

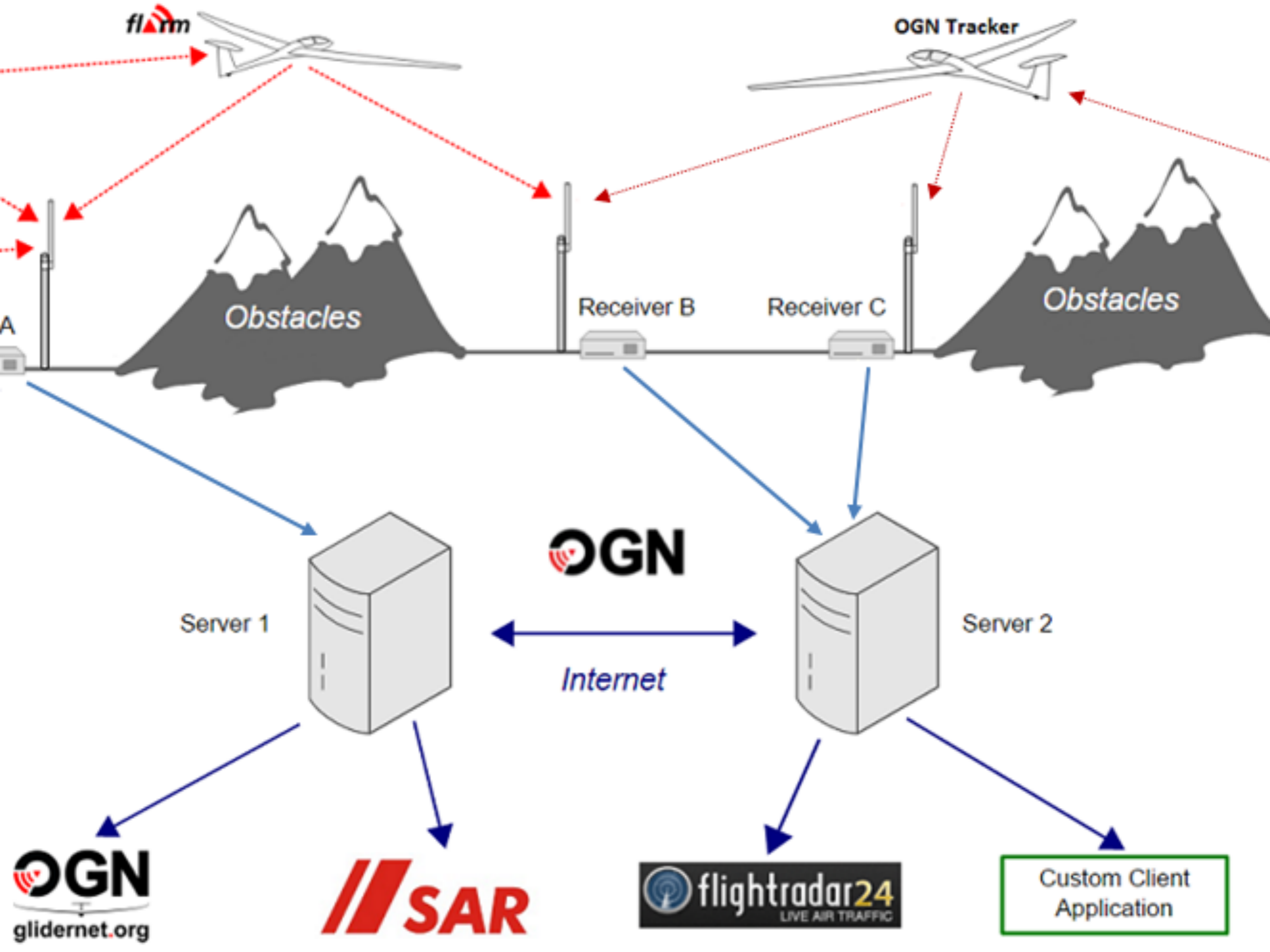
Open Glider Network

Philip G. Lee

Motivation



What is it?



Kinda Like ADS-B

- Ground FLARM receivers pick up gliders
- Data is sent to OGN servers
- Client applications get fed glider position data live
- Can do things like show a live map of gliders



...But Not

- Doesn't require a new xpdr
- OGN data is free to use
- OGN data is live (within 2 seconds of realtime)
- OGN can also integrate other sources of data like Spot/ Inreach trackers
- Open-source APIs to access the data



The Receiver

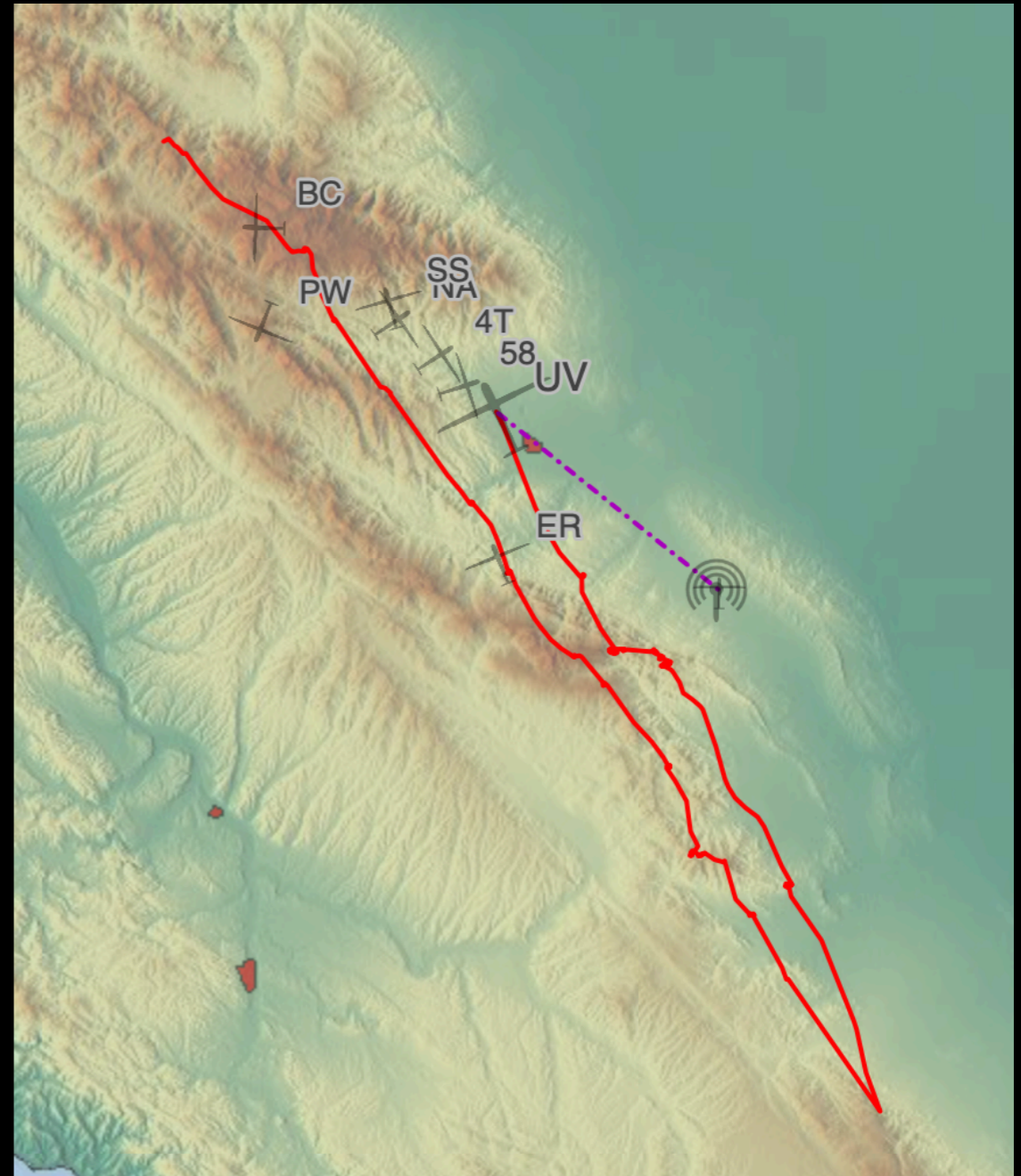
- Very simple
- 915 MHz antenna
- Preamp
- Software-defined radio
- Raspberry Pi (computer)
- Cables



What Can it Do?

