



Summits On The Air

Mountain Top Activations and Amateur Radio



Catalina Island

Presented by:
Scott Bastian-AK6Q

Summits on the Air



- How did it start?
- What is it?
- How do I participate?
- Can I get any awards?
- How do I start activating and what equipment should I use?
- Safety and Operating

"For as long as there has been radio, amateurs have taken their stations to the tops of mountains



Halleakala, HI

It's perhaps a little surprising that no formal program for activating summits existed until March 2002!"



How did **SOTA** start?

- Original idea of John, G3WGV
- Developed with Richard, G3CWI
- Launched on March 2nd 2002
- Internet based activity
 - Industrial strength database
 - Over 2 million QSO's in SOTA Database
 - Thousands of registered users
 - Sophisticated web portal
 - Alerting, spotting, forum, etc
 - 55 participating countries and over 60,000 peaks in the SOTA database and growing fast

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What is the SOTA program?

"**Summits on the Air (SOTA)** is an award program for radio amateurs and shortwave listeners that encourages portable operation in mountainous areas. SOTA has been carefully designed to make participation possible for everyone - *this is not just for mountaineers!*

There are awards for **Activators** (those who ascend to the summits) and **Chasers** (those who either operate from home, mobile or even on another Peak (S2S)

From www.sota.org.uk

Scott AK6Q, Paul AC5S, Randy K0TNG,
Rocky WB5NJU , Snowshoe Peak near
Creed





General **SOTA** Principles

- Two ways to participate
 - Activator
 - Chaser
- Points and Award System
- 1805 SOTA summits in Colorado
- A wide variety of difficulty and elevation
 - From 5324 feet to 14,443 feet
- SOTA activation requirements:
 - summit **MUST** be on the SOTA list
 - Activation Zone (AZ) is within 25m (82 ft) of the summit
 - equipment must be carried (no minimum distance)
 - portable power no fossil fuel generators or vehicle power

