Open Glider Network (OGN)

John DeRosa
Presented at ChicagoLand Glider Council – January 20, 2019
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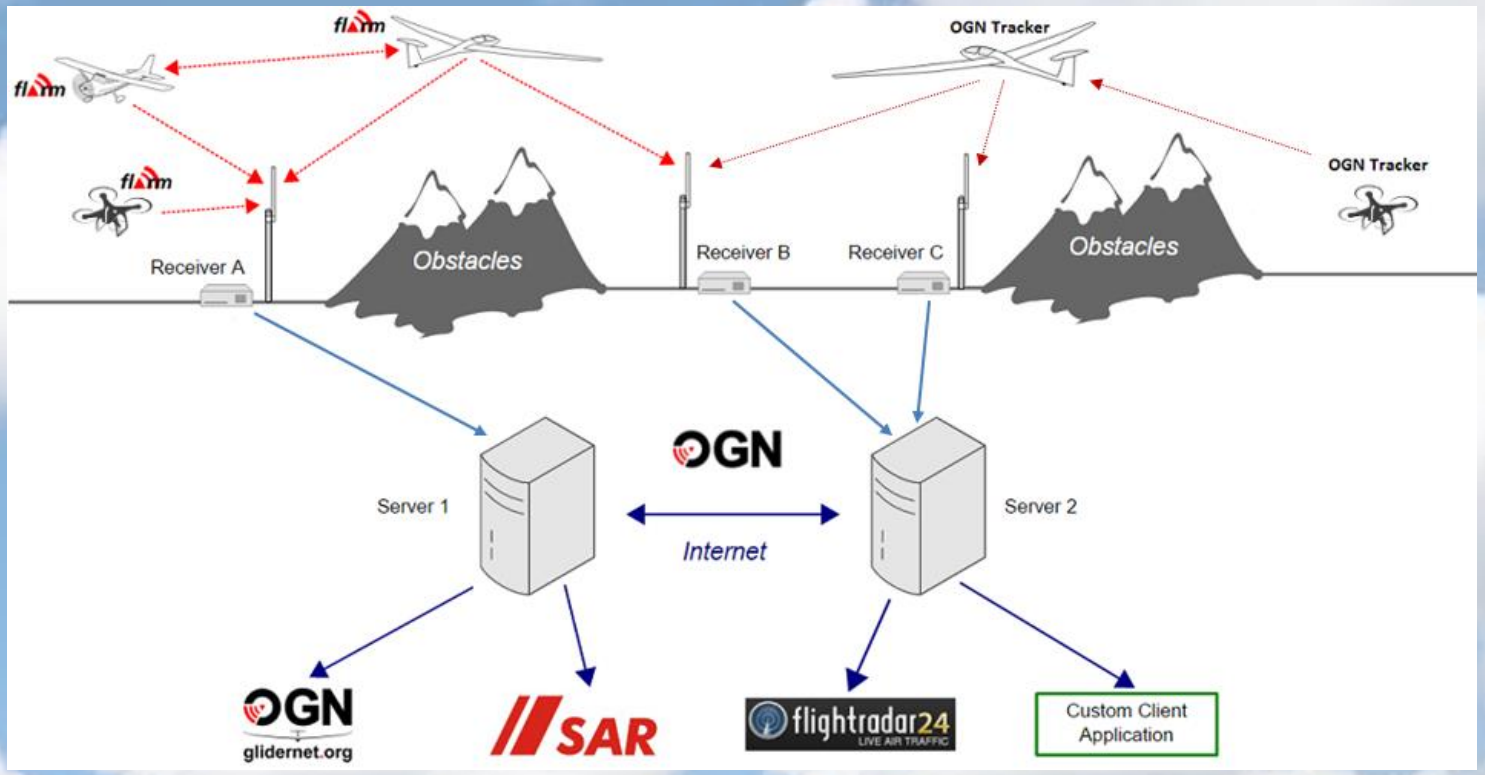

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Version: January 20, 2020

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What is the Open Glider Network?

From http://glidernet.org

The objective of the Open Glider Network is to create and maintain a unified tracking platform for gliders, drones and other aircraft. Focused on tracking aircraft equipped with FLARM and OGN trackers, OGN is also open for integration of other flying objects tracking data sources.

You can see beacons from FLARM PilotAware, SPOT, Garmin InReach, Skymaster, FANET (paragliders) and Spidertracks circulating through our network. The tracking data is freely available.

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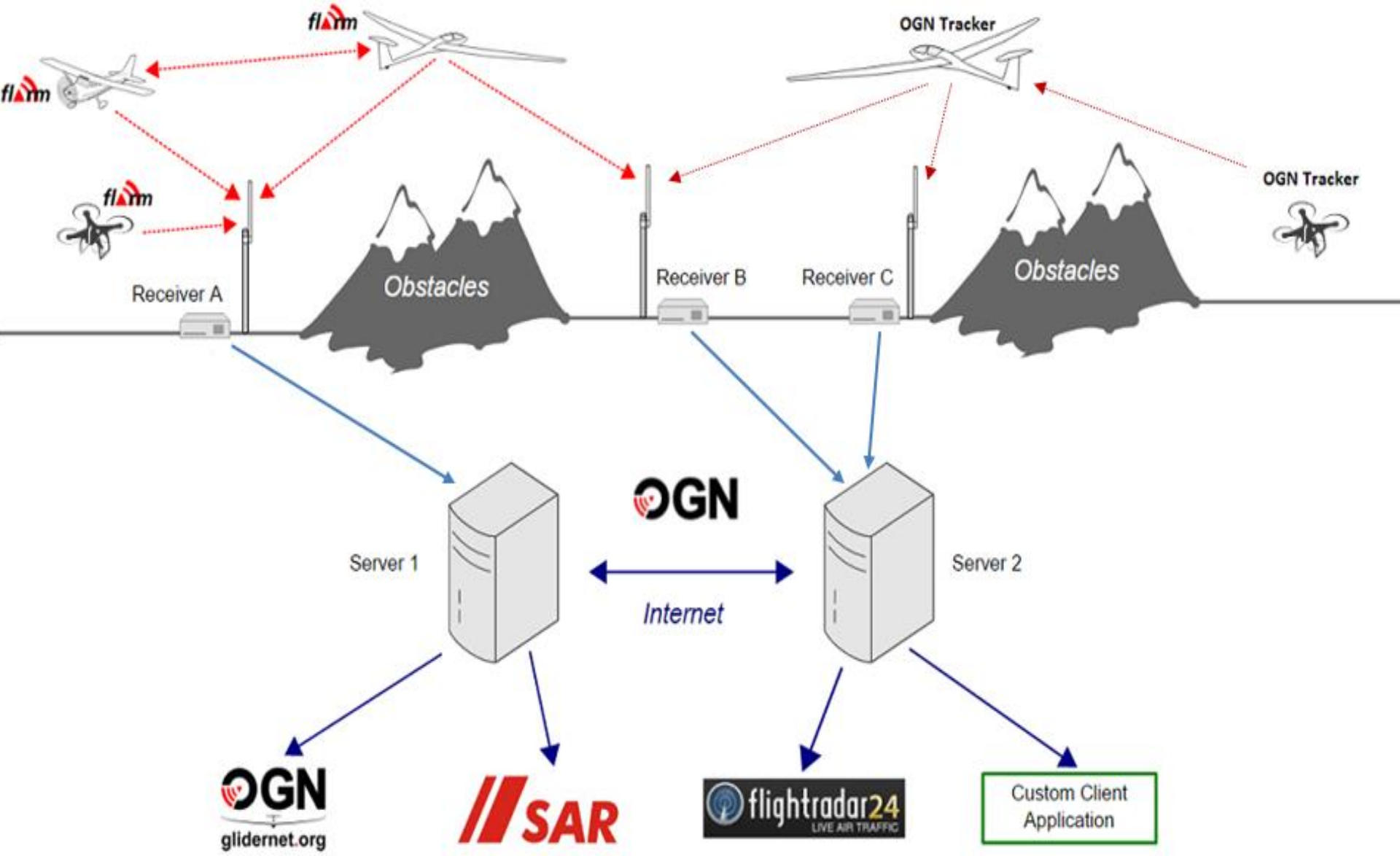
Open Glider Network



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Why Have OGN?

(From Region 12 Report)

Creation of this OGN network will enhance the visibility and safety of soaring in Region 11. OGN receiver stations provide not only real time position reports and flight tracks of FLARM equipped gliders to computers and mobile devices with internet connections, but also provide real time data that could support search and retrieve/rescue operations.

If you are not familiar with the OGN network log into glidertracker.org and you will see all aircraft that have registered and transmitting FLARM devices. You will note heavy application of this technology in Europe and PASCO is actively supporting its introduction in our region.

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Why Have OGN?

(From http://glidernet.org)

- Today FLARM is mainly utilized in gliders, however other small aircraft (planes, helicopters, deltas, para-gliders or even drones) are more and more often equipped with it, especially if operating in the areas intensively used by gliders, such as the Alps.
- Contrary to FLARM, OGN proposes an open transmission protocol and has an ambition to influence a standard for the tracking and surveillance.
- The OGN is a community project. It is based on software, hardware, receivers and other contributions from individuals and the open source community.

