VARIOMETER

PUBLISHED TO RECORD

THE UPS AND DOWNS

OF THE

KANSAS SOARING ASSOCIATION

Editor: Tony Condon

Volume LV **May 2014** **Number 5**

Greetings from DeQuincy, LA!

KSA CALENDAR

May 10th - KSA Meeting - Cookout at Sunflower

June 12th - 21st - 1-26 Championships - Waynesville, OH

June 14th - KSA Meeting - Cookout at Sunflower

June 23rd - 30th - Region 9 - Moriarty, NM

June 24th-July 3rd - 15 Meter/Open Nationals - Montague, CA

July 5th - July 11th - Region 10 North - Sunflower

July 12th - KSA Meeting - Cookout at Sunflower

July 15th-24th - Sports Class Nationals - Midlothian, TX

July 19th - 52nd Kansas Kowbell Klassic - Sunflower

August 4th - 8th - Region 10 South - Waller, TX

August 9th - KSA Meeting - Cookout at Sunflower

September 13th - KSA Meeting - Cookout at Sunflower

September 25th - 28th - Great Plains Vintage Rally - Wichita Gliderport

Notes from the President

Soaring season is finally here. I was at the field today, and was excited to see all the activity. **Jerry Boone** was giving CAP cadets rides in the 2-33. There were several private ships enjoying the thermals produced by the high temps. There were two, possibly three demo rides. I got current in gliders again after a 6 month hiatus. And **Dave Kennedy** flew with me to get his solo endorsement reactivated. And this was only the second day of the scheduled season! I heard reports from Saturday of extensive streeting in the blue, and reaching 11,500 feet, with clouds above. With the auto towing that has been taking place, and some amazing straight out XC flights posted by **Tony** and **Bob**, 2014 promises to be an amazing year.

KSA will again be hosting cookouts on the second Saturday of the month. Grill should light around 5:30 PM, maybe a little later if the day warrants staying up. KSA will provide beef steaks. We ask that you bring something to share, and invite a friend to join you, take them for a flight for their trouble.

This months Soaring magazine has lots of good articles. The very first item talks about the closing of Krey field. Sad news for the folks the called that field home. But, it reinforces the steps that have been taken to form the Sunflower Soaring Foundation and create an organization with the purpose of maintaining the Sunflower Gliderport for future soaring activities. And as a Director on the SSF Board, let me take a moment to thank all the folks that participated in the Spring work day.

Later in the magazine, there's an article about PowerFLARM and the risk of mid-air collisions between gliders and other aircraft. Several of us are flying with FLARM, but without 100% participation, this does not provide universal accident prevention. See and avoid, limited as it may be, is still the primary means to avoid a collision. Recognize that the potential exists, be extra vigilant in looking around you, identifying all the aircraft that you know are in the local area. Practice good group thermaling etiquette. Radio intentions to the Sunflower glider traffic. Fly an standard, left hand traffic pattern. Nothing ruins a great soaring season like an incident, accident, or fatality. Lets do our utmost to ensure everyone has a wonderful experience this year. Remember, fly safe, fly far, fly fast.

Happy Landings,
Andrew

DeQuincy

By **Tony Condon**

On April 8th I had another incredible downwind dash starting in Wellington, KS. On April 2nd I had noticed on the long term prognosis charts that the 8th had potential to be a good soaring day in the Midwest. The forecasts showed a cold front passing through Iowa on Monday morning and being at the Gulf of Mexico by Tuesday morning. After my 318 mile flight on March 12th I had been on the lookout for another chance to run downwind. However my first take on this system was that it would be more suited for a start in Iowa, so I emailed my friend Matt Michael in Ames, IA and told him to be on alert.

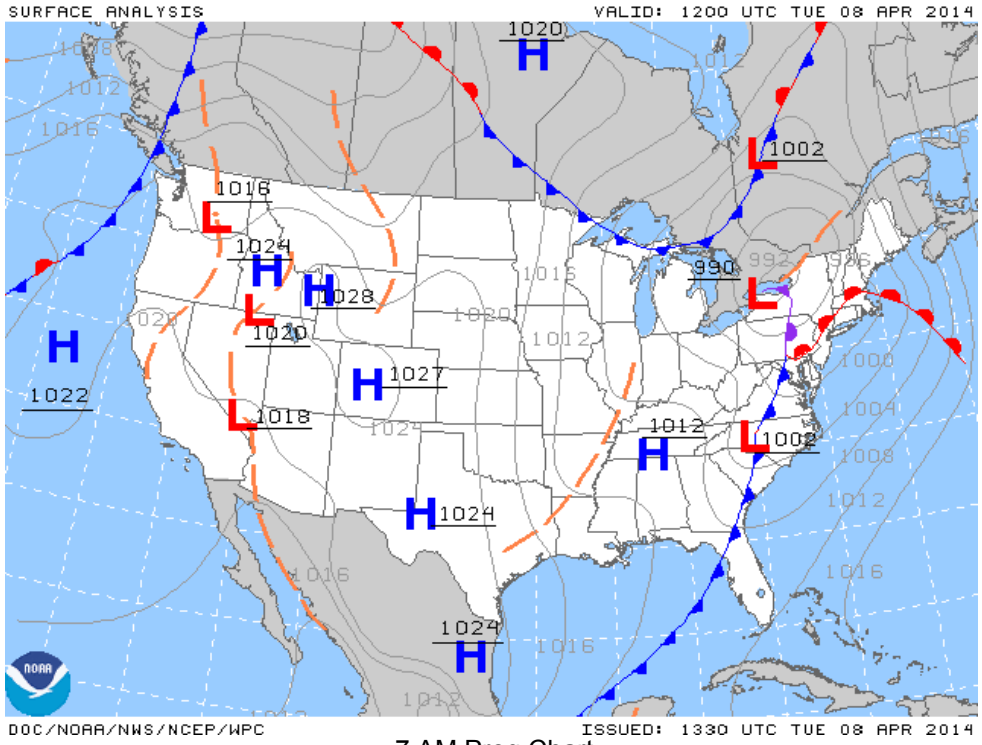
As the week progressed, the forecasts wavered back and forth. Sometimes they showed a cold front, sometimes not. I was not incredibly inspired but never discouraged enough to quit looking. Starting 5 days out, the GFS forecast on XCSkies started looking like Tuesday had potential, and seemed to improve a bit with each model run, indicating that Tuesday would be a good day for a downwind dash. The wind looked a little stronger than the March flight, and the cloud potential looked a lot better, which was welcome news. The wind direction was nearly identical although there was consistent overdevelopment forecast to the east so it did not look like cutting east on the Kiamichi Ridge was going to be the best course of action.