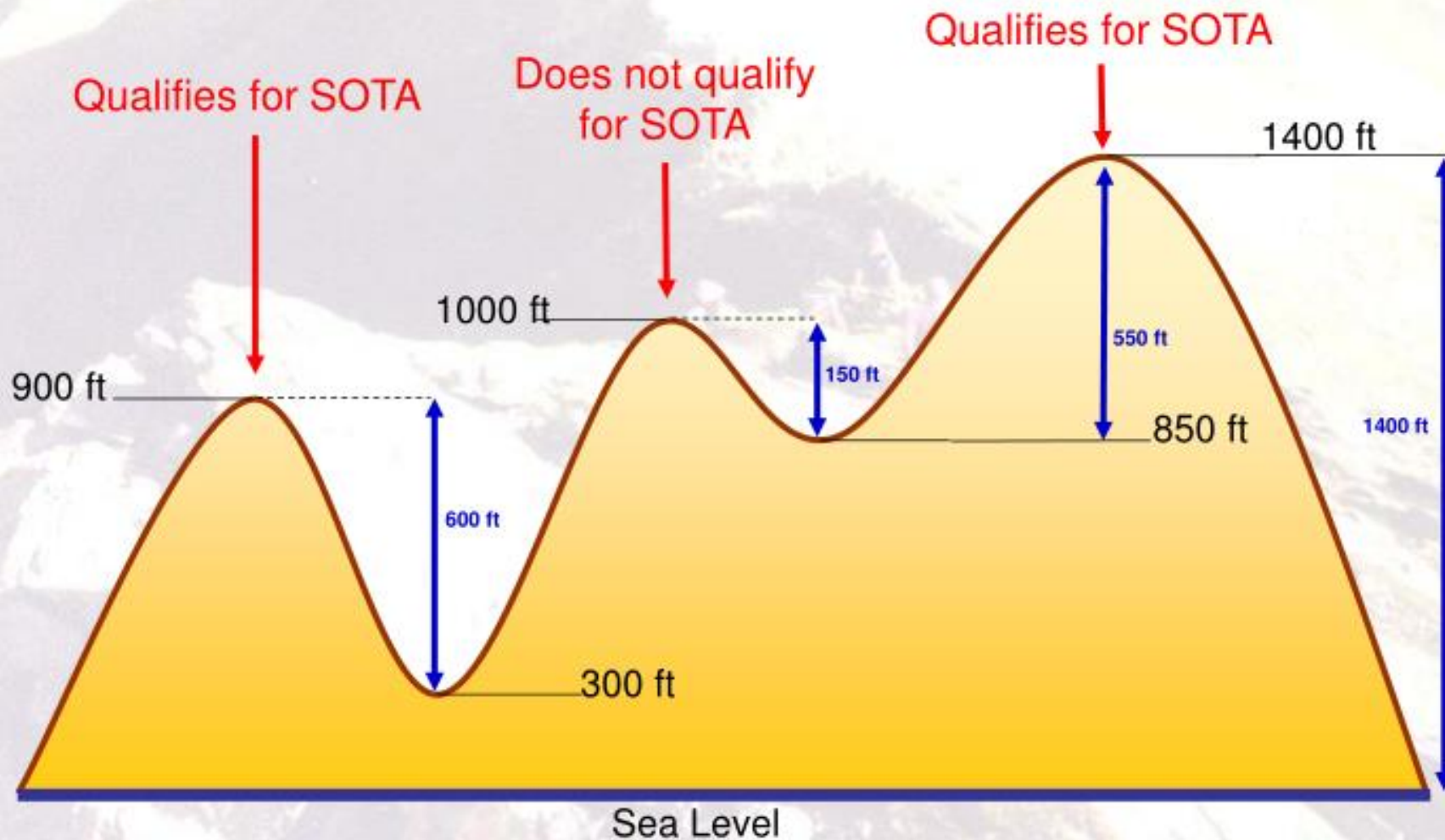


When is a peak not a SOTA peak?

- Peak qualification rules:
 - Prominence must be greater than 500 ft/150m from surrounding peaks
(333 ft/100m for Oklahoma)
 - Peaks may be on private or government property
 - Private property with permission only
 - NO TRESSPASSING
 - Respect for Native American and Government properties

(Not all qualified peaks are in the database
new ones are added as managers
update/grow the data base)

Prominence Definition



Selected SOTA Associations

Some of the US Associations

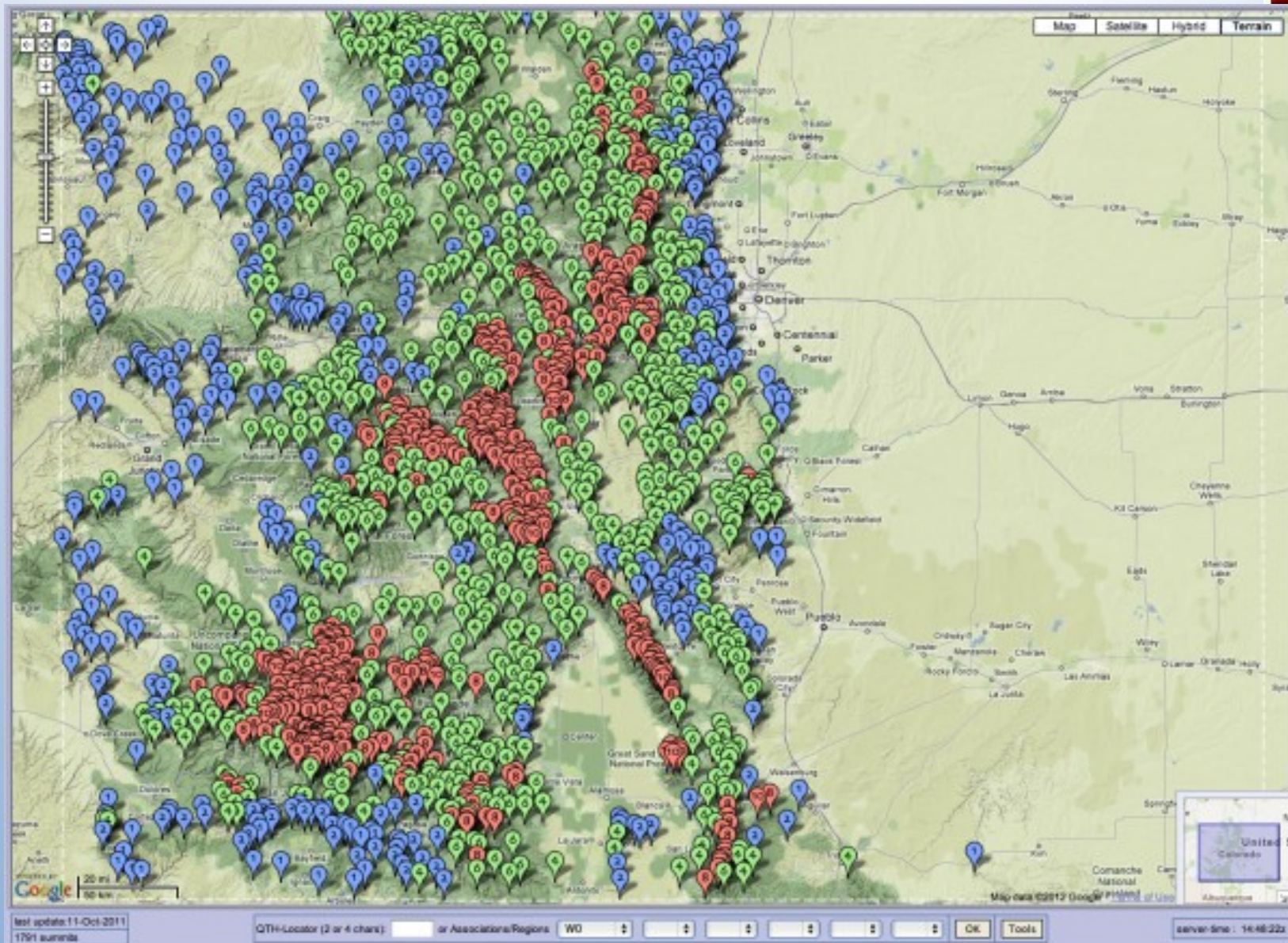
W0C - USA Colorado
W0D - USA Dakotas
K0M- USA Minnesota
W5O - USA Oklahoma
W7A - USA Arizona
W7M - USA Montana
W7Y - USA Wyoming
W7I- USA Idaho
W7W -USA Washington