Live Tracking

- Websites like glidertracker.org display positions on a map
- No need to wait 10-15 minutes to know if everyone is OK



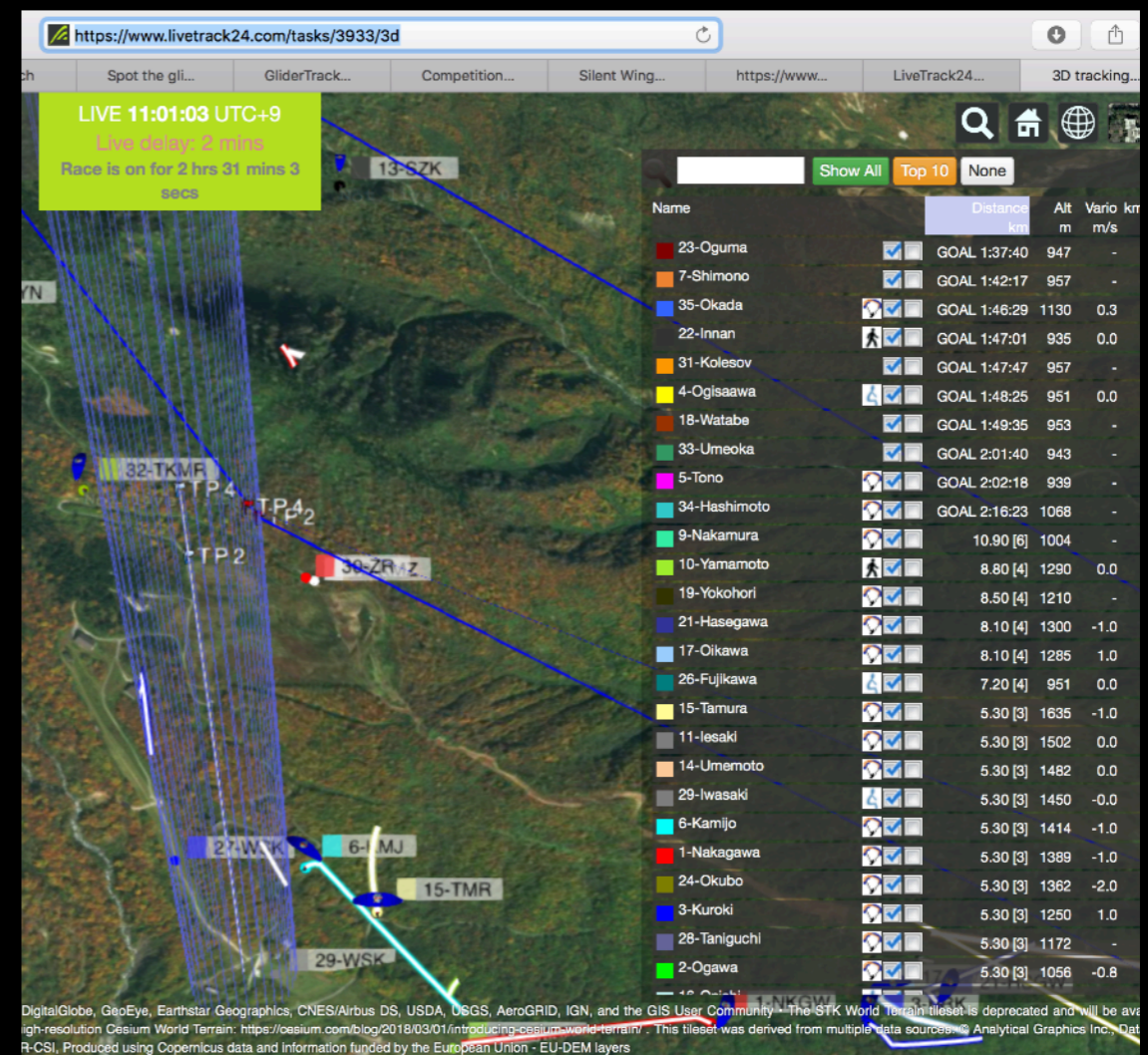
In-Air Live Tracking

- Oudie displays OGN targets
- XCSoar 7.0.0 will display OGN targets alongside normal FLARM targets
- Extends your “radar” when you have cell coverage



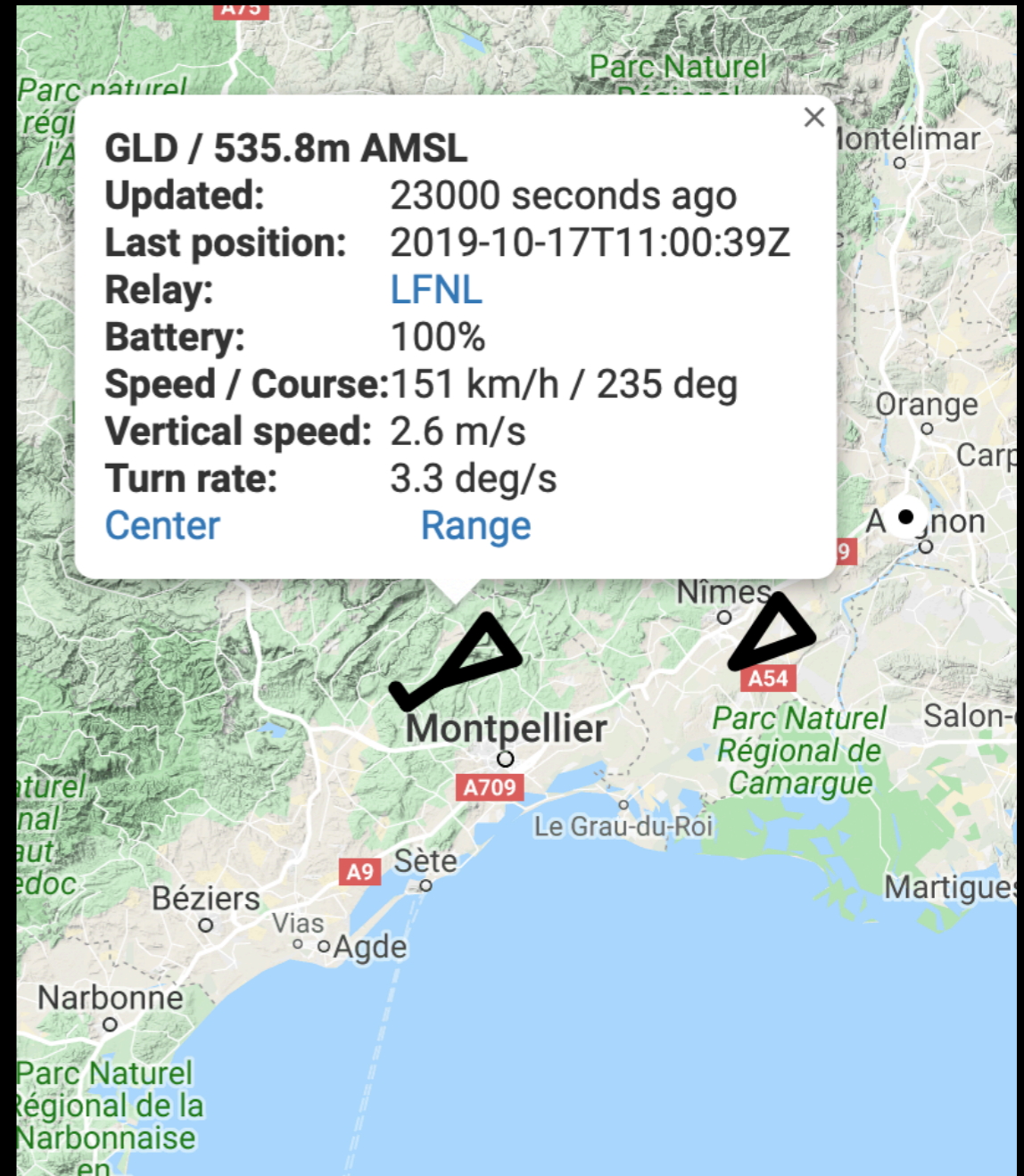
Live Contests

- Websites like livetrack24 allow live contests
- Enter list of gliders competing
- Enter task
- Get a 3D web view and second-by-second scores