On April 4th, Omri Kalinsky put a message out on the Talihina Soaring group to see if anyone was interested in an outing as the wind looked excellent for a day of ridge soaring. Unfortunately he couldn't get enough interest to justify paying a towplane to make the trip. I had decided that if the soaring was good enough to take off in Kansas that is what I would do.

On April 6th I started to get serious and confirmed that **John Wells** was once again interested in chasing and that **Rafael Soldan** would once again give me a tow from Wellington behind his 172. My driver for the last trip, **KC Alexander**, was unavailable but **Mike Logback** had the beginning of the week off work and was willing to drive. The Standard Cirrus was still resting in my driveway, where it had been since the 4 AM arrival on March 13th after the flight to DeQueen, AR. Everything was in place.

April 7th happened to be my 29th birthday and many of my soaring friends were in on a surprise party that **Leah** arranged. We had a good visit and with the forecasts still looking good, spent a lot of time dreaming about how far I might go. I had been thinking about declaring Paris, TX as a goal, which would be just short of Diamond Distance from Wellington. After coming up just a bit short of the declared goal on the last flight it was very tempting to declare a bit short. However, **Steve Leonard** did a good job of straightening me out and insisted that I once again Go Big or Go Home. So, I checked on his Kansas Open Class Distance to a Goal record (423 miles) and decided to declare the San Augustine, TX airport as my goal, at 439 miles. Of course I intended to keep going past the goal if the day was still working, but in the back of my mind, the idea of flying that far seemed like a stretch.

John met me at the house in the morning. We did a quick forecast review. Overdevelopment and rain was still forecast along and east of the Oklahoma/Arkansas border which ruled out a ridge run on this flight, and the cloud field wasn't forecast to extend much further west than Dallas. A launch from Wellington appeared to really be in the sweet spot with the forecast wind line staying between the rain to the east and blue to the west. There was a chance that the Bouancy/Shear ratio would degrade to unworkable conditions past Paris, TX, depending on which forecast model you believed, so I kept that in mind.



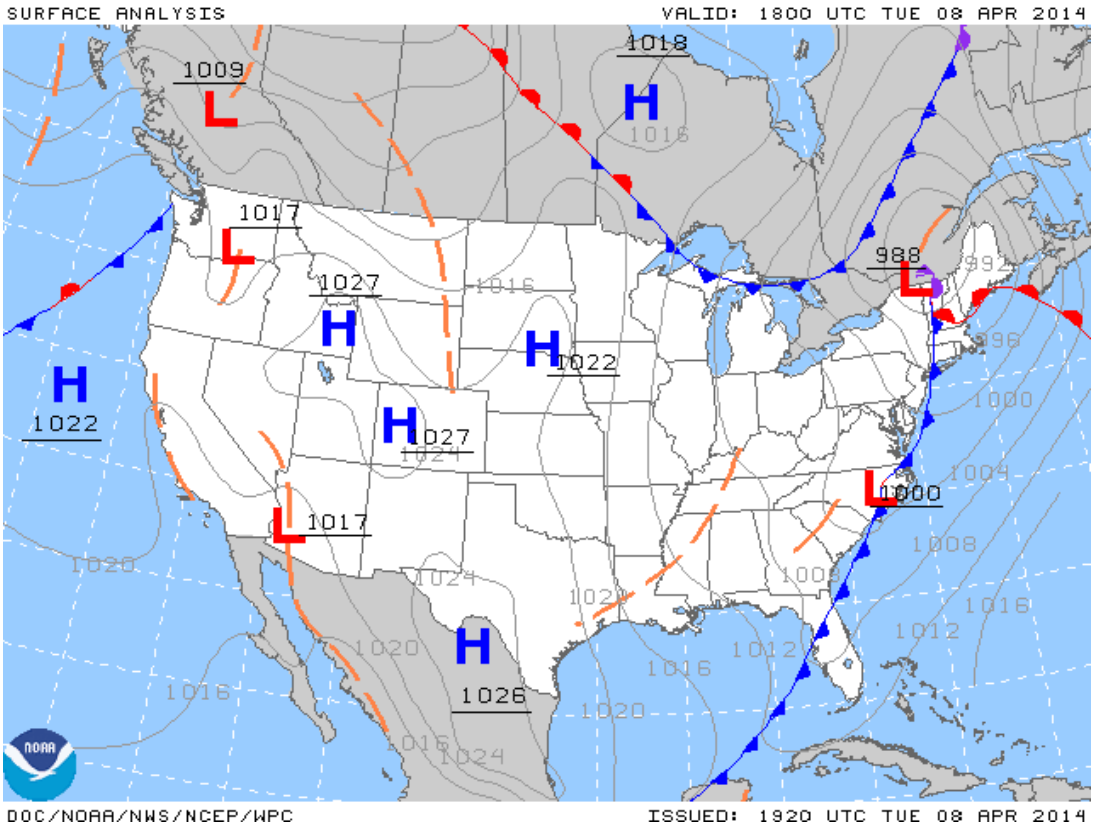
7 AM Prog Chart

Mike flew down from McPherson in his Wittman Tailwind and arrived just in time to help rig. He reported a strong tailwind on the short flight down. We were set for launch at 11:30 AM. The first cu showed up in the area at 10:45 and by 11:30 there were excellent looking streets to the north and good clouds to the south as well. The only thing missing was the towplane.

A quick call to **Rafael** revealed the problem. The towplane was fine but his parents had driven to Wichita with his car, and the towrope was in the car! Some scrambling and improvising took place, and another rope was manufactured. Launch took place at 12:40 PM into excellent skies. Lift was found immediately and the wind was strong, about 30 mph from 340 degrees. The day was on as I drifted through my start line.


Liftoff

Mike and **John** were quickly on the road heading south and I was quickly out of radio range. The conditions were really fantastic. There wasn't as much obvious streeting as I had hoped, but there never is. For the first third of the flight though I was usually able to bump along under clouds for quite a while before stopping to circle. That pattern seemed to change once I passed McAlester, OK and was to the west of the Oklahoma ridge areas. At that point something changed and a more classic climb/glide was what I was finding. That was OK though as the wind velocity had increased and I was able to maintain the same average speed while having to do more circling. I was making just over 80 mph average over the ground, and was starting to realize that it was likely that I would make the goal.

