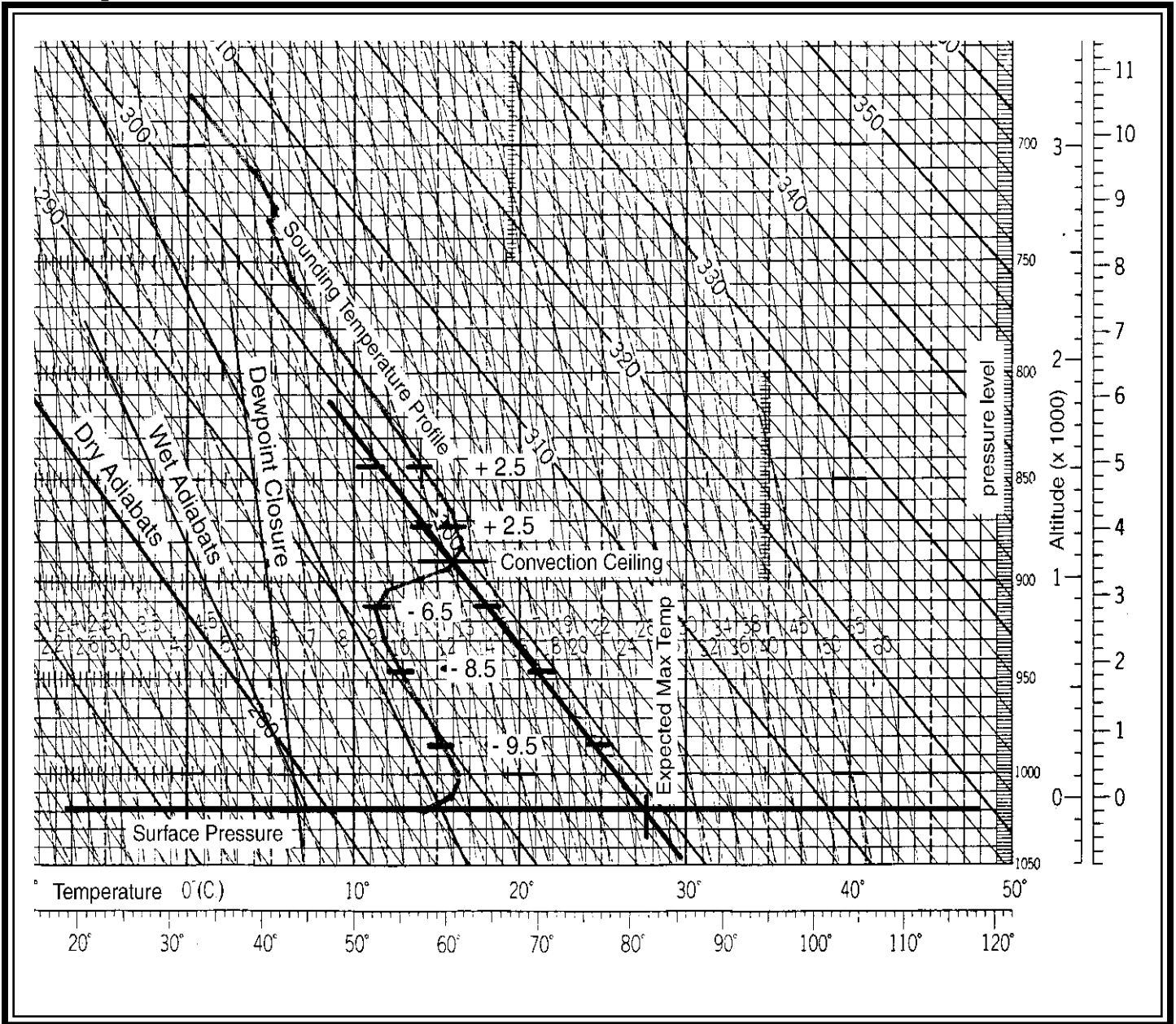


# FLIGHT LINE

THE PUBLICATION OF THE WINGS OF ROGALLO  
 NORTHERN CALIFORNIA HANG GLIDER ASSOCIATION  
 VOLUME 101, NUMBER 08, AUGUST 2001



Made ya look!

