



Summits On The Air

Taking Ham Radio to the Mountaintop

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East Bay Amateur Radio Club July 10, 2015 Meeting

Thanks to Guy, N7UN, for Sharing Draft Slides

Summits on the Air



- Why operate in the mountains?
- What is the SOTA awards program?
- How do I participate?
- How do I start activating and what equipment should I use?

Summits on the Air

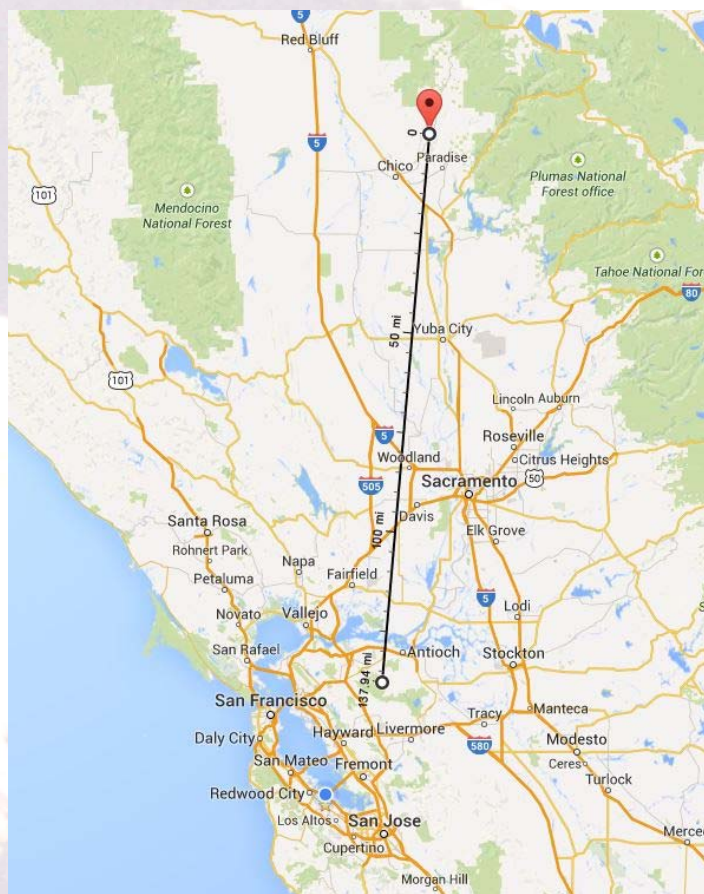


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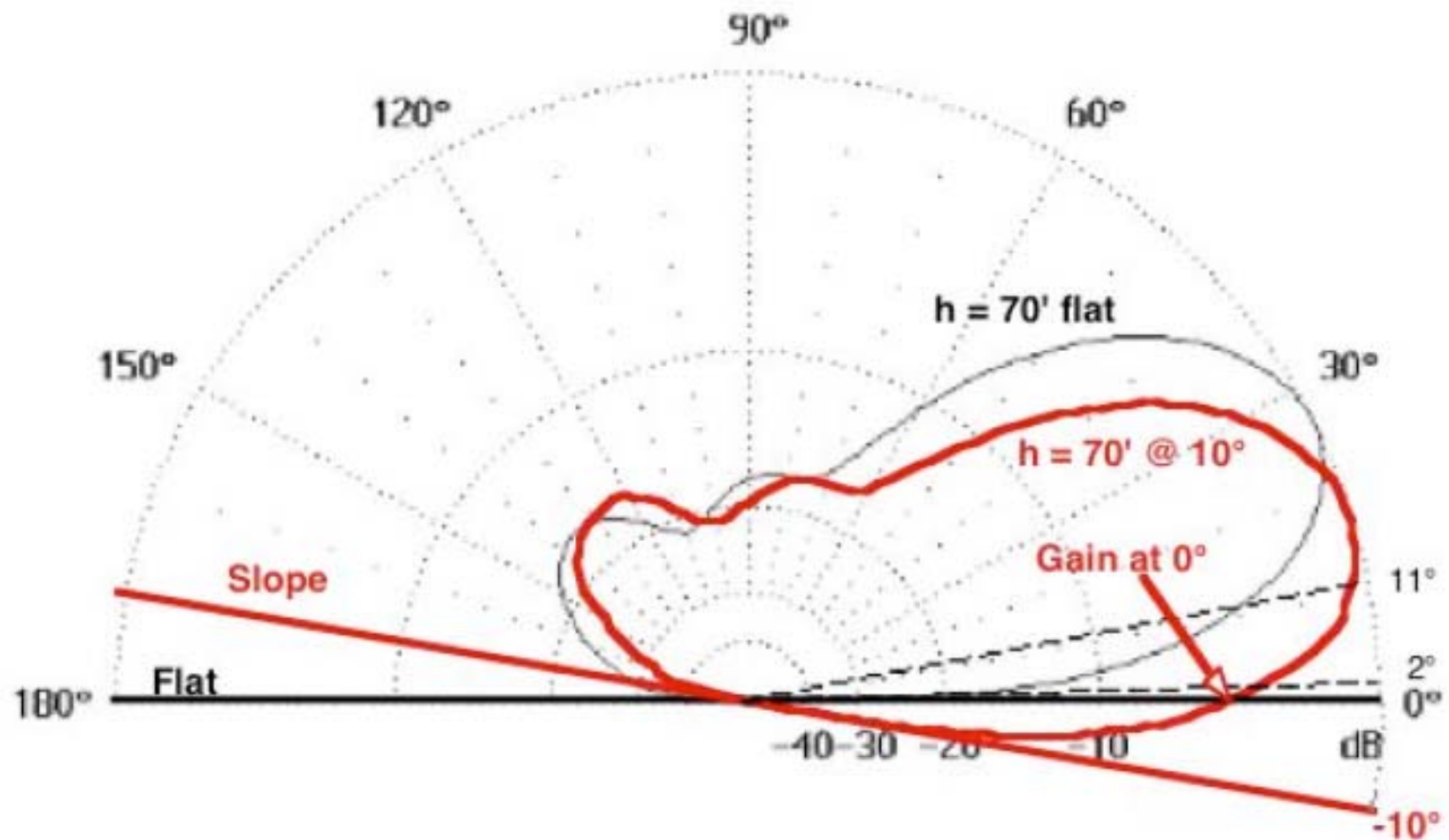
VHF: Elevation Advantages

W6/CC-052 North Peak, Mt. Diablo

2m HT/Whip Personal Record 6 Dec 2014!