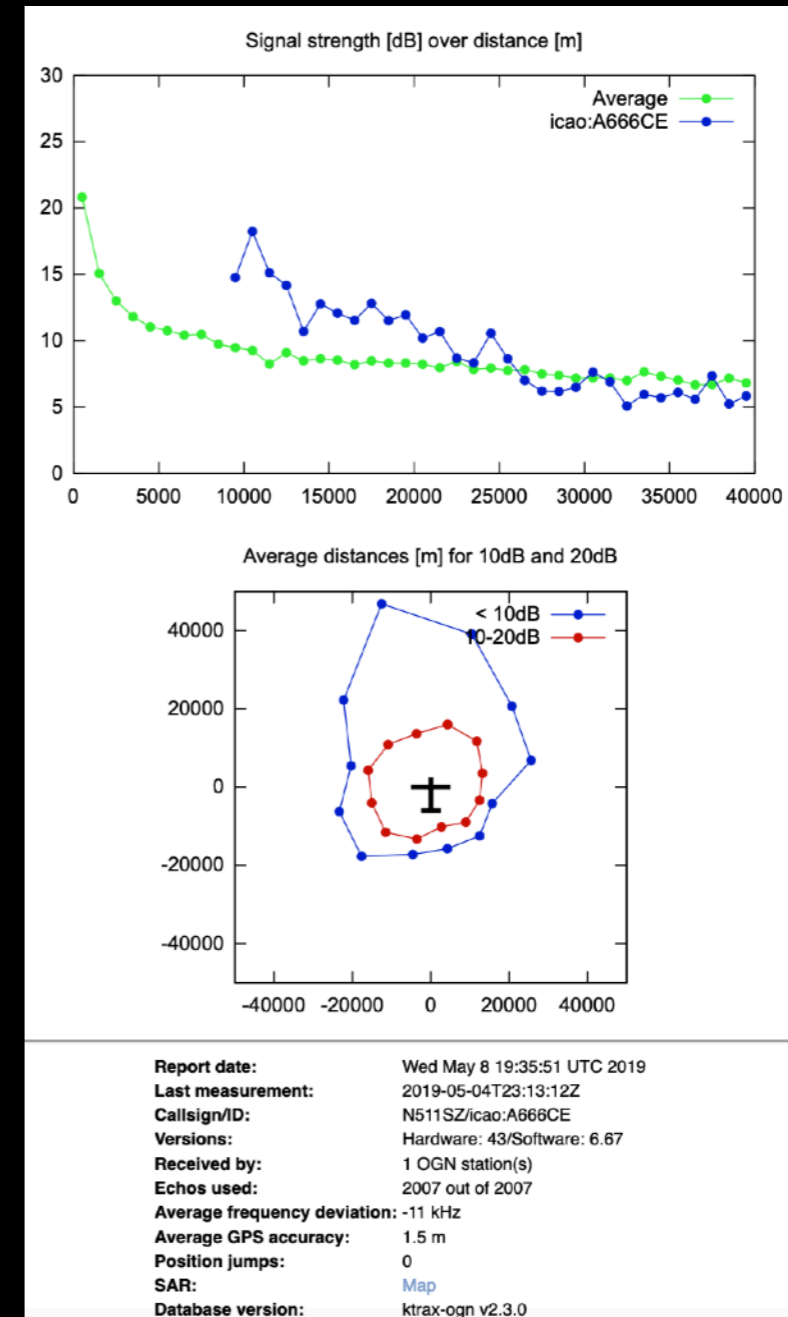
Search and Rescue

- Last-known position and direction of every glider is kept long-term for SAR purposes
- Of course, you can use the live trackers for gliders lost in the last 24 hours
- The live data may offer precious insight into accidents that we otherwise will not have



FLARM Range Analysis

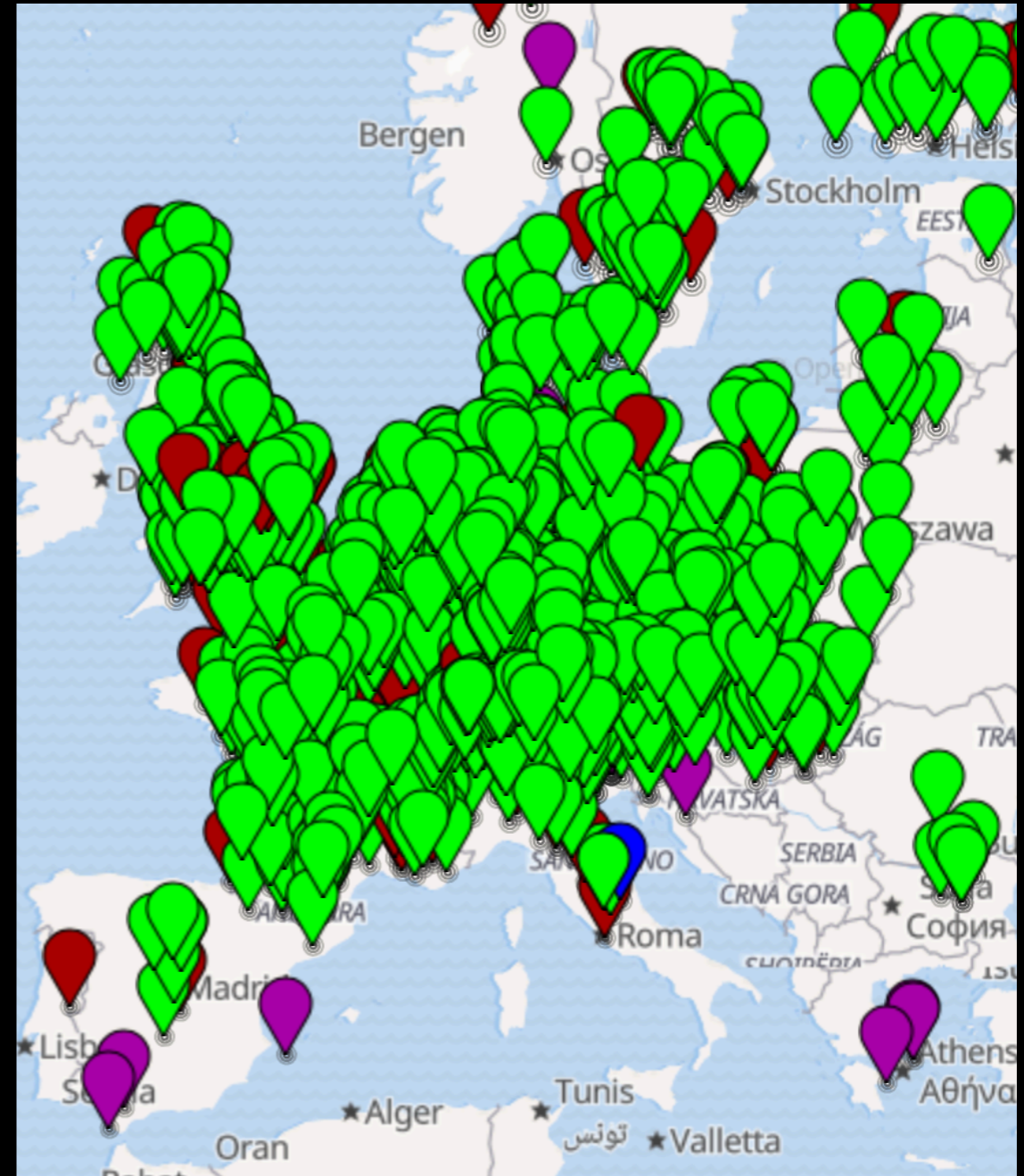
- ktrax.kisstech.ch collects statistics on signal strength per glider
- It is easy to spot gliders with poor installations
- We found Peter Deane's glider had the wrong antenna installed
- No extra effort required to get the analysis



Common Questions

Who is Using OGN?

