

Navigation Northwest

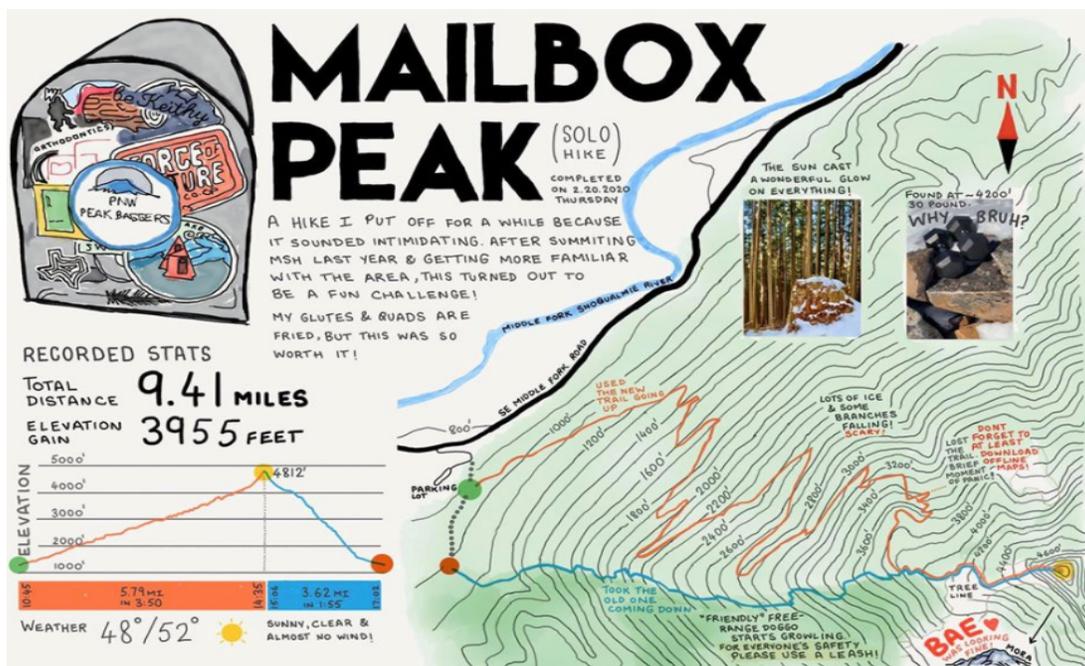
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--Shuraih Latifi's Mailbox trip report. Hats off to Washington Hikers and Climbers.

New Tools For Outdoor Education: eLearning - 2020 Update

By Michael Hutchens

This article updates Doug Canfield's June 2015 eLearning review of a funding proposal for navigation eLearning course development. Canfield participated in the first cross-branch, cross activity Navigation Summit where **Navigation 2.0** advances were discussed.

Below is an abbreviated timeline from the proposed 2015 pilot project to now, with lessons learned by the Seattle Branch. Keep in mind that this is mostly a Seattle Navigation perspective, since that is where I've volunteered. Any omissions regarding other branch involvement in the online development and usage are unintended.

2015-2016: Project Proposal, as outlined in 2015, approved. Development of the Online Navigation Course completed. This is a self-paced course with interactive and audio instruction, exercises, quizzes, and uploads for instructor verification using the LITMOS learning management system.

Spring 2016: Seattle Branch piloted the online class. **15** students successful with field trip performance as good as or better than legacy course students.

Spring/Fall 2017 & 2018: Full Seattle utilization of the online course. Students had option of completing the online course or attending an in-person workshop. All attended an in-person field trip. **139** students successful

Full Kitsap Branch utilization of the online course.

Summer & Fall 2018: Development of the **GPS online course** by the Seattle Branch. Seattle navigation leaders developed a cross functional curriculum. The stand-alone **Introduction to GPS & Trip Planning** became one of the four **Wilderness Navigation Class** components, the **GPS Online Module**. The curriculum was expanded beyond GPS and included the core tools and concepts from **Freedom 9** – map, altimeter, compass, GPS, trip workflow (planning at home using digital tools, trailhead, en-route, and back home again), PLB's/2-Way satellite communications, plus the concepts of *Situational Awareness* and the *Ethic of Self-Reliance*.

[GaiaGPS](#) and [Caltopo](#) apps were standardized for instructional purposes.

Fall 2018: Seattle Branches new **Nav 3.0** (an update to the curriculum that includes Map/Altimeter/Compass/GPS/Situational Awareness) was developed as a pilot in parallel with the regular course. The pilot consisted of the online Wilderness Navigation Course, GPS Online Course, an In-Person Workshop, and Heybrook Ridge Field Trip. **12** students successful.

Spring & Fall 2019: Seattle Branch **Nav 3.0** was launched, fully utilizing both online courses. The legacy curriculum was retired, and all Seattle students took the online course which replaced an in-person lecture. The in-person workshop curriculum focused on exercises and problem solving. The Heybrook Ridge field trip integrated all navigation tools and concepts. **272** students successful.

Foothills Branch developed the **Digital Trip Planning & Navigation** course presented by a series of online webinars – focused on digital tools and topics such as [GaiaGPS](#), [Caltopo](#), on and off trail planning, winter planning, weather planning, and more. Webinars were recorded for later viewing and review if needed. **30** students successful.

Foothills Branch adopted the **Nav 3.0** core online curriculum (also the workshop and field trip).

Kitsap Branch students continue to take the online course.

2020: The current status of the online courses is:

Wilderness Navigation Online Course – Seattle is using the 2019 update that includes a stand-alone Wilderness Navigation course, and a Branch specific Workshop Readiness Course that has uploads specific for the workshop and field trip. It is available for Kitsap, Foothills (in use) and Olympia (planning) Branch Navigation Committees. Tacoma and Everett Branches have expressed interest.

GPS Online Course – currently used by Seattle and Foothills Branch Navigation Committees, other Non-profits, and 1 SAR organization.

Digital Trip Planning & Navigation – Again offered by the Foothills Branch. Seattle commenced instruction to replace legacy GPS stand-alone class.

The Lessons Learned:

There are many, but these rise to the top:

1. *Don't use online as the only curriculum component.* The online work is quite comprehensive, but you still need a practical application component as part of your curriculum. During 2017/2018, students had the option to do an online or in-person workshop, then attend an in-person field trip. No issues with online student preparedness for the field trip were discovered. In fact, in many cases, an improved preparedness was noted for online students. In Seattle's current offering there is no in-person lecture, as the student must take the online courses. I know there is plenty of debate about online vs. in-person curriculum, but I think the Seattle, Foothills, and Kitsap Branches approach which combines the online world with field trips and/or field trips gives students plenty of opportunity to practice what they have learned online.