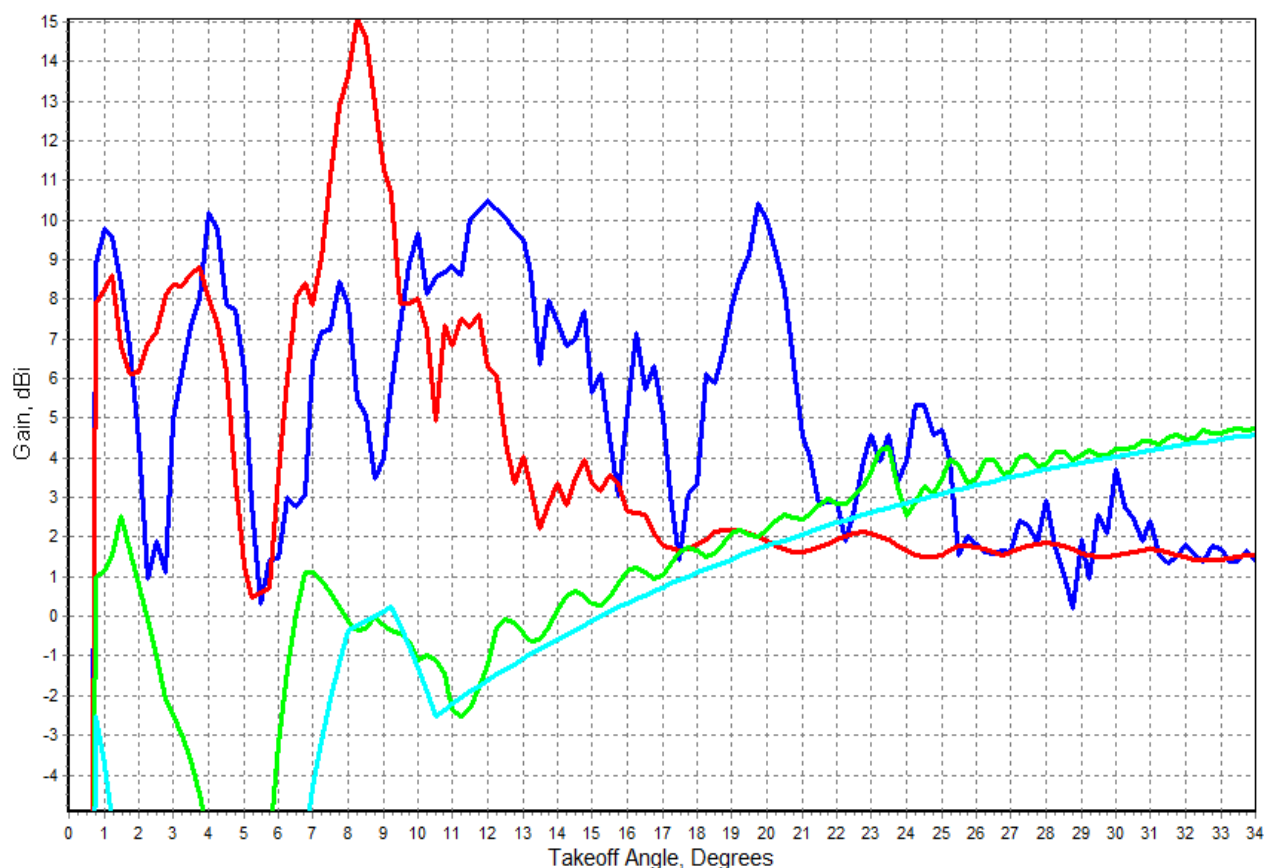
HF Advantages: Ground Gain Under the “Tip the Pic” Slope Model



HF Advantages: HFTA Gain Comparison of Stanford Condo vs. Box Springs Mtn. HP (W6/CT-180)



HFTA, Copyright ARRL 2003-2004, by N6BV, Ver. 1.03



Freq. = 14.1 MHz
Max. Gain: 15.1 dBi

AZI-70.00.PRO
16 ft
Dipole

AZI-100.00.PRO
16 ft
Dipole

AZI-70.00.PRO
16 ft
Dipole

AZI-100.00.PRO
16 ft
Dipole

Print

Out File

Close



HF Advantages: Ground Gain

Comparison of Home QTH, W6/CT-180

- At low elevation angles:
 - ~12-15dB gain over home station with identical antenna
 - equivalent to 10W home station w/ a 50W amp
- Open a band before other QRP stations and some LP stations (higher MUF at low angles)
- BONUS: improved noise floor at most rural/remote sites

Summits on the Air



- Why go operate in the mountains?
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What is the SOTA program?