- Europe...heavily
- Chile
- Argentina
- South Africa
- New Zealand
- Australia
- Canada
- Pretty much any country on metric units



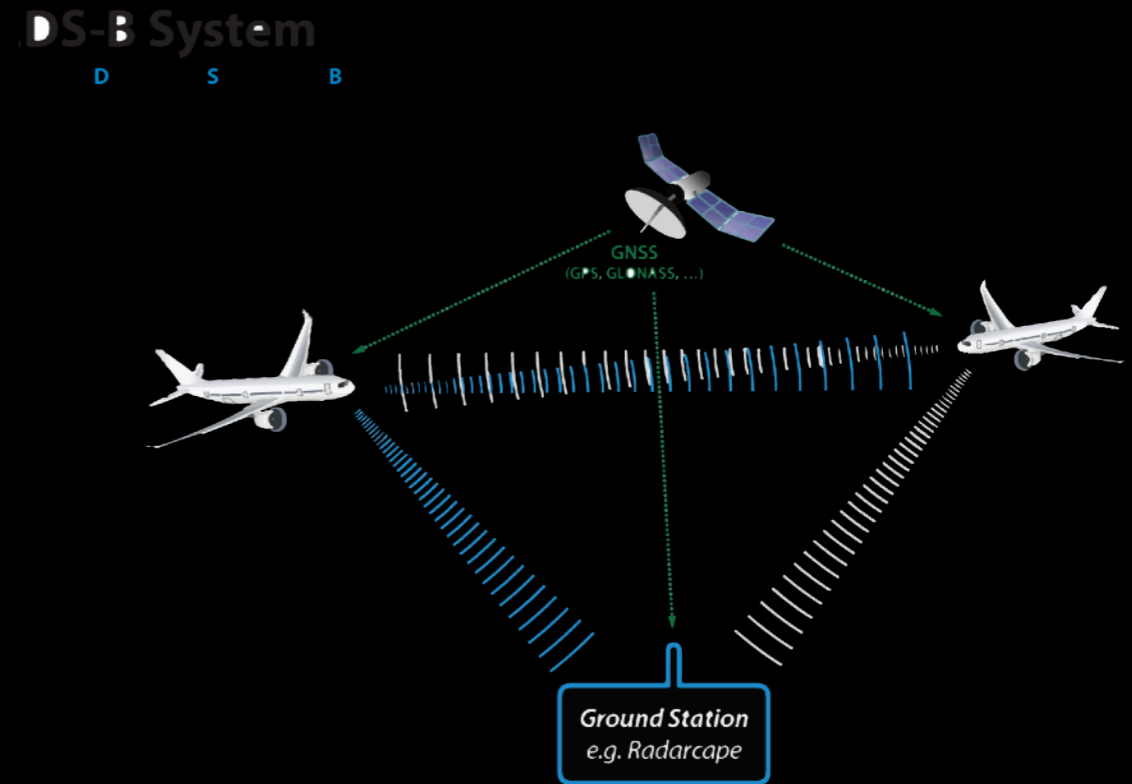
What is the Range?

- About 80 miles
 - 120 miles max (Williams to Susanville)
- Antenna provides 8x (9 dB) gain
- Limited mostly by line-of-sight



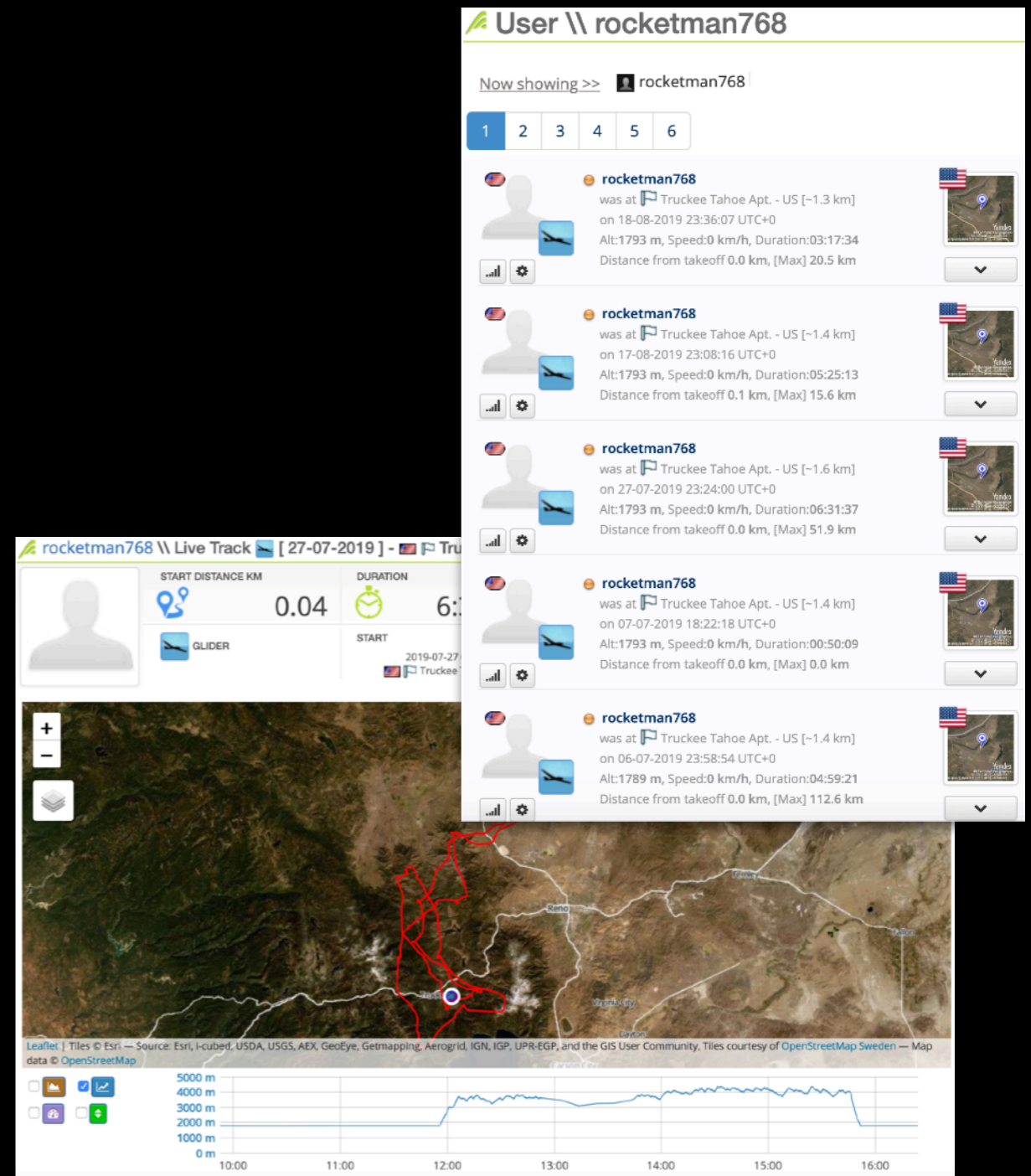
What about ADS-B?

- OGN allows ADSB data to be forwarded to the network
- ADSB data is not free to access (except for research)
- FLARM will continue to be the de-facto collision avoidance for gliders
- Can always update the receiver software as necessary



Where is the Flight Data Stored?

- For privacy, full tracks are not stored publicly for more than 48 hours
- However, livetrack24 will automatically save your own tracks if you register



Is OGN Just for FLARM?

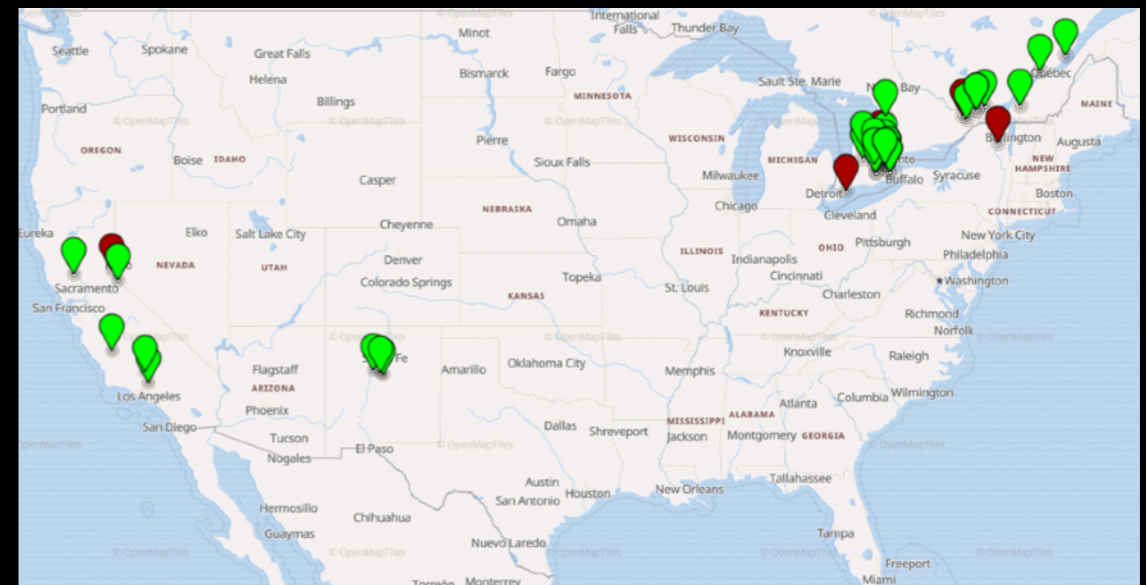
- No!
- OGN is just an internet relay for position reports of various types
- It can currently carry:
 - FLARM
 - ADS-B
 - Inreach
 - Spot
 - Naviter
 - Skylines
- But support for these is not 100% yet