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## The Editor's Turn

Our very own Mark Mulholland is finally back in the US! He was medevaced from Spain back to the US a week ago, and is now here in the Bay Area. As this issue of *Flight Line* was going to press, he was about to be moved to a different hospital for surgery on his pelvis, so I do not know his latest status, but we'll try to have info on the **WOR** Web Site at <http://www.wingsofrogallo.org>. I'm sure Mark and his family would appreciate good wishes from everyone in the club, so give him a call or drop him a line.

Barry Levine has raised some objections to Paul Klemond's article, *Flying the Crowded Skies*, in the last issue of *Flight Line*. After some discussion with Barry, I believe the controversy revolves around how and when to apply the right-of-way rule for passing on a ridge. In particular, is it acceptable for a PG to fly slowly close to the ridge in what HG pilots would consider the 'passing lane'? If you look at this one way, this is a clear violation of the ridge rules. But if you look at it another way, if I'm flying a HG, should I be required to leave the lift band and fly far from the ridge just because there's a sailplane somewhere behind me?

This is not a trivial question. Barry raises an important issue, to which I do not have an answer. I have included an edited version of Barry's letters in this issue of *Flight Line*, and I invite comments from everyone in the club.

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## Ed Levin Report

by Steve Pittman

### The Ed Levin 1750' primary windsock is back up

Thanks to the many people who joined the work party on Saturday, June 16th, a new windsock mast is installed at the 1750' launch. The

new mast is a considerable improvement over the old one in that a single person can step (lower and raise) the mast to replace the windsock. The club owes a special thanks to Ernie Reguly, who designed and built the improved mast base, and to Randy Tribe, who led the entire effort. The Ed Levin maintenance department (John Patterson and others) also helped by lending us tools that were particularly useful in the excavation effort and the Ed Levin rangers (Mike Maximovich and others) helped by hauling 50 gallons of water up the hill in a pickup with a water tank. When you see them, please thank the following **WOR** members for excavating the hole for the windsock base (roughly a foot of the depth through solid sandstone) and then pouring cement to anchor the base in place: Bob Carlson, Peter de Rooi, James Ellis, Robert Johnston, Don Jones, Whitney Gleckner, Irene Hagen, Peter Kalab, Rob Kinchen, Tim Kuenster, Chris Manlove, Joseph McEaney, Wayne Michelsen, Clifton Moody, Nick Mora, Ken Petrochko, Rob Reiter, Simon Rowell, Ken Seeds, and Kathy Wilde.

### Ed Levin 300' gate left open

The gate to the 300' launch has been left open on two occasions recently. Luis, the Ed Levin ranch manager, had to spend several hours rounding up cattle both times. It is very possible that **WOR** members are not responsible. Please let me know if you find the gate open. Just leave a message at 925-277-5080 letting me know the date and time of the incident.

I will plan to change all gate combinations during **WOR** membership renewal early next year. In the meantime, please make sure the gate is closed and locked whenever you pass by or through it.

## Problems with the new walkovers

The cows have been able to get over the new walkovers on either side of Minnis Road. John Patterson, Ed Levin Park maintenance supervisor, saw them cross both walkovers from the lower pasture to the upper pasture. Needless to say, I am frustrated.

On Thursday morning July 26, I modified the walkover uphill of Minnis Road. I raised the height of the top step and replaced the top step's deck with six 3"x1" planks with 1.5" gaps between them. I intentionally used only a few nails in each plank, in the hope that the deck would seem rickety to cattle and they would therefore be less inclined to attempt to cross it. Please do not to hammer any more nails into it in a misguided attempt to make it stronger. Although the new deck is considerably weaker than the deck constructed on March 3, even the heaviest pilot can cross it without a problem if they place their feet near the center of the step, which is supported by a central joist. Staying near the center of the step will, of course, be the natural inclination of a pilot carrying a glider, since the control frame must pass through the opening, meaning that the pilot must stay near the center.