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Why Have OGN?
(From http://glidernet.org)

- APRS linux based servers that receive and forward data. Data includes device location information, status of receivers, status of tracking devices (OGN trackers) and the status of the OGN APRS network itself.
- A device database (aircraft). Register your aircraft/drone with tracking device in the OGN device database here if you wish to influence the way how it's going to be visible in the system (anonymous vs recognized).
- OGN ground receivers, located at airfields, gliding clubs, summits of mountains or at private houses of our community members. They listen and decode radio beacons from aircraft in their vicinity and send position reports via network to the APRS servers.
- Software for Linux that can be installed on a PC or small mini-board computers (such as the Raspberry Pi, Cubieboard2, Odroid U3, etc.). It drives a USB DVB-T radio receiver and listens for, decodes, sends the position reports and participates in the OGN network.
- Websites and applications that can use and display the data. The most obvious use is to track aircraft on a moving map in real time, another use would be search and rescue (SAR), automatic flight logs, etc.

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Open Glider Network

List of Countries Having OGN Receivers

Argentina	Italy
Australia	Lithuania
Austria	Namibia
Belgium	Netherlands
Canada	New Zealand
Chile	Norway
Czech Republic	Poland
Denmark	Romania
Estonia	Russia
Finland	Slovakia
France	Slovenia
Germany	South-Africa
Hungary	Spain
Iceland	Sweden
India	Switzerland
Indonesia	United States
Israel	United Kingdom

http://wiki.glidernet.org/list-of-receivers

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Open Glider Network

OGN Receiver Quantities in Selected Countries

Germany – 281
France – 196
United Kingdom - 166
France – 85
Switzerland – 91
Netherlands – 43
Australia – 39
Italy – 31
Chile – 23
South Africa – 15
Canada – 8
Namibia - 6
United States – 6

http://wiki.glidernet.org/list-of-receivers

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OGN Receivers in the United States

No.	APRS name	Description	Photo	Status	Contact
	AIRFIELDS				
1.	ABQNM	Albuquerque, New Mexico		Last heartbeat 2020-01-19 22:40Z	Mike
2.	CN12	Receiver located at Williams Soaring, Williams, California	Webcam	Last heartbeat 2020-01-19 22:40Z	Philip Lee
3.	KMEV	Receiver located at Soaring NV, Minden, Nevada		Down since 2019-07-22 02:28Z	Silvio
4.	0E0	Moriarty Municipal Airport, New Mexico		Last heartbeat 2020-01-19 22:39Z	Mike
5.	Edgewood	Edgewood, New Mexico		Last heartbeat 2020-01-19 22:41Z	Mark Hawkins
6.	LKPlacid	OGN receiver at ADK FBO during wave camps		Down since 2019-10-14 15:43Z	Dan

http://wiki.glidernet.org/list-of-receivers#toc34

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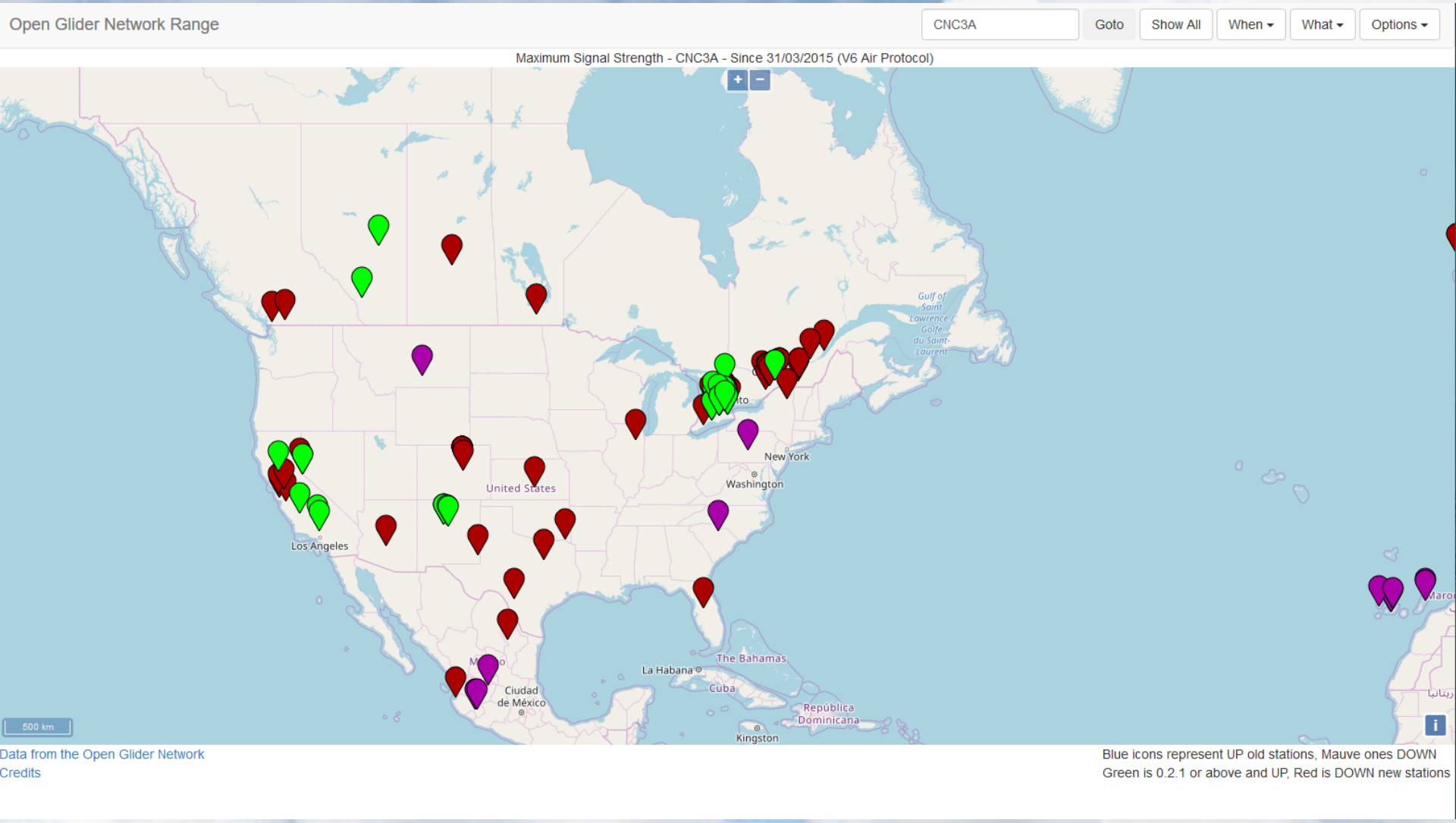
Receiver Drill Down – North America

(via http://glidertracker.org)



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Online OGN Receiver Viewing

- Live Web Pages
  - http://live.glidernet.org
  - http://glidertracker.org
  - https://www.gliderradar.com/
  - https://www.navplan.ch
- For Android
  - APRSDroid can be easily configured and used with OGN
  - OGN viewer Live App for OGN
  - Live viewer Live App by XCguide used by the paragliders folks
- PC software - XAstir program can be used to connect directly to one of the OGN servers and visualize APRS messages

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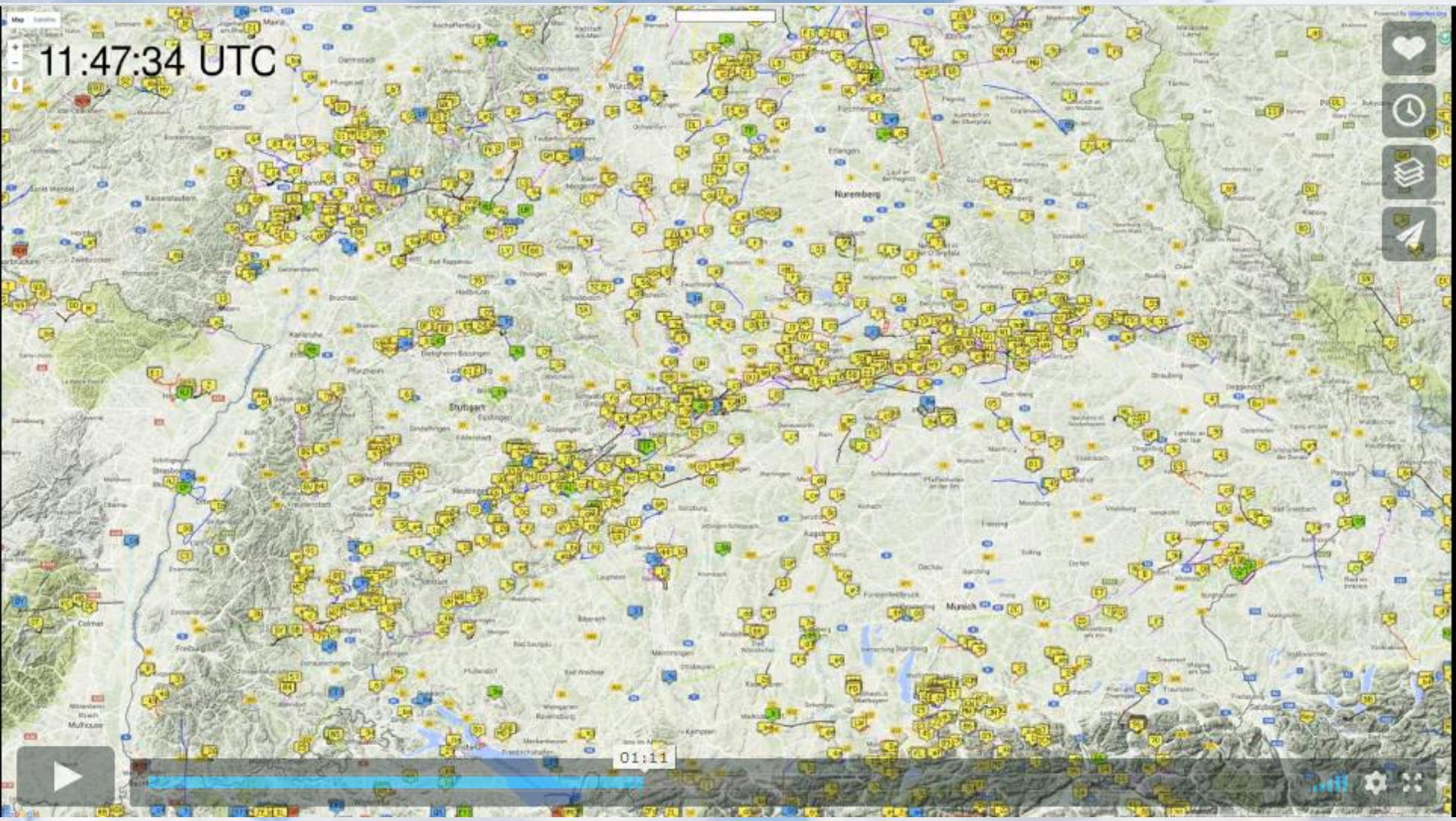
OGN The Movie – A Sunday in Germany