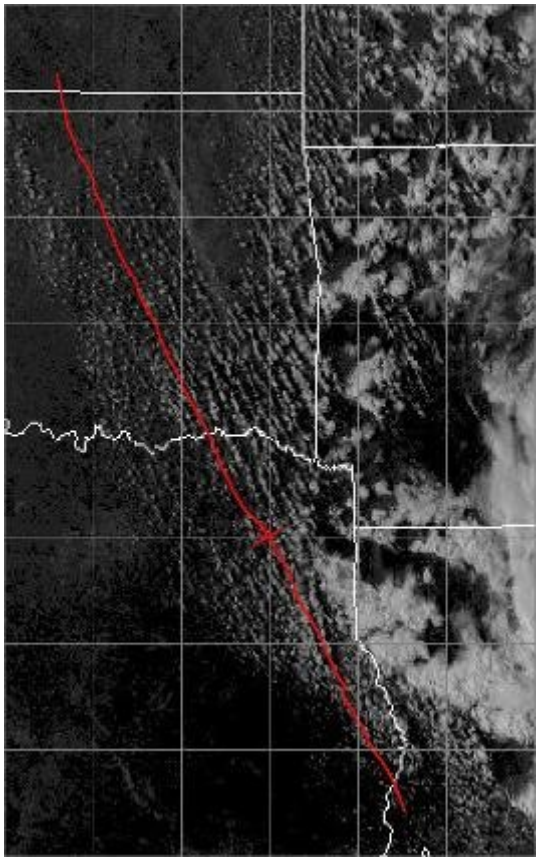


1 PM Prog Chart

.

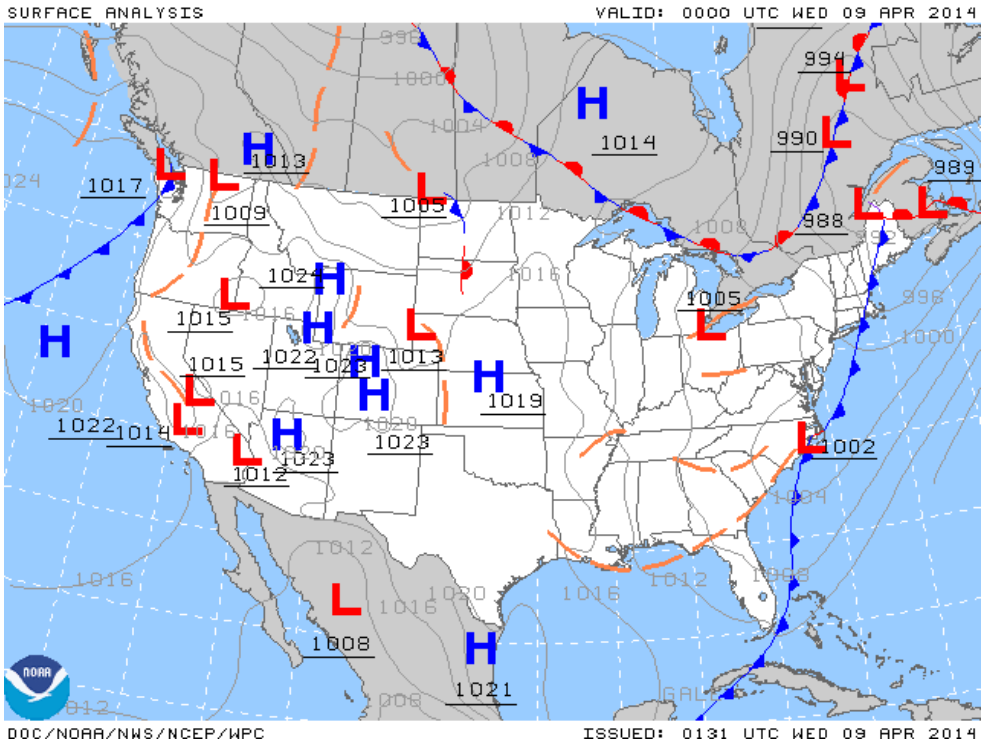

Over Oklahoma

Even with the strong wind I was not finding it a challenge to center or stay in the lift. I was usually above 5000 MSL and never below 4000. As I flew over southern Oklahoma and crossed the Red River near Paris, TX I was now entering an area that had seen an inch or more of rainfall in the last few days. I also was starting to wonder which forecasts Buoyancy/Shear forecast would be right, and even though I could see that the ground below me was wet, the lift stayed good and I arrived at Paris with nearly enough altitude to make Longview, with several airports between. I had been flying over a lot of trees since central Oklahoma and landing options besides airports were limited. Past Longview, the only options were airports as the rest of the landscape was covered in either Pine trees or Pine stumps.



4:45 Satellite with Flight Track

Longview has radar approach control and since the Cirrus is transponder equipped I gave them a call. I had started on a bit of a downward trend and was thinking that a landing at Longview may be required if I wasn't able to climb out. Considering the trees ahead I switched to a survival mode and took basically anything going up as I drifted past the airport. ATC wasn't working much traffic, on account of the wind gusting to about 35 knots on the surface. One Citation pilot queried about the wind and when told, he replied that it was like flying in Wichita. I chimed in that I had taken off from near Wichita. ATC wondered how far I was going and I told him I hoped for San Augustine and beyond. As I passed the airport I found a series of climbs that gave me a comfortable glide to San Augustine, signed off with Longview Approach, and set out over the trees.



7 PM Prog Chart

I shifted gears and slowed down a little, but with the wind speed still steadily increasing, was able to get a 100 mph groundspeed with only 55-60 knots indicated, and pretty easily achieving 40:1 and better. There was still plenty of lift too and at about 6:15 PM I crossed the finish line over the goal at San Augustine. There was still plenty of day ahead of me and I found a good climb right after that. From 8000 feet I was high enough to make it past the airport at Pineland and comfortably make the next airport at Newton, TX. I could see the rain to the east and now could see the blue to the west. I was perfectly positioned in the only remaining wedge of cumulus in this airmass. This was right where I wanted to be at the end of the day. The glide was 29 miles at 70:1 and I encountered a weak thermal at 6:45 over Newton. It averaged less than 2 knots, less than an hour before sunset and got me back high enough that I now could comfortably make DeQuincy, LA

and maybe beyond. The wind had increased to at least 40 mph now but the weak lift was perfectly smooth and easy to work.

