WFCA

GPS: Using your Mobile Device for High-Precision GPS Data Collection

UAV: Do-It-Yourself Accurate Drone Mapping in Natural Resources

GPS: **March 7, 2018 • Coeur d'Alene Resort**

UAV: **March 8, 2018 • Coeur d'Alene Resort**

Using your Smartphone/Tablet for High-Precision GPS Data Collection

You don't need a dedicated handheld GPS receiver any longer

March 7, 2018 • Coeur d'Alene Resort, Coeur d'Alene, Idaho

Workshop Agenda

The workshop will explore the growing trend of using smartphones and tablets in the field as GPS/GIS data collection devices (BYOD – Bring Your Own Device). Carrying a specialized "GPS handheld" is no longer necessary to collect high-accuracy, feature-rich data.

How accurate is the GPS chip inside your iPad? How can you get sub-meter or centimeter accuracy using your iPad, iPhone or Android device? Which software should you use on your smartphone/tablet to collect GPS/GIS data?

The workshop will also discuss the basic concepts of how GPS works and how GPS and GNSS will change significantly over the next few years. Attendees are encouraged to bring their own mobile devices, including legacy GPS handhelds, for an interactive workshop.

8:30am
Introduction and Overview

How did mobile technologies evolve? Looking at the legacy of devices and operating systems (Windows Mobile, Blackberry, iOS and Android).

8:45am
BYOD – The Future of Field Data Collection

- What is BYOD (Bring Your Own Device)?
- Why BYOD makes sense.
- When BYOD doesn't make sense.

9:30
GPS/GNSS receivers: Basic operation & technology trends

- How does GPS work?
- How accurate is GPS?
- Different categories and capabilities of GPS receivers. Recreational vs. Professional
- GPS Advancements: What can you expect in the next couple of years

10:30 Break

10:45am
A look at BYOD hardware and software:

- iOS, Android, Windows smartphones, and tablets.
  -Screen readability, GPS accuracy, ruggedness, expandability, and flexibility.

- Software.
  -Open source (free) vs. paid. Esri, tMap, Avenza, GIS Cloud, etc.
  -Cloud vs. on-device software. To download or not to download?
- What combination works best for you?

12:00 Lunch

1:00
GPS mapping fundamentals and troubleshooting

- Why doesn't my data line up?
- Map projections and datums.
- GIS data collection structure. Points, lines and polygons.
- Field data collection forms.
- Linking photos to data.

2:30 Break

2:45
Using background map data, sources and cost.

- Imagery (aerial/satellite/UAV photos).
- Vector (roads, parcels, contours, etc.).
- Sources of free and paid data.

3:15
Wrap up and Q&A

4:00pm Adjourn

About the Instructor:

Eric Gakstatter has been involved with GPS for more than 25 years as a product manager, consultant and power user of GNSS technology. He has used GNSS receivers on six continents.

Since 2006, Eric has been the high-precision GNSS editor for GPS World magazine, writing over 100 technical articles and speaking at numerous conferences in North America, Europe, Africa and Australia. Eric's consulting firm, Discovery Management Group <www.gps-mapping.com>, is located in a suburb of Portland, Oregon, where he operates a GNSS lab to test GNSS receivers, mobile devices and GPS/GIS data collection workflows.

Do-It-Yourself Accurate Drone Mapping in Natural Resources
Centimeter-accurate data with a $1,500 drone

March 8, 2018 • Coeur d'Alene Resort, Coeur d'Alene, Idaho

Workshop Agenda

You no longer need a traditional FAA Pilot license or a $50,000 drone to start using UAVs for mapping and inspection. The FAA rules changed last summer so it's much easier to start flying now. Consumer drones are getting better, faster, less expensive and easier to fly.

The workshop will explore:

- The current FAA rules for flying drones and what it takes to obtain a drone pilot certificate.
- Discussion about different types of drones, costs, and capabilities.
- Examples of products and data you can produce with an inexpensive drone.

The workshop will discuss the basic concept of how UAVs work and how they will change over the next few years. Join a lively discussion on collecting data with drones. You can now put a drone in your pickup along with the rain gear.

Attendees are encouraged to bring their own drones for an interactive discussion.

Static display of drones will be available at the workshop.

8:30am
Introduction and Overview

How did mobile technologies evolve? Looking at the legacy of devices and operating systems (Windows Mobile, Blackberry, iOS and Android)

8:45am
Drone Rules

- How to obtain a drone pilot certificate.
- 20 hours of on-line study. Common test questions. Local test centers.
- Drone flying rules. Where can you fly and not fly?
- Flying by yourself, flying in the woods and around people.
- Hobby vs. business flying.

10:30 Break

11:00am
Drone Technology: Capabilities, cost and pros/cons

- Airframes
  - Rotorcraft, fixed-wing, hybrid.
  - Flight controller (tablet/smartphone vs. proprietary).
  - Airframe pros/cons.
  - Batteries.
  - Operating differences.