The modification only cost \$30 and I did the work by myself. Although solid now, the deck will likely only last a few years. I hope that after the cattle have learned they can't cross it, we can replace it with something slightly more substantial and still keep the cattle in. I haven't gotten positive confirmation from Luis that the modification keeps the cows in, but Luis thinks it will work.

We must modify the walkover downhill of Minnis Road to discourage the cows. [Note: *If the cows get discouraged, will they*

*require counseling?* Ed]. There are several alternatives:

1. Ron Schaeffer, a **WOR** member who works for Fluid Industrial Systems, says he could remove some bars from the grating and make the openings considerably larger. Given that the cows are now used to crossing the grating, it is unlikely that such a modification alone will discourage them, but Ron also has access to a solar/battery powered electric gate, similar to an electric fence, but with an insulated handle that can be used to open and close it. He proposes to lend it to the **WOR**. We can use it to close the opening where the grating is, in hopes that the cows come to associate the grating with an electric shock. Pilots who walk up the hill will have to open and close the gate while it is there, but we will only leave it in place for a few months. There is, of course, a significant possibility that the cows won't be fooled and will begin walking over the grating again once the electric gate is removed.

2. Luis, the ranch manager, suggests that we replace the grating with a cattle guard like the one on the road to the top. I drove up and measured that cattle guard. It was originally constructed of sections of two-inch steel pipe mounted 5.5" apart (on-center). But someone removed every other section of pipe, leaving the remaining sections 11" apart (on-center)!? The only motivation I can think of for such a modification is that the cows were able to cross the cattle guard as originally constructed. Two-inch steel pipes mounted 11" apart do not seem suitable for pedestrian traffic.

3. A better option is the cattle guard shown in Figure 13.19 at <http://www.fao.org/inpho/vlibrary/s1250e/S1250E1c.htm>. The cattle guard described there consists of 4" round posts mount-

ed 8" apart (on-center). Such a cattle guard seems much more practical for pedestrian traffic. The web page calls for a pit 20" to 32" deep beneath the posts, which is possible to arrange.

4. Another option is to build steps at the top of the walkover similar to, but wider than, the existing walkover across the fence between the breakdown area and the triangular dirt parking lot. The steps would be similar to those there before we built the new walkover. Such a project would require carpentry skill. The required lumber would likely cost the **WOR** more than the other options. On the other hand, such steps are more suitable for pedestrian traffic and will make life easier for pilots.

My current thinking is to ask Ron Schaeffer to attempt his modification to the grating and to install the electric gate, assuming the **SCCPRD** agrees. If that doesn't work, I propose to pursue option 3. But if the **WOR** thinks it is worth the money and effort, I would consider option 4. If you have an opinion, please attend the next **WOR** meeting and voice it.

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## July 2001 Meeting Minutes

by Paul Clayton

### NEW MEMBERS/GUESTS

Mike Hedblom - Hang 1, flies a Falcon 225.

### GREAT FLIGHTS

Kevin Cameron - flew 174 miles from McClellan in 6 3/4 hours, reached 17500 ft.

Vince Endtner - Flew 51 miles from McClellan; also had flights of 102 and 75 miles from King Mountain in Idaho.

Wayne Michelson - Soared for 1 hr at Ed Levin.

Rick Dumlao - Flew 28.5 miles in 3 1/2 hours at Chelan.  
Tom Moock - 30 mile flight at Chelan.  
Jim Woodward - Took 2nd in Lakeview Trophy Dash.