SOTA Scoring



- Based on ASL elevation of a qualified peak
 - Points Varies by Association
 - Same principles for Chasers and SWLs
 - May include a "seasonal bonus" for activators
- Colorado has a 3pt bonus for Dec 1- Mar 31 (>9k)**
- **Scoring for W0C Colorado: 1805 Peaks**
- | | |
|-------------------------------|------------------|
| Under 8000' | 1 point |
| 8000' to <9000' | 2 points |
| 9000' to <10,500' | 4 points |
| 10,500' to <12,500' | 6 points |
| 12,500' to <13,500' | 8 points |
| 13,500' + | 10 points |

W0C Peaks in database



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Participation Roles

- **Activators** - those who "activate" a peak
 - Need 4 QSO any band to get points
- **Chasers** - those who work the activator
 - Need only the one QSO to get points
- **Short Wave Listeners** - those who can confirm a QSO get same points



Mt Crested Butte



Web Tools for SOTA

- www.sota.org.uk
 - The main site about the SOTA program
- www.sotawatch.org
 - Alerts, spots, map, and a forum
 - Register to participate
- <https://www.sotadata.org.uk/en/>
- Log QSO's both Activator and Chaser
 - Register to enter QSO's and see more detail
 - [WØC SOTA \(w0c-sota.org\)](http://w0c-sota.org)
 - Lots of Colorado SOTA information

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Activator Roll of Honor



Menu

SOTA Results and Summits Database

Activator Roll of Honour

*A is not inherently a competitive activity, it's about individual aspirations and working towards a goal at your own pace. However, it can be fun to see how your progress compares with that of others, hence we publish our Honour Roll on the internet. Please help us to keep this page up-to-date by regularly submitting your SOTA logs.

Association W0C- USA- Colorado	Year ▼ - All Years -	Band ▼ -All Bands-	Modes ▼ -All Modes-	Show
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Position	Activator Callsign	Summits	Points	Bonus Points	Total Points	Average	View Log
1	KX0R	1701	6349	780	7129	4.19	View
2	WA6MM	440	2553	288	2841	6.46	View
3	WG0AT	625	2177	513	2690	4.30	View
4	K7PX	449	2165	465	2630	5.86	View
5	K0MOS	406	2172	342	2514	6.19	View
6	K5RHD	236	1825	192	2017	8.55	View
7	W0CCA	264	1936	75	2011	7.62	View
8	W0CP	299	1750	183	1933	6.46	View
9	KD0YOB	467	1874	54	1928	4.13	View
10	N0TA	363	1620	201	1821	5.02	View
11	K0NR	267	1437	144	1581	5.92	View
12	K0JQZ	280	1298	213	1511	5.40	View
13	WV0X	188	1374	132	1506	8.01	View
14	K7EEX	199	1232	99	1331	6.69	View
15	KC5CW	213	1191	39	1230	5.77	View
16	K0JJW	225	1105	117	1222	5.43	View
17	KC0YQF	191	1010	156	1166	6.10	View
18	W0MNA	169	971	3	974	5.76	View
19	W0ERI	166	965	3	968	5.83	View
20	W7UM	166	706	120	826	4.98	View
21	AD0KE	91	560	87	647	7.11	View
22	N0IPA	78	502	66	568	7.28	View
23	AE0AX	91	461	78	539	5.92	View

