OREGON GNSS USERS GROUP
MEETING MINUTES

Date: January 19, 2024

Location: Salem Convention Center—Salem, Oregon

Board Members Present: Samantha Tanner, Chair (outgoing)
                                    Alycia Lenzen, Chair (incoming)
                                    Chase Simpson, Chair Elect (incoming)
                                    Eric Zimmerman, Treasurer
                                    Chris Munson, Secretary

Called to Order: 1:15 pm
Adjourned: 4:05 pm
Contact Hours: 2.5 hours

Business Meeting (1:15-1:25)

- Introduction by Samantha Tanner, Chair. Agenda changes have been made due to inclement weather.
- Treasurer's Report by Eric Zimmerman: $10,185 in bank account at the beginning of 2023 and $10,166 at the end of 2023.
- Elections: Chase Simpson was nominated for the position of Chair Elect for 2024 by Samantha Tanner, and Chase was elected by acclamation of those present. Alycia Lenzen, Chair Elect for 2023, moves into the position of Chair for 2024 per OGUG bylaws. No one ran for the positions of Treasurer or Secretary, and Eric Zimmerman and Chris Munson will continue in those positions for 2024.

Solar Cycle 25 and the Ionosphere, by Bob Green of Frontier Precision (1:25-2:05)

- Solar effects travel at different speeds; all affect the ionosphere. GNSS manufacturers are developing tools to deal with this.
- Solar activity occurs in cycles, every 11 years on average. This current cycle will peak around July 2025.
- Bob discussed the different frequencies used by GNSS: L1-C, L1, L2-C, L2, L5-C, L5.
- In his own experience and testing, Bob finds Glonass to be "noisy", and turns it off for control work, and only turns it back on in challenging environments.
- Bob gave an overview of the different GNSS constellations: GPS, Glonass, Galileo and Beidou.
- Online free mission planning tools: gnssmissionplanning.com and gnssplanning.com (Trimble).
    - Has ionosphere predictions.
    - Also has number of satellites visible, PDOP, etc.
- Ionospheric disturbance can cause "noisy" positioning, less satellite availability and longer time to fix.
- Trimble Ionoguard helps with mitigation of ionospheric disturbances.
    - Needs firmware 6.23 or later/ProPoint.

- o Bob showed an example from Peru on results of using Ionoguard versus without.
- NOAA space weather website is available to the public.
- Bob showed the ionospheric disruption for the X5 flare on 12/31/2023.
- In general discussion, ASPRS standards require double occupations on control points. A question was asked if a study cold be down using subsets of the same occupation to achieve the same redundancy.

Central Oregon Coordinate System, by Kevin Samuel of the Deschutes County Surveyor's Office (2:05-2:25)

- Kevin discussed his background.
- Bill Kauffman of Deschutes County developed the Central Oregon Coordinate Systems (COCS) between 1988-1991.
- COCS is a transverse Mercator conformal map projection. The goal was to best fit 80% of the area by population of Deschutes County with an accuracy of 1:50,000 or better.
- Kevin showed a map prepared by Michael Dennis showing distortion of COCS over Central Oregon.
- Original survey for developing COCS observed 394 public land corners.
- Shelby Griggs developed the Deschutes09 transformation, bringing the newer NAD83(CORS96) coordinates back to the original NAD83(1991) coordinates used with COCS.
  - o 68 additional public land corners were surveyed.
  - o 14 transformation points were used.
- The Deschutes13 transformation brought current NAD83(2011) coordinates back to original COCS coordinates.
  - o 68 additional public land corners were surveyed.
  - o The same 14 transformation points from Deschutes09 were used.
- Around 500 public land corners have COCS coordinates in Deschutes County.
- All Deschutes County and City of Bend projects are on COCS.
- The Deschutes County Surveyor has observed consistent coordinates/bearings/distances between different firms, software, equipment and plats.
- The County Surveyor is currently taking 4 hours of static observations on the 14 transformation points and sharing with NGS.
- Future work: Deschutes25 (?) transformation to align with NATRF2022 whenever it goes into effect.
- In response to a question, Kevin stated that there is no requirement to use COCS when filing a survey in Deschutes County.
- Another question was asked if variations were noted in vertical observations between transformations? Kevin said no, elevations are consistent, but not exact. There was no geoid developed when COCS was implemented, it is based on NGS vertical control points (NGVD29).

Break (2:25-2:50)

Mapping Sidewalk Improvement Needs, by Bill Hines of AKS Engineering & Forestry (2:50-3:15)

- Bryan Gregor (Survey Lead) of AKS joined Bill in his presentation.
- City of Cornelius sidewalk inventory.
- Used Field Maps (ESRI) with Android software and Trimble R10 Model 1 receivers.

- Uploaded data to the cloud while surveying in real time.
- Mapped defects in sidewalks, presence or absence of ADA ramps.
- Big drain on phone and tablet batteries. Field crews would swap devices while another was charging.
- Photos were taken of the defects surveyed in the field and attached to each point in the geodatabase.

Geospatial Center for the Arctic and Pacific, by Chase Simpson of Oregon State University (3:15-3:30)

- Geospatial Center for the Arctic and Pacific (GCAP)
  - 5-year grant from National Geodetic Survey (NGS).
  - Based at Oregon State University (OSU), with partners.
- Eight tasks:
  - Task 1: Precise point position (PPP) within the National Spatial Reference System (NSRS). Develop and test real time PPP.
  - Task 2: Improve hydrodynamic modelling of Columbia and Klamath Rivers.
  - Task 3: New datums in geospatial applications.
  - Task 4: Develop and evaluate OPUS (Online Positioning User Service)
  - Task 5: Develop a national RTN (real time network) alignment service.
  - Task 6: Multi-GNSS. M-PAGES software uses more than GPS.
  - Tasks 7-8: Education & outreach.
- OSU Geomatics workshops are starting again.
  - Oregon Survey Law Workshop #1 is the first one, held February 22-23.

Oregon Real time GNSS Network (ORGN) Changes in 2023, by Eric Zimmerman of the Oregon Department of Transportation (3:30-3:55)

- Installed domes on 6 ORGN stations.
- 7 stations upgraded to full GNSS (GPS, Glonass and Galileo).
- Several more ODOT and PBO stations slated for full GNSS upgrade.
- All stations and information can be found on the ODOT website (ODOT operated stations only; PBO has their own station pages).
- 3 ports for correctors:
  - 9879: Single-base correctors.
  - 9881: GPS-only network & single-base correctors.
  - 9882: Network GG (GPS+Glonass) and GNSS (GPS+Glonass+Galileo) correctors.
- Eric presented a list of all currently available correctors and descriptions.
- Some stations have Beidou and QZSS for single-base correctors. ODOT believes that if your equipment is capable, you should be able to use them if Spider is not limiting.
- A question was asked if PPP will be supplanting the ORGN anytime soon. Chase Simpson does not believe so. PPP is good at absolute accuracy, but as of now is not as good with relative accuracies (which RTN's are good at).

Business Meeting—continued (3:55-4:05)

- Closing remarks by Samantha Tanner.
- Discussion of location, date and time of meetings.

Adjourned at 4:05 pm

Minutes APPROVED by board majority (Lenzen 2/2/2024, Simpson 2/2/2024, Zimmerman 2/8/2024, Munson 2/2/2024)

Respectfully submitted,

Chris Munson, Secretary
Oregon GNSS Users Group