12:00 Lunch

1:00
Drone Technology (continued)

- Mission planning software
  - Third-party vs. manufacturer-supplied.
  - iOS vs. Android vs. Windows.
- Sensors
  - RGB cameras (photogrammetry, Phodar point clouds).
  - Lidar, thermal, NDVI (Normalized Difference Vegetation Index).
- Image processing software
  - Matching images effectively and accurately.
  - Using ground control points.
  - Cloud processing vs. Stand-alone processing.
  - Producing orthophotos, DEM (Digital Elevation Model)/DSM (Digital Surface Model), contours, volumes and 3D models.
  - Integrating into GIS (Esri) systems.

2:30 Break

2:45
The Possibilities. What's Possible with a $1,500 UAV?

- Orthophoto example .• Elevation contour example.
- 3D model example. • DEM/DSM example. • Volume example.

3:15
Wrap up and Q&A

4:00pm Adjourn

About the Instructor:
Eric Gakstatter has been involved with UAVs since 2012. He holds an FAA Private Pilot certificate and an FAA 333 Exemption to fly UAVs for commercial operations. He's tested UAVs from a wide variety of manufacturers using several different sensors.

He has presented at many conferences and written many articles for Geospatial Solutions on the value of using inexpensive UAVs to produce high-accuracy data.

Eric's consulting firm, Discovery Management Group, www.gps-mapping.com, is located in a suburb of Portland, Oregon, where he tests various UAVs and processes UAV imagery using specialized software and high-performance computers.

WFCA

REGISTRATION FORM

NAME _____

ORGANIZATION or AFFILIATION _____

ADDRESS _____

_____

CITY, STATE, ZIP_____

EMAIL _____ TEL _____

PLEASE LIST ANY DIETARY NEEDS: _____

REGISTRATION

I will attend: (pick 1 or 2 workshops)

GPS on March 7 ☐

UAV on March 8 ☐

One workshop:

BEFORE Feb 26, 2018 $245   _____

AFTER Feb 26, 2018 $325   _____

Two workshops and same attendee:

BEFORE Feb 26, 2018 $395   _____

AFTER Feb 26, 2018 $475   _____

PAYMENT

1. **Please make check payable to:**
   WFCA
   4033 SW Canyon Rd. • Portland OR 97221
   503-226-4562 • FAX: 503-226-2515

2. **Purchase order #** _____

3. **Charge to:**   MC   VISA   AmEx
   (please circle)

   Account # _____

   Expiration Date _____ **Security Code** _____
                         (on back of card)

4. **Register online at www.westernforestry.org**

   Questions? Give us a call or email.

   # WFCA

   Western Forestry and Conservation Association
   503-226-4562
   or melinda@westernforestry.org

WFCA

Workshops Location

Both sessions will be held at the Coeur d'Alene Resort, Coeur d'Alene, ID.

Lodging Information

For overnight accommodations, a guest room block has been held at the Resort. Reservations can be made by calling 888-965-6542. Single and double rooms in the Lake Tower are $135 plus tax. Single or double rooms in Park Tower or North Wing are $93 plus tax. The room block is being held until February 9, 2018. Reservations will continue to be accepted after this date on a space/rate available basis. Please reference Western Forestry and Conservation to receive the special rates.

Registration

The registration fee for one workshop is $245 if received by Feb. 26, 2018 or $325 after Feb. 26. The registration fee for two workshops, attended by the same person, is $395 if received by Feb. 26, 2018 or $475 after Feb 26. The registration fee includes a book of speaker materials, lunch and refreshments. Checks should be made payable to Western Forestry and Conservation Association. Purchase orders, VISA/MasterCard, and American Express are accepted. Tax id # 930-331-712. Any questions: 503-226-4562.

Registration is available at www.westernforestry.org

Cancellations

Cancellations received by Feb. 26, 2018 are subject to a 15% service charge. Cancellations received after that time will be charged the entire registration fee, but substitutions are always welcome.

Society of American Foresters CFE Credits

Attendees will be eligible for 6.0 CFE credit hours for the March 7 session and 5.5 CFE credit hours for the March 8 session through the Society of American Foresters.

Registration questions?

Call Melinda at (503) 226-4562
or melinda@westernforestry.org

Western Forestry and Conservation Association
4033 SW Canyon Rd., Portland, OR 97221
503-226-4562 • Fax: 503-226-2515

Register online at www.westernforestry.org

GPS: Using your Smartphone/Tablet for High-Precision GPS Data Collection in Forestry and Natural Resources

UAV: Do-It-Yourself Accurate Drone Mapping in Natural Resources

GPS: March 7, 2018 Coeur d'Alene

UAV: March 8, 2018 Coeur d'Alene

March 7 - 8, 2018 • Coeur d'Alene, ID