

2008 10-Meter Spring/Summer Es Season

By Art Jackson KA5DWI

Background

The following documentation is a summary of the 2008 Sporadic Es season based upon PropNET captures and identified partials and fragments received at the home QTH of Art Jackson, KA5DWI, maidenhead grid square EM12ju, located near Fort Worth, Texas. All the data analyzed and displayed in this summary was accumulated by the software PropNetPSK, written and maintained by Jeff Steinkamp, N7YG. All captures logged were of the mode PSK31 primarily of other participants of PropNET (www.propnet.org). All the data used is based on reception and captures at KA5DWI on 10 Meters (28.131 MHz). No other frequency or modes are used. Any data using captures of KA5DWI, are for the use of comparison.

I will occasionally make references to past years in this summary. A 4-Year study of 10-Meter Es will be written and published in 2009.

Any opinions and theories expressed are those of Art Jackson KA5DWI and are not to be construed of those members and officials of PropNET. My personal thanks go out to everyone involved and participated in PropNET both the current and past years.

Operating:

QTH - North Richland Hills, Texas (Grid Square EM12ju), a northeastern suburb of Fort Worth, Texas in a 30+ year old neighborhood surrounded by trees and in a creek valley. A ridge of hills, no lower than 60 feet higher than the tops of my antennas runs from northeast to east of the QTH.

Equipment -

Rigs:

Primary Rig – 20 year old Yaesu FT-747GX, running 15-20 watts.

Secondary/Lurker Rig – Radio Shack HTX-10 (not used for transmitting)

Antennas:

Primary – 3-Element Yagi @ 30 feet.

Secondary – 10 Meter Hamstick ground plane, Cushcraft ATV-3 Vertical @ 10 feet, and a 125-foot inverted-V Doublet @ 30 feet (for lurking use only)

Operating Schedule -

Tranceiving Mode – Began by 12:00 UTC (7:00 AM local CDT) and ended by 04:00 UTC (11:00 PM local CDT). Occasional 24-Hour operating.

Lurking Mode – Began by 04:00 UTC and ended by 12:00 UTC (11 PM – 7 AM local CDT) or whenever severe weather was expected or occurring.

Data Statistics:

Dates:

First identified partial or capture – 15:00 UTC hour on April 20, 2008 (WD4RBX)

Last identified partial or capture – 23:00 UTC hour on August 15, 2008 (K8VGL)

Totals 2008:

Total Captures and identified partials – 8,342 (4,605 Captures, 3,737 Identified Partial/Fragments)

Total KA5DWI Captured by other PropNET stations – 3406 (Data not used in analysis)

The Year's Challenges:

1. Computer – I had a fairly new 512 Mb memory board fail in the Dell XP Desktop in the local morning hours on May 27th. Thanks to Office Depot, I was back in operation within two hours of the diagnosis. The old ME Dell Desktop gave me NO trouble the entire season as it had in 2007 (Drive Write errors). Its work as the lurker computer was outstanding.
2. Software - I used PropNetPSK Versions 3.0.0.5 and 3.0.0.6 for the season on the XP Desktop. I used 2.2.2.2 on the ME Desktop. Version 3's never ran successfully on the ME machine. My capture to partial ratio was a little lower again this year by 3 percent (55 to 45 percent). I noticed fewer double and triple captures from a single signal this season and may explain part of the lower numbers. I continued to notice (heard) a few signals that never registered as a capture or a partial. I made only small configuration changes during the season.
3. Weather – Early in the spring, the weather was at times fairly rough, but by June it had turned hot, dry and very windy and resulted in a much higher level of electrical interference. I was moving the Yagi in many directions to avoid the noise. The verticals were loud (QRN) all of the time and they continued to pick up RF from TV's.
4. Antennas - I do not know how, but the reflector on my 3-Element Yagi shifted about a foot to the left. Either high wind or a fat dove was the culprit.

Normal Operation:

Transceive Mode - Yaesu FT-747GX @ 15 watts into 3-Element Yagi pointed 60-90 degrees or at 20 watts out into the verticals.

