OREGON GNSS USERS GROUP (OGUG)
MEETING MINUTES

Date: January 17, 2025

Location: Salem Convention Center—Salem, Oregon

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

Called to Order: 1:00 pm
Adjourned: 4:00 pm
Contact Hours: 3.0 hours

Business Meeting (1:00-1:05)

- Introduction by Alycia Lenzen, Chair.
- Treasurer's Report by Eric Zimmerman: $9,800 in bank account at the beginning of 2024 and $8,848 at the end of 2024. $1,573 was collected in dues and approximately $2,500 was expended for the summer 2024 meeting at Chemeketa-Eola.
- Elections: Josh Kowalski was nominated for the position of Chair Elect for 2025, Eric Zimmerman for Treasurer and Chris Munson for Secretary; all were elected by acclamation of those present. Chase Simpson, Chair Elect for 2024, moves into the position of Chair for 2025 per OGUG bylaws.

Distortion? What Distortion? Creating Low Distortion Projections to Render Distortion Negligible, by Robert Keene, Oregon Institute of Technology (1:05-1:45)

- Rob works in forestry, with high gradient sites, lots of elevation change and high error.
- Can take a projection surface, rotate it, raise/lower it, move it horizontally, etc. to make projection surface follow general topography.
- Oregon Coordinate Reference System (OCRS) is generally optimized for populated areas that tend to be more level.
- Can use an OCRS zone that maybe is not the official boundary of the zone, but might fit better for your project area.
- Distortion is not "error"; it can be mathematically accounted for.
- Rob does pre-analysis with the Oregon Department of Transportation (ODOT) Geometronics On-line Toolkit
    - Makes multiple point probes through project area; the toolkit shows distortion in different projections.
    - Exports to Excel, does absolute value of distortions to see what projection fits best.
    - Exports latitudes & longitudes and uses them in National Map Bulk Elevation Creator.
- He then runs it through his custom software which outputs an Excel report with a custom low distortion projection (LDP) for the project.

- o Rob developed the software himself using the OCRS process with the National Geodetci Survey (NGS) manual. He is hoping to publish it for public use when finalized—it is now still considered an alpha product.
- Q&A period.

3D Printing of Topographic Models, by Jon Aschenbach (1:45-2:15)

- What is 3D printing?
- History of 3D printing—first printer invented in 1987.
- Materials used: Plastic, metal, concrete.
- Size of object that can be printed depends on the printer.
    - o Printer can be bought for as low as $232 on Amazon—that printer can print an object up to 9" x 9" x 9".
- Primary file format is .STL; others are also available.
    - o Millions of .STL files are available online for free.
- Need to feed .STL file into "slicer" program, which turns it into printer instructions.
- Several software programs are available to make 3D topo models.
- Jon gave an overview of Terrain2STL, Touch Terrain and QGIS software.
- One can make their own 3D models using widely available software, some of which are free.
- Plusses and minuses of 3D printing.

Break (2:15-2:30)

Precise Point Positioning (PPP) Performance Under Geomagnetic Storm Conditions, by Brian Weaver, Oregon State University (2:50-3:25)

- Overview of GNSS positioning methods. This presentation focused on dual frequency PPP, which gives accuracy less than a decimeter with a convergence time of 30-60 minutes.
- Overview of GPS signals, evolution and current status.
- GPS is actually measuring partial phase cycles, then adding a full integer number of carrier cycles. Cycle slip occurs when the number of cycles is miscounted.
    - o Using dual frequencies can detect and repair cycle slips.
- Currently at the peak of the current solar cycle.
    - o National Oceanic and Atmospheric Administration (NOAA) offers space weather prediction services.
- Static PPP is not affected by extreme geomagnetic storms. Kinematic PPP is affected.
- Galileo is less prone to cycle slips than GPS—theory is that newer, stronger E1 and E5 signals work better through storms than legacy L1/L2 signals.
- Brian suggests possibly not engaging in GNSS field work at storm level KP7 or above, but that there are different types of storms, and you can get degraded results at lower storms. Relatively long initializations can be a sign of trouble.

Oregon Real-time GNSS Network (ORGN) Changes in 2024, by Randy Oberg & Eric Zimmerman, Oregon Department of Transportation (3:25-4:00)

- Several stations have been upgraded to full GNSS capability. Equipment was provided by Central Washington University.
- Astoria station replaced due to construction at Tongue Point.
- ORGN Rinex data now provided in 1-second intervals.
- Only a few stations are left that do not have full GNSS capabilities.
- Grass Valley and Madras stations are currently down due to telco and power issues.
- ODOT station pages are online for reference.
- Overview of ORGN ports. May get rid of Port 9881 (GPS-only).
- Plan for NATRF2022 is to have two different ports, one for the new realization and one for the current NAD83 realization.
- ODOT products list. Some stations can be utilized as a single base with MSM4 correctors to get Beidou & QZSS corrections if both the base station and the receiver are capable.
- ODOT is ready for the NATRF2022 transition in 2025 but not sure if NGS will be.
- A new ORGN station is to be installed in Merrill.
- Moving station "DOWL" in Eugene to a different location.
- Replacing FTP server with something else, but no further details at this time.
- Q&A and general discussion.

Adjourned at 4:00 pm

Minutes APPROVED by board majority (Kowalski 9/30/2025, Simpson 10/2/2025, Zimmerman 9/11/2025, Munson 9/11/2025)

Respectfully submitted,

Chris Munson, Secretary
Oregon GNSS Users Group