https://vimeo.com/224374017

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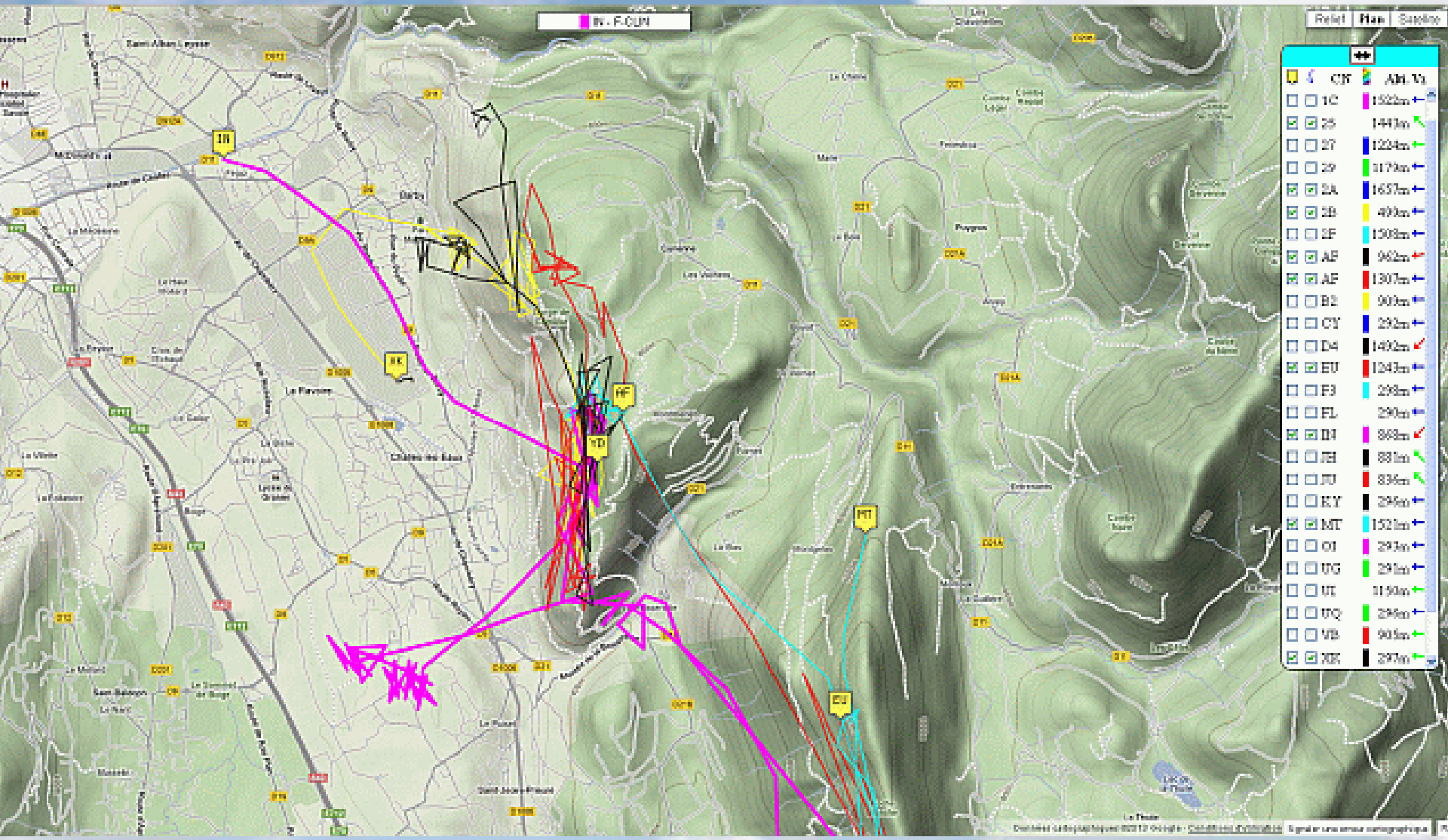
Open Glider Network (OGN) – Historic Data

From http://live.glidernet.org



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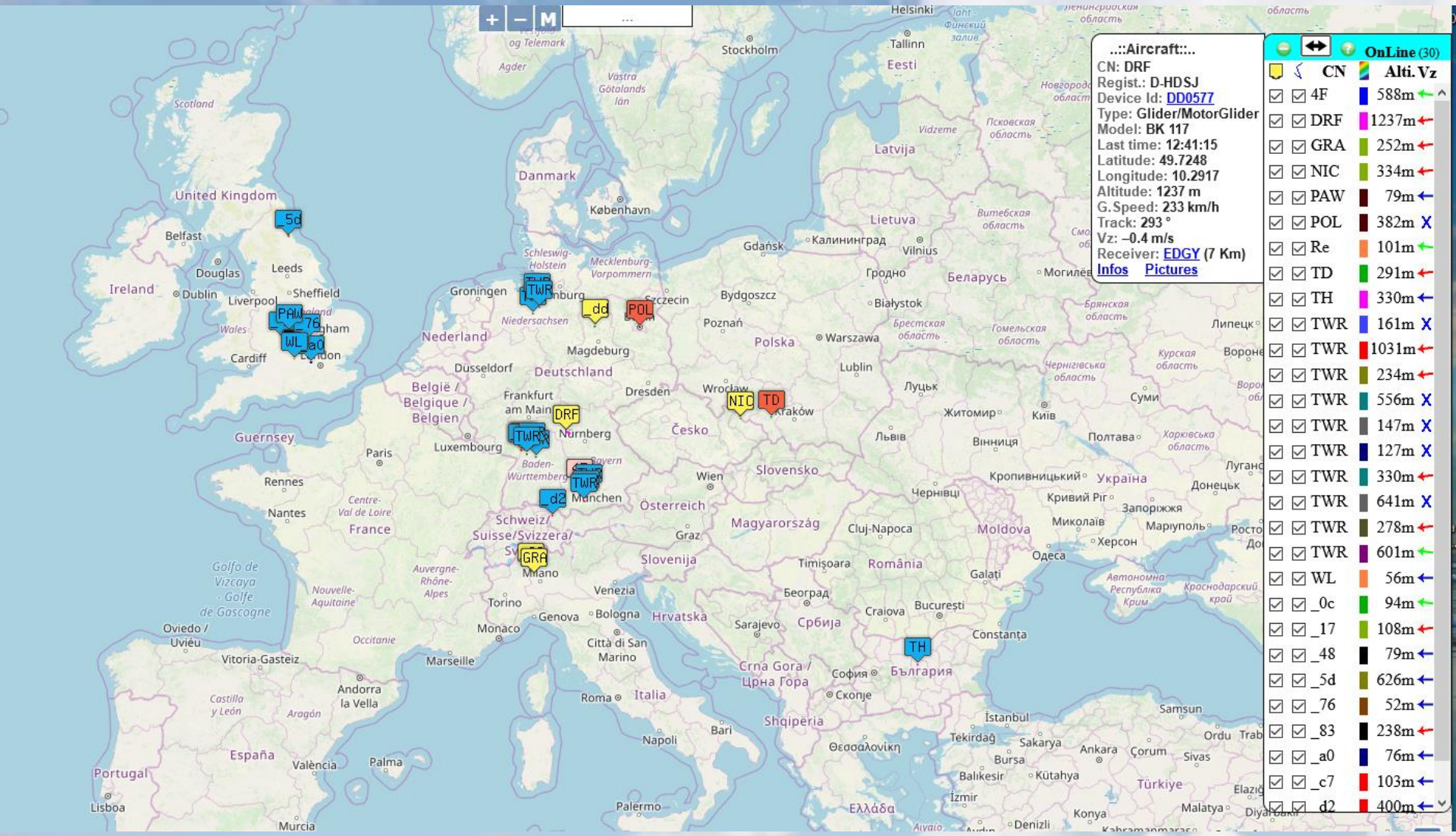
OGN – Europe – 19 Jan 2020 - 1300hrs CST