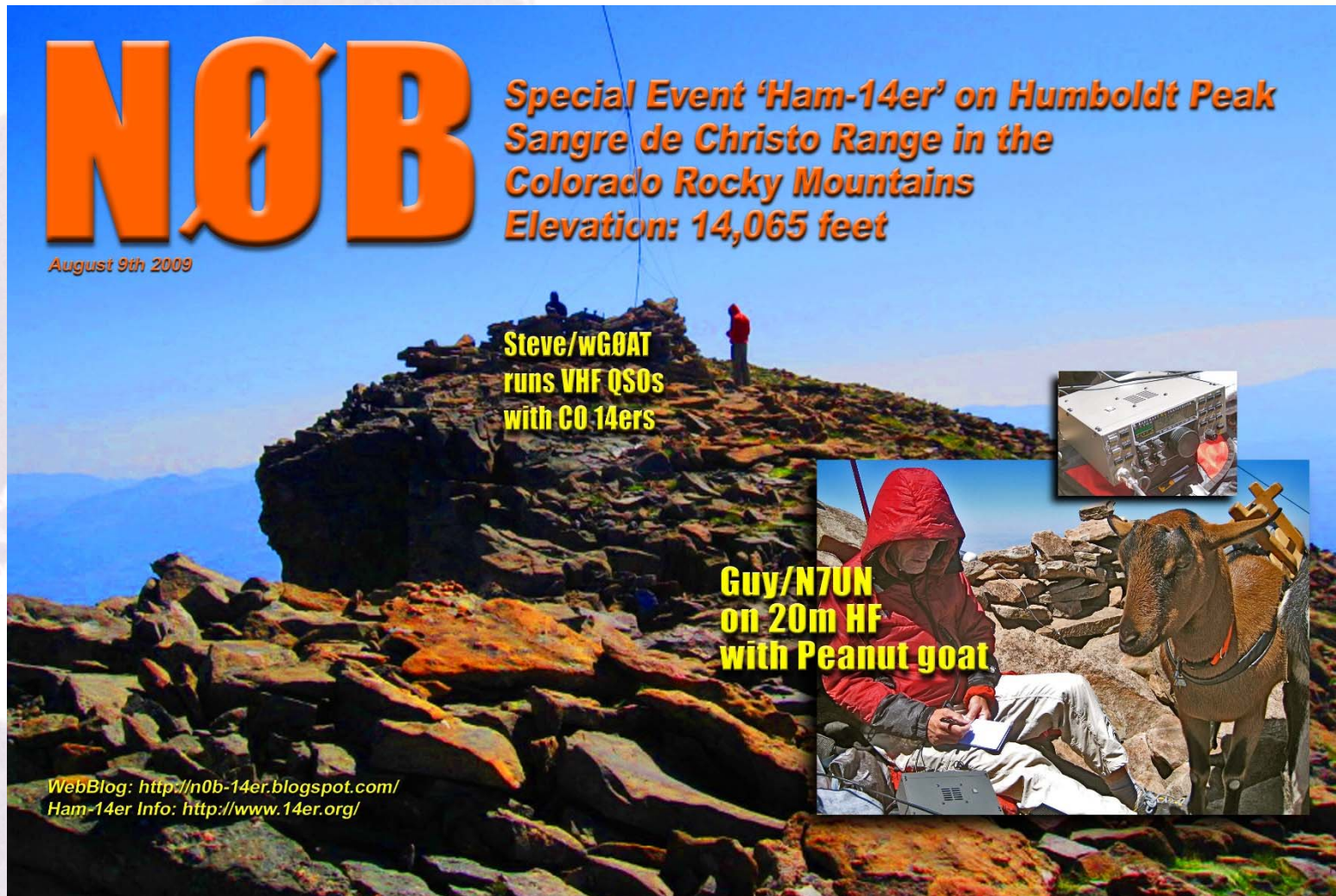


“**Summits on the Air (SOTA)** is an award program for radio amateurs and shortwave listeners that encourages portable operation in mountainous areas. There are awards for *activators* (those who ascend to the summits) and *chasers* (who either operate from home, a local hilltop or are even Activators on other summits).” From www.sota.org.uk

Richard, G3CWI/P on Snowdon - GW/NW-001



wG0AT, N7UN on Humboldt Peak, CO



NØB *Special Event 'Ham-14er' on Humboldt Peak
Sangre de Cristo Range in the
Colorado Rocky Mountains
Elevation: 14,065 feet*

August 9th 2009

Steve/wG0AT
runs VHF QSOs
with CO 14ers

Guy/N7UN
on 20m HF
with Peanut goat

WebBlog: <http://n0b-14er.blogspot.com/>
Ham-14er Info: <http://www.14er.org/>

The main image shows a rocky mountain peak under a clear blue sky. In the foreground, a person in a red jacket is sitting on the rocks, looking at a laptop. To their right, a brown goat is standing. In the background, another person in a red jacket is visible on the peak. Two inset images are present: one showing a close-up of a ham radio and another showing a person in a red jacket sitting on the rocks.



General SOTA Overview

- SOTA is not like DXCC
- A honor-based, decentralized program, administered by national and regional associations
- DX entities create one or more “Associations”
 - US: Call areas or states (W6, W9, W1, W7A, W7O)
- Associations maintain the summit lists and decide scoring, and set assoc-specific rules
- SOTA scoring is based on elevation of peaks within each association, on a 1-10 point scale
- Activators, Chasers (& SWLs)