Lurker Mode – Radio Shack HTX-10 into any of the antennas.

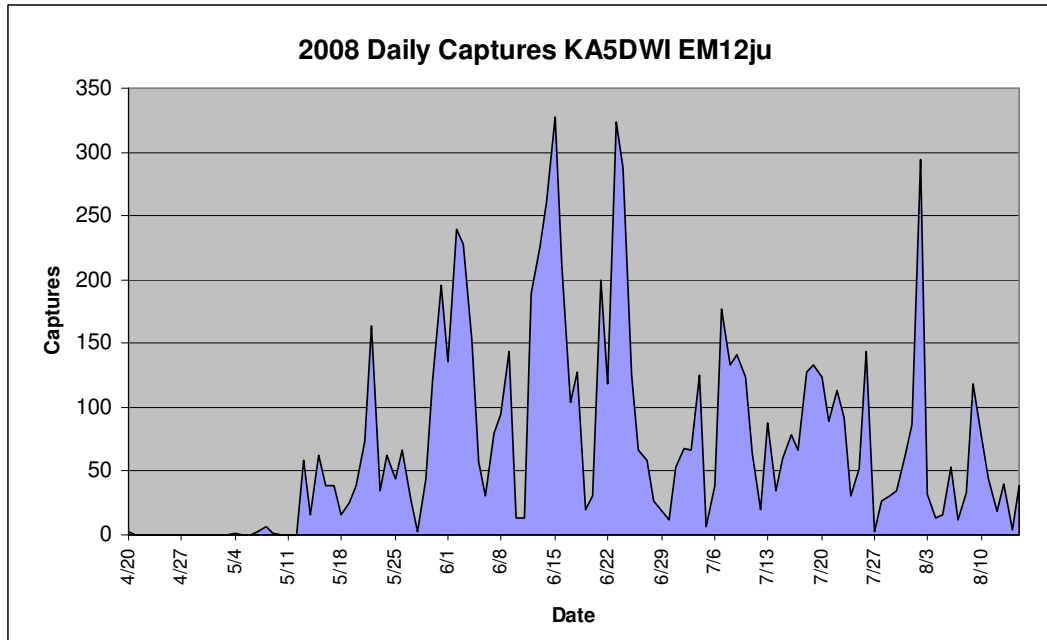
Thank you again for you participation and 73's.

Art Jackson

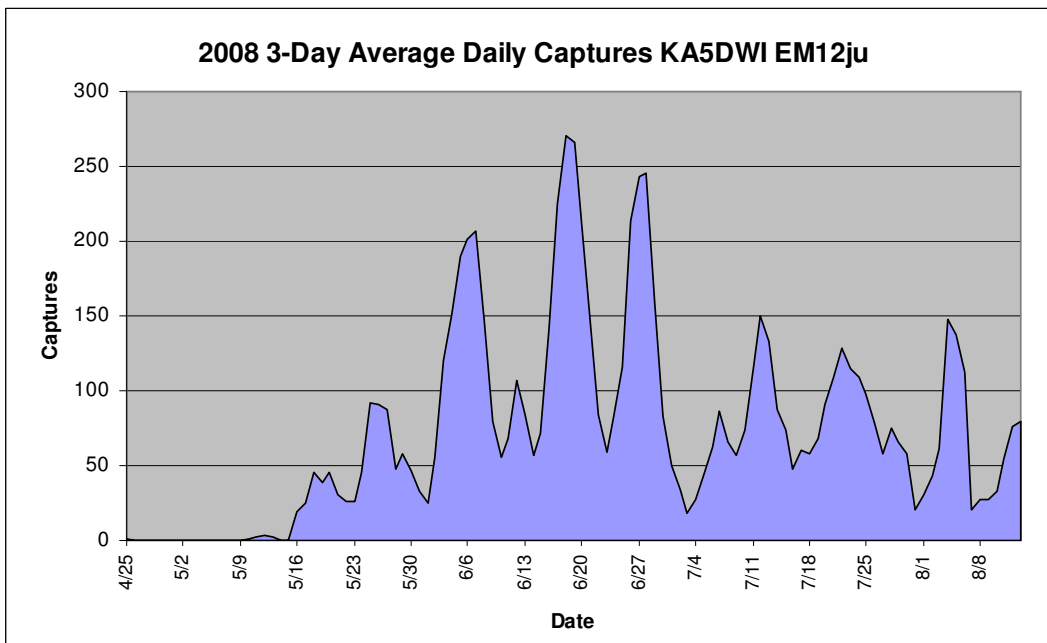
Results – 2008 Spring/Summer 10-Meter Es Season @ KA5DWI EM12ju