SOTA Awards



- Certificates
- 100, 250 and 500 points
- Mountain Goat
 - 1000 activating points
- Shack Sloth
 - 1000 chasing points
- SWL
- Association awards
- Further certificates at 2500, 5000, 10000 points



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Bands and Modes

- VHF and UHF
 - A lot of 2m FM 146.580mhz
 - SSB is popular
 - CW is also used occasionally
- HF
 - A lot of CW, due to use of QRP equipment
 - 10118 kHz, 14060 kHz, 14285kHz are Popular watering holes

Sunset-Pk Paul W6PNG



Principal Rules for Activators

- Cannot use motorized transport to summit
 - but you can drive up close to it
- Must operate from portable power source
- Must carry all equipment to summit
- Must make at least four QSOs
 - Any mode, any band
- QSO's via repeaters don't count
 - Exception is via satellite

Typical SOTA Equipment



Any HT is good... but you need more antenna



Elecraft KX2 and KX3

It's all a lot easier these days!

- *Equipment is smaller, lighter and more efficient*
- *Battery technology has improved immensely*



Yaesu FT817 and FT818

Typical SOTA Antennas



VHF/UHF Arrow Yaggi / Log Periodic



HF (Dipole, EFHW, OCFD)

& Fiberglass Pole / string for throwing in a tree

HF or VHF/UHF?



Take Your Pick, Or Do Both

VHF/UHF

Height Above Average Terrain

Basic/compact equipment: Handheld Transceiver (HT)

Dependent on local chasers

FM most common, SSB for VHF contests

Technician Licensees can play!!!

HF

Classic QRP operating (CW and SSB)

Longer distance contacts

More radio contacts

Recommended: General License Class or higher
(unless on CW)

How Far Will My Signal Go on VHF?



- Optical horizon from Pikes Peak: 120 miles, plus 15% for radio horizon = 138 miles
- Mt Sunflower (highest spot in Kansas) is easily worked on 2m FM from Pikes Peak (160 miles)
- Best DX between two 14er summits on 2m FM (Colorado 14er Event):
Andy AAØCM on Longs Peak to Jan W3GEY on Sunshine Peak (188 miles)
- Best 2m FM DX during Colorado 14er Event: Phil NØKE on Mt Bross to Larry NØLL near Smith Center, KS (375 miles)

No Rubber Duck Antennas



A rubber duck antenna is the world's most convenient crappy antenna.

Bad bad bad bad bad bad bad bad bad
bad bad bad bad bad bad bad bad bad
bad bad bad bad bad bad bad bad bad
bad bad bad bad bad bad bad bad bad
bad bad bad bad bad bad bad bad bad
bad bad bad bad bad bad bad bad bad
bad bad bad bad bad bad bad bad bad
bad bad bad bad bad bad bad bad bad
bad bad bad bad bad bad bad bad bad
bad bad bad bad bad bad bad bad bad
bad bad bad bad bad bad bad bad bad

BAD



Arrow II VHF/UHF Yagi Antenna



Bob KØNR
Mt Sneffels

Crossed Yagi Design

Two antenna
connections, or use
duplexer

2m gain= 5.9
dBd
70cm gain= 8.2
dBd
(2009 CSVHFS)

Elk Log Periodic Antenna UHF/VHF



Scott ACØFQ
San Luis Peak

One feedline
connection for
2m & 70 cm

Same
polarization on
both bands

2m gain= 6.6
dBd
70cm gain= 7.0
dBd
(Mfg datasheet)

HF Operations

Frequently get to be the pile up! Lots of DX Opportunities



- Radios
- Antennas



Mt Orizaba Catalina Island

HF Radios



Small is GOOD
Light Batteries
Built in ATU
Low current RX
Multi mode

Small
No ATU
High Current RX
Affordable
Multi mode



CW only
No ATU
Very small
and Light!



HF Antennas and poles







Steve WGoAT

Tech on the go!