~100 Current SOTA Associations

- G - England
- GW - Wales
- GD - Isle of Man
- GM - Scotland
- GI - Northern Ireland
- HA - Hungary
- F – France
- EI - Ireland
- DM - Germany
- OE - Austria
- SV - Greece
- ZS - South Africa
- HB - Switzerland
- W2 – USA
- ON – Belgium
- OK – Czech Republic
- OH – Finland
- SP – Poland
- LA – Norway
- HB0 – Liechtenstein
- ON – Belgium
- OK – Czech Republic
- OH – Finland
- SP – Poland
- LA – Norway
- HB0 – Liechtenstein
- SM – Sweden
- S5 – Slovenia
- PA – Netherlands
- OD – Lebanon
- TK – Corsica
- Z3 – Macedonia
- W1 – USA
- **W6 – USA**
- VE2 – Canada
- W3 - USA(W3)
- VP8 - Falkland Islands
- LX - Luxembourg
- 9H - Malta
- OZ - Denmark
- YO - Romania
- E7 - Bosnia-Herzegovina
- VE1 - Canada (Novia Scotia)
- W0 – USA (5 assns.)
- UT – Ukraine
- W1 – USA
- W5 - USA (5 assns.)
- HL - South Korea
- W7 - USA (W7, 7 assns.)
- EA1 - Spain - North West
- EA3 - Spain (Catalunya - EA3)
- EA2 - Spain (North - EA2)
- EA8 - Canary Islands - EA8
- EA5 - Spain (Southeast - EA5)
- EA4 - Spain (Center - EA4)
- VE7 - Canada (BC)
- W4 - USA(W4)
- IS0 - Sardinia
- I - Italy
- CT – Portugal
- JA – Japan (as of June 2015)

And more....



The W6 Association

- 3,761 qualifying summits in 16 (overlapping) mountain regions
- Most summits in the Bay Area are in the Northern Coastal Ranges Region (NC) or Coastal Ranges (CC). Tahoe region is the Northern Sierras (NS) region.
- Example:
 - Mt. Tamalpais, W6/CC-063
 - San Bruno Mountain, W6/CC-072
 - Mt. Davidson, W6/NC-423
 - El Sereno, W6/NC-191
 - **But not** well-known Mission Peak. Why?

When is a peak a SOTA summit?

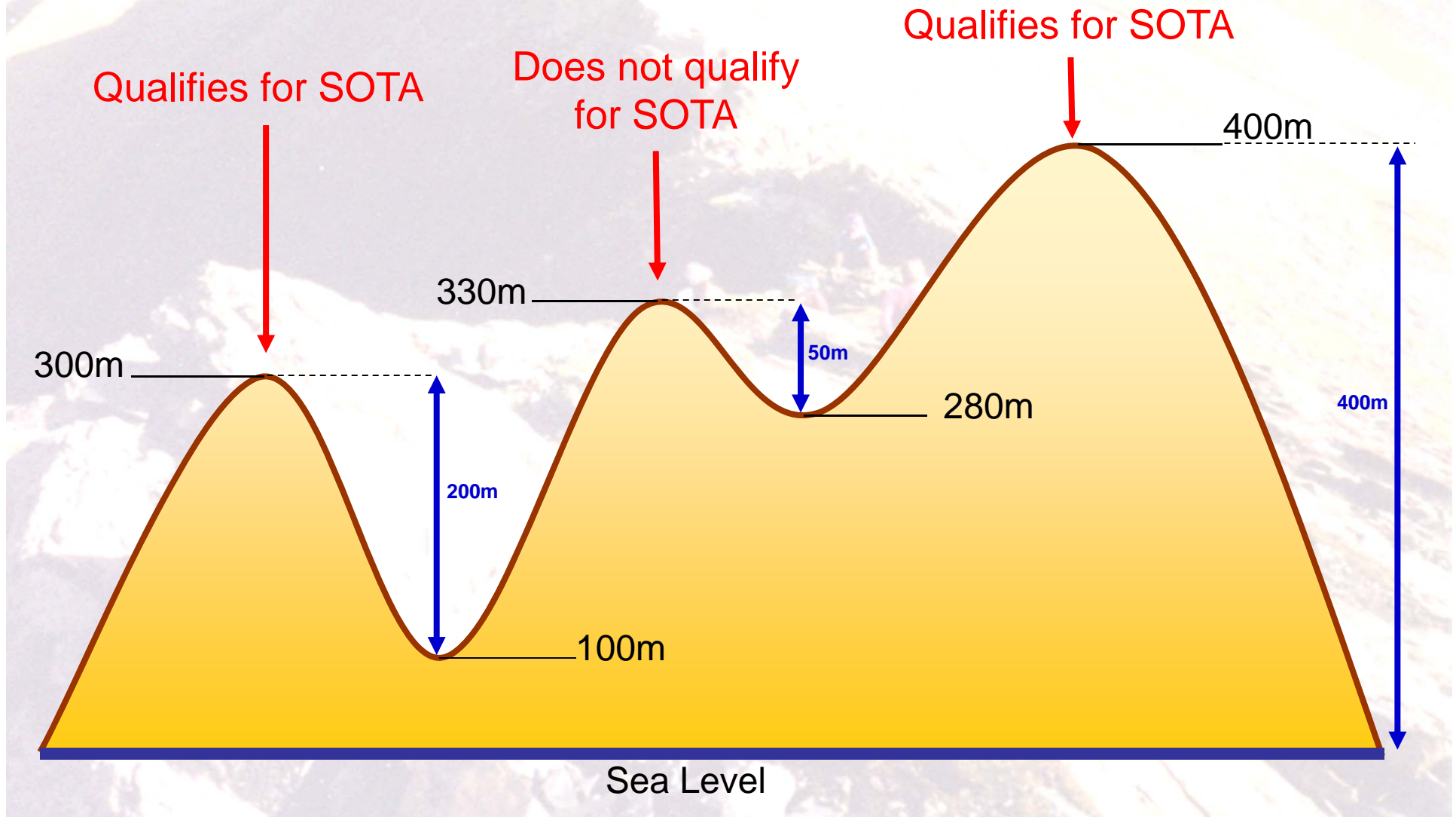


- A peak qualifies for SOTA when:
 - Prominence is greater than 500 ft (150m) from surrounding peaks (this varies by region)

Definition: “The height of the peak’s summit above the lowest contour line encircling it and **no higher summit.**”-Wikipedia

- If prominence= P meters, one must physically descend at least P meters to get to higher terrain.
- See listsofjohn.com for information on summits and their elevation and prominence.