PRESIDENT'S REPORT - Steve Rodrigues

A flyin was held Saturday in support of Mark Mullholland, who is recuperating from an accident in Spain. There were some unpaid dinner tickets from last month's meeting. Please make sure you pay your tab. 147.495Mhz is designated as the official club frequency for 2m ham communications.

VICE PRESIDENT'S REPORT - John Wilde

Ed Levin does not currently need mowing. The Red Bull meet has been postponed indefinitely.

TREASURER'S REPORT - Don Jones

The club is solvent. At this time of year, expenses exceed income.

MEMBERSHIP COMMITTEE REPORT - Carmela Moreno

We have 485 paid members for 2001.

FLIGHT DIRECTOR'S REPORT - Steve Rodrigues

There have been several incidents lately, which fortunately have not resulted in any injuries.

ED LEVIN SITE COMMITTEE REPORT - Steve Pittman

The cows have been getting out by climbing over the walkovers. The addition of stripes and other modifications are under consideration. As far as we know, none of these cows required counseling.

MISSION PEAK SITE COMMITTEE REPORT - Steve

Rodrigues

The LZ is large enough that it is not necessary to fly downwind of the trees on approach.

MT. DIABLO SITE COMMITTEE REPORT - None

NEWSLETTER REPORT - None

COMPETITION COMMITTEE REPORT - None

SITE ACQUISITION REPORT - Gene Pfifer

Gene attended a meeting of the county parks department steering committee. A proposal for opening another flying site is currently being prepared.

OLD BUSINESS -- None

NEW BUSINESS

Gordon has put a group photograph of the Mark Mullholland fly-in on a website, at <http://home.pacbell.net/skygawd/formark/.html>. If you wish to send funds for Mark and his family, make checks payable to WOR, with a memo indicating that they are intended to benefit Mark.

Carmela Moreno brought a tape of the Mark Mullholland fly-in for entertainment.

END OF MEETING MINUTES

*[Editor's note: Barry's original discussion took the form of e-mail. I have edited his messages and added what I felt was the necessary background to turn them into an article, but editing of this sort is always difficult. If I have not done justice to Barry's arguments, the fault is my own.]*

Comments on Paul Klemonds

Article Share the Air

from Barry Levine

The Rules of the Ridge state:

- 1) The pilot with the ridge on his/her right has the right of way.
- 2) Yield to any pilot turning away from the ridge."
- 3) The faster aircraft should pass on the inside (between the slower aircraft and the ridge) to avoid pinning the slower aircraft against the ridge.

In his discussion of the third of these rules, Paul Klemmond suggests that "(Warning: This rule varies between sites and even between aircraft types! Learn the local protocol before flying any site!) At some sites, faster aircraft should pass on the outside (away from the ridge). Be prepared to yield in case anyone you're passing turns away from the ridge! It could happen suddenly! At other sites, faster aircraft pass on the inside (between the ridge and the aircraft you're passing.)"

I don't know where he gets this stuff about overtaking a slower glider on the outside. That's contrary to everything I've ever learned, dangerous, and illogical. Does anyone know any precedence for this alternative right-of-way analysis?? Right-of-Way is a matter of convention, not physical law, but it only works if everyone involved knows and keeps the same convention. This bears a lot of further discussion.

Passing can be a problem when the liftband gets weak and tight. If a PG is working close to the ridge, I can't physically pass on the ridge side. But I can't responsibly pass on the outside without waking the PG and risking a collision if he does turn out. I'm with yelling and turning short on the ridge.

A couple of weeks ago, I was in exactly this situation. I was overtaking a fast PG who was overtaking a slower PG, with the ridge on our left. The faster PG was obliged to turn short rather than risk an outside pass. I left the ridge, landed rather than risk a misunderstanding or worse. Remarkably, the pilot of the faster PG sought me out and apologized for the situation, and for the slower PG pilot.

We have right-of-way rules to help us share the air, but they can't save us from folks who don't intend to share the air.