From http://live.glidernet.org



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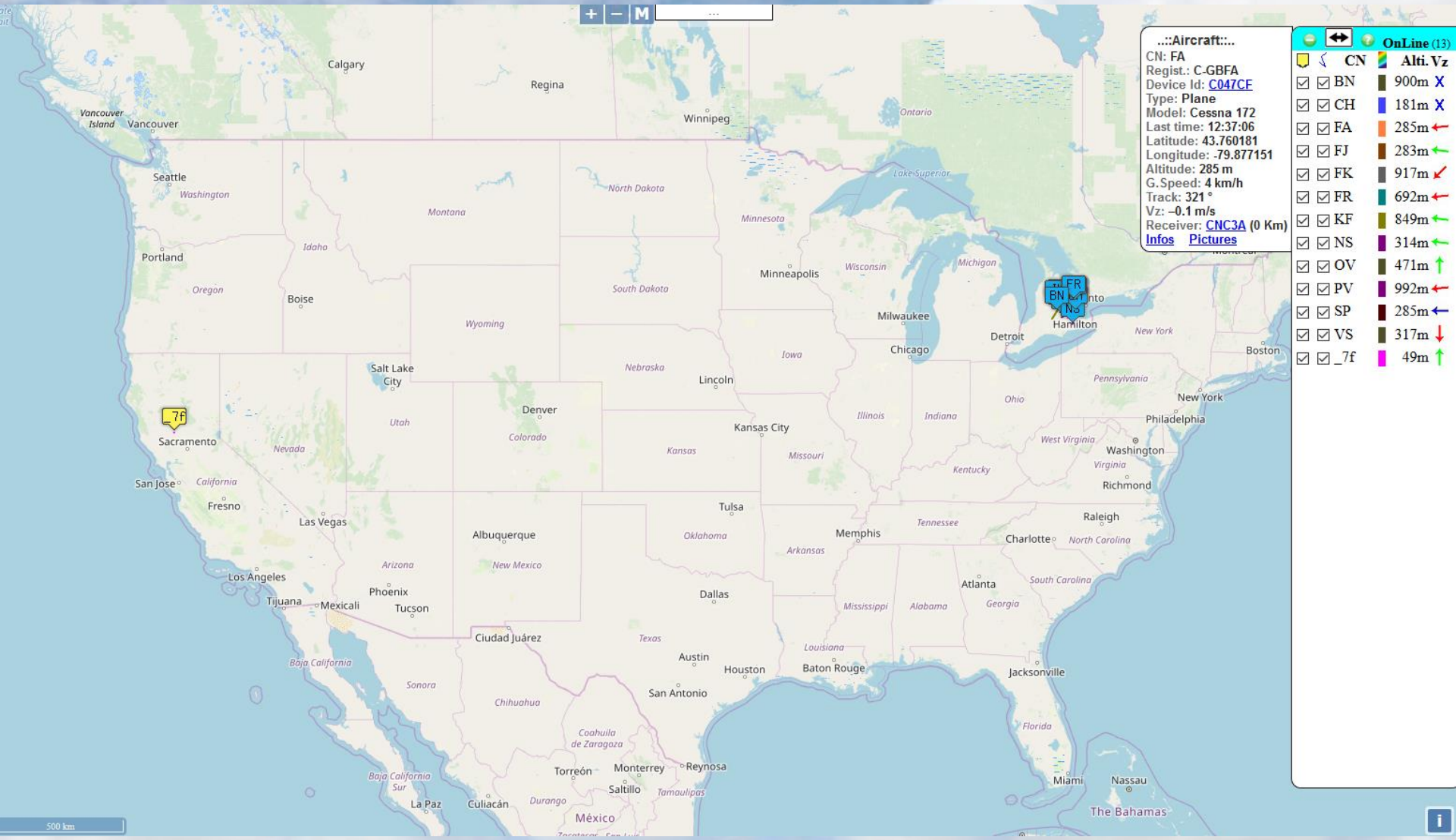
United States – 20 Jan 2020 - 1300hrs CST

From http://live.glidernet.org



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Toronto, Canada – 20 Jan 2020 - 1300hrs CST

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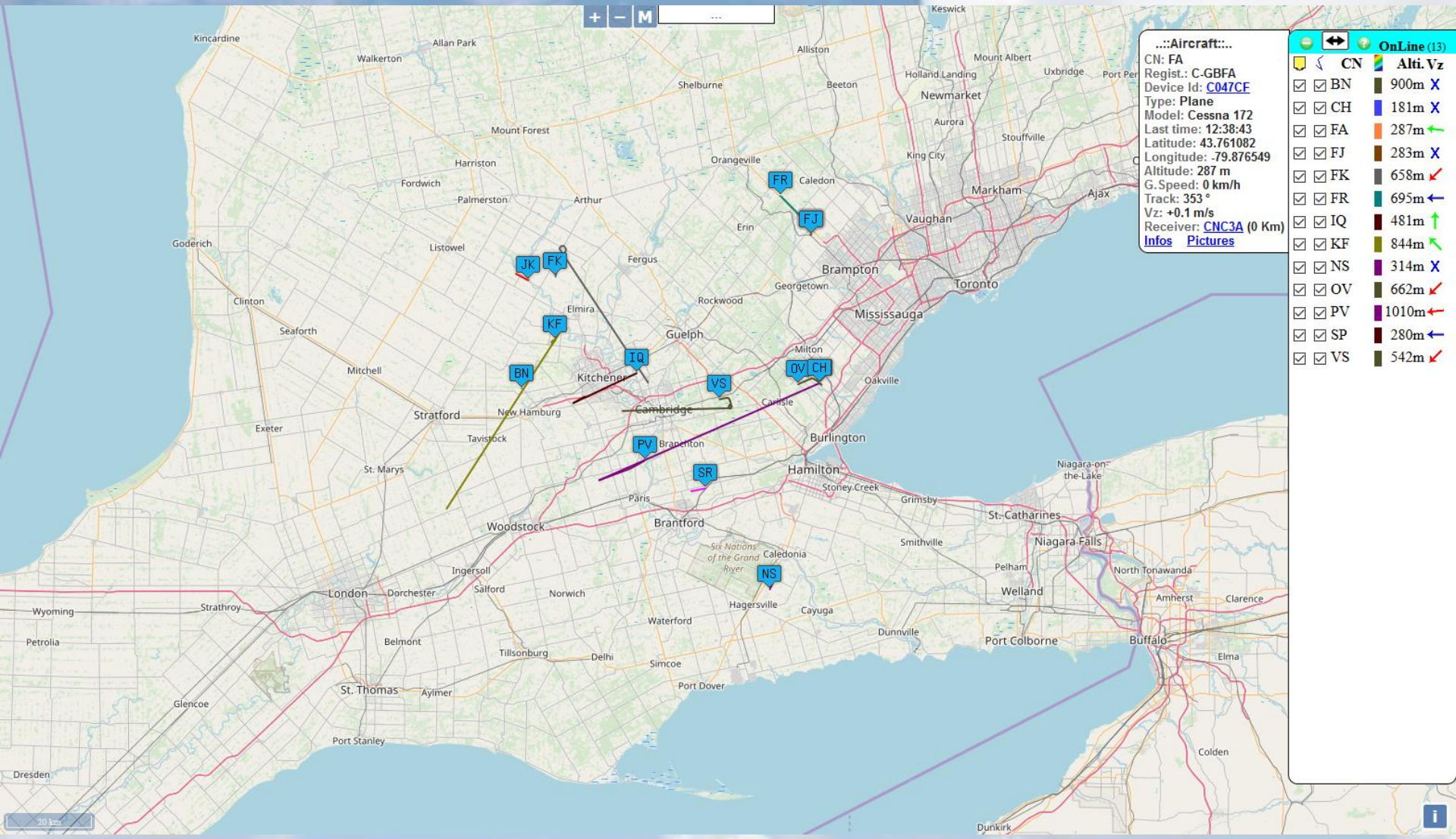