Prominence Definition





SOTA Scoring

- Based on ASL elevation of a qualified peak
 - Varies by Association
 - May include a “seasonal bonus” for activators
 - Activators can claim points for a peak once per calendar year, chasers once per calendar day

- Scoring in W6:

Under 2500'	1 point	(645 peaks)
2500' to <4000'	2 points	(835 peaks)
4000' to <5500'	4 points	(646 peaks)
5500' to <7500'	6 points	(724 peaks)
7500' to <11000'	8 points	(563 peaks)
11000' +	10 points	(305 peaks)



How to Find/Research Peaks

2.8.1 Regional Notes

This region was created in version 2 of this document and overlays the northern portion of the Coastal Ranges region. Its southern border with Southern Coastal Ranges (W6/SC) is formed (west to east) by SR 129, north on US 101 to SR 152, then east along SR 152 to the Central Valley.

2.8.2 Table of Summits

Northern Coastal Region W6 California (NC-xxx) SOTA Table											
Ref	Summit Name	Height		Longitude	Latitude	Valid Dates		Pts	Prom	Grid	
Number		(m)	(ft)			Start	Until		(ft)	Square	County
W6/NC-001	Snow Mountain East	2151	7056	-122.7522	39.3833	8/1/2012		6	2519	CM89oj	Lake
W6/NC-002	Tomhead Mtn.	2061	6763	-122.8171	40.1367	8/1/2012		6	1284	CN80od	Tehama
W6/NC-003	Brushy Mtn.	2060	6760	-122.8527	39.6644	8/1/2012		6	1580	CM89np	Glenn
W6/NC-004	Saint John Mtn.	2056	6746	-122.6935	39.4346	8/1/2012		6	1846	CM89pk	Glenn
W6/NC-005	Bald Mtn.	2054	6740	-122.9742	39.6206	8/1/2012		6	1160	CM89mo	Mendocino
W6/NC-006	Snake Ridge	1991	6533	-122.7587	39.9887	8/1/2012		6	553	CM89ox	Tehama
W6/NC-007	Sheetiron Mtn.	1982	6503	-122.7342	39.4914	8/1/2012		6	1523	CM89pl	Lake
W6/NC-008	Big Signal Peak	1882	6175	-123.0961	39.5160	8/1/2012		6	2675	CM89km	Mendocino
W6/NC-009	Crockett Peak	1881	6172	-122.7759	39.4298	8/1/2012		6	1112	CM89ok	Lake
W6/NC-010	Goat Mtn.	1866	6121	-122.7149	39.2603	8/1/2012		6	1861	CM89pg	Colusa
W6/NC-011	Goat Hill	1864	6116	-122.7603	39.8296	8/1/2012		6	1136	CM89ot	Tehama
W6/NC-012	Summit Springs Hill	1813	5947	-122.7356	39.6160	8/1/2012		6	527	CM89po	Glenn
W6/NC-013	Etsel Ridge	1811	5940	-122.9818	39.6969	8/1/2012		6	720	CM89mq	Mendocino

- Peak reference numbers: [Association Prefix]/[Region]-[Serial Number]
- See the SOTA W6 Association Reference Manual for a full list of peaks

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Participation Roles

- **Activators** – those who go to a peak
- **Chasers** – those who work the activator
- Each group gets “points” for their participation equal to the peak point value. Points total for awards.
- Activators: claim points once per calendar year
- Chasers: work a peak once per UTC calendar day for points



Getting Started

- SOTA-specific online tools
 - sotawatch.org: Read profiles of past ops, announce activation, self-spot (integrated with RBN)
 - sotamaps.org: Good mapping tool. Use “range” tool to find nearby peaks
 - sotadata.org.uk: Submit log results, view rankings on honor roll
 - sota.org.uk: Basic info, including SOTA General Rules and association manuals



Summit Information for W7/CU-001

Borah Peak - 3859m, 10 points

Association: USA(W7) **Region:** ID - Custer County
Latitude: 44 8 14 N, **Longitude:** 113 46 52 W

Today's Sunrise: 13:03 UTC, **Today's Sunset:** 02:11 UTC

Relative to home QTH: 3111.1 km, 262 degrees
[Google Map](#) | [Open in Google Earth](#)

Resources

Feel free to add external links [↗](#) and articles relating to this summit that activators and chasers may find useful or interesting. Please read the disclaimer notice at the bottom of the page.

No resources for this summit

[Add new external link](#) | [Add new article](#)

DISCLAIMER: The SOTA programme and its Management Team is not responsible for the content of external internet sites or for information added by third parties to this website. Please contact the SOTA Management Team if you have concerns about submitted content. The existence of information relating to a particular location does not confer or imply any right of access. Participation in the SOTA Programme is at the risk of the participant.

Summit Activity

Total Activations: None yet!