I set off from 6800 feet at best L/D. Sunset was at 7:35, and I was predicted to make it to DeQuincy at 7:10. Beyond, there was only one airport between DeQuincy and the Gulf of Mexico, and that was at Lake Charles, LA. My Oudie showed a marginal glide to Lake Charles and I wanted to have a lot more confidence than that. Shortly after I started the glide, I passed the magical 500 mile mark. I encountered no more lift and once I was about 10 miles from DeQuincy, decided to commit to the airport there. There wasn't much but trees and swamp between DeQuincy and Lake Charles and I was also racing the sun.

I had been sending out occasional texts to my crew during the flight and after landing I snapped a picture, got off the runway and gave them a call. I really couldn't believe that I had made it this far and was elated when I saw the sign on the side of the hangar that confirmed that I was in fact in Louisiana. I was thankful to Rick, the airport guardian, who gave me a ride into town for some supper and to get a hotel room. **John** and **Mike** arrived about midnight and we loaded the glider up and got some sleep for the long drive home the next day. The drive back really made me realize how far I had actually flown, I got home at 8 PM.

John Wells enjoys his well-earned Ice Cream on the drive home

Sunflower Seeds

April 5th: **Matt Gontizke** and **Jerry Boone** completed the condition inspection on the Zooney. **Mike Davis** arrived with a semi and excavator and several concrete barriers were moved into place. **Steve Leonard** worked on the 175 fuel tank, **Dennis Brown** was also in attendance, and **John Wells** flew in in his Fly Baby to check out the activity.

April 5th Activity

April 8th: **Bob Holliday** flew the PIK-20E and soared to Palestine, TX in the excellent Go South conditions. 442 miles!

April 12th: Work Day! **Andrew Peters**, **Jerry & Annie Martin**, **Tony Condon**, **Don Jones**, **Matt Gonitzke**, **Gerry Sibley**, **KC Alexander**, and **John Wells** and maybe more pitched in. **Bob Holliday** and **Steve Leonard** were seen after lunch but this reporter headed home and missed out on any afternoon activity.

The Crew(d) Report

By **John Wells**

After reviewing **Tony**'s "radio", and use of cell calls to my loving wife to look at Google Earth for flight following on March 12th, **Tony** decided to use "Spot" and cell phone use for the crew in navigation to the landing site on subsequent long cross-country flights.

He selected Tuesday April 8th for the next "Go South" attempt. We were unable to reassemble the original crew since **KC Alexander** had developed a bad sinus condition. **Tony** found **Mike Logback** willing to drive. The plan was to originate at Wellington, Kansas, as the towplanes at Sunflower were still unavailable. **Tony** and I compared weather independently and agreed on a launch time of 11:30.

We drove to Wellington, and **Mike** flew his Tailwind. Conditions were as expected, with clear skies, high winds, chilly temperatures, and miniscule Cu appearing on the upwind horizon. We assembled the Standard Cirrus,"Kate", moved it to the runway and waited for **Rafael** to appear with the towplane. **Rafael** arrived at the correct time, but to his chagrin, did not have the tow rope. It was in the car that he loaned to his parents. Wellington is a small town, so **Rafael** was able to confirm that his parents had left town (with the tow rope), and we quickly directed **Rafael** to raid the hardware store and return with enough rope to do the job. We made a fid out of a ball point pen, and rubbed the melted rope ends on the runway concrete to fit into the splices. Fortunately, **Tony**'s Subaru made just enough shelter to complete this frantic task without too much more additional delay.

Making a rope!

Throughout this preparation, we were constantly besieged by cell phone calls from an impatient crowd watching "Spot" and wanting to know why nothing was happening. **Mike** loaded **Tony** into Kate while I drug our new rope out to the runway. My cell phone went off four times while we got the towplane positioned and launched **Tony** into the teeth of the gale. We were well past (70 minutes) Launch Time, and the sky was full of beautiful Cu sailing past at 45 mph. **Mike** and I got on the road and got one glimpse of **Tony** before we got on I-35 South.

The trip was uneventful. Fortunately, **Mike** travels frequently to Dallas to see his son, so we were able to navigate through the megalopolis without difficulty. We got frequent "Spot" reports from **Tony**, and the cheering crowd would call and report their observations and recommendations. The only difficulty occurred trying to locate DeQuincy, LA on the roadmap, as we were far behind **Tony**, and the landing site was in the remote far corner of our map. **Mike** has voice connection with his GPS, and when he entered DeQuincy, we groaned at the readback for distance and ETA. We were four hours behind **Tony**. Fortunately, the recommended road was good and the traffic light.

We found **Tony** in the dim light outside the motel in DeQuincy, went to the airport that was nearby, tucked Kate in the trailer and bedded down in the motel. Four hours later we were on the road. Leaving the lush, green, warm, Gulf air we traveled though sunlit flower lined freeways to ever fading color and temperature. Dropping **Mike** off at Wellington at dusk to fly home to McPherson, we were reminded that "Spring go South" did not involve warmer weather in Wichita.

Reprinted from Sept. 2011 *Soaring*

WEATHER TO FLY

BY DAN GUDGEL

THERMAL FORECASTING

Much has been written through the years on thermal development and thermal forecasting for the purposes of soaring flight, including many fine articles now present in *"Soaring"* Magazine archives. Other than just mentioning a few rudimentary concepts of thermals and because of the published wealth of information, the subject of thermals within these immediate articles of mine in "*Weather-to-Fly*" should simply be construed as an abridged review. However, I would like to provide a few insights and background in regard to thermal concepts and forecasting based on empirical information seen through the years and as conveyed to me courtesy of far more experienced soaring pilots and meteorologists. I am including a list of references that detail thermal development and thermal strength forecasting that can be studied at the leisure of the reader. (See *"References and Library Building"*).