Region 11 Status

Growth

- Prior to this year, only 3 receivers in the US near Moriarty
- PASCO provided funding for R11 coverage
- We have tripled the receivers this year and have increased area covered by about 900%

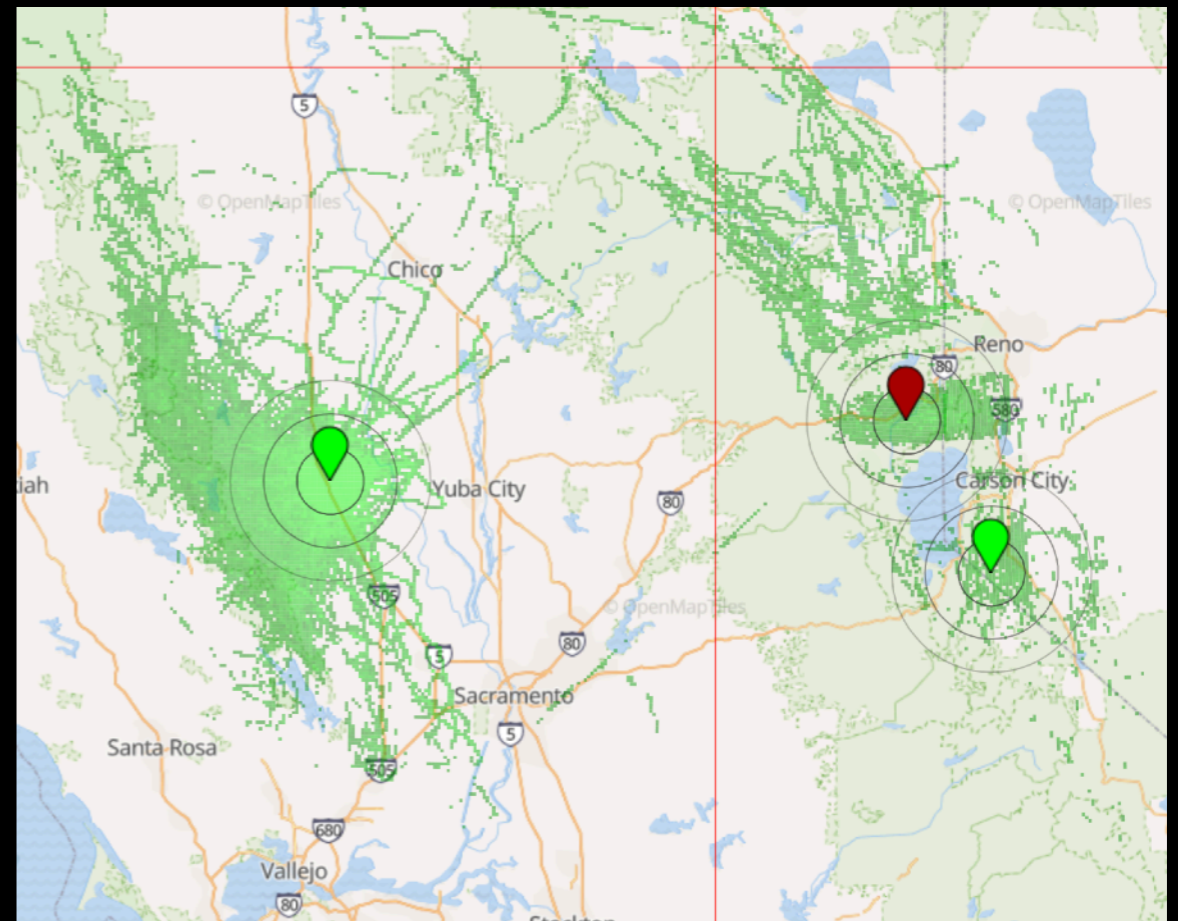
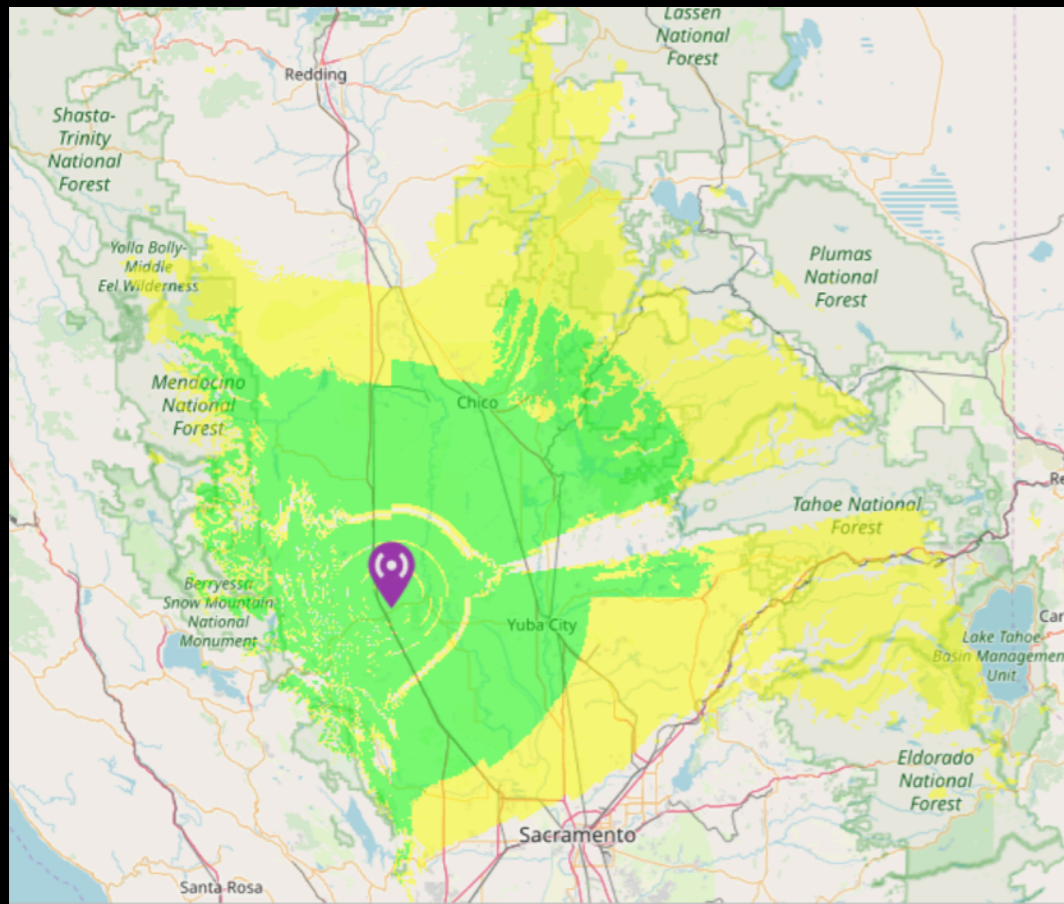


Williams

- First receiver installed by Noelle Mayes last year
- Huge thanks to her and the Mayes' for believing it could work