Daily Figures:

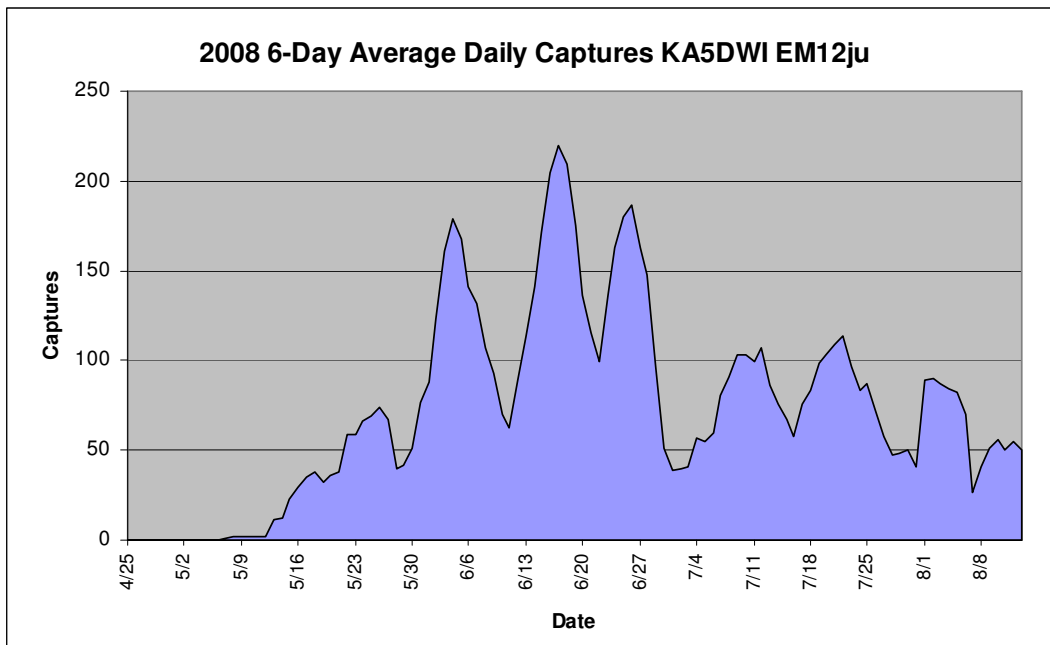
After a highly active 2007 and then compiling the data for a 3-Year study, I made the decision to accumulate a fourth year of data. We continue to be at a solar minimum and no real evidence seemed to indicate that the new cycle had begun. I believe that a less active sun would have little influence on Es. Reading materials and data from other amateur radio operators led me to believe that “Es” activity is higher and best during solar minimum. This year would bring a few surprises, but still the consistency of past years.