- **Cell Phone Apps!**

- iPhone***

- SotaGoat 
 - Pocket SOTA 
 - Hamlog/Pignology 
 - HAMRS logging 

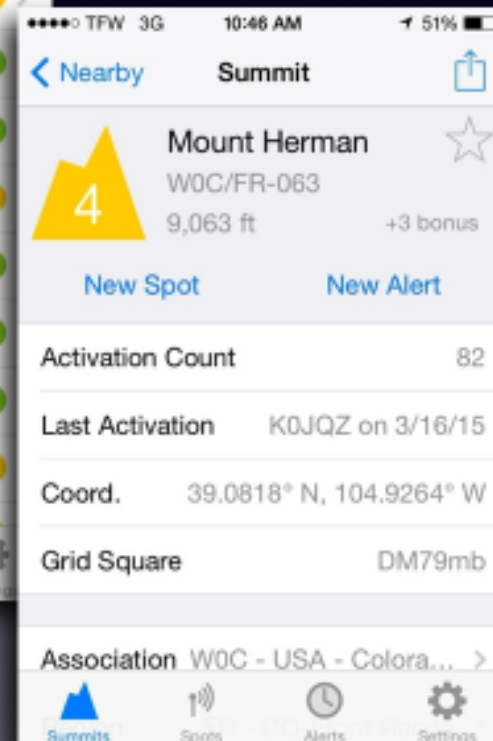
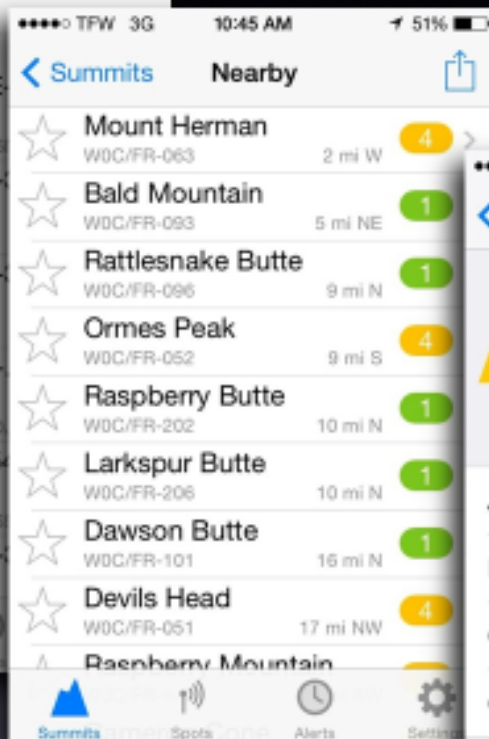
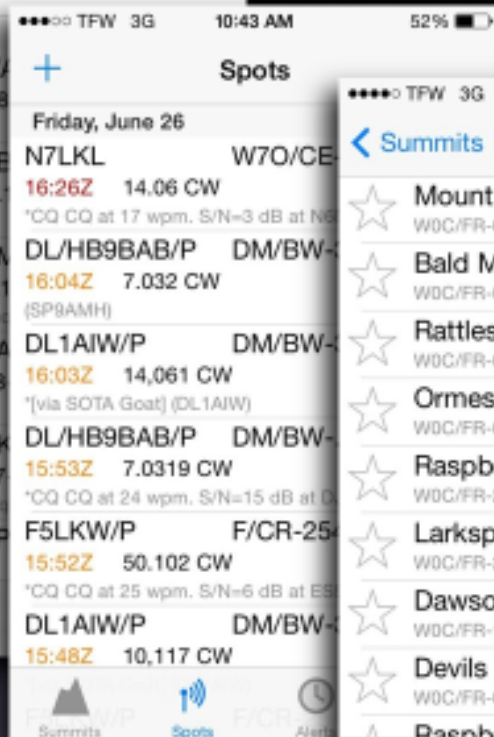
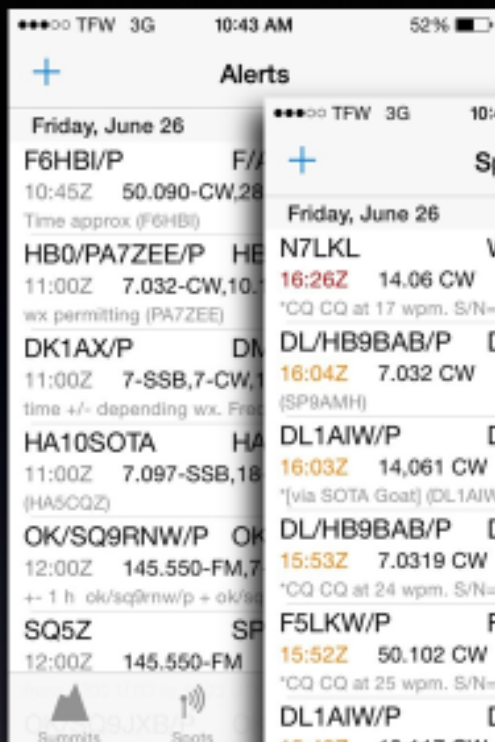
- Android***

- Pocket SOTA 
 - SOTA Finder 
 - HAMRS logging 

One of my Favorite apps!