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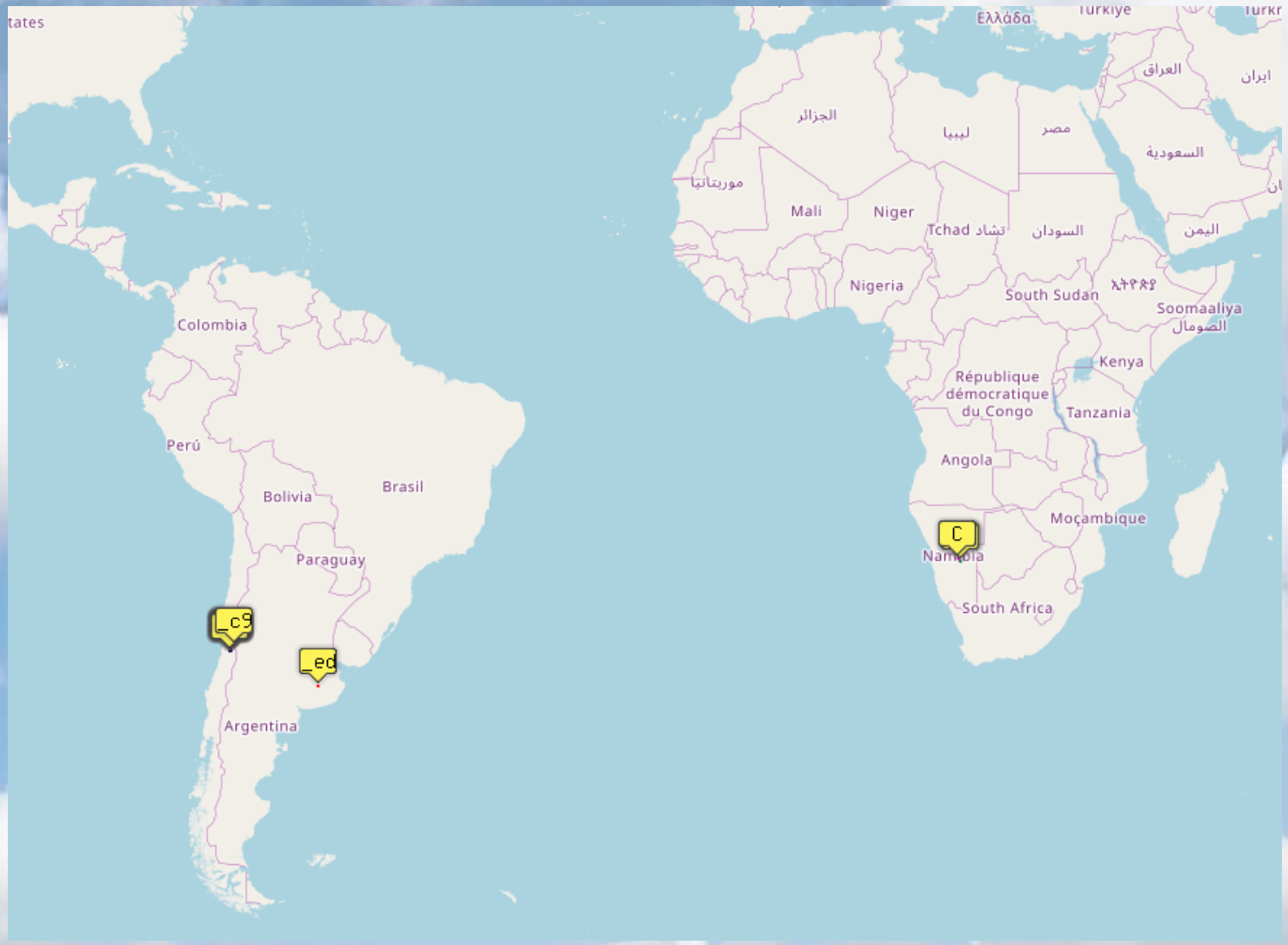
South of Equator – 19 Jan 2020 - 1300hrs CST

From http://live.glidernet.org



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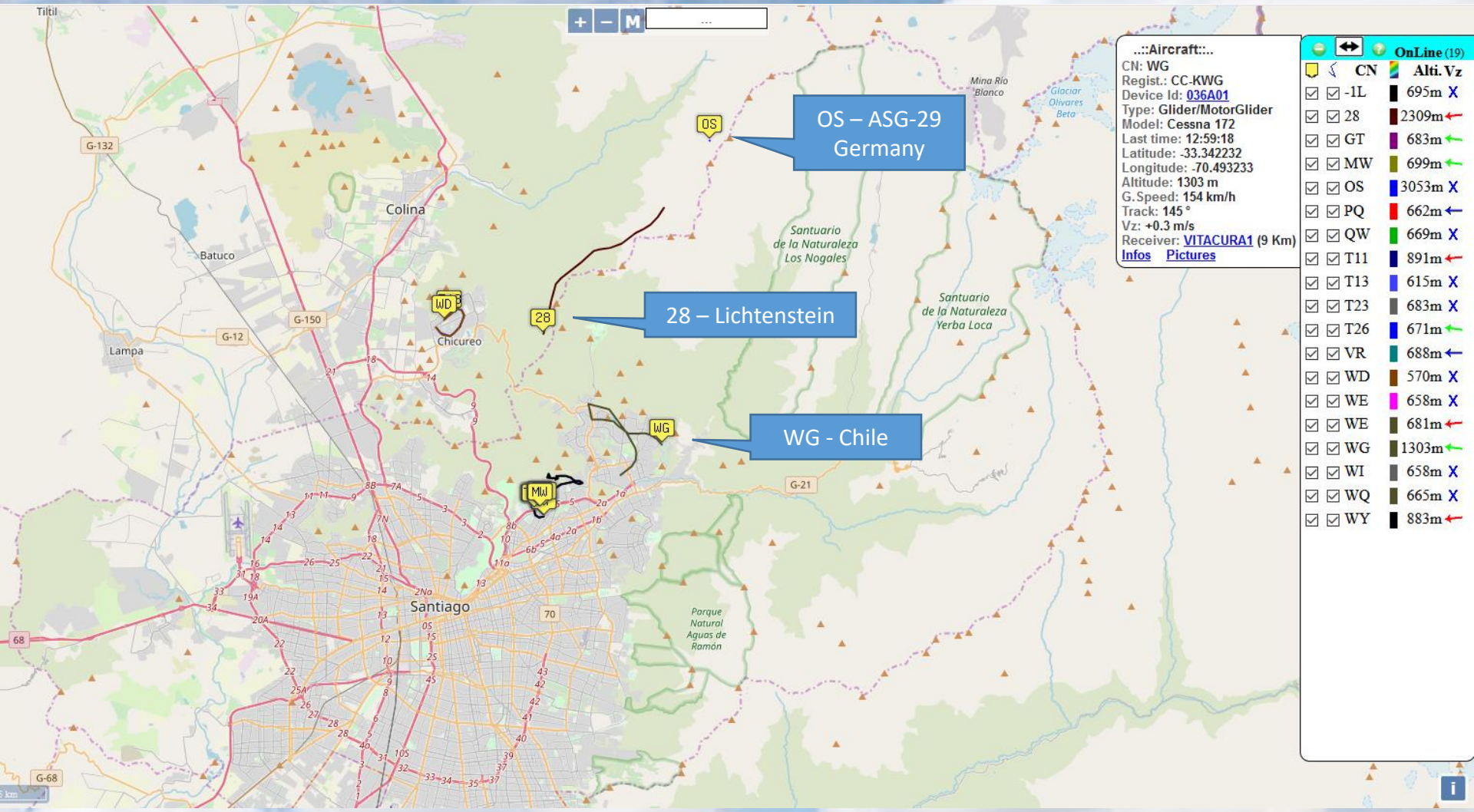
Santiago Chile – 19 Jan 2020 - 1300hrs CST

(via http://live.glidernet.org)



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Santiago Chile – 20 Jan 2020 - 1200hrs CST

