

Safety in Numbers: Essential Outdoor Technology

Jon Bentley

My safety outdoors often depends on numbers. Some of those are stored in my memory: “The storm is due in at noon” or “Five miles back to my car from this summit.” Some of those numbers come from my senses: “Good chance of sliding on these rocks” or “Those clouds could be here within an hour”. But most of the numbers come from high-technology tools that I carry into the backcountry. Here are some of the tools that I use most often, and a bit of perspective on each. I’ll describe them in my personal order, starting with the ones I use most often.

A Watch

I never go into the woods without a watch, and if my watch were to break, I would head out immediately. I always know at least two baseline times that make the current time worthwhile: the time I started, and the time of sunset. As I explained in the essay “How Fast and How Far”, I use my watch to ensure that I’m keeping up with the pace I need to have a safe day. And I listen to what my watch tells me: if my heart tells me to stop and savor another spectacular view, but my brain tells me to keep moving so I can choose my campsite in the daylight, the brain wins.

Few wrist watches keep perfect time. I know that my watch tends to gain about 30 seconds per month, or a second per day. That doesn’t matter much in the outdoors, but accurate times are useful when I take notes as an Emergency Medical Technician. I therefore reset my watch every month or so. I use my cell phone as a very accurate time source, and then set the watch to be about fifteen seconds slow. Over the next couple of weeks it will catch up to the correct time, and then drift about fifteen seconds ahead before I reset it again.

A Map

When I head out in a new area, I usually have at least three maps. I have a detailed map of my route at my fingertips. I often carry a copy that I have enlarged to 150% size so that my old eyes can read the details more easily. The map lives inside a zip-lock bag to protect it from moisture (rain and sweat). I often make notes on it, showing for instance the cumulative mileage and elevation gain along my planned path, and marking the distances along key escape routes. A couple of spare copies are tucked away, just in case.

I also carry a map of the entire region in a pack pocket. That big picture allows me to identify the views from a new peak. Because I embarrass easily, I won’t tell you about how useful it was the time that I parked at the wrong parking area, and was the second person that day to sign in the trail register heading down the wrong trail to our desired peak – my little map didn’t even have my real location on it. Fortunately, I was able to dig myself out of this deep hole using the big map.

No map is perfect, but some are a lot better than others. If a map says that the trail goes over that stream, but you see that the bridge is out, don’t believe the map. A lot of maps have mistakes that are less transient.

Even on a peak that I have climbed often, I always take at least one map. If I lose all my maps (and I've picked up more than a few maps on trails, and donated one or two myself), then I head back out the safest way possible.

An Altimeter

My watch has a built-in barometric altimeter – it senses the air pressure and uses that to estimate the altitude. I reset it at the start of each trip to the elevation of the parking area. I find that the barometer is my most useful tool to establish where I am on a map, and especially to warn me about key places, such as turning onto a new trail. It is also useful for keeping a good pace: fast enough yet not too fast.

In a day in the mountains with absolutely no change in the atmospheric pressure, this tool is an altimeter: it tells me my altitude. In a day paddling on a big, flat lake, this tool is a barometer: my altitude is constant, so I see changes in atmospheric pressure. Typically, a rising barometer brings in good weather, and a falling barometer brings in nasty weather. (I remember that by picturing a barometer falling off a shelf – bad news!) But how can you get both readings on a day when the atmospheric pressure is changing as you walk up and down mountains?

If I'm heading up Slide Mountain from Route 47, I set my barometer to 2400 feet at the car. As I walk up, I glance now and then to ensure that I'm on a good pace. If I happen to notice the 3500-foot elevation sign, I check to see what the barometer says (those signs are not always perfect, but they are usually pretty close). When I get to the top, I hope that my altimeter is indicating right around the true height of 4200 feet; if it is, then the barometer is steady, and the news is good. If the instrument indicates 4000 feet, though, then that means that the atmospheric pressure has risen, and the increased pressure fools the watch into thinking that it is at a lower elevation than it really is. Increased pressure usually means good weather. Conversely, if the instrument indicates 4400 feet, that means that the atmospheric pressure has dropped, and the decreased pressure fools the watch into thinking that it is at a higher elevation than it really is. Bad news – that probably means that bad weather is heading in.

I go through a similar calibration every time I come to a known altitude: a peak, a pass, a trail intersection, or whatever. I typically find that my altimeter is pretty darned close. If it is just a little off, I notice the trend – is it getting higher or lower? And if it is way off, then I may reset the instrument. Rather than going through the above derivation each time I get to a known altitude, I recite the following:

A rising altimeter is a falling barometer,
and a falling altimeter is a rising barometer.

If you can't recall which you're hoping for, just recall the tragedy of that barometer falling onto the floor.

A Thermometer

This humble yet useful tool merits its own essay. Suffice it to say that I keep a couple in my automobile, one on my pack strap, and another in my pack.

A Compass

I do not step foot out of doors without a compass. A 5/8-inch diameter compass stays around my watch strap at all times. A tiny compass is on the thermometer on my backpack strap. I keep a two-inch diameter compass handy in a pack pocket, and I have a 3/8-inch compass tucked away in my first aid kit.

On most of my hikes, though, I never really use a single one of those compasses. Sure, I glance down at my wrist compass every now and then to verify my sense of direction, and I'm almost always right. In most places I hike, I can recognize the direction from the views. On all but the cloudiest of days, I can see the sun somewhere in the south, starting off in the southeast and ending up in the southwest.

Every once in a while, though, a compass saves my bacon. I have found myself turned around 180 degrees and walking the wrong way on a trail – one compass reading turned me true. Off trail, I keep to a certain bearing to get up a particular ridge. Sometimes I hide stuff (water shoes for a stream crossing, or a cache of water) 70 paces at 220 degrees magnetic off of an easily identified point on a trail.

Like any tool, a compass has to be used properly. Which way does that pesky declination from magnetic north go? I remember that on both the Appalachian Trail and the Pacific Crest Trail, the north ends of the needles give a friendly nod toward the other. I inadvertently ascended Balsam Cap twice in one day when an experienced woodsman and trip leader was hypothermic enough to think that the white end of the compass needle pointed north. I once watched an Assistant Scoutmaster struggling to teach compass basics in Harriman State Park – he happened to be on the Iron Mines Trail. After I started wearing a fire service pager on my left hip, I noticed that the wrist compass on the watch band on my left wrist would sometimes point south. A key element of any speaker is a magnet, and I was swiping my compass across that powerful magnet with every step I took. *Caveat emptor.*