water crossings; yesterday's route may no longer exist.

3 WIND AND FALLING TREES

- Inspect for dead tops, leaning trees, root failure, hanging limbs and wind funneling.
- Stop cutting or moving beneath suspect timber as gusts rise.
- Lower wind profile, secure loose objects and protect eyes and hands.
- Reassess after the storm; damaged trees may fail later.

4 SNOW, ICE AND WET COLD

- Clear shelter loading from a safe position and keep ventilation open.
- Protect footwear, gloves and sleeping insulation from moisture.
- Reduce travel when ice, whiteout or deep snow erases route control.
- Track body function: fumbling, confusion and unusual fatigue require immediate warming action.

COMPOUND HAZARDS

Storms stack problems: wet clothing plus wind, snow load plus blocked ventilation, heavy rain plus darkness, or rising water plus an injured return. Plan for the second failure, not only the first.

FAILURE MODES & CAMP HARDENING

Correct the system while options still exist.

DIAGNOSE THE SYSTEM

Diagnose before repairing

Storm work is high-risk work. Protect the person and sleep system first, then correct the failure without creating a fall, cut, burn or tree-strike exposure.

FAILURE SIGNAL	LIKELY CAUSE	BEST CORRECTION
Shelter leaks only when wind rises	Poor overlap, wind-driven rain, loose roof or pressure lifting an edge.	Reorient or reinforce from a safe position; protect bedding before chasing the leak.
Condensation soaks insulation	Ventilation reduced too far or wet gear drying inside.	Restore high and low airflow, separate wet gear and protect sleep system.
Water begins crossing the camp floor	Site or drainage is failing.	Move critical gear and person uphill early; do not deepen trenches that violate rules or destabilize the site.
Trees or limbs move unusually	Wind loading or damaged timber.	Leave the fall zone before attempting camp repair.
Snow roof bows or vents disappear	Load accumulation and blocked exhaust.	Unload carefully, reopen ventilation and maintain an exit route.
Repeated weather surprises	Observation schedule, forecast access or thresholds are inadequate.	Increase log frequency and set objective trigger points for stopping work.

WEATHER LOG

Record time, temperature trend, cloud change, wind direction and strength, precipitation, water level, visibility, alerts, actions taken and the next decision threshold. A log turns impressions into evidence.

FIELD CARD, RED FLAGS & SOURCES

A weather operating standard for camp and travel.

CARRY THE STANDARD

Read the sky; act on the threshold

Use official information when available, observe changes on a schedule and harden camp before the hazard arrives.

FIELD CHECKLIST

- ☐ Check forecast, alerts and regional hazards before departure.
- ☐ Log cloud, wind, temperature, precipitation, water and visibility changes.
- ☐ Define the hazard and the first protective action.
- ☐ Stop exposed work before thunder, wind or high water removes options.
- ☐ Protect sleep insulation, dry clothing, fire kit and electronics independently.
- ☐ Secure shelter, tools, watercraft and fuel; maintain ventilation and egress.
- ☐ Move away from flood channels, exposed ridges and falling-tree zones early.
- ☐ Clear snow loading and blocked vents from a safe position.
- ☐ Treat a lull as a reassessment point, not automatic all-clear.
- ☐ Inspect camp and route hazards again after the storm.

STOP / REASSESS

- Thunder is audible or towering clouds are rapidly developing.
- Water rises, muddies or carries debris.
- Wind begins moving suspect trees or shelter anchors.
- Visibility removes safe travel or route confirmation.
- Snow, ice or rain is compromising ventilation or sleep insulation.
- Cold, fatigue or darkness makes storm repair unsafe.

AUTHORITATIVE STARTING POINTS

NWS Lightning Safety

www.weather.gov/safety/lightning

Current lightning science, warning information and safety guidance.

NWS Flood Safety

www.weather.gov/safety/flood

Flood and flash-flood preparedness and response.

NWS Winter Safety

www.weather.gov/safety/winter

Winter storm, cold, snow and ice hazards.

NPS Hike Smart

www.nps.gov/articles/hiking-safety.htm

Weather readiness and backcountry risk planning.

VERIFY BEFORE FIELD USE

Rules, access, weather, emergency procedures and land-use practices change. Confirm local requirements, current forecasts, device registration, medical guidance and land-manager instructions before deployment.