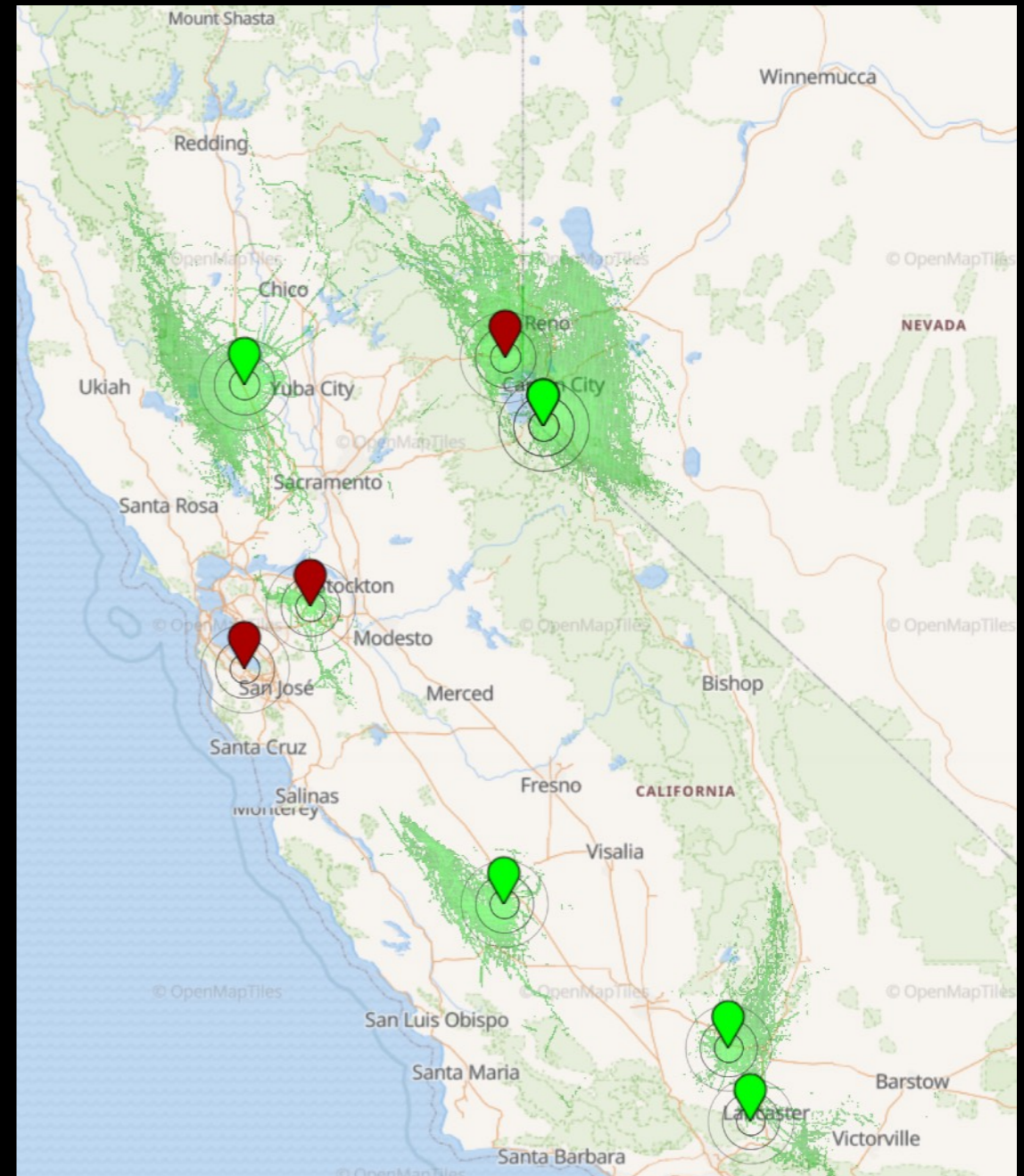


Williams Coverage



CA/NV Total Coverage

- Truckee: Mike Mayo
- Minden: Jennifer Ware / Jim Herd
- Avenal: CCSC
- Tehachapi: Jim Staniforth
- Palmdale: Britton Bluedorn



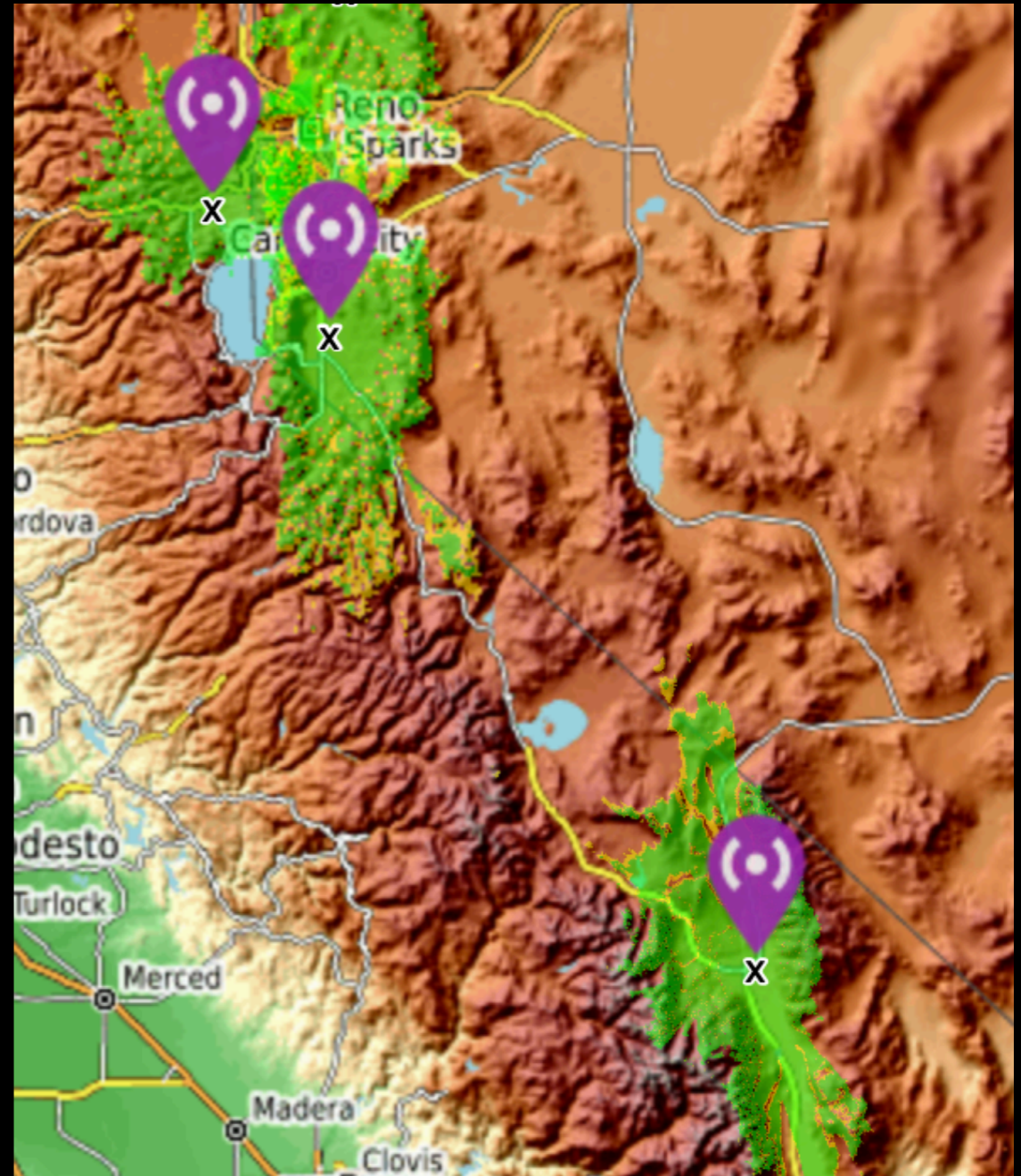
Planned: Hollister

- One is built and ready to be installed at Hollister
- I need a volunteer to install it
- Could also be nearby at someone's home
- Would complete coverage of the "milk run" to Black Mt.