2. 75-80% of the students will wait until the last 3 to 4 days to start and complete the online courses. This is just the nature of online courses in general. Having multiple sessions, 2 weeks in duration rather than 1 large session and leaving it open is highly recommended and really worked. The overall success rate for students in Seattle's 2019 course was around 80%, even higher in 2020. Some of the students that didn't complete the work would retake it (where they left off) in the next available session, or they would drop completely. The net effect was that by the time you had in-person instruction, the attendance was nearly 100% and the students were highly motivated to complete the course.

3. Overall student feedback for the online components has been positive. It is self-paced, highly organized, and instructors are available to answer questions via email. The most frequent positive feedback response was that students and instructors don't have to make a trip for an in-person event. Instructor feedback has also been mostly positive given that there are new components to teach and much to learn.

4. The number of instructors needed has been reduced dramatically. Finding navigation instructors is hard in general, and the online course really just needs 2-3 depending on enrollment. All work can be done from the comfort of home or office.

5. There are students that don't do well with online work. They are in a small minority, but be prepared to help them come up to speed during your in-person curriculum. Seattle has offered an in-person mentor session, but the attendance for these has dropped to practically zero and has been replaced by more instructor training.

6. Don't underestimate the amount of technology issues that you and the students will encounter with the online work, especially the GPS aspects. The 80/20 rule applies here – 80 percent will encounter few to no issues, while 20 percent will have some sort of problems with IOS, Android, Microsoft, MAC, Gaia and the many other types of devices and applications that can be used. [GaiaGPS](#) and [Caltopo](#) were chosen to standardize instruction. Smartphones are plentiful and the applications are relatively inexpensive. Also, one can translate all the core concepts to the device and application of your choice outside of the class.

In Summary:

In 4 years, an online course has been developed and updated multiple times; a stand-alone GPS course developed; pilot programs run; and 3 branches (likely more ahead) currently use the online curricula as main components of their Wilderness Navigation course. The Digital Trip Planning & Navigation course uses Webinars (to deliver the content) that proved to be highly successful. The GPS online course can be a stand-alone course if desired and has been presented to other non-profits, including SAR organizations. This seems like a long time to get where we are today, but for volunteers trying to fit this in with their main lives

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(work, family, and outdoor pursuits – which I have many), I think this is a great achievement.

Moving forward I see continuous updates to the eLearning courses to support changing technology and to improve the overall experience for the students and instructors. You are never completely done. Also, more online-based courses will be available with some taking advantage of different forms of delivery such as webinars and group collaboration software.

Finally, there is no requirement that other Mountaineers branches adopt the online curriculum, but it is available if desired, and has been through three years of usability testing by well over 500 students and instructor

Michael Hutchens is Co-Chair of the Seattle Navigation Committee. He mainly likes to climb and ski, but occasionally dabbles in navigation. Contact him at mphutch11@gmail.com.

[Editor Note: Michael worked hand-in-hand with Foothills to implement eLearning and has begun working with Olympia. A California student has remotely completed the first three modules, benefiting from ad hoc phone calls and slight edits to the in-person workshop. The field trip will be in person post Covid-19 issues.]

Navigating During the Covid-19 Pandemic—Branch News

Bellingham – Krissy Fagen, Branch Chair

Bellingham integrates navigation instruction within courses.

Everett -- Joel Heidal, Chair

Classes are cancelled and seeking ways forward. The course area is already booked by others for the remainder of the year. In Everett, navigation falls under Scrambling which has cancelled their course.

Foothills – Alan Davey, Co-Chair

Foothills has postponed Wilderness Navigation completion to July 1. Some 23 current students yet need the Field Trip. Others already completed a Field Trip. The make-up plan calls for a series of June hikes, each with 2 instructors and 8 students. Worst case, he said, would be to move completion to the fall. Digital trip Planning is still on. Staying Found may be postponed from May to a later date.

Foothills had already moved to the 4-component Seattle Wilderness Navigation model – eLearning, GPS eLearning, in-person Workshop and Field Trip at Raging River State Forest.

Kitsap – Troy Hubbs, Chair

No courses currently posted.

Olympia – Mike Kretzler, Chair

In response to the Covid-19 shutdown, Olympia's Navigation committee has rescheduled its April class to late September. In addition, we've decided to implement the online curriculum that Seattle (and others) have been using, as a way to reduce the need for our instructional lectures. We still need to hold the field day, so time will tell.

Seattle – Michael Hutchens & Patricia McDonald, Co-Chairs

Seattle postponed Wilderness Navigation spring field trips to a mix of novel single small group outings led by 2 or 3 instructors and a two-fer November 7/8 weekend to accommodate the 226 students needing the field trip. Both Intro to Map & Compass and Digital Trip Planning and GPS seminars are under construction as eLearning exercises using Google Classroom (likely) and Zoom. A working group is polishing procedures and documents to implement small group outings (≤ 12 in group) on Heybrook Ridge (when National Forests reopen).

Tacoma -- Rick Finkle, Immediate Past Chair

The Fairfax Road to the Irish Cabin property, where Tacoma has held field trips, washed out in February and then the Corona Virus hit. The classes were cancelled. Utilities are back in along the road with likely access in late May. Classes will be rescheduled. Veteran instructors **Kevin DeFields** and **Jerrick Linde** are incoming co-chairs.

Who Is The Alpine Geek? – More Resources From a Submariner

By Travis Prescott.

I've been enjoying podcasts for the past several years, mostly on the subjects of entrepreneurship and investing. I listen to them on my commute to work or the trailhead and often listen while out on the trail.

That realization, combined with my desire to share the amazing knowledge circulating in The Mountaineers with hiking communities across the country gave me the inspiration to start the [Alpine Geek podcast](#) with the aim of helping people find fun, fitness and fulfillment in the outdoors.

Partly due to my time in the Navy, where all of our shipboard navigation was digital and partly due to my job as a software engineer, I have carved out a tech niche for myself in the Mountaineers.

Ever since seeing my first map that was made in CalTopo I was sold on the value of digital tools. I've evaluated dozens of different tools that fall essentially into three buckets: pre-trip, on-trip and post-trip. However, I still find it frustrating that my digital toolkit contains so many tools. It's a lot of time and effort that I frankly would rather spend enjoying the outdoors!