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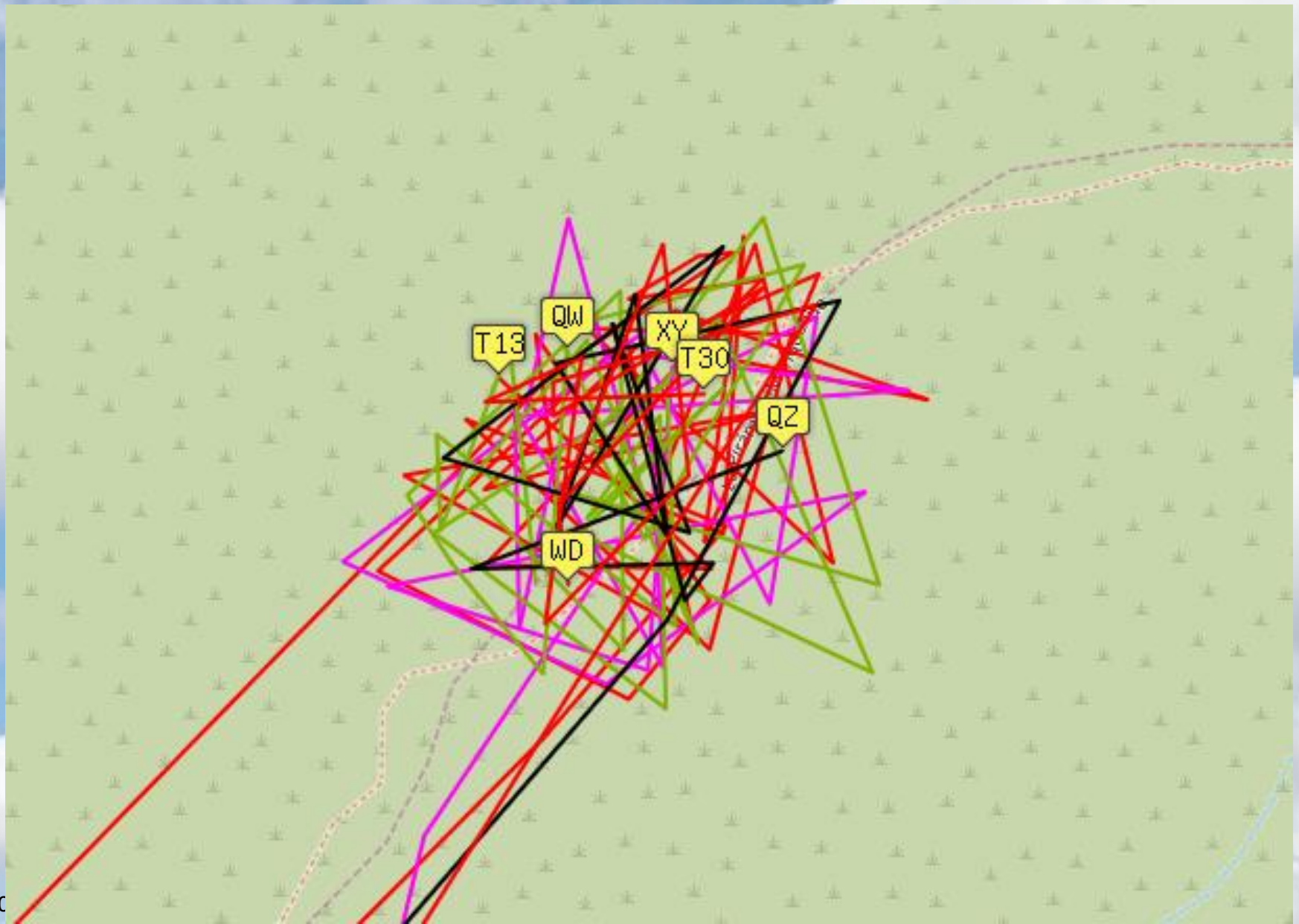

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Aerodromo Municipal de Vitacura

Club de Planeadores de Vitacura
https://www.planeadores.cl/

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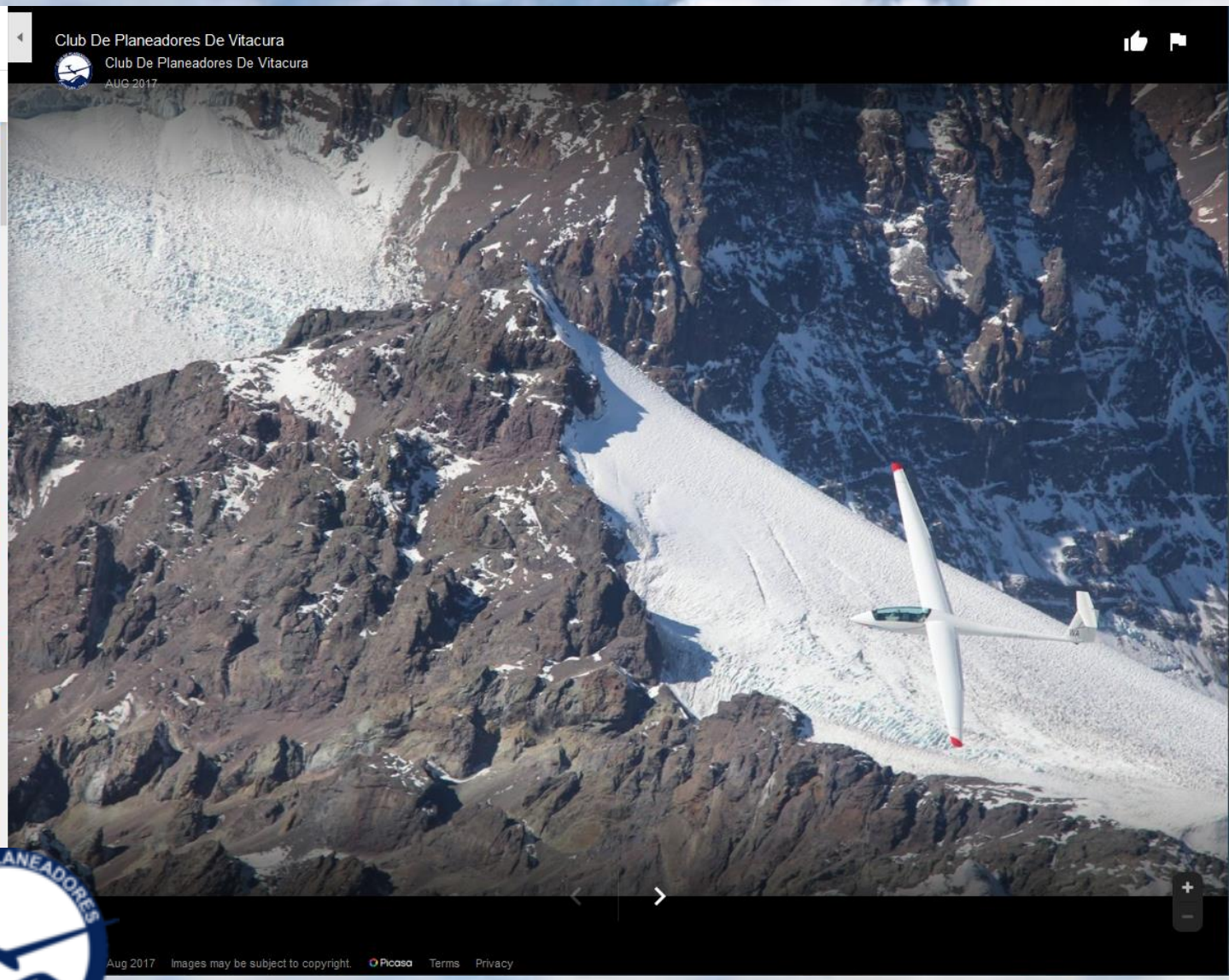
Club de Planeadores de Vitacura



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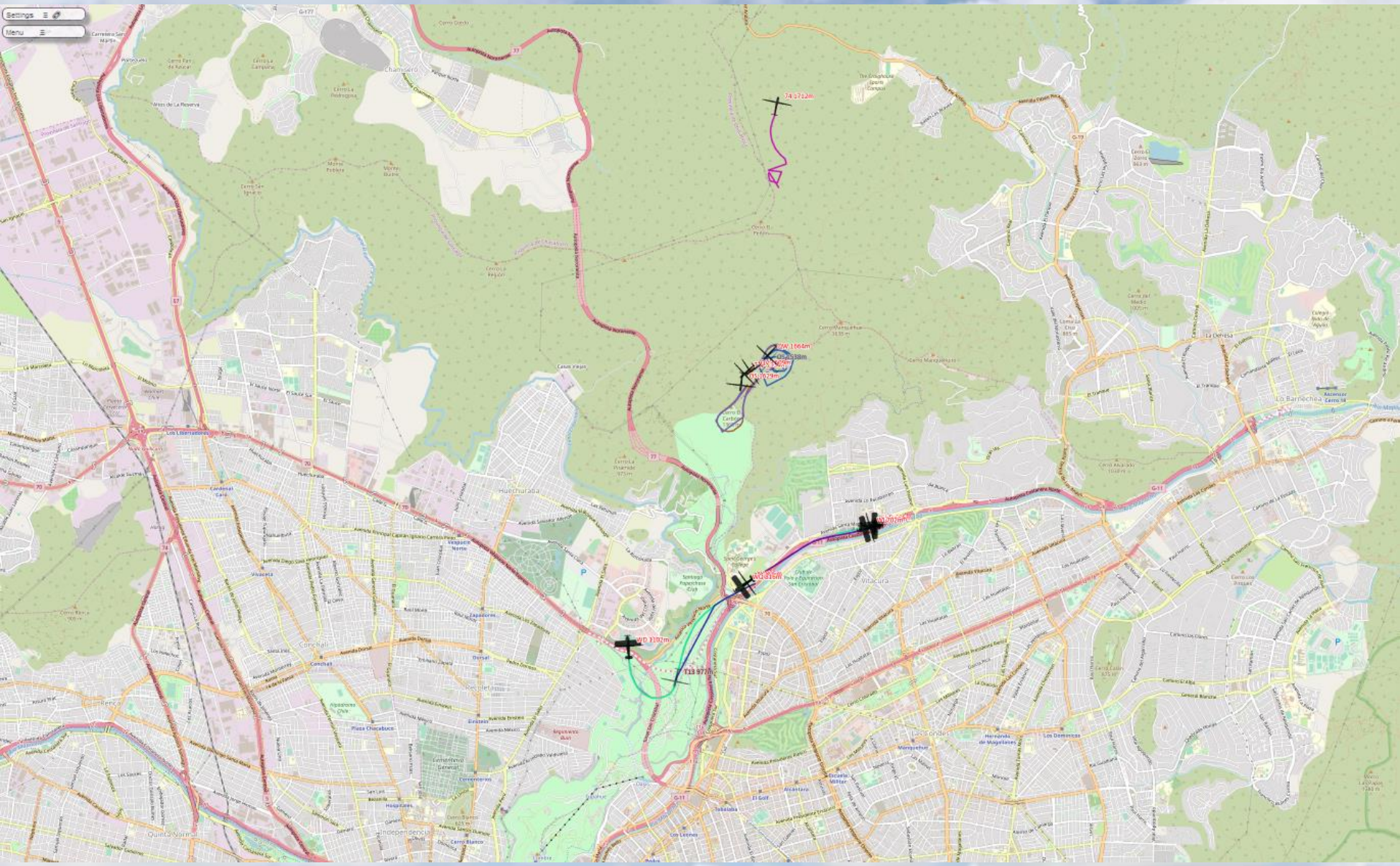
Santiago Chile – 20 Jan 2020 - 1130hrs CST