SotaGoat App
for iOS & Android



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- **Safety and Operating**

Mountain Safety



- Weather /Lightning
- Getting Lost
- Gravity
- Temperature
- Rescue can be hours OR days away
- **Warning:** *Climbing mountains is inherently a dangerous activity.*

Do not attempt this without proper training, equipment and preparation.

- AK6Q in previous assignment

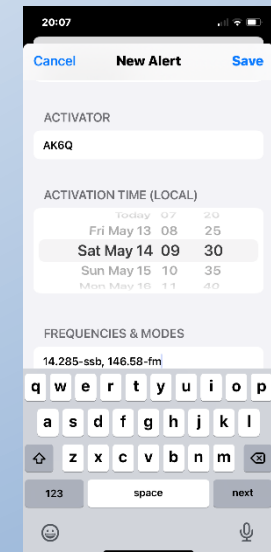
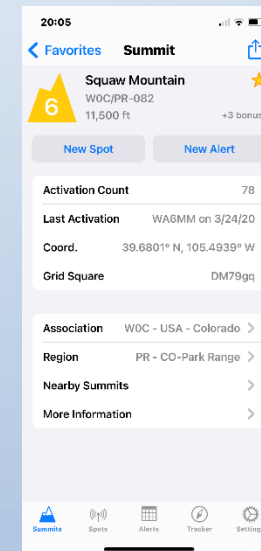
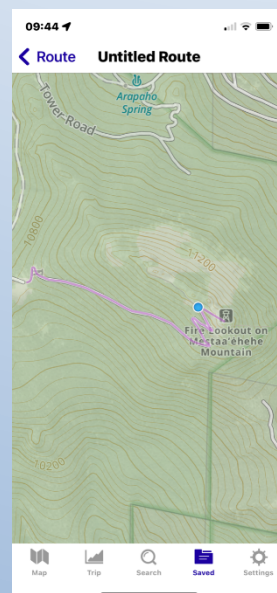


So now what.....How do I start?



PREP

- Chose a peak of interest (close to a destination maybe?)
- Look up data from SOTA apps (SOTA Goat)
- Plan a route (GAIA GPS app and desktop)
- Weather check for day of activation
- Verify your equipment: Radios, Batteries, antenna, logging
- SAFETY GEAR, Weather Gear, Map, Compass, GPS, Cell/HT Batts, Food, Water, Clothes, Poles, Bivy?
- Create an alert for the activation (SOTA Goat)