That's part of the reason I created the Digital Navigation and Trip Planning course, a deep-dive approach to teaching the most impactful of these tools to our members. It is the first course of its kind in the club—how would that meme go? I was social distancing on Zoom before it was cool?

The Foothills [course is open](#) and seeing as how people are looking for ways to use this time effectively, I raised the registration cap to the max allowed by our branch Zoom subscription. This can be a great time to plan for all those amazing trips you'll go on when this is over!

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Note: To make sure you don't miss a single episode, use one of the above players and make sure to hit **SUBSCRIBE!**

THE ALPINE GEEK
with Travis Prescott

Breaking Halos with Katjarina Hurt

08:00 | 51:32

About This Episode

Katjarina Hurt is a climber, leader and educator in the Mountaineers. The loss of a close friend in a 2018 climbing accident set her on a mission to identify and combat the human factors that are too commonly the cause of accidents among well-trained individuals. She presents a seminar called Breaking the Halo, and has published a book by the same name. In this episode, Katja and I discuss the six halos that every outdoor adventurer and outdoor leader should watch out for.

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Breaking the Halo
By Katjarina Hurt

Resources

Katjarina Hurt
Mountaineer, Author

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Ultimately, the aim of the Alpine Geek is to help people use technology to enhance their outdoor experience, whether that is by planning more effectively, navigating more competently, or sharing beta for those who follow in your footsteps.

Currently, that is done through the podcast, teaching the course for Mountaineers, and free video content I post on the Alpine Geek [Youtube channel](#). My hope is to eventually create entirely new tooling that streamlines and simplifies the most important of our tasks so we can spend more time in nature, and less on a screen.

Contact Travis at travis@thealpinegeek.com or on Twitter @AlpineGeek. If you want to subscribe to the podcast or YouTube channel, I also won't stop you.

[Editor note: Travis supported Seattle Navigation as a test instructor for the small group delivery model on Heybrook Ridge. And he's been a Foothills navigation stalwart through their development and launch of the Wilderness Navigation course leading to the Raging River field trip.]

Which Altimeter Reading Do You Believe?

By Peter Hendrickson

We'd prepared well for a quick side-trip to Mallorca, Spain in connection with some work in London last December. We both speak Spanish and had trekked along Catalonia's Costa Brava in late fall 2018. And we had another of our beloved Cicerone guidebooks, *Trekking in Mallorca* (Paddy Dillon, 2017).

Our goal was to through hike the Drystone Route through La Serra de Traumuntana (mountains of the north) along and above the Mediterranean Sea. The 140km GR221, also known as the Ruta de Pedra en Sec, is variously sign-posted from terrific to not at all. Given available days and a severe weather threat we completed five of the 10 sections, staying in refuges and small hotels.

We ducked earlier heavy rains and enjoyed splendid, if chilly days and nights. A greater challenge was finding lodging or food in some picturesque towns that zip tight until March when tourists return. Encounters with other hikers were infrequent. The most "interesting" route following was Day 3 (Stage 6), Valldemossa to Deià. 13.5 km with 580m \wedge and 870m \vee , around 7 hours.

This section is not yet signed. Dillon accurately remarks, "The ascent climbs through a well-wooded valley, followed by rocky slopes leading to a high crest. A splendid path traverses the mountains, constructed as a carriage drive for the Archduke Lluís Salvador. The steep and rugged path used for the descent must be located with care; it exploits a breach in a fearsome cliff that overhangs in places. After negotiating fiddly paths among olive terraces on the lower slopes, the delightful hilltop village of Deià, beloved of artists should be explored thoroughly."

Figure 1. Sketchy trail provides a short scramble.



When travelling outside the U.S. we set all apps and tools to metric, to better correspond with maps, guide books and trailside encounters. And we try to think in meters and kilometers, rather than feet and miles.

The prior day we found ourselves walking with an itinerant German guy, most pleasant company through the woods with occasional signs. Gaia was working OK with saved maps and we persistently consulted the German and English editions of Paddy's guide. We missed an "awkward gap in the wall," instead scrambling over a steeper section (Figure 1). We kept the cliff on our left shoulders as the paths were braided and followed the "Swing left and walk down to a wall and fence in a rocky cleft" directions as there was no other hike/scramble gap to be found (Figure 2). Soon we could see Validemossa in the distance but managed to lose the trail (more chatting than turn spotting).

Figure 2. Farms ahead outside the Validemossa.



This trek is as much a cultural wonder as it is natural splendor in these limestone mountains with long views north across the Mediterranean where you can see the light blush of Barcelona at night. The land has been worked, terraced, cairned, canalized, towered and cisterned for over 6000 years to support olives, citrus and more. This is wild in places but not wilderness.

We were off trail but easily descended on a compass bearing by moving from terrace to terrace until we struck a farm road. The altimeter gave us the best guess at how close we were to finding a vehicle track. And the town was splendid to wander in the fading light (Figure 3).

Figure 3. Valdimossa on a chilly December evening.



The higher altitude ridge walk the next day (Figure 4) was trickier to find that "breach in a fearsome cliff that overhangs in places (Figure 5)." It was sunny but windy and hovering about 10c – no inclination to linger at ~950m (~3000') with shortest day of the year just ahead.

Figure 4. Views northwest towards from Archduke's carriage drive.



I tried the *FusedAlti* function of my wrist Suunto Traverse to recalibrate at known altitude Puig Gros (938m) where we sheltered for lunch. The fused function combines barometric pressure and GPS to establish altitude. Most of the time, Navigation Northwest (V8.1) Winter 2020

when trekking, I simply adjust altitude to match either map or GPS to conserve battery charge. And to save time, as it can take several minutes to activate.

In this case, we found the breach and scrambled down to the overhung trail. But the altimeter had soared to over 5000m and was yo-yoing on the descent. This had happened to me before after a flight but was disconcerting with the exposure and full attention to not missing turns. Again we could see the village and knew the terrain would be laced with farms and tracks once we dropped lower.

Figure 5. Overhung path below the breach.



My altimeter solutions are two. First, continue to carry redundant tools – hard copy maps, altimeters, hand bearing compass, watch and apps. They have all failed. An Anker back up battery has become essential. Second, get more competent with the deep capabilities of the GPS enabled Traverse. See [“What can I do if the altitude readings during daily use in the Alti-Baro display of my Suunto Traverse or Traverse Alpha are incorrect?”](#) at [SuuntoSupport](#).