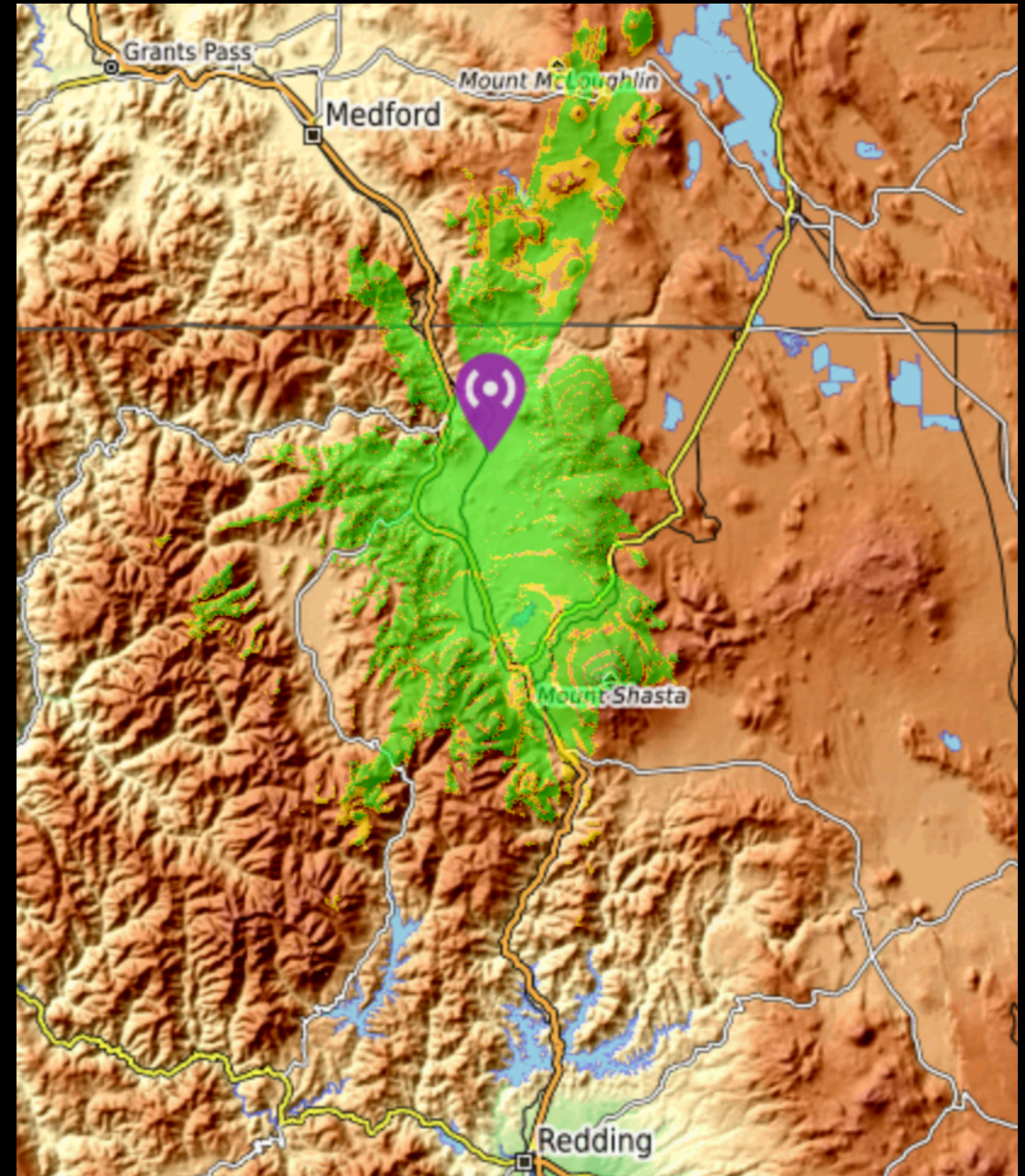
Planned: Bishop

- I have built one for Bishop
- Need a volunteer to install it
- Would span the gap from the Tehachapi receiver up to Mono Lake



Planned: Siskiyou

- Would give coverage near Oregon border
- Noelle Mayes offered to install this one
- I'm just lazy and need to drive the receiver to Williams



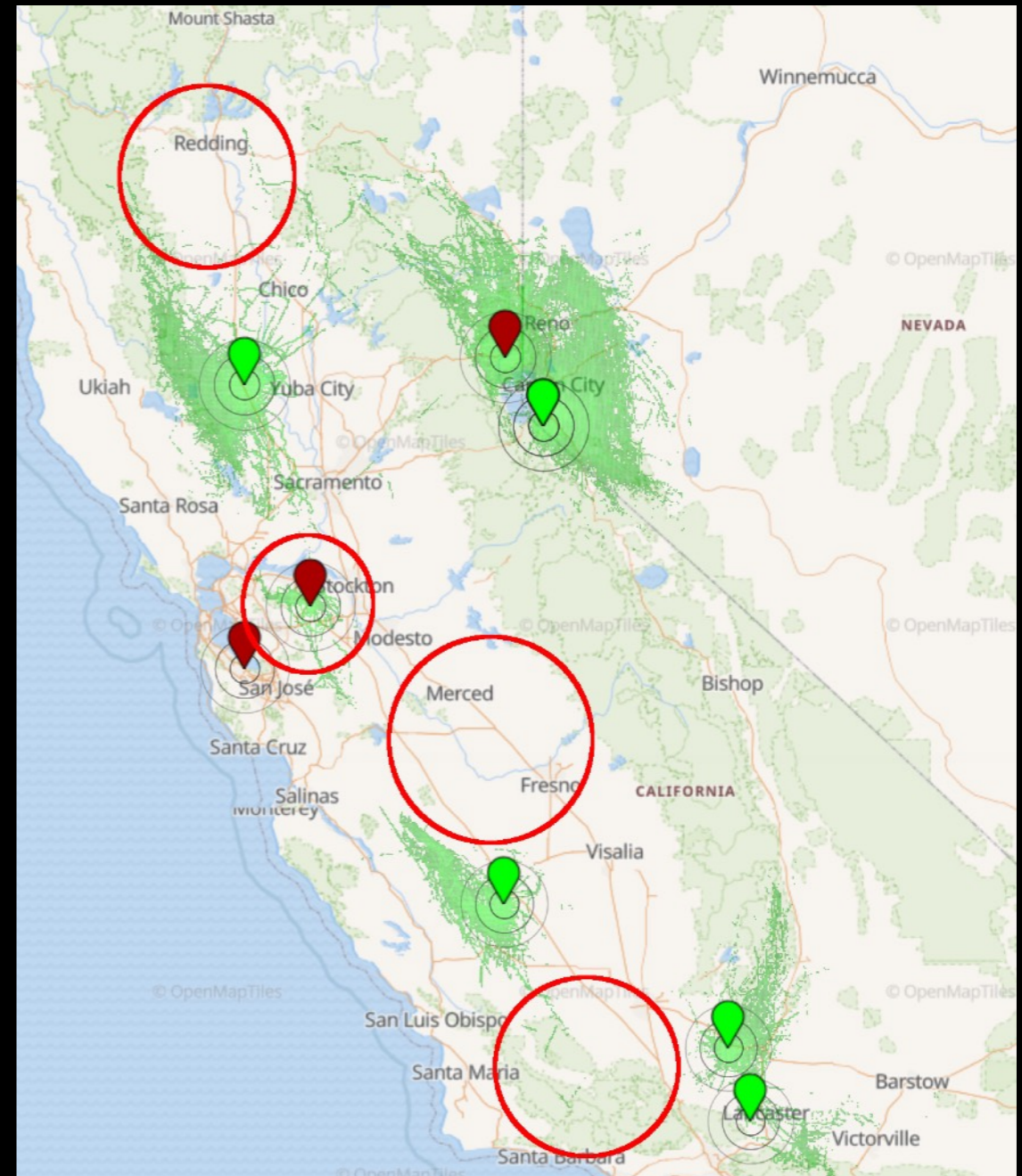
Air Sailing

- I sent one this year to cover that valley
- Stopped getting email responses
- Need somebody to go up there and find/install it



Wish List

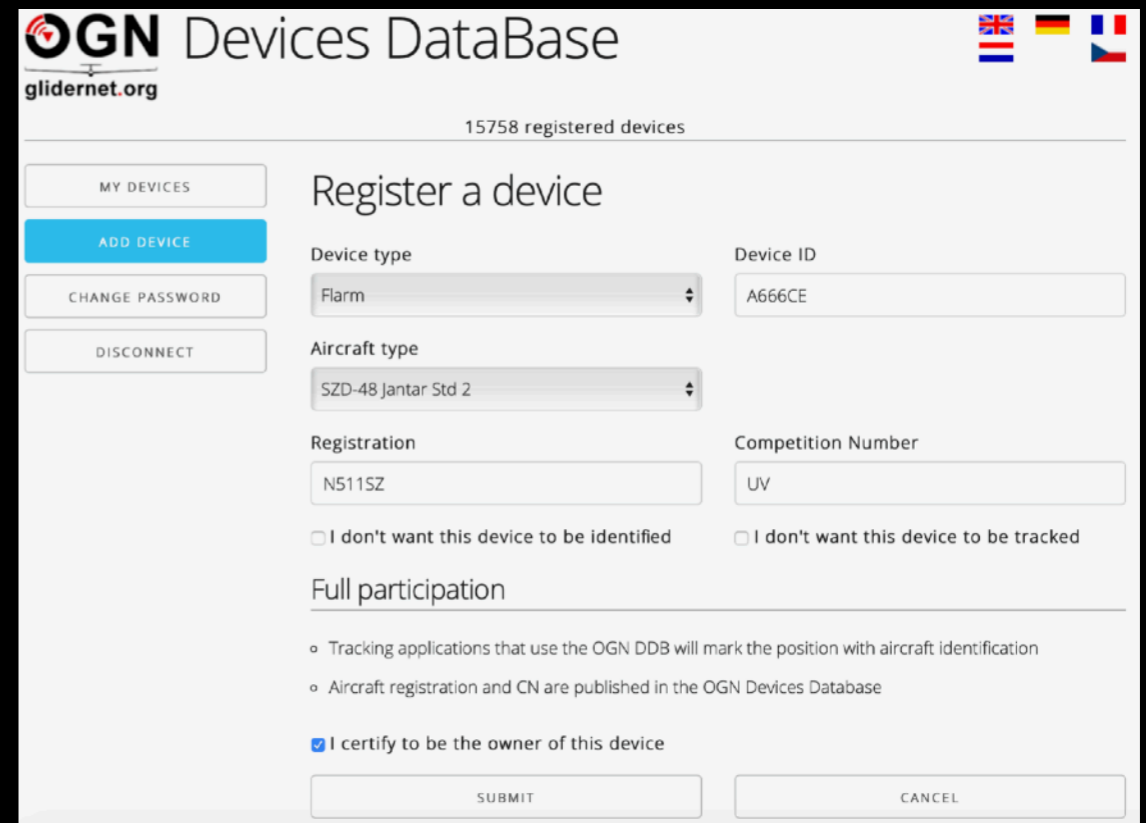
- We want to see coverage in these areas
- Need volunteers who could build/install/host here
- PASCO has enough funds remaining to build these
- This would cover nearly all of us the vast majority of the time