In the July issue of *Soaring,* enhancement of thermal development by elevated terrain was deliberated. In the August issue we discussed air density differences resulting from differential heating of the air adjacent to the ground and that the density of warmer air is less than the relatively cooler air surrounding it. This less dense air is more buoyant and results in upward vertical motion known as a thermal. A majority of cross-country soaring is accomplished by use of thermals that occur in an air mass that responds to surface heating with the development strong lapse temperature conditions with altitude over a broad area. (Reminder: In meteorological definitions, "lapse" refers to a decrease in a given parameter.) Because thermals develop in an air mass their development is generally not restricted to areas of orographic features that are required for the development of ridge and mountain wave lift. Thermal development needs differential surface heating in combination with an air mass that has or will develop a temperature lapse rate at or exceeding the dry adiabatic lapse rate (DALR) over the lower layer of the atmosphere to an altitude sufficient to make cross-country soaring possible in the course of the flying day. (Moisture contributions to the development of thermals or upward vertical air motion will be addressed in a future article.)

Definitions: "Convection" and the "Convective Condensation Level (CCL)"

"Because the most striking meteorological results of convective motion occur in conjunction with the rising current of air (strong updrafts or thermals, cumulus, etc.) convection often is used to imply upward vertical motion." (*Glossary of Meteorology, p.133*).

"The CCL is the height to which a parcel of air, if heated sufficiently from below, will rise adiabatically until it reaches saturation (condensation of the average moisture content over the approximately lowest 1500 feet of the atmosphere). The CCL approximates the base height of cumulus clouds which are, or would be, produced by surface heating." (The author's redefining of the CCL courtesy of NWS Reno Internet Website *"Soaring Terms and Definitions"*).

Evaluating the weather for potential soaring flight has always been a challenge. The most successful long cross-country soaring pilots are those who are good observers and evaluators of the weather situation *and* are prepared to launch as soon as the lift is available that can support soaring flight. Assisting in this evaluation, the soaring community has relied on the concept of the Thermal Index (TI) for decades (See *"The Thermal Index"* by H.Higgins). *The* TI is intended to be a predictor of dry thermal presence and quantify the maximum altitude of those thermals. The TI is the Celsius temperature difference at a given altitude (often given for the 850-millibar and/or 700-millibar pressure level on an upper air temperature sounding) between the ambient air as measured by a morning sounding and the temperature at that level along the dry-adiabat that intercepts the expected surface maximum temperature. The *"Glider Flying Handbook"* concisely describes the TI at a given level or altitude as *"the temperature of the air parcel having risen at the Dry Adiabatic Lapse Rate subtracted from the ambient temperature"* (See Diagram #1: *"The Thermal Index"*). The TI provides some degree of illustration emphasizing the point that air density differences, i.e., air temperature differences and not high temperatures, drive thermal development.

Having been developed from observed and recorded lift rates and the altitudes reached during soaring flights, and subsequent analysis of morning temperature soundings, the TI is a soaring community "standard" for forecasting useful thermal maximum altitudes and inferring relative lift rates. Relative lift strength is deduced that the greater the absolute value of the "negative" TI then likely is the greater thermal lift. For clarification to my students I always comment in regard to the TI and its meteorological convention of the "minus" number that is necessary for thermal development. Remember what a thermal is all about – at any point where a thermal is rising, the air temperature within the thermal is higher (the air warmer) than the ambient air outside of the thermal's boundaries. The meteorological convention of this situation being a "minus" number is derived from

the TI Definition. However, the physics of buoyancy in regard to the needed temperature difference is the concept to absolutely remember, i.e., the air in the thermal must be warmer than the air outside the thermal.

Following on the heels of Higgins' publishing of the TI in 1963, research was done by meteorologist Charles Lindsay in analyzing a series of flights by Mario Piccagli in a Standard Austria from 1963 to 1969 in the mountains around Frederick, Maryland. Piccagli's flights led to empirically-derived regression equations that were published under the auspices of the National Weather Service in "*Forecasters Handbook No. 3, Soaring Meteorology for Forecasters.*" The analysis of those flights attempted to objectively determine and describe the relationships between maximum altitudes and lift rates reached in soaring flight with the depth of the DALR, including relating thermal strength to the initial height of the Convective Condensation Level (See "Definitions; *Convection* and *Convective Condensation Level, CCL*").

The results of Piccagli's flights and Lindsay's analysis specified:

1) A correlation of the maximum height of the thermals with the height of the dry adiabatic lapse rate;

2) Lift is stronger in a dry ("blue" or no-cloud) thermal that reaches a greater altitude (deeper) than one that is lower (shallower);

3) Convection or rising air inside the cumulus cloud is an extension of the thermal's rising air below the cloud;

4) That for a given altitude, lift under a cumulus cloud will usually be stronger than for that same altitude in a dry thermal;

5) Air has to be heated enough to become dry-adiabatic through at least the lowest 3000 feet of altitude before the sailplane encountered lift rate of 100 ft/min or greater; and,

6) It was Higgins study that suggested a potential temperature increase of 3 degrees Celsius or greater (a TI of -3 or less) provided a good chance for sailplanes to reach the altitude of that temperature difference.

Following Lindsay and his analysis of Piccagli's flights in the mid-Atlantic Region of the United States, feedback graciously provided by the 1975 Regional Contest Pilots in the Minden area of Western Nevada provided a soaring data set for evaluation by National Weather Service (NWS) Meteorologists Chris Hill and Doug Armstrong that resulted in the development of an objective aid for forecasting thermal strength. Edited by John Joss in "*SoarSierra*," this objective aid was labeled the "Soaring Index, SI". (See *SoarSierra*, pp. 23-28). While the TI provides a forecast estimate of thermal height – and only a relative and very subjective estimate of thermal strength based on the surface temperature in its relationship to the lower atmosphere lapse rate – the SI algorithm quantified an estimate of thermal strength (See Diagram #2: *The Soaring Index*).

The assumption on the application of the TI and the SI in estimating thermal presence is that the air mass represented by the morning sounding is not influenced by synoptic-scale changes in the course of the soaring day. But even given the ever changing nature of any air

mass, on the average the SI has proved to be a reliable forecast aid in describing the quality of a thermal soaring day for the Intermountain West Great Basin and especially if its output is applied in comparison to previous days' forecasts as a trend.