Thinking of trekking in Mallorca? It is really hot in the summer and the LaPalma airport is the busiest in Europe during the high season. Late fall worked for us. We were there between heavy rain days. Don't speak Catalan? Don't worry, your Spanish or German or English will work most places.

--Peter Hendrickson works and travels in Spanish speaking countries. Contact him at p.hendrickson43@gmail.com.

Datum Shifts Matter & NAD 2022 Approaches

By Bob Boyd

One of the biggest mistakes that can be made in Land Navigation is to select the wrong coordinate datum. Here in the Seattle area, the amount of datum shift between coordinate systems can be about 220 meters for UTM. So how did this happen?

In 1927, a group of forward-thinking individuals believed we needed a common coordinate system to help with public works projects. After all, they had Clarke's 1866 computations of the earth's size and shape. The midpoint was Mead's Ranch in Kansas, and life would be good. Their coordinate system would be called the North America Datum of 1927, (NAD27).

Come 1983 and the forward-thinking individuals now have satellite technology and realize the 1927 guys had the earth's size and shape all wrong. Their proposal: match everything on the East Coast, and push the error to the West. Their coordinate system would be called North American Datum of 1983, (NAD83).

The Adjustment: Envision a group of NAD27 UTM coordinates. Now envision a *copy paste*, moving the copied coordinates (in the Seattle area) about 220 meters on a bearing of about 155°, and call those UTM coordinates NAD83. The confusing part, now you have two sets of identical coordinates 220 meters apart, not a problem, if you attached the name of the datum to the coordinate first.

Latitude & Longitude coordinates changed too, but not in the same direction. The datum shift between NAD27 and NAD83 in the Seattle area was about 94 meters at 76° True.

Your GPS can convert coordinates in many datums. Turn on your GPS and set it to WGS84 (or NAD83) and write down your coordinates, do not store them on the GPS. Now change your Datum to NAD27, reenter the coordinates and tap go. The UTM shift, from your location, will be about 220m on a grid bearing of 335°, the Lat Long shift will be about 94m on a true bearing of 256°.

If you're navigating outside the Seattle area, remember that the shifting of datums varies with location and coordinate type.

A NAD 2022 is in the works to replace both the NAD 83 horizontal and the NADV 88 vertical datums. Changes impacting wilderness navigators will be minor – 0.5 to 1.5 meter horizontal shifts and 0 to 1.2 meter shifts vertical. For more information: <https://geodesy.noaa.gov/datums/newdatums/index.shtml>

--Bob Boyd is a Retired Land Surveyor, Navigation Consultant for the Seattle & Foothills Chapters of the Mountaineers, King Co SAR. Contact him at robert.boyd@comcast.net

Gaia & Mountaineers Digital Trip Planning Courses

Gaia's regular e-letter provides notice of new features and tips for users. Not so many years ago I was deep into solo hiking and climbing (mostly scrambles up Mt St Helens in the early 2000's). I carried the 10 essentials but did not have a solid app for navigation. Standard routes and garish combinations of orange and red outer wear made sense.

Gaia's March 2020 newsletter feature Tips for Solo Backpacking by Mary Cochenour (Gaia Marketing) resonated and I was drawn to the planning section below. See here for the full post: [SoloBackpack](#)

Research the Terrain Online

Once you've selected an area that you're comfortable with, go to [gaiagps.com](#) and pore over your [favorite topo maps](#). Check out the surrounding landscape using [satellite imagery](#). Get a good sense of the lay of the land, noting major landmarks, your planned campsite, trail junctions, and any side routes that you could use to bail out in case of an emergency. [Create a waypoint](#) for these important features and add notes to revisit later. [Check for public tracks](#) and, if you find one that matches your exact route, add it to your account. Finally, [create a route of your planned hike](#) and [share that route](#) with your friends and family so that people back home know your exact plan.

Next, look on blogs, Reddit groups, YouTube, and Vimeo for trip reports. Trip reports often contain images or videos that can give you a clue as to trail conditions, camping locations, and hazards like creek crossings or snowfields. Check in with relevant social media groups for current conditions. It's amazing what you can find with a hashtag. Visit land agency websites for updates on conditions and permit requirements, call if you have questions.

Mountaineers Digital Trip Planning

I would add that The Mountaineers and WTA also provide an abundance of more local trip reports. And for those seeking a seminar, Seattle provides [Introduction to GPS Navigation, Trip Planning and Workflow](#) (Steve McClure, Lead) and Foothills offers [Digital Navigation and Trip Planning](#) (Travis Prescott, Lead). The Seattle course generates a GPS Badge and replaces an earlier version which is now the Activity 2 Google Slides module in both Seattle and Foothills Wilderness Navigation courses.

The Foothills course is a unique collection of Wednesday webinars crafted by Prescott, a Wilderness Navigation instructor and leader for both Foothills and Seattle Branches.

See the full set here [FoothillsPrescott](#) . Titles include:

- **Course Intro and Trip Planning Basics**
- **GaiaGPS and CalTopo 101**
- **On-Trail Route Planning**

- Off-Trail Route Planning
- Winter Route Planning
- Navigating with GaiaGPS
- Researching Weather Online
- Other Apps and Course Wrap-up

--Editor

Mountaineers Required Compass Features

Wilderness Navigation & Other Courses

Revised August 2019

1. **Adjustable declination:** This feature simplifies map and compass work. Most compasses with adjustable declination have an adjustment screw, usually brass or copper-colored, and a small key attached to the lanyard. Some have a 'tool-less', pinch-to-adjust feature.

- All students **MUST** have a compass with adjustable declination. The presence of a declination scale does not guarantee that it can be adjusted.
- Even if you already have a compass without adjustable declination, you may not use it in this course. Experience indicates that such compasses detract from the learning experience.

2. A **transparent rectangular base plate** with a direction of travel arrow or a sighting mirror.

- Transparency allows map features to be seen underneath the compass.
- A rectangular shape provides straight edges and square angles to plot on the map.

3. A **0 to 360 bezel** (the rotating housing) marked clockwise from 0 to 360 degrees in increments of two degrees or less. Bezels should be large to allow use with gloves - the larger size also improves accuracy. Do not get one marked in 0-90 degree quadrants OR one marked in 0-6400 mils!