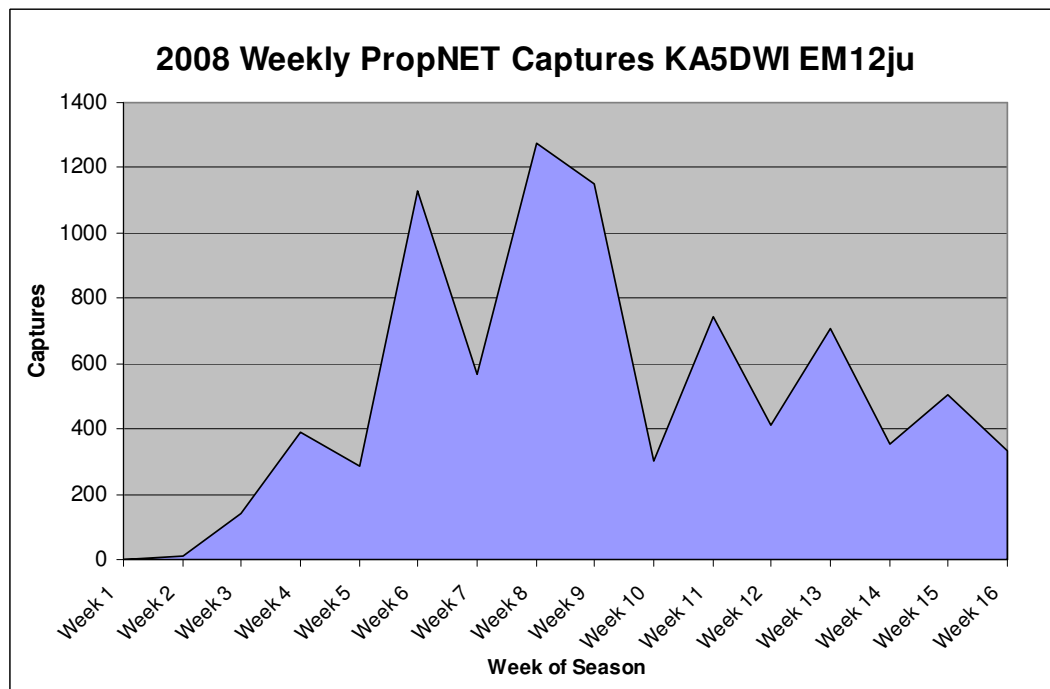
After 2 captures of WD4RBX on April 20, it took 2 more weeks before another capture occurred. Beginning on May 13th, at least one capture occurred every day for the remainder of the season (Aug. 15).



The “3-Day Average” is the average of all daily captures 2 days prior to and the day measured. It showed approximately 11 peak activity days. For the first time it showed its most highly active period close to the Summer Solstice. Prior years would reflect a slight decline in activity during the solstice.