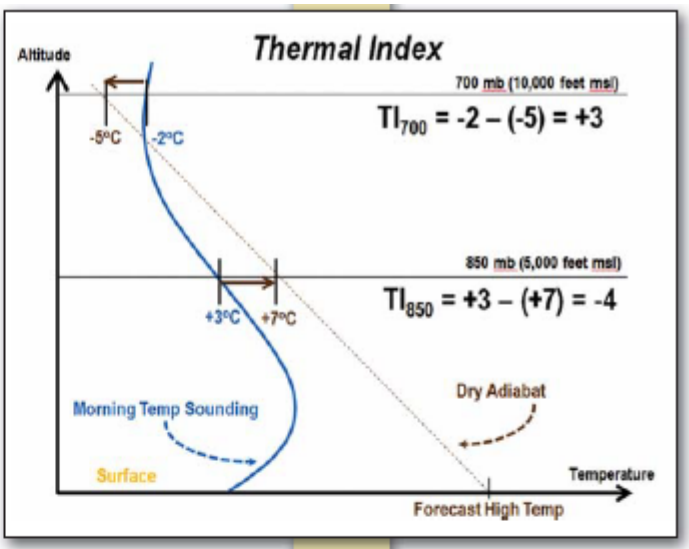
There are a few interesting notes that need to be emphasized to put these two empirically derived soaring aids – the TI and the SI – into proper perspective. Geography and climate are crucial in understanding the logic behind the aids' outputs. As mentioned, the TI was developed from observations of soaring flight in the mid-Atlantic area with its modest vertical terrain variation (modest in comparison to the Intermountain West), higher average atmospheric relative humidity, more extensive vegetative ground cover, and higher soil moisture content. Conversely the SI was developed utilizing pilot feedback from the Great Basin with its large vertical variation in terrain, dry soil, minimal vegetation, and very low atmospheric moisture. As published in numerous soaring textbooks and articles, the altitude where a TI value of -3 occurs is considered to be the useful "top of the lift."

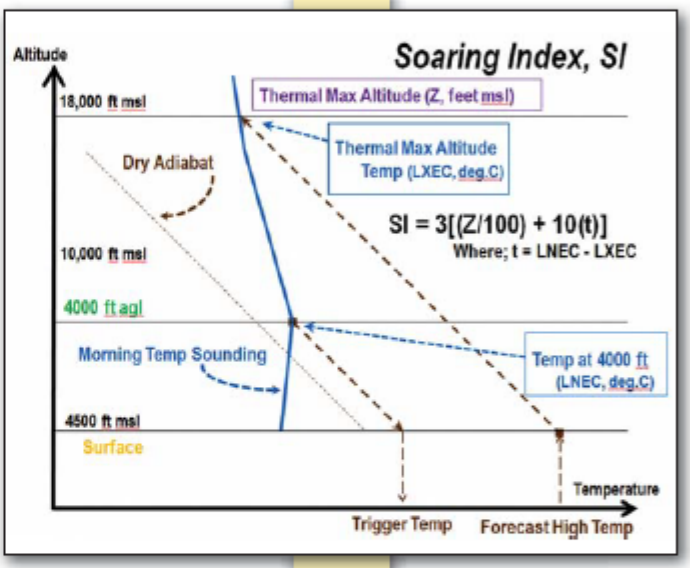
Understanding the climate of the mid-Atlantic region and that the effect of the incoming solar energy in its heating of the surface is mitigated by the amount of moisture present in the air and soil, the top of the useful lift would usually not reach the intersection of the DALR with the morning temperature sounding (given no large scale synoptic atmospheric changes during the day).

Observed in the Western U.S. with terrain contributions enhancing thermal production and drier conditions, incoming solar energy efficiently raises the sensible temperature of the lower atmosphere as the surface heats. The intersection of the DALR with the morning temperature sounding in the SI is quite frequently the top of useful lift as opposed to "capping" thermal altitudes at a value of -3 as depicted by the TI.

Observed in Hill's and Armstrong's own data set as well as utilizing one of the results of Picaggli's flights, the strength of thermal lift is a function of the depth of the surface-heated, convectively-mixed, lower atmospheric layer. The deeper the convectively mixed lower atmospheric layer, then generally stronger is the lift rate of the thermal. The SI's forecast for thermal strength is comprised and a function of two terms, the maximum altitude of the thermals and a solid lapse condition where there is a good decrease in temperature with altitude.

In summary, differential surface heating results in lower atmospheric level temperature differences. These temperature differences lead to air density differences. In combination with a favorable upper air temperature profile that favors development of a strong temperature lapse condition during the day, thermal soaring flight is then possible. The "soaring standard" *Thermal Index* provides an estimate of atmospheric mixing or thermal height and subsequently an inference of relative thermal strength. The "Great Basin" (author's descriptor) *Soaring Index* in its quantifying forecast for thermal strength underscores the contributions of *both* maximum thermal altitude for the day and temperature differential from the surface to aloft. I have addressed these two thermal





forecast indices to underscore the concepts that are necessary to understand thermal development. I acknowledge that there are several other soaring indices and forecast aids, and variations of those aids, used around the world. But the meteorological physics and concepts for the thermal process are consistent. An additional factor that needs to be addressed in the future is a discussion of atmospheric moisture in its role of de-stabilizing of the air mass and contributions to thermal development.

Note that I have discussed these particular thermal forecast indices for the expressed purpose of understanding thermal development. Subsequent technological advances in computer speed and the ability to apply more detailed atmospheric physics has resulted in many more numerical soaring forecasts and forecast atmospheric model outputs in my lifetime. The worldwide contributors to soaring in this computer environment are simply too many to know or list but they are thanked on behalf of all the meteorologists and soaring pilots who now daily use the fantastic atmospheric model output for planning soaring flight.

References and Library Building:

Harry C. Higgins, "*The Thermal Index*," *Soaring*, Vol. 27, No. 1, Jan. 1963, pp. 8-10.

Charles V. Lindsay, "*Types of Weather Favoring Cross-Country Soaring*," *Soaring*, Vol. 28, No. 12, Dec. 1964, pp. 6-9.

David H. Owens, "*Thermal Soaring – Southwest Style*," *Soaring*, Vol. 30, No. 5, May 1966, pp. 10-12.

Glider Flying Handbook, FAA-H-8083-13; U.S. Department of Transportation, Federal Aviation Administration; Published 2009.

Forecaster Handbook No. 3, Soaring Meteorology for Forecasters; U.S. Department of Commerce, NOAA, National Weather Service; Sep. 1972.

A Handbook of Soaring Meteorology by Charles V. Lindsay; First Edition 1988, Revised Edition 1993. (Editor's Note: This publication is Charles Lindsay's personal, updated rendition of the referenced *Forecasters Handbook No. 3*).

Aviation Weather, AC 00-6A; U.S. Department of Transportation, Federal Aviation Administration, Revised 1975.