4. **Meridian lines:** Parallel 'meridian lines' on the bottom of the interior of the circular compass housing rotate with the bezel when it is turned. Longer lines are better. Meridian lines run parallel to the north-south axis of the bezel, however turned, for use with a topo map.

5. A **ruler and/or gradient scale** engraved on one of the straight edges, used for measuring distances. In the U.S. 1:24000 scales (rather than 1:25000) are preferred. Both are acceptable.

6. A **3 to 4-inch base plate**. A longer straight edge makes map work easier.

Additional recommendations

- A sighting mirror in the cover: May reduce error introduced when moving compass from eye-level after sighting to waist-level for reading the dial. Protects the bezel.
- A liquid-filled housing: Reduces erratic needle movement (common on better compasses). In some cases, steadying the compass needle can be difficult
- An inclinometer: A gravity driven arrow that allows you to measure slope angle.

Current favorites: Suunto, Silva and Brunton are favorites. All have adjustable declination. Their quality and usability varies, so **keep any receipt**. We have unfortunately seen many defective compasses in the past.

Maker	Models	Features +	Features -	Vendors	Cost
Silva of Sweden	Ranger 2.0	Slope card, Luminous		Forestry Supplies Liberty Mountain	~\$45
	Explorer Pro	No mirror, Bendable	Lacks clinometer		~\$45
Suunto of Finland	MC-2 Pro	Northern Hemisphere		REI, Online	~\$56
	M3-D Leader	Mirrorless	Lacks clinometer		~\$44
	MC-2G Navigator	20 degree tilt margin			~\$95
Brunton of Colorado	TruArc15*	*Global needle, mirror	Bezel may pop out	REI, Cabela's, Online	~\$50-60
	TruArc 7*	Fewer scales	Skinny Mirror		~\$36

Manufacturers make continuing improvements and corrections in models. Model variations and designations proliferate – insist on features 1 to 6 above. Remove plastic from Suunto mirrors and Brunton bezels before use.

(Rev 9Aug2019/ph bb bs)

Wilderness Navigation Course Offerings—Seattle 2020*

The revised Wilderness Navigation 3.0 is focused on wilderness/back country travel including off trail navigation to meet requirements for Alpine Scramble, Basic Climbing, Snowshoe and BC Ski students (and others). Essential tools are maps, altimeters, compass, GPS and emergency communicators. The four components are (1) eLearning Workshop, (2) GPS online module, (3) In-Person Workshop and (4) Field Trip. Completers receive both Wilderness Navigation and GPS Navigation badges, reflecting the expanded navigation tool set. Fee.

Lead course administrator is Michael Hutchens, Seattle Co-Chair.

Dates 2020	1 - eLearning 2 - GPS Module	Date & Day	3 - Workshop 4 - Fieldtrip
TBD Sep 26 to Oct 10	Online Online	TBD, if offered Saturday & Sunday, Nov 7 and 8	Program Center Heybrook Ridge

Introduction to GPS & Trip Planning Course—Seattle 2020*

Interested in learning to use your smart phone as a wilderness GPS? Maybe you've had a Garmin for years or the Gaia app on your smart phone and want to get the most out of them. This one evening course is revised. An online presentation with exercises is viewed and completed (4 to 5 hours) before the class (~2.5 hours). Applications are Gaia GPS and CalTopo. Prior completion of the Wilderness Navigation course is strongly encouraged. Note: This is not a comprehensive Trip Planning class. Fee and Badge.

Course lead administrator is Steve McClure.

Dates 2020	Location
Tuesday, April 21	Online + Virtual Classroom
Wednesday, May 13	Online + Virtual or In person
Wednesday, June 10	Online + Virtual or In person
Tuesday, September 22	Online + Virtual or In person

Introduction to Map & Compass – Seattle 2020*

The Seattle Navigation Committee scheduled five 2020 Introduction to Map and Compass dates at the Seattle Program Center from 6:30 to 8:30 p.m. Instructors are drawn from the pool of Wilderness Navigation Course teachers.

This Getting Started introductory class does not satisfy the navigation requirement for Alpine Scramble, Basic Climbing, Snowshoe or Backcountry Ski. Baseplate declination adjustable compass loaners are available for the class. Fee, no badge.

Course lead administrator is Otto Greule.

Intro to Map & Compass	Location
Wednesday, April 22	Online virtual classroom
Thursday, June 8	Online or In Person classroom
Monday, August 10	Online or In Person classroom
Wednesday, September 2	Online or In Person classroom

Other Seattle 2020 Navigation Seminars/Clinics*

Seminars/Clinics	Dates
Instructor Training eLearning – No fee Program Center Lead seminar administrator is Nina Crampton.	TBD Seattle Program Center
Wilderness Navigation & GPS Equivalency – Fee Lead equivalency administrator is Lynn Graf	Rolling enrollment

Other Branches 2020 Navigation Courses*

Branch	Course	Dates
Everett	Basic Navigation Workshop & FT Camp Edward	Dates TBD
	Wilderness Navigation eLearning Option	Under Consideration
Foothills	Staying Found	May 17, Sept 12
	Wilderness Navigation Workshop, Field Trip	Sept 8, Oct 31
	Wilderness Navigation Optional Mentor Session	Oct 08, Oct 15
	Digital Trip Planning & Navigation	Apr 29 & forward
	Navigating in Winter Terrain	TBD
	Wilderness Navigation Equivalency	Alan Davey, Contact
	Kitsap	Both series have eLearning Wkshp Option
Kitsap	Wilderness Navigation Lectures Option	Dates TBD
	Wilderness Navigation Wkshp/Field Trip	Dates TBD
	Olympia	Navigation Lectures 1 and 2 Lacey Community Center
Olympia	Navigation Field Trips Kennedy Creek, Black Hills	Postponed to late September
	Tacoma	Wilderness Navigation Lectures 1 & 2; Field Trip
Wilderness Navigation Lectures 1 & 2; Field Trip		Uncertain
Wilderness Navigation Lectures 1 & 2; Field Trip		Uncertain
Wilderness Navigation Lectures 1 & 2; Field Trip		Sep 1, 8; Sep 12

***Many courses are cancelled, postponed or moved to online during COVID-19 restrictions. Check mountaineers.org for up-to-date listings.**

Mazamas (Portland, OR) 2020 Navigation Instruction*

Portland	Navigation Skill Builder Class – Videos, Wkshp, Field work	TBD
	Wilderness Navigation Smartphone GPS (Gaia)	TBD

*Northwest climbing clubs support similar goals for exploration, learning and conservation. Reciprocity is routinely granted across state lines. Mazamas lead navigation instructor is John Godino, contact johngo.pdx@gmail.com.