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## The Wings of Rogallo Soaring Forecast -- Part II by Greg Knepp

[Continued from last issue] Air-mass movement can complicate matters. Cold air (which is heavy), can move into an area of hot air. Since air of different temperature resists mixing, it will shove its way under the hot air. If this has occurred, our balloon will find the air getting warmer with altitude. This is an "inversion", which simply means the temperature profile is the inverse of the normal cooling trend. An inversion typically forms over the Bay at about 2000 feet in the summer, because air that has been cooled by the cold ocean waters off our coast shoves its way under the hot inland air. The chart shows a typical profile. The air starts cooling as it is supposed to until we reach the boundary with the warm layer of air. There is a sharp rise in temperature over a few hundred feet, then the normal cooling trend with altitude starts again. The altitude of the inversion has to do with several factors, including the depth of the ocean's cooling effect, the overall pressure of the atmosphere above us, and the heights of the barrier hills, east of the bay. For similar

reasons, the central valley has an inversion at about 6000 feet.

That cold air moves onshore due to regional pressure differences between the coast and interior. In the summer, the hot, light, rising air of the central valley creates a low pressure that draws air from the summer high pressure area off our coast. Winter's cooler interior and warmer waters reverses this trend, so we have cooler summers and warmer winters than we deserve.

I am jumping ahead in the soaring report, but this is all why we offer the SFO and Sacramento pressures in the coastal section of the report. The Funston rule of thumb is that a 0.05" to 0.08" pressure difference will result in favorable onshore winds by that afternoon. 0.10. will likely be blown out.

Getting back to our thermal prediction, once we have a profile of temperature with altitude, we can predict what a bubble of hot air will do. For that we turn to our pseudoadiabatic chart. This is a way to predict what the cooling rate will be for a parcel of air at any temperature and altitude. Unfortunately, you will not find this chart on any website today. It has been replaced with the Skew log T chart, which is simply a logarithmic version of the chart shown. Unfortunately, the Skew log T compresses the lower 15000 feet (our interest) into the bottom 10% of the chart, giving emphasis to useful altitudes like 50-100,000 feet. This chart is for the convenience of meteorologists, not soaring pilots. I do show the same info, but the accuracy suffers. We replot the data on the older, obsolete PA chart, starting from the text version of the data.

To use the chart, we plot the actual temperature measured by the balloon. Then we find the predicted high temp for the local fly-

ing site along the bottom scale. Where this intersects a horizontal line marking the surface pressure for the day, defines the temperature of our thermal at the surface. We then draw a diagonal line from this point parallel to the dry adiabatic lapse rate lines on the chart. These are the lines that represent the normal dry air cooling rate with altitude I mentioned. When this line intersects our measured profile line, the air will stop rising, because the temperature is the same. This is the altitude we call the "convection ceiling".

We can never rise to this point, because our gliders are always sinking at about 200' per minute. Our ceiling is the point that our thermal is still rising at 200' per minute. Rule of thumb is that there must be a 3 deg C difference in temperature for this to be true. So our "Top of Lift" is the altitude where the thermal is still 3 deg C hotter than the surrounding air.

To get a sense of the strength of the lift, we look at the difference in temperature between thermal and air-mass (bigger IS better). This is called a thermal index. We use a variation on the traditional index, which is a composite of the entire thermal column. We report the temperature differences at 500 or 1000' altitude intervals. This gives you a better idea of strength with altitude, as well as allowing you to reconstruct a rough picture of the balloon profile on your own chart. As noted, you can find plotted skew T charts on the NWS site, but the section of interest is rather tiny.

We don't report a trigger temperature, which is an arbitrary sailplane report number related to the expected surface temperature needed for lift to break 2500' (that level is typically above our inversion). We do report when the expected high is near a temperature that could push a ther-

mal past the inversion, or when the ambient air is cooling at a rate similar to the dry adiabatic rate. In that case, a small change in surface temperature can drive the convection ceiling much higher.