Meteorology for Glider Pilots by C.E. Wallington; First Edition published by John Murray (Publishers) Ltd. Copyright 1961 and 3rd Internation Edition in 1977.

Meteorology and Flight: A Pilot's Guide to Weather by Tom Bradbury; Published by A&C Black; First Edition 1989. (Bradbury's early soaring articles and research were incorporated into his book).

SoarSierra edited by John Joss; Printed by The George Banta Company, Inc., Manasha, WI. Copyright 1976. (*Soaring Index* detailed on pp. 23-28).

Weather Forecasting for Soaring Flight, Technical Note No. 203; World Meteorological Organization; Prepared by Organisation Scientifique et Technique Internationale du Vol a Voile (OSTIV); 2009 Edition; (Thermal Development detailed on pp. 1-2 through 1-10.)

Soaring Terms and Definitions, Internet Website of National Weather Service, Reno, NV. www.weather.gov/reno; Menu Path: "Forecasts", "Aviation", "Soaring".

"*Glossary of Meteorology*", Published by the American Meteorological Society, Edited by Ralph E. Huschke, copyright 1959 and corrected 1970.

Soaring Meteorology Publishing Pioneers

At the risk of omitting significant contributors to understanding soaring meteorology and as a soaring meteorologist myself for many years, I would like to acknowledge the published works of those with whom I am familiar. Their compilation of soaring meteorology and pioneering publishing has furthered the understanding of "modern" soaring meteorological concepts for soaring pilots and meteorologists:

- Harry Higgins' work and derivation of the *Thermal Index*;
- Australian Meteorologist and pilot C.E. "Wally" Wallington, NWS Meteorologist Charles V. Lindsay, and British Meteorologist and pilot Tom Bradbury on fine pioneer publishing work to describe meteorological elements (not just "thermal" related) relevant to modern soaring flight;
- NWS Meteorologists Chris Hill and Doug Armstrong for their work in development of the *Soaring Index* and providing the precedent for acceptance of soaring parameters and forecasts within the NWS; and,
- A notable "computer-era" reference to Navy Research Laboratory Meteorologist and pilot Dr. John "Jack" Glendening for his development and subsequent availability of numerical soaring forecasts. Besides the actual computations, access of "Dr Jack's" internet website also provides excellent definitions of significant soaring meteorological aspects.

Wellington Seeds

April 8th: With excellent Go South conditions, **Tony Condon** flew Kate the Cirrus. **Rafael Soldan** provided the tow with **John Wells** and **Mike Logback** chasing. **Tony** ended up in DeQuincy, Louisiana, 525 miles downwind!

DATE	TOW PILOT		LINE MANAGER		INSTRUCTOR
Sat, May 3	Mike Logback	620-755-1786	Don Jones	620-960-6444	Rafael Soldan
			Kevin Ganoung	785-536-4540	706-255-9909
Sun, May 4	Mike Logback	620-755-1786	Keith Smith	785-643-6817	
			Neale Eyler	316-729-0659	
Sat, May 10 Cookout	Bob Holliday	316-733-5403	Don Jones	620-960-6444	Andrew Peters
			Matt Gonitzke	815-980-6944	316-682-4287
Sun, May 11	Bob Holliday	316-733-5403	Steve Leonard	316-249-7248	
			Mike Orindgreff	316-200-5046	
Sat, May 17	Jerry Boone	620-662-5330	David Wilkus	316-788-0932	Brian Bird
			Matt Boone	620-662-5330	620-728-1341
Sun, May 18	Jack Seltman	316-636-4218	Keith Smith	785-643-6817	
			Mike Orindgreff	316-200-5046	
Sat, May 24 Holiday	Mark Schlegel	316-641-5093	Don Jones	620-960-6444	Mike Westemeir
			Mike Davis	316-772-8535	316-729-2551
Sun, May 25 Holiday	Andrew Peters	316-682-4287	David Kennedy	316-841-2912	
			Dana Duckworth	316-722-2078	
Mon, May 26 Holiday	Rafael Soldan	706-255-9909	David Kennedy	316-841-2912	
Sat, May 31	Bob Holliday	316-733-5403	David Wilkus	316-788-0932	Tony Condon
			Matt Gonitzke	815-980-6944	515-291-0089
Sun, Jun 1	Tony Condon	515-291-0089	Don Jones	620-960-6444	
			Leah Condon	316-249-3535	
Sat, Jun 7	Jerry Boone	620-662-5330	Dimick, Scott	316-733-5678	Rafael Soldan
			Kevin Ganoung	785-536-4540	706-255-9909
Sun, Jun 8	Mark Schlegel	316-641-5093	Neale Eyler	316-729-0659	
			David Kennedy	316-841-2912	
Sat, Jun 14 Cookout	Jerry Boone	620-662-5330	Paul Sodamann	785-456-5654	Andrew Peters
			Matt Boone	620-662-5330	316-682-4287
Sun, Jun 15	Jack Seltman	316-636-4218			
			Paul Sodamann	785-456-5654	
Sat, Jun 21	KC Alexander	316-308-8498			Brian Bird
					620-728-1341
Sun, Jun 22	KC Alexander	316-308-8498	David Kennedy	316-841-2912	
			Mike Davis	316-772-8535	
Sat, Jun 28	Mark Schlegel	316-641-5093	Bob Blanton	316-683-9759	Mike Westemeir
			Robbie Grabendike	316-686-8859	316-729-2551
Sun, Jun 29	Mark Schlegel	316-641-5093			
Fri, Jul 4 Holiday	Bob Hinson	316-841-5561			
Sat, Jul 5	KC Alexander	316-308-8498	Mike Davis	316-772-8535	Rafael Soldan
					706-255-9909
Sun, Jul 6	Bob Holliday	316-733-5403			
Sat, Jul 12 Cookout	Mark Schlegel	316-641-5093	Paul Sodamann	785-456-5654	Tony Condon
			Kevin Ganoung	785-536-4540	515-291-0089
Sun, Jul 13	Jack Seltman	316-636-4218	Steve Leonard	785-643-6817	
			Paul Sodamann	785-456-5654	
Sat, Jul 19 Kowbell	Mark Schlegel	316-641-5093			Brian Bird
					620-728-1341
Sun, Jul 20 Konsolation	Bob Hinson	316-841-5561	Dennis Brown	316-722-8351	
Sat, Jul 26 Konsolation II	Jerry Boone	620-662-5330	Dennis Brown	316-722-8351	Mike Westemeir
					316-729-2551