Contact Information Other Northwest Mountaineering Clubs

Organization	Web address	Notes
The American Alpine Club – Northwest Region	https://americanalpineclub.org/cascade-section	Cascade Section has a Washington & Oregon focus Facebook presence
BOEALPS, The Boeing Employees Alpine Society	http://boealps.org/about-us/	Primarily climbing; spring Basic Mountaineering Course
Bushwhacker Climbing Club	https://bwcc.clubexpress.com/content.aspx?page_id=22&club_id=172409&module_id=151320	Founded as 501(c)(3) 2003. Hike, climb, ski, socialize
Mazamas	https://mazamas.org/	Founded 1894 in Portland. Mainly a climbing club for those who have already summited a glaciated peak
Never Stop Moving	https://www.neverstopmoving.org/volunteer	Volunteer run Seattle LLC women’s rock climbing company
OSAT, One Step At A Time	http://www.osat.org/	Melds outdoor activities with recovery; 6 month glacier climbing course
WAC, Washington Alpine Club	https://washingtionalpineclub.org/	Founded 1916. Many Guye Cabin activities, Snoqualmie Pass

Navigation Gear, Apps & Links of Interest

Your comments and suggestions are ever welcome regarding the Seattle Navigation website and links in Navigation Northwest.

The Gear...

Bob Boyd reports, "One of our SAR trainees had this K&R compass. She was more than willing to swap it for one of my 2016 Suunto test compasses. It is now part of my 5 lb compass collection." Below is a summary of the compass testing protocol Bob uses at his home on batches of compasses bound for SAR use or ones that come to his attention from Mountaineers or others. Figure 1 shows a sample K&R adjustable declination compass.

- 1) Freeze test for an hour, good, it still worked.
- 2) Mirror, found slightly warped, it still works as a signaling device. The slit blocks the view of the needle's pivot point.
- 3) The clinometer determines the steepness of the slope, works good.
- 4) The needle appears to be painted with the same red paint that Suunto tried. While holding the compass on it's side, I see pieces of paint in the compass oil.
- 5) Offsetting the declination by turning the inner circle of the bezel works ok.

Figure 1. K&R Alpin Sighting compass with inclinometer.



- 6) Reading the bezel at the black pointer is difficult, as the pointer is too long.
- 7) Boxing the needle within the two white forks is ok, but odd.

- 8) The lid could be a little more ridge, it could break at the hinge.
 - 9) The UTM Scale is 1:25000, not 1:24000 as the package indicated.
 - 10) The needle is the longest on the market, vs the Brunton which is a toy needle.
 - 11) Pointing Error. Bearing reads 2° high, or points 2° Left.
- This is good for a quick bearing, not an accurate bearing.

My Compass Checking Station:

The compass is placed on top of an old wood & brass surveyor's tripod.
 The compass is leveled up and pointed at a target 200' away.
 All readings are made with a magnification glass.

Bob Boyd is a retired Washington Land Surveyor and active member of Seattle and Foothills Navigation Committees. Contact him at robert.boyd@comcast.net.

The Apps...

- **Maps.me** is widely used by travellers in new countries and cities. First you load the area map for offline use to save on mobile data use. The app is free and based on OpenStreetMap data. We were impressed with the features last fall during two weeks trekking and walking in Ecuador. Yes, there is a new topographic layer and you can update previously downloaded maps. See this Dave Hoch review: <https://longhaultrekkers.com/maps-me-review/>
- **Oruxmaps** for Android user (free <https://www.oruxmaps.com/cs/en/>) is based constantly updated maps with the option to store and program routes. The manual is available in several languages but the developer is in Madrid, Spain. Ex. "You will see OpenStreetMap. If you want the GPS to move the map, button 'Tracks'—'Start GPS', or on screen button 'GPS on/off'. After receiving a first positioning, either from the network (if enabled in the android settings) or through the GPS itself, the map will focuses on your current position." A Google user states, "The app can be a bit daunting to use due ot its complexity, but persistence is rewarded."
- **Gaia** now offers Apple CarPlay compatibility including offroad and overland use. And they've updated Android functionality.
- **Gaia** has released a land measuring function (area/polygon) – attention land managers. See the updates blog for a more complete list of new or improved features <https://blog.gaiagps.com/category/app-updates/>.
- **AllTrails** Fieldnotes blog gives tips on getting outside responsibly during COVID-19 <https://fieldnotes.alltrails.com/>. And AllTrails is now in French, German and Spanish.
- **Walk the Distance** uses your iPhone pedometer to virtually walk the 3500km Appalachian Trail (free during COVID-19 crisis) <https://apps.apple.com/us/app/walk-the-distance/id634548793>
-

(Following apps first published in June 2017 issue)

Free (or nearly) Altimeter Apps For Smart Phones

By Lynn Graf

	App Name	Device	Developer	Cost
	Gareth Altimeter	Android	Gareth Price	free
	Accurate Altimeter	Android	AR Labs	free
	Pro Altimeter	iPhone	Hunter Research and Technology	\$0.99
	Altimeter Plus	iPhone	Sichtwerk AG	\$1.99

Short guide to a few recommended altimeter apps for cell phones

Don't want to spend the money for a classic wristwatch altimeter, one more gadget? Basically all SmartPhones nowadays have GPS capability. This means that they can pinpoint your spatial position without cell service, which is often spotty or non-existent in the backcountry (and searching for a signal drains the battery, in case you haven't noticed). Many of the newer models (iPhone 6 and later, for example) also have a pressure sensor. This can be used for extra correction or a cross-check of elevation by barometric pressure (which is what wristwatch altimeters use) but that is not really necessary and requires more frequent calibration.

Here are recommendations for two very basic apps for Android and two for iPhones.

Selection Criteria (not in order of importance): low or no cost, easy to use, no cell service required, no ads, low memory and storage usage, reasonable speed at obtaining GPS signals, clear numerical display, recommendation from Mountaineers member(s) who have used it in the field.