Cloudbase prediction is based on another aspect of the physics of rising air. Every parcel of air has a temperature and a dewpoint. The dewpoint is the predicted temperature that the parcel of air needs to be cooled to to reach 100% humidity and the formation of clouds (without any change in altitude). Our thermal bubble at the surface has a temperature and relative humidity (and dewpoint). As the bubble rises, it cools at the dry adiabatic lapse rate (5.4 deg F every 1000'). When the parcel's temperature cools to the dewpoint temperature we predicted, clouds will form. The hitch in this exercise is that the dewpoint temperature actually drops a bit as altitude increases (about 1 deg F per 1000'). So clouds will form at a higher than expected altitude. The psudoadiabatic chart lets us predict this change by including a third set of lines that predict how the depoint will vary at any pressure(altitude) and temperature. To predict cloudbase, we mark the measured dewpoint at an arbitrary 500' above the surface. Then we draw a line parallel to the dewpoint depression lines. If this line crosses the dry adiabatic line (that we drew for our predicted high temperature for the day) of our predicted afternoon thermal bubble before the dry line crosses the actual temperature profie line(drawn from the sounding balloon measurements), a cloud will form at that altitude. Remember, when the dry adiabatic line meets the actual line, the ceiling has been reached.

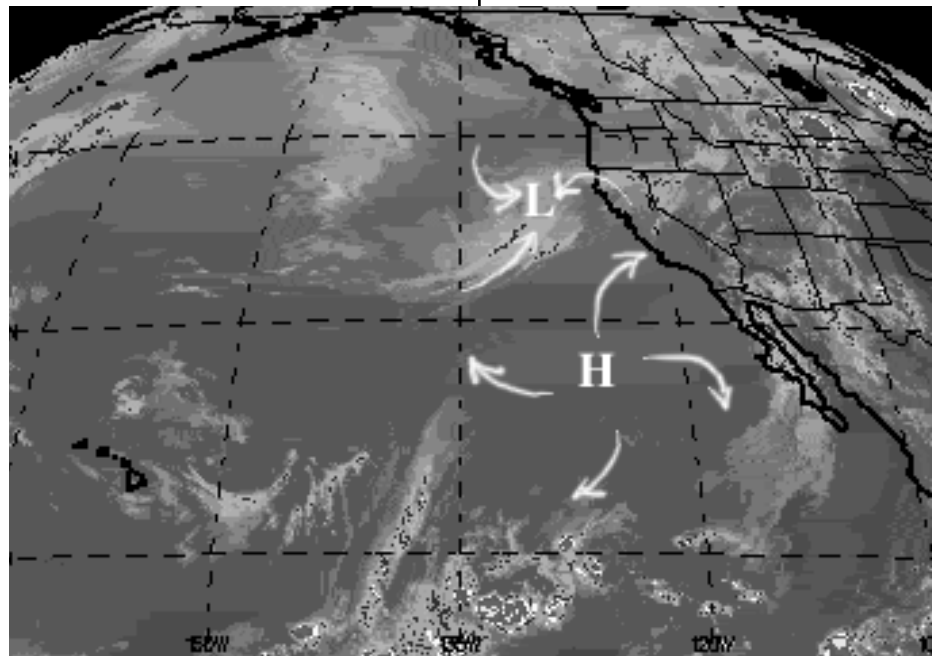
If a cloud can form, everything changes above the cloudbase altitude. Cooling now happens at the wet rate, which is half the dry rate. That means the air will rise much higher before it cools to

match the surrounding air than it would if no clouds were forming. That's why desert clouds often seem to explode upwards once they begin to form. If the surrounding air doesn't cool much with altitude, the rising cloud thermal bubble may still soon reach a ceiling. But many times in the desert, the cloud can continue to rise to the natural inversions at high altitudes near 20 or 30,000 feet.