Sun, Jul 27	Bob Hinson	316-841-5561	Harry Clayton	316-744-2389	
			Susan Erlenwein	316-744-2389	
Sat, Aug 2	Mark Schlegel	316-641-5093	Paul Sodamann	785-456-5654	Rafael Soldan
					706-255-9909
Sun, Aug 3	Jack Seltman	316-636-4218	Neale Eyler	316-729-0659	
			Paul Sodamann	785-456-5654	
Sat, Aug 9	Bob Hinson	316-841-5561	Bob Blanton	316-683-9759	Mike Westemeir
Cookout			Robbie Grabendike	316-686-8859	316-729-2551
Sun, Aug 10	Brian Bird	620-728-1341	Dimick, Scott	316-733-5678	
Sat, Aug 16	Mike Logback	620-755-1786			Rafael Soldan
					706-255-9909
Sun, Aug 17	Mike Logback	620-755-1786	Mike Davis	316-772-8535	
			Dana Duckworth	316-722-2078	
Sat, Aug 23	Mike Westemeir	316-729-2551	Bob Blanton	316-683-9759	Brian Bird
			Robbie Grabendike	316-686-8859	620-728-1341
Sun, Aug 24	Bob Holliday	316-733-5403	Harry Clayton	316-744-2389	
			Susan Erlenwein	316-744-2389	
Sat, Aug 30	Bob Hinson	316-841-5561	Mike Davis	316-772-8535	Andrew Peters
Holiday					316-682-4287
Sun, Aug 31	Mike Logback	620-755-1786			
Holiday					
Mon, Sep 1	Brian Bird	620-728-1341			
Holiday					
Sat, Sep 6	KC Alexander	316-308-8498	Matt Gonitzke	815-980-6944	Mike Westemeir
					316-729-2551
Sun, Sep 7	KC Alexander	316-308-8498	Harry Clayton	316-744-2389	
			Susan Erlenwein	316-744-2389	
Sat, Sep 13	Mike Logback	620-755-1786	Mike Davis	316-772-8535	Andrew Peters
Cookout					316-682-4287
Sun, Sep 14	Jack Seltman	316-636-4218	Mike Orindgreff	316-200-5046	
			Dana Duckworth	316-722-2078	
Sat, Sep 20	Bob Hinson	316-841-5561	Matt Gonitzke	815-980-6944	Tony Condon
			Leah Condon	785-643-6817	515-291-0089
Sun, Sep 21	Tony Condon	515-291-0089	Steve Leonard	316-249-7248	
			Keith Smith	785-643-6817	
Sat, Sep 27	Jack Seltman	316-636-4218	David Wilkus	316-788-0932	Mike Westemeir
					316-729-2551
Sun, Sep 28	Andrew Peters	316-682-4287	Mike Orindgreff	316-200-5046	
Sat, Oct 4	Tony Condon	515-291-0089	Neale Eyler	316-729-0659	
			Leah Condon	316-249-3535	
Sun, Oct 5	Bob Hinson	316-841-5561	Leah Condon	316-249-3535	Tony Condon
			Dimick, Scott	316-733-5678	515-291-0089
Sat, Oct 11	Jerry Boone	620-662-5330	Matt Boone	620-662-5330	Rafael Soldan
Cookout			Dana Duckworth	316-722-2078	706-255-9909
Sun, Oct 12	Bob Holliday	316-733-5403	Harry Clayton	316-744-2389	
			Susan Erlenwein	316-744-2389	
Sat, Oct 18	Jerry Boone	620-662-5330	David Wilkus	316-788-0932	Andrew Peters
			Matt Boone	620-662-5330	316-682-4287
Sun, Oct 19	Bob Holliday	316-733-5403	Keith Smith	785-643-6817	
			Steve Leonard	316-249-7248	
Sat, Oct 25	KC Alexander	316-308-8498	Bob Blanton	316-683-9759	Brian Bird
			Robbie Grabendike	316-686-8859	620-728-1341
Sun, Oct 26	KC Alexander	316-308-8498	Don Jones	620-960-6444	
Last Man Down			Kevin Ganoung	785-536-4540	

KSA TOWCARD

TOW NUMBER _____ START TACH TIME _____

TOW PILOT _____

PILOT _____

ADDRESS _____

_____

SAILPLANE _____

TOW HEIGHT _____

TOW SPEED (MPH) _____

DATE _____

KSA TOWCARD

TOW NUMBER _____ START TACH TIME _____

TOW PILOT _____

PILOT _____

ADDRESS _____

_____

SAILPLANE _____

TOW HEIGHT _____

TOW SPEED (MPH) _____

DATE _____

KSA TOWCARD

TOW NUMBER _____ START TACH TIME _____

TOW PILOT _____

PILOT _____

ADDRESS _____

_____

SAILPLANE _____

TOW HEIGHT _____

TOW SPEED (MPH) _____

DATE _____

KSA TOWCARD

TOW NUMBER _____ START TACH TIME _____

TOW PILOT _____

PILOT _____

ADDRESS _____

_____

SAILPLANE _____

TOW HEIGHT _____

TOW SPEED (MPH) _____

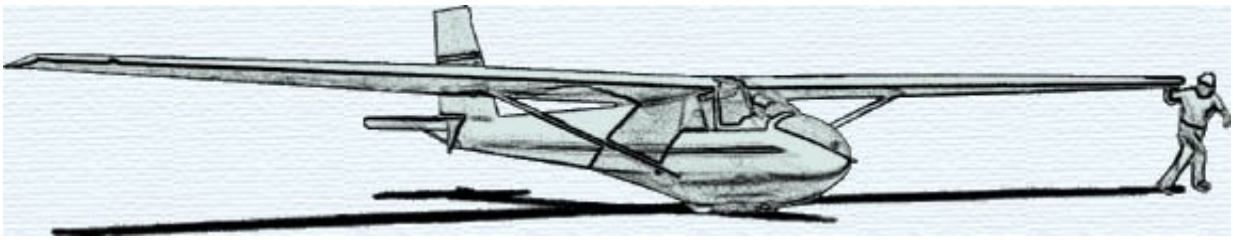
DATE _____

KSA VARIOMETER

911 N Gilman

Wichita, KS 67203

abcondon@gmail.com



KSA MEETING

Cookout at Sunflower

Saturday May 10th, 2014, 5:00 PM

Bring a side dish to share!