There are many more out there, more all the time, and increasingly with features in addition to GPS-based elevation. We invite you to try them, see how they work for you, and let us know if they don't work as advertised. If you want additional information, see the article in Navigation Northwest

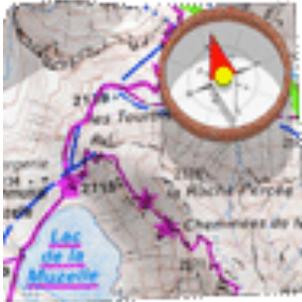
(<https://www.mountaineers.org/blog/how-to-pick-an-altimeter>) describing a systematic comparison of several Android apps.

Also, The Mountaineers currently has a deal for free use of GAIA Pro that basically turns your cell phone into an advanced GPS device. Check the website under "Benefits" (<https://www.mountaineers.org/membership/benefits/instructions-for-redeeming-member-benefits>). It is highly recommended but requires time and practice to set up and use efficiently. The Seattle Navigation GPS class features Gaia as the app of choice. Backcountry Navigator, another full-service GPS app, also has many followers. Both are well worth it, in my opinion, but a paper map, compass and altimeter app will get you a long ways, both on and off-trail.

--Lynn Graf is a past Seattle Navigation chair and an active hikes and scrambles trip leader. She is a frequent contributor to Navigation Northwest. Contact her at: lynn.graf@gmail.com.

Free (or nearly) GPS Apps for Smart Phones

By Brian Starlin and Emma Agosta

Screen Shot	App Name	Device	Developer	Cost
	MyTrails	Android	FrogSparks	Free Pro €2
	GPS Essentials	Android	Schollmeyer Software Engineering	Free
	Handy GPS	iPhone	Anthony Dunk <i>[Note: Also authored Coordinate Master to convert Lat/Long to UTM]</i>	Free
	Altimeter GPS	iPhone	Andrea Piani Immaginet Sri	Free Pro \$4.99

Criteria for Android and iOS GPS:

- 1) Backcountry oriented (Topo Maps rather than street maps)
- 2) Works offline, in airplane mode, with only the GPS on

- 3) Can display UTM and Lat/Long
- 4) Has at least NAD83/WGS84, but gets extra points if it has NAD27
- 5) Extra points if it's available for Android and iOS
- 6) Able to save data and send in GPX format
- 7) Able to import GPX format
- 8) Accurate (although I believe it's based on underlying GPS hardware)
- 9) Extra credit if tracks can be shared on a cloud service
- 10) Free

We used a 10-point scale with higher numbers meaning more of the above features were found. Also, there is a main point we need to make. Gaia is a serious app for backcountry use and has all the features we want. And Gaia Pro is currently free for one year to Mountaineers members .

Android Reviews (Brian)

>>GPS ESSENTIALS (mictale.com) -- 5 points

Only available on Android.

It only uses cached maps, which limits its offline usefulness.

Very robust dashboard, highly configurable.

Limited selection of map sources

The UI is clunky. It uses a thing called "streams" to store data. The Import/Export functions were hidden in the "streams." The track recording was also buried in the stream screens. The Dashboard is great, but the other functions are clunky.

>>HANDY GPS (BinaryEarth) -- 2 points

Great for just displaying your coordinates in various formats. It has very limited maps -- a blank screen, and the Google Maps. The map does not work offline and cannot be downloaded.

>>MYTRAILS (FrogSparks) -- 6 points.

Great selection of maps. I think it has only NAD83/WGS84 because I don't see a Datum setting. Tracks and waypoints can be saved as GPX. The free version can only save the current track, plus one. And can only store 100 tiles at a time in the offline storage. UTM displays on the screen. It's on Android.

>>RAMBLR (Bientus) -- 2 points

This is more of a journaling and trip sharing app than a GPS app. It's very focused on tracking and sharing details of a trip. It has Google Terrain and OpenCycle maps. It can use an offline map. It does not display coordinates, but it can show you your location on the map background. As I said, it's a journaling app.

iOS Reviews (Emma)

Additional features I noticed are under "other features and comments."

>>ALL TRAILS -- 3 points, free

Hiking oriented but by trail (not backcountry). More like WTA app. Works offline. WGS 83/84. Available for IOS and Android. Map overlays (such as USGS topo) are in the Pro version (\$29.99/year). No UTM or Lat/Long. Other features/Comments: ability to track a route, keep history etc. Many other apps do this for hiking, biking, running and other sports. I do not believe these are the kind of apps our readers are looking for.

>>ALTIMETER GPS -- 4 points, free.

Not backcountry oriented. Lat and Long: yes. No UTM. Elevation (ft/meters). Accuracy: unknown. Available on both? Some features only work with internet (i.e. choice of map format). Other features/comments: Weather, barometric pressure. Compass heading, Step Counter. Speedometer. Save position. Ads (non intrusive at the bottom, yet one can accidentally click). Find feature to search for location.

>>DECLINATION -- 1 point, free

Not backcountry oriented (map: satellite view). Lat and Long and UTM. Works offline: yes. Accuracy: unknown; Datum: ? Other features/Comments: Declination; Ability to search by Lat and Long. Ads.

>>HANDY GPS -- 6 points, free

Not backcountry oriented. Works offline: yes. UTM and Lat/Long, (plus elevation); Datum: ? Available for both IOS and Android. Able to save data and email : yes. GPX file: no; Accuracy level (+-10m). Other features/comments: nice display: uncluttered; intuitive, user-friendly; key features: Map. Digital Compass. Can save waypoints and email position from within the app. No ads. My favorite among free but cannot compete with Gaia.

>>MAP TOOLS -- 3 points, \$0.99

Street oriented; Works offline; Lat and Long and UTM; Datum: ?; GPX format: no; accuracy: unknown. Other features/comments: Not intuitive. Confusing zoom in and out feature. Declination provided.

--Brian Starlin is a past Seattle Navigation Chair and a frequent Navigation Northwest contributor. Contact him at brian.starlin@comcast.net

--Emma Agosta is a Seattle Navigation instructor and committee member. A geologist, she is fluent in land forms (and Italian). Contact her at emagosta@gmail.com

And the links ...