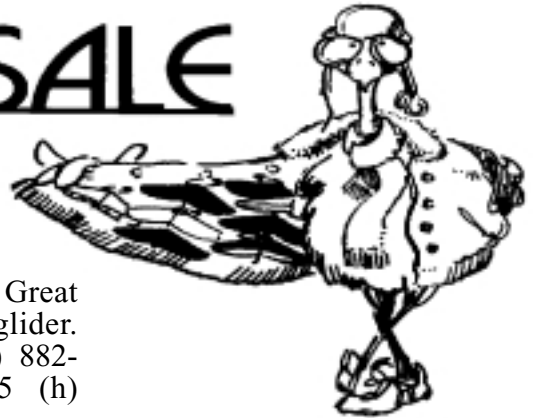
Our last topic will be wind patterns, since they relate to another valuable tool, the satellite picture. The SFSU pacific IR view is one of the most usefull (accessed from the NWS page mentioned above). It covers from the Aleutians chain in the west to Montana in the east, and south to Mexico. Most of our weather comes to use via Alaska, so pictures that don't extend west almost to Russia are useless. Ideally, you throw charts that show actual pressure distrubutions into the mix, but the satelite pic is enough to get a good sense of the big picture. Lows are associated with the comma shaped sweeps of clouds, and highs generally mark big clear areas on the photo. Those clouds are following the winds around that low. Winds spiral to the left into a low, and

out and to the right from a high. You can begin to see the relationship of our local winds to the position of highs and lows. As a low nears our coast, winds switch to the southeast, turn southerly as the front reaches us, then northwest when it is to our east, assuming the center passes north of the Bay. In the summer, we typically have a high parked off Northern Cal and Oregon. The winds spinning out of that high become north to northwest as they pass the Bay Area. That general direction is altered as winds flow through the gaps and are deflected by the hills that surround the Bay. Go to <http://sfports.wr.usgs.gov/wind> for a cool chart depicting in real-time the flow of air across the Bay Area. That chart is pretty well known among our coastal pilots.

I've tried to keep the detail to a minimum and focus on our local situation. If you want to really delve into soaring meteorology, I highly recommend the *Handbook of Soaring Meteorology* by Charles Linsay. This is a self-published thesis on sailplane meteorology. Last address I had was: Chas. V. Lindsay, 1030 Colonial Meadows Way, Virginia Beach, VA 23454.



# WINGS FOR SALE



## Wings for Sale

*(Ad policy: ads run for 6 months, then are cancelled automatically unless they are renewed. Ads are free to WOR members)*

### Flexwings

**Aeros Stealth 2 151** (Fresno area) Excellent shape. 1 yr old. Pictures at: <http://www.geocities.com/sky-godmatt/stealth.html>. \$3000 obo. Call Matt Potter (559) 243-1831

**Aeros Stealth 2 151** (late 1998), Matrix cloth, white LE, red and blue undersurface. Additional sail and 2 extra dtubes. \$2900 obo. Call Reto at (916) 804-4063, [reto\\_s@yahoo.com](mailto:reto_s@yahoo.com)

**Aeros Stealth 3 Combat 151.** Late 2000, matrix cloth, special comp mods. Flown in Speed Worlds on gold medal team. 1/2 hr total time! \$3500 or best offer. Call Reto at (916) 798-7156 or Mike at (510) 744-1953.

**HP-AT 145.** Approx 150 hours Good cond. Orange-light green-white. 6 hrs airtime since last pre-flight. Spare dtubes. \$800 obo. Call Weegie (510) 649-8181, [weegie@lightroom.com](mailto:weegie@lightroom.com)

**Sensor Production Slot available!** Paid for over a year ago; this glider is ready to start building! Topless or kingposted. Offered for dealer's cost. Call Mike at (510) 744-1953.

**Sensor.** 1993 Custom flap system (better than stock). Fantastic shape; less than 200 hrs. I'd either sell this or the production slot (listed above), and use the other for myself. Call Mike at (510) 744-1953.