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Bands and Modes

- VHF+
 - Lots of 2m FM (146.52, especially in SF Bay Area)
 - SSB is less common, CW used occasionally
 - 6m/10m Challenge currently underway (15 May-15 August) for Es season
- HF
 - Lots of CW, due to QRP (low power) equipment. QRP SSB about as common.
 - QRP calling frequencies +/-, 14.340+ SSB



How to Chase/Activate

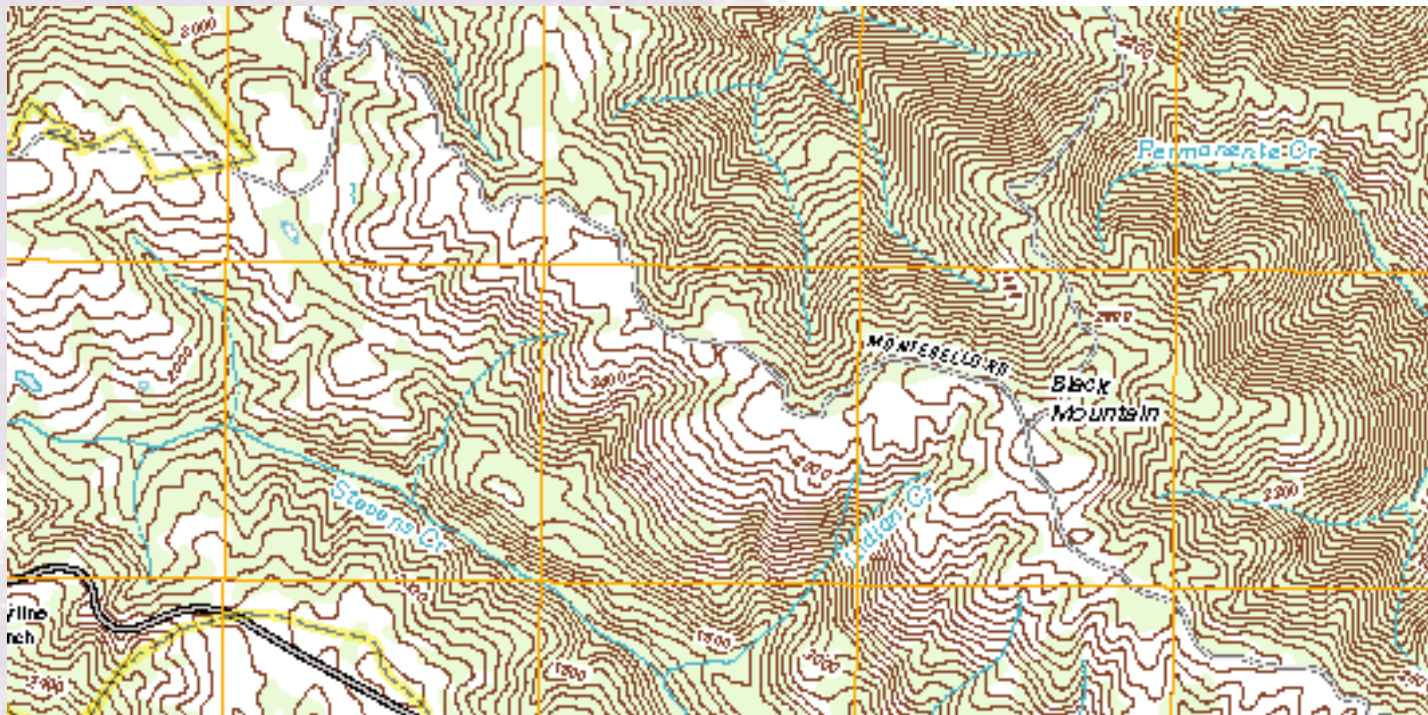
- Non-Mountaineering Options
 - You can participate from your shack or w/ HT
 - Some summits where you can almost drive to the top
 - The SF Peninsula and East Bay have several dozen accessible 1 and 2 point summits
- Adventure Options
 - There are many first expeditions to be done
 - Difficult peaks in this area have yet to be activated (e.g., Mt. Sizer, 15-mi RT hike in Santa Clara County)
 - Reconnaissance to determine property access (legal and physical), and the climb/hike part of the challenge