(via http://glidertracker.org)



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Santiago Chile – 20 Jan 2020 - 1130hrs CST

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Santiago Chile – 20 Jan 2020 - 1130hrs CST

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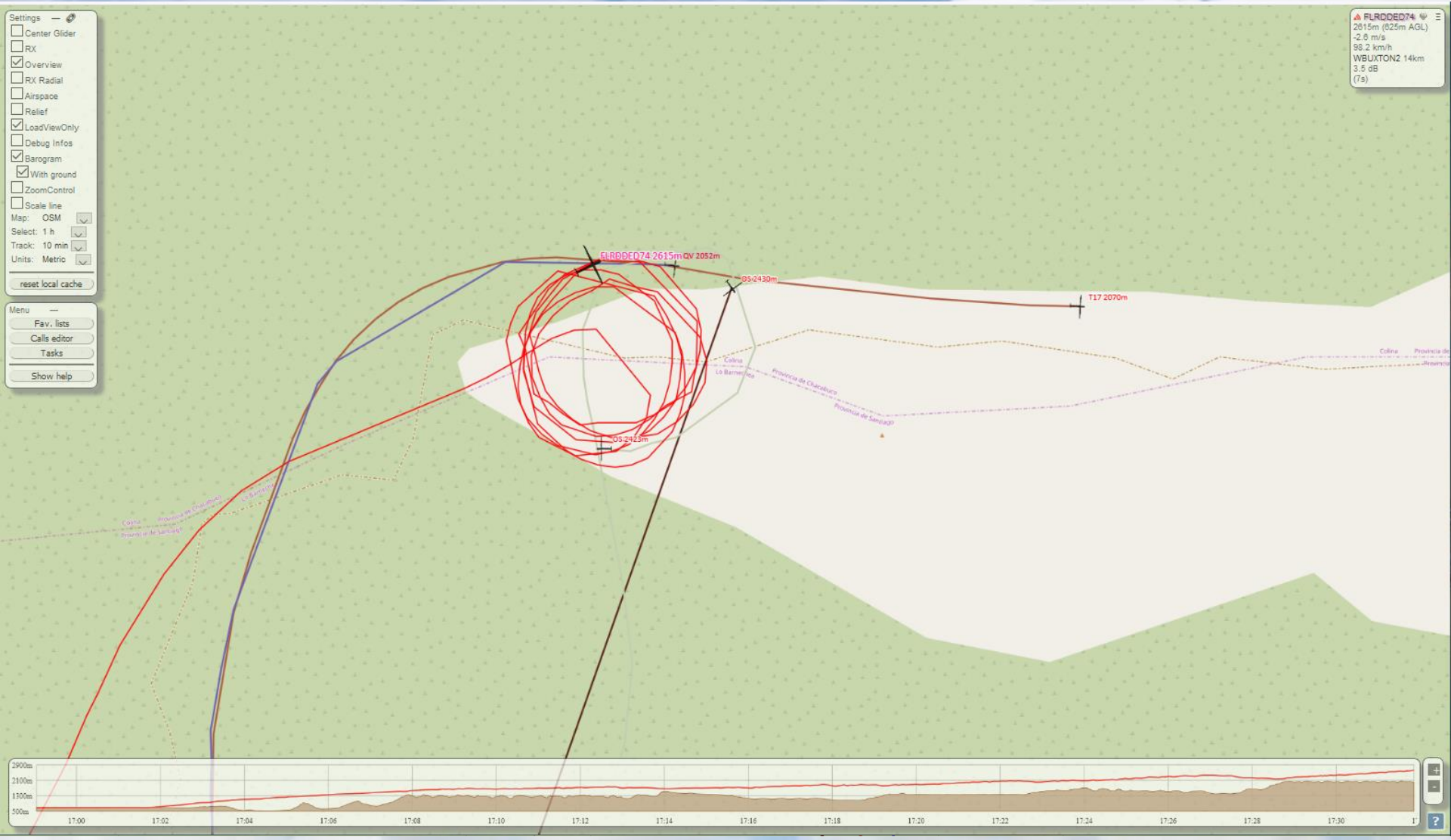

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OGN Receiving System

To set-up an OGN receiver you'll need

- 914MHz (US) Antenna and brackets $50
- LNA Pre-amplifier $50
- RG174 Coax $30
- Type N to SMA Coax Adapter $10
- DVB-T-Dongle (SMA to USB) $40
- Computer / Raspberry $50-$200
- **Total Estimated Cost - $200-$300**

RG174 Coax

Linux Computer
Or Raspberry Pi

USB

SDR DVB-T
Automatic Packet
Reporting System (APRS)
Receiver/Tuner

RG174 Coax

Pre-Amplifier
(Optional)

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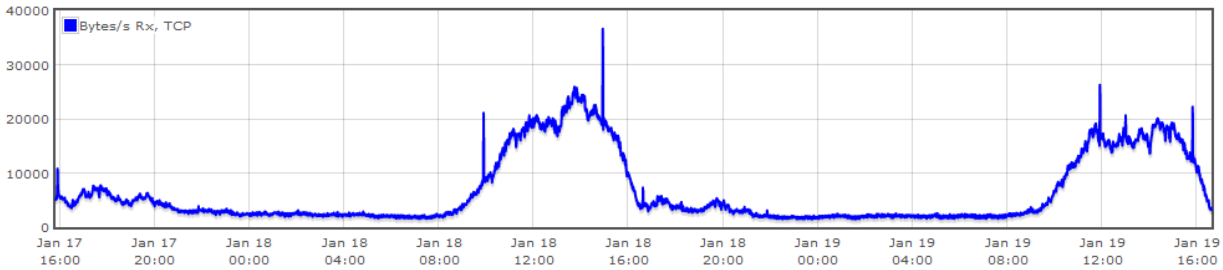
OGN Receiver Report

GLIDERN2 aprsc status
2020-01-19 16:39:31z

APRSC

Server

Server ID	GLIDERN2
Server admin	Sebastien Chaumontet
Software	aprsc 2.1.4-g408ed49
Software features	epoll posix_cap clock_gettime gcc_atomics zlib ssl sctp
Uptime	202d18h
Server started	2019-06-30 21:48:05z
Operating system	Linux x86_64



Zoom

Totals

Clients	373	0.17/s
Connects	7956997	1.0/s
Bytes Tx TCP	2962587536072	37796/s
Bytes Rx TCP	216803254865	3616/s
Packets Tx TCP	23080563928	309/s
Packets Rx TCP	1704091298	30/s
Bytes Tx UDP	0	0/s
Bytes Rx UDP	0	0/s
Packets Tx UDP	0	0/s
Packets Rx UDP	0	0/s
Bytes Tx SCTP	0	0/s
Bytes Rx SCTP	0	0/s
Packets Tx SCTP	0	0/s
Packets Rx SCTP	0	0/s

Duplicate filter +

Duplicate packets dropped	4404358	0/s
Unique packets seen	1693638086	30/s

http://glidern2.glidernet.org:14501/

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OGN Receiver Report

Port listeners

Proto	Address	Name	Clients	Peak	Max	Connects	Conn/s	Packets Tx	Packets Rx	Bytes Tx	Bytes Rx	Tx/Rx bytes/s
tcp	[::]:10152	Full feed	6	87	200	1465222	0	13892906785	794748888/2048081/1947430	1768563562959	102817429595	13204 / 1517
tcp	[::]:14580	Client-Defined Filters	371	502	1000	6492329	0.55	7960256254	343938858/1628962/2601032	1037296077414	41928361110	10834 / 279