**Wills Wing Spectrum 165.** Excellent condition Includes UV bag,

ladder rack, straps, etc. Great beginner/intermediate glider. \$1950, Call Roger at (408) 882-0382 (w) (408) 224-1815 (h) [rohang3@aol-com](mailto:rohang3@aol-com)

**Wills Wing Sport AT 167.** Floresent green LE, black, yellow. Good condition. \$800. Call Roy (408) 985 2810 [netedtec@pacbell.net](mailto:netedtec@pacbell.net)

**WillsWing Sport AT 167.** Floresent green LE, black, yellow. Good condition. \$1000. Call Roy 408 985 2810 [netedtec@pacbell.net](mailto:netedtec@pacbell.net)

**Wills Wing Super Sport 153.** Very good condition. \$800. Call Mercury, (408) 353.2383. [MercuryFly@aol.com](mailto:MercuryFly@aol.com)

**Wills Wing Supersport 163.** Original owner, mint condition, many extras. Asking \$1200. Call Tom (408)747-0414 lv msg.

**Wills Wing XC 155** Fair to good condition \$400. Call Russ (408) 737-8745

### Paragliders

**FreeX Spear (L),** violet/white. Approx. 150 hours. Still covered by FreeX 300 hours guarantee. One of the most responsive DHV 2 gliders around. \$900 obo. Call Steve Thorpe (408) 435 2600 ext. 506 (w), (408) 260 7029 (h), [thorpes@arklogic.com](mailto:thorpes@arklogic.com)

**Ozone Electron (L).** DHV 1/2. Only 14 hrs. Perfect condition. Weight range 95-115Kg. Have dropped below the min. weight range. Great performance and handling. \$2000 obo. Call Larry at 6 5 0 - 2 4 8 - 5 8 7 3 , [larry@tmpartners.net](mailto:larry@tmpartners.net)

### Equipment

**20 gore H.G. parachute with swivel.** Never used and in excellent condition. \$100 or obo. Call Rick at (408) 224-4378, [sport@onemain.com](mailto:sport@onemain.com)

**Apco Top Secura Harness** with kevlar backplate and CO2 air-bag protection. \$200 obo. Call Steve Thorpe (408) 435 2600 ext. 506 (w), (408) 260 7029 (h), [thorpes@arklogic.com](mailto:thorpes@arklogic.com)

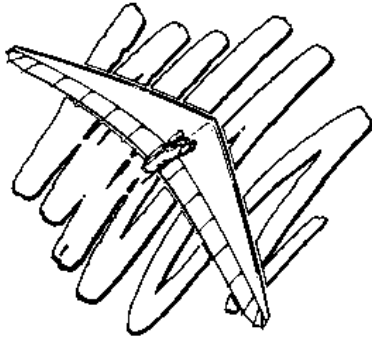
**Tangent flight computer,** \$500, Call Reto at (916) 804-4063, [reto\\_s@yahoo.com](mailto:reto_s@yahoo.com)

**Wills Wing cocoon HG harness,** for pilot abt. 6'3". \$10, **Open face helmet,** wht. \$5, **Pacific Windcraft HG chute** \$10. Call Paul (408)-246-2218.

### Vehicles

**1987 Chevy Suburban 4WD,** 350 V8 1/2 ton, excellent cond. Comes with glider rack and 2m radio, \$8000 obo. Call (408)-288-6607.

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*Wings of  
Rogallo*

# FLIGHT LINE

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The next Wings of Rogallo Meeting will be held  
Tuesday, August 21.  
at the Summit Point Golf Club in Milpitas near Ed Levin Park  
Check the Wings of Rogallo WWW Page  
<http://www.wingsofrogallo.org/meetings.html>  
for details and directions.

Entertainment at the next meeting will be provided by Mike Gomes  
who will bring a video about Ray Kelly's 41 years in aviation.  
I am told, by those who know, that this is well worth seeing.