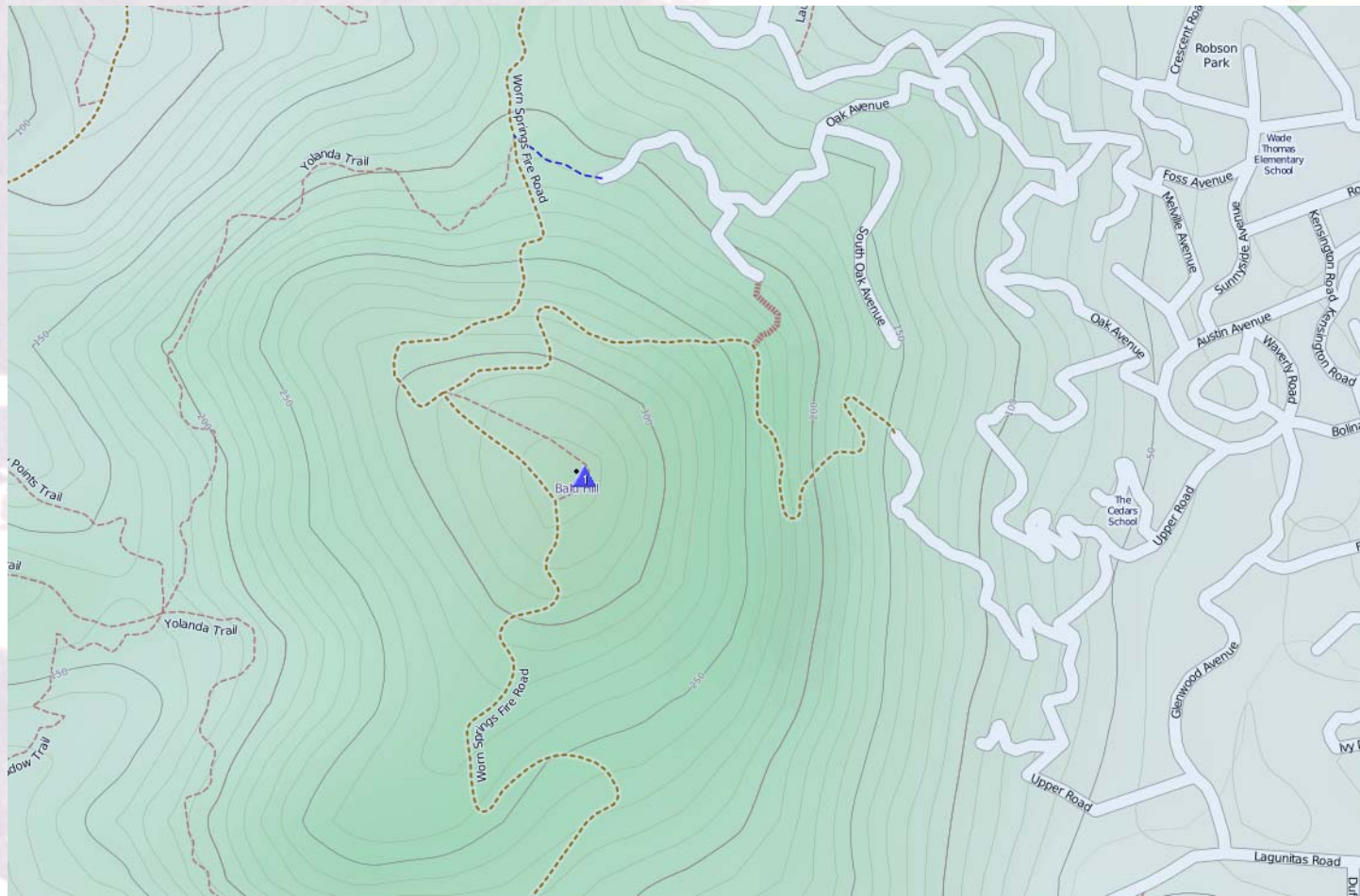
Mountain Safety

- Safety is important to SOTA
- Consider your competence for a climb
- Take careful inventory when packing
- Golden rules
 - “Ten Essentials”: pack water, food, paper maps, compass, first aid
 - Keep track of time/light, especially in winter (cold/dark) and heat/sun (summer)
 - Dress in layers, pack gloves/hat. Windy WX on peaks.
 - Don't use electronics (GPS, cell phone) alone.
 - Maps: print terrain/trail maps from sotamaps or USGS

Paper Maps from USGS 7.5'x7.5' Quads, Crop & Print



Paper Maps From sotamaps.org (use OSM Cycle Trail Maps) [NF1R's Preferred Option]





Rules for Activators

- Organizing principle: Leave No Trace/low impact
- Portable power (no combustion generators)
- Nonmotorized “final access” to activation zone (80 vertical feet from summit)
- No operation in the “vicinity” of motor vehicle
- Must make contact with 4 unique calls of people not on the mountain with you.
- No terrestrial repeater QSOs.
- See the SOTA General Rules and W6 Association Manual for more detailed rules



Equipment

- Typical activator radios
 - Elecraft KX1, KX3; IC-703; FT817
 - HTs for 2m FM
- Typical antennas
 - VHF: J-poles, long whips, small Yagis/Moxons
 - HF: End-fed half-wave (EFHW), linked (jumper) dipole, 44' or 88' Norcal doublet, Buddipoles, verticals, magnetic loops
 - “Wonderpole” fiberglass (\$20) or carbon fiber pole (\$20-\$100+, allfishingbuy.com)
- Power: Internal batteries (NiMH), sealed lead acid/gel cell, LiFePO, Li-Ion polymer

Typical SOTA Equipment



Portable Radios e.g. Yaesu FT817



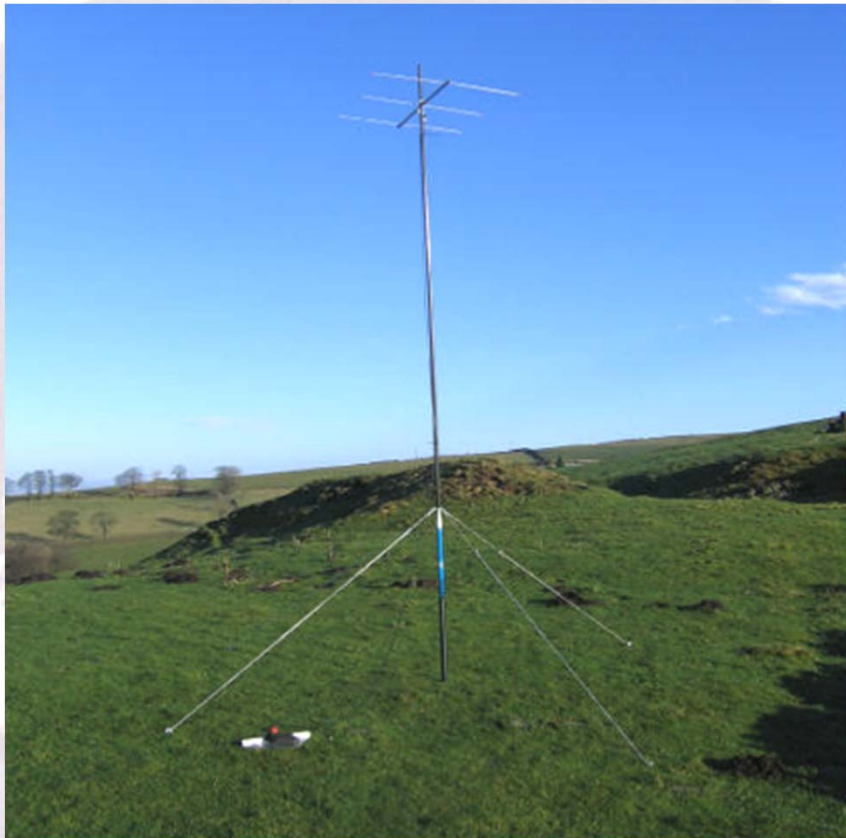
Handheld Radios
e.g Yaesu VX7



QRO (relatively light) Radios e.g. Yaesu FT857



Typical VHF SOTA Equipment



A portable Sotabeams yagi and fibreglass "fishing pole"