I Need Your Help

Get Involved: Register

- ddb.glidernet.org
- If you already have FLARM, it takes 30 seconds to register it with the OGN database
- Works like flarmnet, just more generic
- Can also add ADSB id and other ids that identify your aircraft



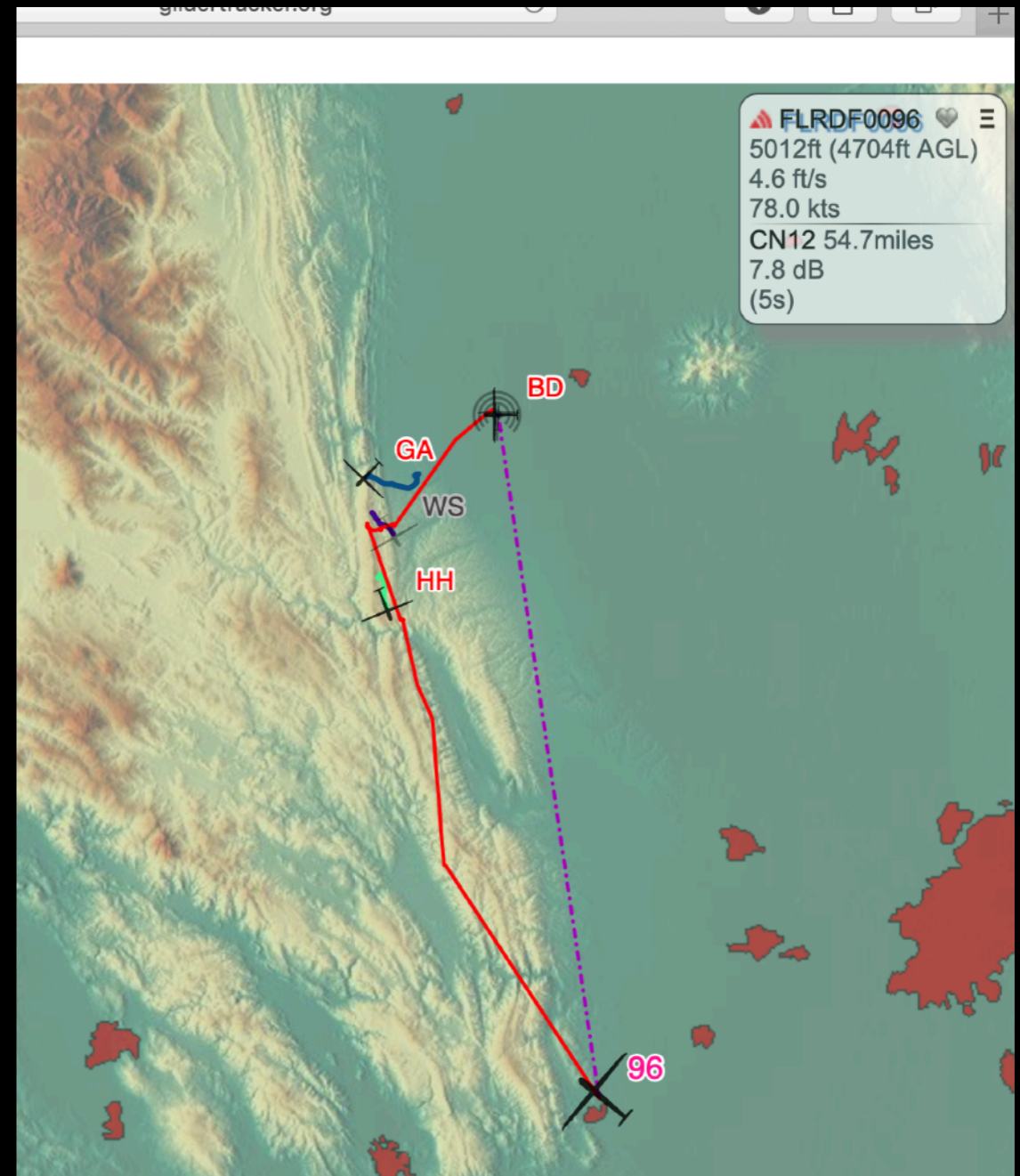
The screenshot shows the 'Register a device' form on the OGN Devices DataBase website. The page header includes the OGN logo, the text 'glidernet.org', and the title 'Devices DataBase' with flags for Norway, Germany, and France. Below the header, it states '15758 registered devices'. On the left side, there is a navigation menu with buttons for 'MY DEVICES', 'ADD DEVICE' (highlighted in blue), 'CHANGE PASSWORD', and 'DISCONNECT'. The main form area contains the following fields and options:

- Device type:** A dropdown menu with 'Flarm' selected.
- Device ID:** A text input field containing 'A666CE'.
- Aircraft type:** A dropdown menu with 'SZD-48 Jantar Std 2' selected.
- Registration:** A text input field containing 'N511SZ'.
- Competition Number:** A text input field containing 'UV'.
- I don't want this device to be identified
- I don't want this device to be tracked
- Full participation:** A section with two bullet points:
 - Tracking applications that use the OGN DDB will mark the position with aircraft identification
 - Aircraft registration and CN are published in the OGN Devices Database
- I certify to be the owner of this device

At the bottom of the form, there are two buttons: 'SUBMIT' and 'CANCEL'.

Get Involved: Display glidertracker at your gliderport

- Put up a computer monitor or old TV
- Hook it up to a chromecast or something and open glidertracker.org
- More eyes on the situation is more fun and also safer for everyone



Get Involved: Set up A Live Contest

Start gate open

SGPrace			
Altitude ASL			
1	QX	Roman M	1930 m
2	WM	Sebastian N	1848 m
3	I	Mario K	1830 m
4	YO	Jon G	1827 m
5	3V	Tilo H	1825 m
6	WG	Werner A	1818 m
7	DID	Didier H	1817 m
8	4S	Fridolin H	1810 m
9	AR	Gintas Z	1784 m
10	GT	Thomas G	1757 m
11	P	Sebastian K	1745 m
12	Y	Giorgio G	1739 m
13	EJ	Boštjan P	1728 m
14	ZZ	Tomas R	1720 m
15	AT	Rene V	1704 m
16	PL	Łukasz W	1672 m
17	OB	Mark T	1298 m

Call Sign	Name	Altitude (m)	Groundspeed (km/h)	Vario (m/s)	Flown (km)	Dist Left (km)	Avg Speed (km/h)
AT	Rene V	1704	165	-0.2	16.2	270.6	134.1
EJ	Boštjan P	1728	154	-0.4	15.3	271.3	128.5

Get Involved: Build a Receiver

- pglee@pm.me
- wiki.glidernet.org
- I can give you a parts list
- About \$100-\$200 depending on how much you want to DIY
- PASC0 can cover the cost if we coordinate and approve
- Open-source stuff with vibrant community and documentation. Don't be scared to try.



Get Involved: Write Software

- openglidernetnetwork@googlegroups.com
- <https://github.com/glidernet>
- Easy-to-use Python API to drink from the firehose of glider positions
- Need some more simple and modern tools that make the data useful

Questions?