Some at home resources

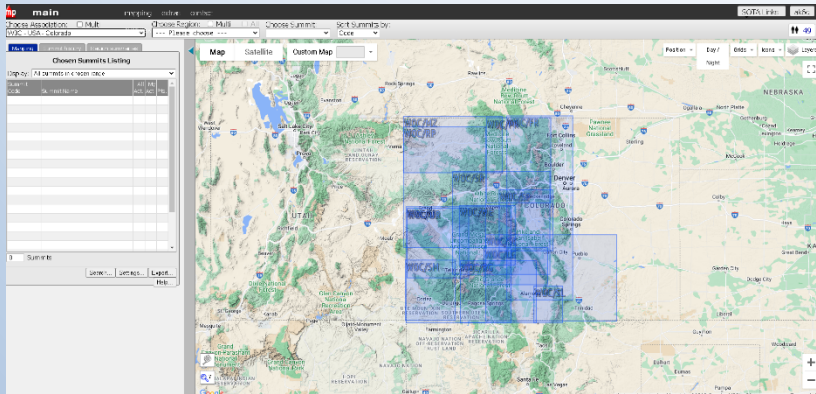


www.SOTAMAPS.org

Identify peaks

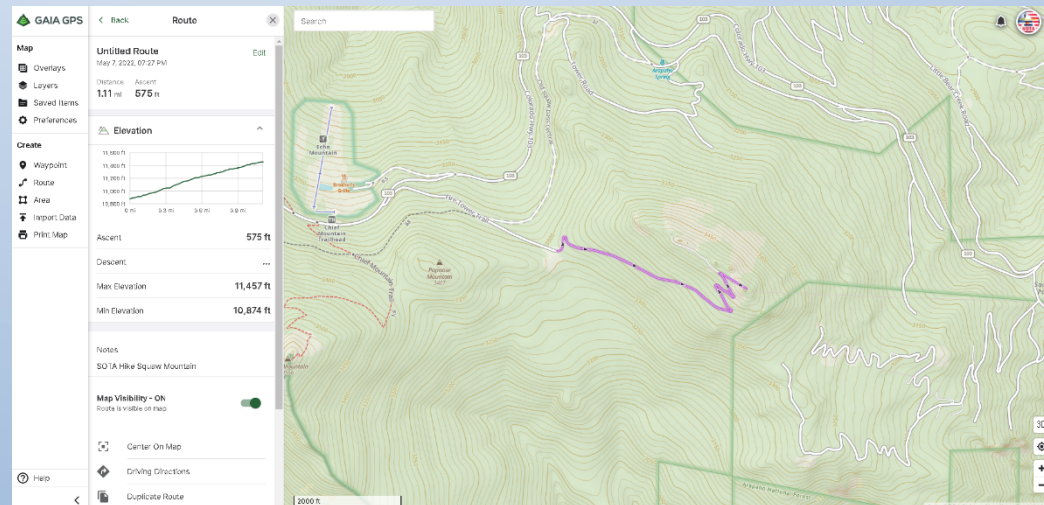
Plan trip and routes

Gives peak info



www.GAIAGps.com

Links to phone app with
routes, maps driving
directions...



ACTIVATION DAY



- Verify you have your gear in pack
- Know your route and timing
- Watch the weather, and enjoy the journey!
- Set up on summit
- Spot if possible Cell, APRS.... Ask a contact to spot you!
- Log your QSO's
 - Paper Log or notes (pencil?)
 - HAMRS..... (ADIF)

DATE	TIME	FREQ	MODE	STATION WORKED	REPORT SENT	REPORT RECD	COMMENTS
7/21	1129	14.285	SSB	KD5RZD	59	45	SNOWSHOE MTN
	1130			KF9D	59	55	WOC/R4-167
	1132			K7GT	59	54	
	1134			W1W7D	57	42	
	1135			W1B6POT	59	44	
	1133			KQ9E	59	55	
	1140			N7SP	56	55	
	1145			K2HKA	59	55	
	1158			N6GR	59	56	
1224				W1B7R1	44	44	MARTHA *
1211				W0MNA	44	44	GARY *
							*525
				W/Paul ACSG			WSA/PT-002
				Rocky WBSNTD			

09:49
Logbooks
QSOs

WOC-PR082. Squaw Pk

QSOs 13

THEIR CALLSIGN	RST S	RST R
<input type="text"/>	59	59
THEIR SUMMIT	TIME	
<input type="text"/>	15:49:21	<input type="button" value="II"/>
DATE		
2022-05-16	<input type="button" value="Clear"/>	<input type="button" value="Save"/>

FREQUENCY	BAND
14.285 MHz	20m
POWER (W)	MODE
5	SSB
MY SUMMIT	MY CALLSIGN
WOC-PR082	AK6Q

Signal Butte Summer Trip





Now what to do with that log?

- Use SOTA Data Base for tracking
www.sotadata.org.uk/en/
- Paper Logs scan be manually entered
- Import an ADIF File



SOTA Results and Summits Database

My Activator Log
AK6Q

Year: - Last 12 Months - Order: ☐ Show Analysis

Download complete log

Date	Own Callsign	Summit	QSOs	Points	Bonus Points	Total	Show Log	Delete	Download
2021-08-14	AK6Q	WOC/PR-082 (Mestaa'shehe Mountain)	9	6	0	6	Show Log	Delete	Download
2021-09-09	AK6Q	WOC/RG-107 (Snowshoe Mountain)	11	6	0	12	Show Log	Delete	Download
2021-09-18	AK6Q	WOC/FR-165 (Signal Butte)	7	4	0	16	Show Log	Delete	Download
2021-12-30	AK6Q	WOC/FR-087 (Bennett Mountain)	10	2	0	18	Show Log	Delete	Download

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SOTA Results and Summits Database