San Bruno Mtn, W6/CC-072



Hogback Mtn, W4V/SH-007



Hogback Peak, W4V/SH-007



Hogback Peak, W4V/SH-007



W6/CT-243 Mt. Rubidoux



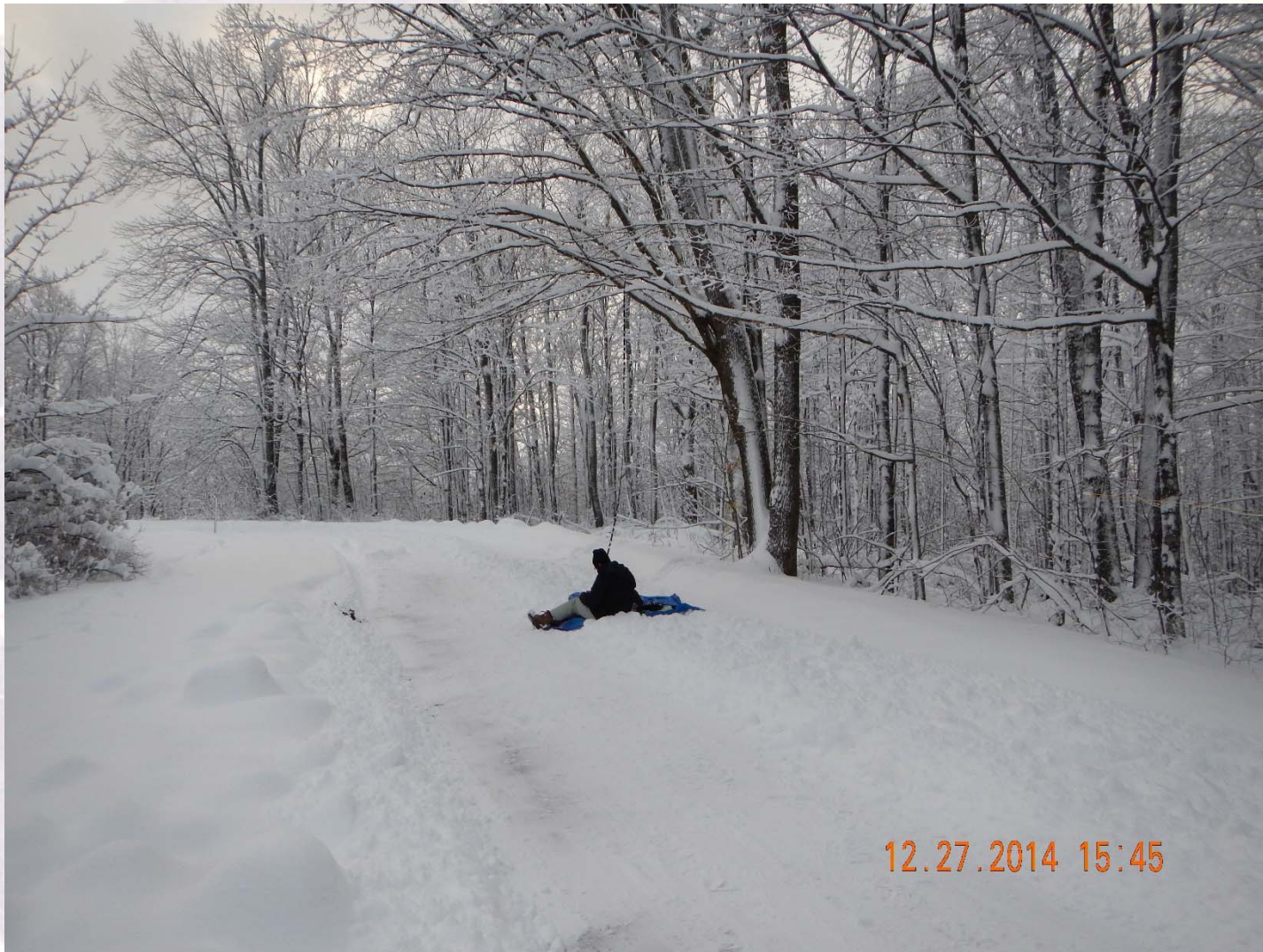
W6/CT-243 Mt. Rubidoux



W9/WI-003, Sugarbush Hill



W9/WI-003, Sugarbush Hill



12.27.2014 15:45



Summary

- So start chasing or climb a local peak!
- Use the SOTA Internet based tools
 - *Alerts* announce upcoming activations
 - *Spots* report ongoing activations/QRG
 - Track points, get awards by logging QSOs on sotadata.org.uk.
- Be careful, SOTA activating/chasing is addictive (features frequent, unpredictable rewards)



Questions?

nall@stanford.edu

www.sota.org.uk

www.sotawatch.org

sotadata.org.uk

Join **nasota@yahooogroups.com** to follow US-related
discussions

Appendix: SOTA equipment



- Rigs: Elecraft KX3, Elecraft KX1, Yaesu VX7R
- Antennas:
 - Alexloop Walkham (~\$400, 40-10m)
 - LNR Precision EndFedz Trail-Friendly II \$75
 - Jumper dipole: SOTAbeams kit
 - Pryme AL-800 whip for 2m FM
- Batteries:
 - Tenenergy LiFePO4 scooter-type battery (~\$80)
 - Zippy 11.1V LiPo model airplane batteries (HobbyKing) for KX1
- Antenna masts (don't use narrowest sections):
 - Jackite pole 31' (heavy fiberglass, ok for short hikes)
 - Wonderpole 20' fiberglass crappie pole (\$20 Walmart)
 - Carbon fishing pole from allfishingbuy.com (\$70)