>>The endangered art of getting lost and why it may be good for us.
[AdventureJournal](#)

>>Cell towers in our national parks – what next?
[eMagazine.com](#)

>>Turns out that turn-by-turn GPS use is detrimental to long term brain health and more customary navigation where you build an internal map helps prevent cognitive decline. We are teaching an anti-dementia behavior, cool! – Bruce Crawford

[WashingtonPost](#)

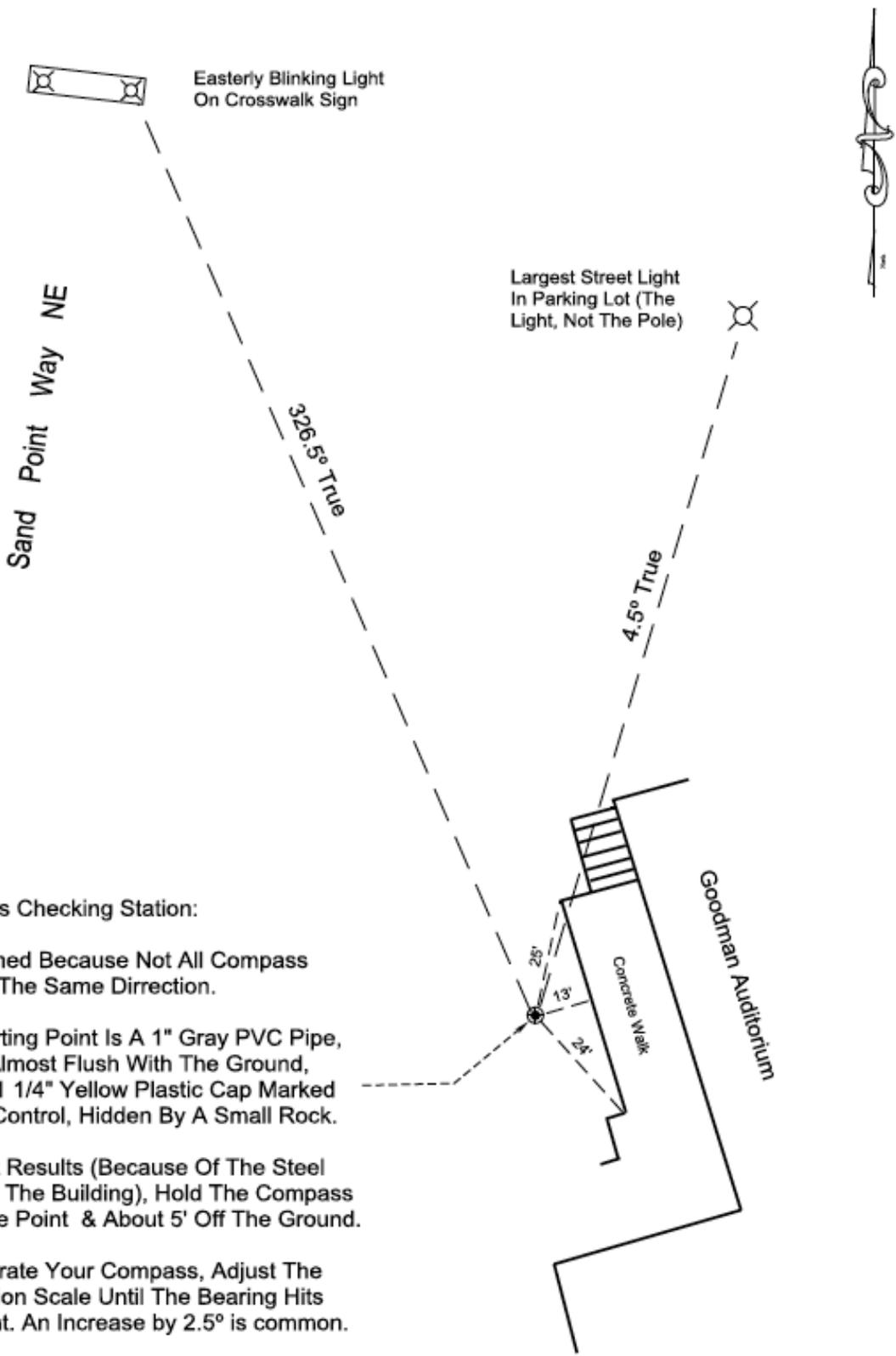
>>We've 3 of the 6 Starlink SpaceX, 1.016 diameter antenna, ground stations here in Washington State (Redmond Ridge, North Bend and Brewster). These gateway earth stations will communicate only with those SpaceX satellites that are visible on the horizon above a minimum elevation angle (first at 25 degrees, then at 40 degrees with more deployments.) And the FCC has approved SpaceX to deploy up to one million ground stations.

<http://www.parabolicarc.com/2020/03/29/spacex-get-approval-for-1-million-starlink-ground-stations-in-usa/>

We may have cycled last week past an Amazon factory under construction on Redmond Ridge to built satellites to compete with SpaceX. Or was it more SpaceX capacity?

>>Gaia blog promotes taking the lead as navigators.

https://blog.gaiagps.com/how-learning-navigation-skills-can-make-you-more-confident-outdoors/?utm_source=newsletter&utm_medium=email&utm_campaign=august-newsletter-premium&utm_content=leadership



Compass Checking Station:

Established Because Not All Compass Point In The Same Direction.

The Starting Point Is A 1" Gray PVC Pipe, Driven Almost Flush With The Ground, With A 1 1/4" Yellow Plastic Cap Marked Survey Control, Hidden By A Small Rock.

For Best Results (Because Of The Steel Roof On The Building), Hold The Compass Over The Point & About 5' Off The Ground.

To Calibrate Your Compass, Adjust The Declination Scale Until The Bearing Hits The Light. An Increase by 2.5° is common.

Please Hide With Rock When Finished.

RWB
2/2014

Seattle Program Center Compass Calibration Station

Navigation Northwest Copy and Publish Targets 2020

Calendar 2020	Copy Deadlines	Publish Dates
Volume 8, Issue 2	May 1	Spring 2020
Volume 7, Issue 3	September 1	Summer 2020
Volume 7, Issue 4	November 8	Fall 2020

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Inquiries, Contributions, Letters to the Editor to Peter Hendrickson
p.hendrickson43@gmail.com

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Guidelines for contributor submissions:

- Word doc...Google doc OK but not a PDF
- 12 pt Verdana
- Standard margins
- Indicate in body of text where you would like figures/tables etc. to go
- Send figures, tables, photos as attachments or by separate email
- Refer to figures & tables by number in body of text
- No footnotes, header or footer
- Author blurb with preferred email contact address

Kindly contact editor for further information regarding topics, length, tables, figures, deadlines...

"Do not go where the path may lead, go instead where there is no path and leave a trail." --Ralph Waldo Emerson, American writer, 1803-1882

(Rev 08Apr2020/ph)