Callsign	Summit	Date	Time	Band	Mode	Other Callsign	Other Summit	Comment	Is S2S?	Is Chaser Entry?	Duplicate?
AK6Q	WOC/PR-082	14/5/2022	15:44	14MHz	FM	NN0G					
AK6Q	WOC/PR-082	14/5/2022	15:45	14MHz	FM	AC5S					
AK6Q	WOC/PR-082	14/5/2022	15:53	14MHz	FM	AC0FT					
AK6Q	WOC/PR-082	14/5/2022	15:58	14MHz	FM	NK7W					
AK6Q	WOC/PR-082	14/5/2022	16:02	14MHz	FM	N0CFM					
AK6Q	WOC/PR-082	14/5/2022	16:41	14MHz	FM	N0K9Y					
AK6Q	WOC/PR-082	14/5/2022	17:16	14MHz	SSB	K7FT					
AK6Q	WOC/PR-082	14/5/2022	17:17	14MHz	SSB	W0M0CB					
AK6Q	WOC/PR-082	14/5/2022	17:22	14MHz	SSB	W6DT					
AK6Q	WOC/PR-082	14/5/2022	17:23	14MHz	SSB	KF7E					
AK6Q	WOC/PR-082	14/5/2022	17:25	14MHz	SSB	AB6SO					
AK6Q	WOC/PR-082	14/5/2022	17:30	14MHz	SSB	W9DRB					

Please verify the uploaded details and click Submit when ready

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Squaw Peak (Mestaa`ehehe)



Lets do SOTA!



- You don't have to be a mountaineer!
 - Some summits you can drive near the top
 - You can participate as a Chaser from your shack
- But if you are...
 - There are many first expeditions yet to be done
 - It's a good excuse to enjoy the outdoors on the summit looking at the views
 - It's a great way to bring two hobbies together
 - Be careful it is ADDICTIVE!!!

Maybe Just Chase ???



*Is it the points/awards?
...Bragging rights?*

*Fine tuning and keeping your
station/
antenna in peaked
performance?*

*Respect? Payback for being
chased?*



Why Chase Responses



Larry K0RS:

Chasing QRP stations with improvised antennas...frequently on another continent...is a real DX challenge. Pulling a weak signal from the noise teaches one how to get the most from one's radio as well as fundamentals of propagation. And a dose of patience as well. The problem is, SOTA is addicting.

Paula K9IR:

When you chase summit activators, you can:

- 1. Join over 6,300 other hams in the chase, nearly 4,000 of them also activate summits.*
- 2. Enjoy making contacts and qualifying for awards without needing a super-station.*
- 3. Improve your ability to tune in, hear and work weak signal stations.*
- 4. Help activators log the required minimum 4 QSOs*

Chaser Tools



www.SOTALIVE.tk

SOTALIVE.tk interface showing a map of the United States and a list of active SOTA stations.

Map: A map of the United States with various SOTA stations marked by orange and red icons. The map includes state boundaries and labels for Canada, Mexico, and Guatemala. A scale bar indicates 500 km and 300 mi.

Active Stations List:

- K6TAA**
WSN/GF-009 9175, 2797m, 8 pts, USA - New Mexico
05/17 16:04 18.120 SSB
- KE7BGM**
W7A/AE-043 Porter Mountain, 2316m, 10 pts, USA - Arizona
05/17 16:09 7.035 CW
QRS 10 WPM K6HPX to follow on 5.332
- AA6XA**
W6/CT-271 Burn Benchmark, 943m, 2 pts, USA
05/17 16:15 7-18-cw, 146.52-fm [SOTA Spotter]
05/17 16:18 7.0299 CW
[RBNHole] at W6YX 21 WPM 18 dB SNR
- K3FBI/9**
W9/WI-003 Lookout Mountain, 588m, 6 pts, USA
05/17 16:00 14-cw, 14-ssb, 7-cw, 7-ssb, 10-cw, 5-cw Special Event Station - Natl Police Week; POTA: K-4238; APRS: K3FBI-7
05/17 16:22 7.053 CW
2ops on 2 bands same time
- PY2TTN**
PY2/SE-009 PY2/SE-009, 1198m, 6 pts, Brazil - Sao Paulo
05/17 16:23 28.390 SSB
- K6HPX**
W7A/AE-043 Porter Mountain, 2316m, 10 pts, USA - Arizona
05/17 16:25 5.332 CW
- KX0R**
W0C/FR-044 Green Mountain, 3176m, 4 pts, USA - Colorado
05/17 16:30 7.033-cw, 10.113-cw, 14.063-cw, 18.093-cw, 146.55-fm ETA approx, monitoring 146.55, looking for S2S
- K5SJC**
W0C/SP-074 Burntop, 3379m, 6 pts, USA - Colorado
05/17 16:30 10-cw, 14-cw, 18-cw time + / -

Questions?



www.sota.org.uk

www.sotawatch.org

<http://groups.yahoo.com/>

[WØC SOTA \(w0c-sota.org\)](http://w0c-sota.org)

SOTA