Uplinks

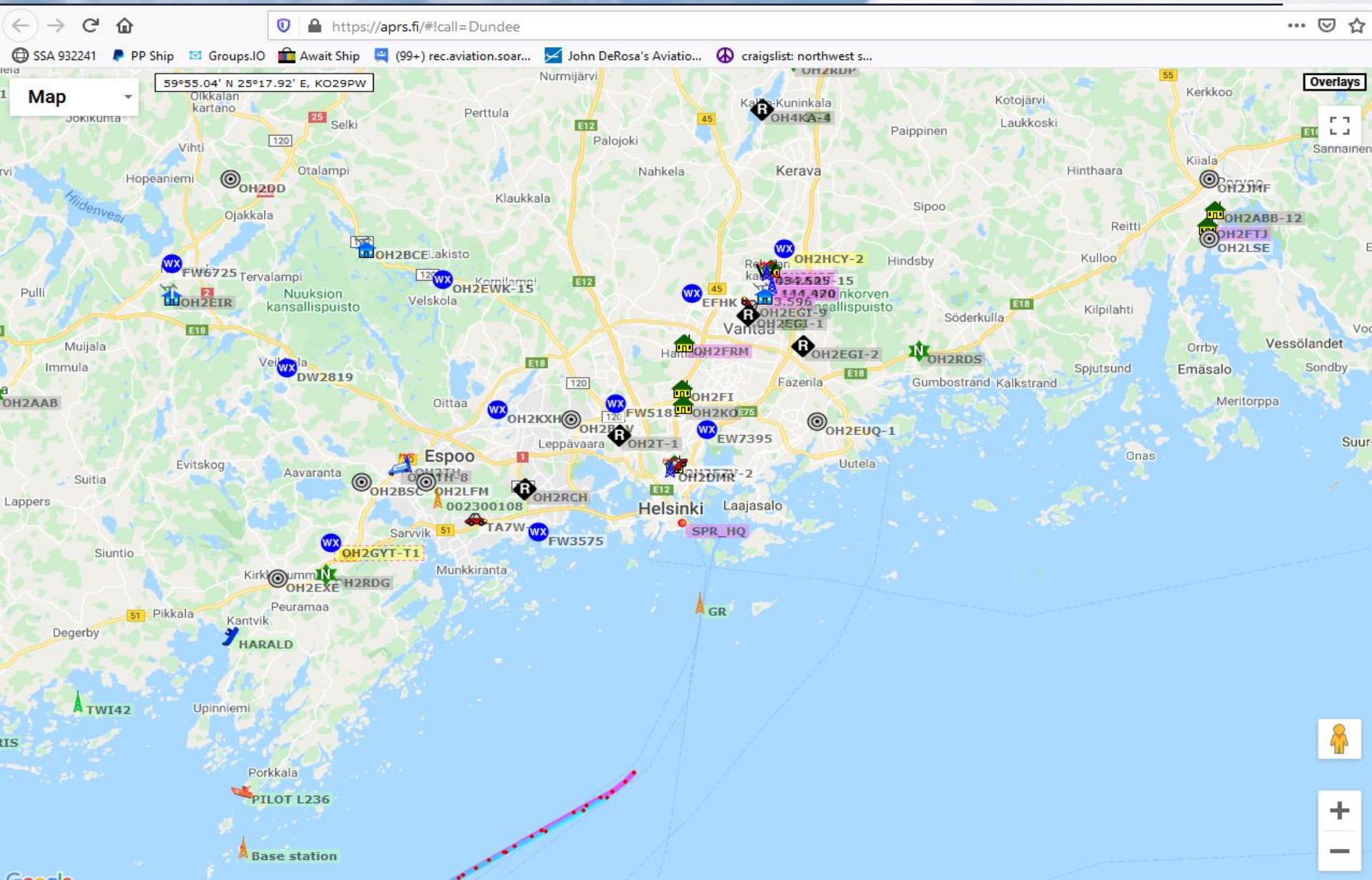
Server ID	Address	Mode	Connected	Up	Last in	Software	Packets Tx	Packets Rx	Bytes Tx	Bytes Rx	Tx/Rx bytes/s	OutQ
GLIDERN1	37.187.40.234:10152	full	2020-01-18 13:59:06z	1d2h	1s	aprsc 2.1.4-g408ed49	3880620	1160326/22644/5457	483185471	146632403	1769 / 698	0

Clients

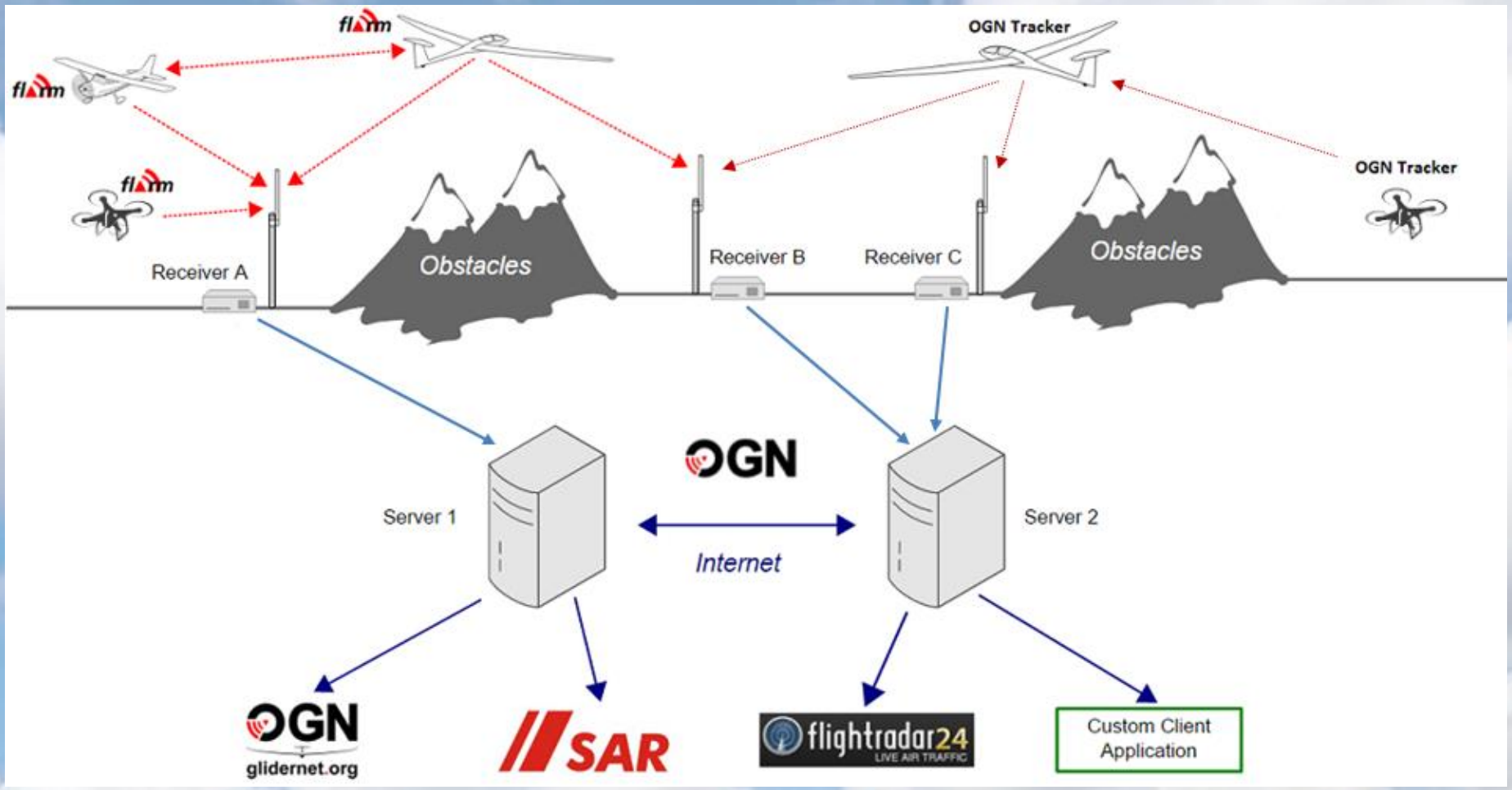
Port	Username	Address	Verified	Up	Last in	Software	Packets Tx	Packets Rx	Bytes Tx	Bytes Rx	Tx/Rx bytes/s	OutQ	MsgRcpts	Filter
14580		87.149.208.217:37814	No	0s	0s		0	0/0/0	24	0	-18 / -5.9	0	0	
14580		83.160.88.128:40476	No	6s	6s		0	0/0/0	24	0	-7.1 / 0	0	0	
14580		77.160.117.32:39928	No	8s	8s		0	0/0/0	24	0	-7.1 / 0	0	0	
14580	Schwend	141.79.10.10:53268	Yes	9s	9s	RTLSDR-OGN	0	0/0/0	69	68	-3.0 / 6.2	0	0	g/ALL
14580		77.160.117.32:39926					0	0/0/0	24	0	-7.1 / 0	0	0	
14580		84.104.136.73:34197					0	0/0/0	24	0	-7.1 / 0	0	0	
14580		77.160.117.32:39922					0	0/0/0	24	0	0 / 0	0	0	
14580		77.160.117.32:39924	No	12s	12s		0	0/0/0	24	0	0 / 0	0	0	
14580		77.160.117.32:39920	No	12s	12s		0	0/0/0	24	0	0 / 0	0	0	
14580		69.131.49.51:41500	No	14s	14s		0	0/0/0	24	0	0 / 0	0	0	
14580		77.160.117.32:39918	No	14s	14s		0	0/0/0	24	0	0 / 0	0	0	
14580		84.104.136.73:34194	No	14s	14s		0	0/0/0	24	0	0 / 0	0	0	
14580		77.160.117.32:39914	No	16s	16s		0	0/0/0	24	0	0 / 0	0	0	
14580		77.160.117.32:39910	No	16s	16s		0	0/0/0	24	0	0 / 0	0	0	
14580		77.160.117.32:39916	No	16s	16s		0	0/0/0	24	0	0 / 0	0	0	

More than 380 Clients using this OGN server

OGN Receiver Report



The End



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