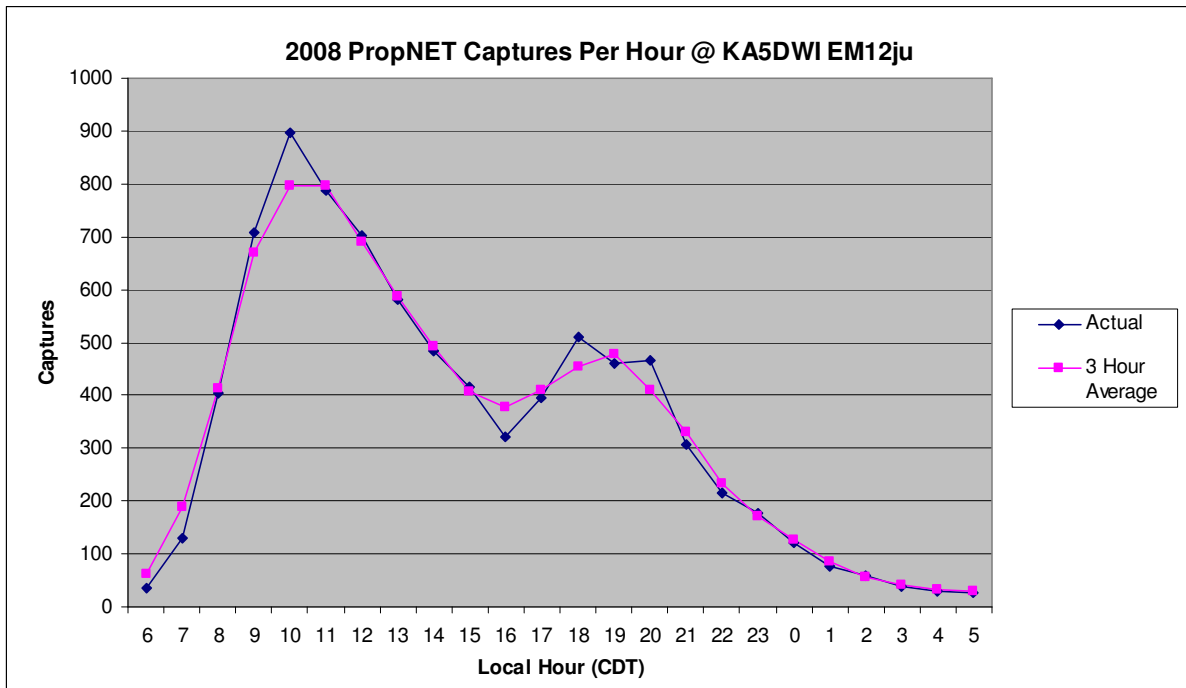


The 6-Day average is the average of captures 5 days prior to and the day measured. It showed approximately 8 peak activity days during the season. This also showed the most active period close to the Summer Solstice.



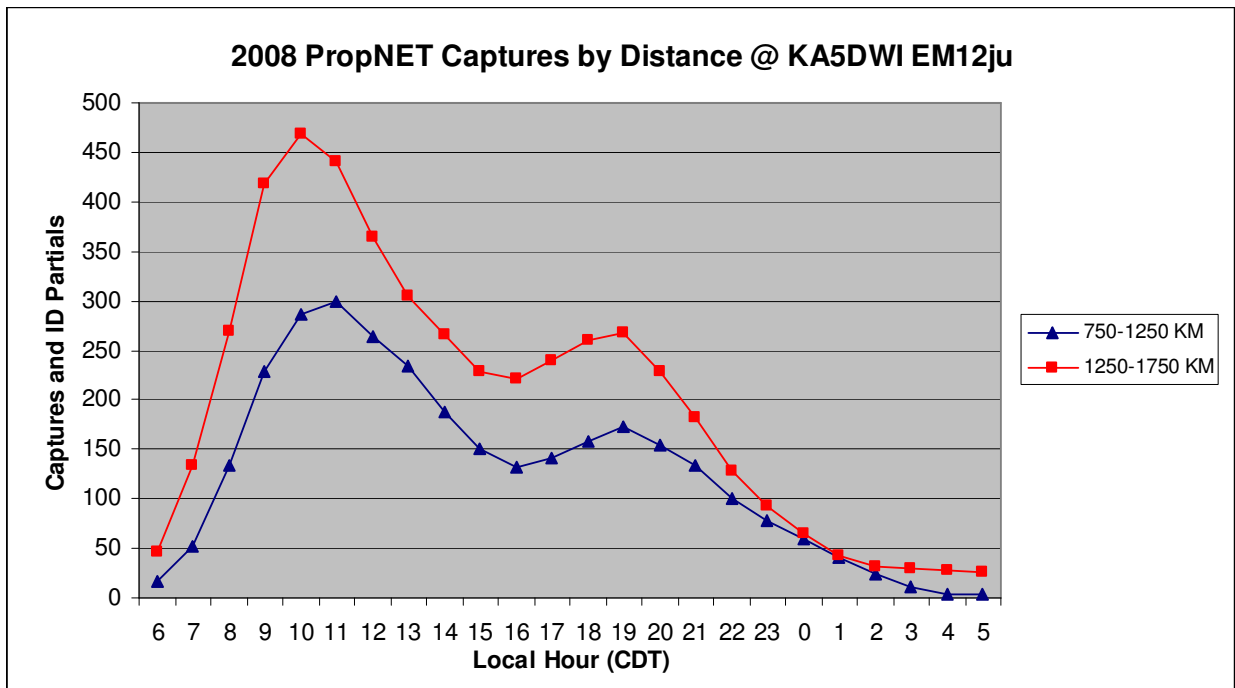
A chart similar to this one will be used in the 4-Year Study. This represents the actual number of captures for one week periods beginning 4/25 and ending on 8/14. The Summer Solstice occurs early in Week 9. As indicated for the earlier charts, this was the first time in 4 years of recording that the two weeks around the Summer Solstice were the most active weeks of the season. Generally it occurred in Weeks 5, 6, or 7.

Hourly Calculations:

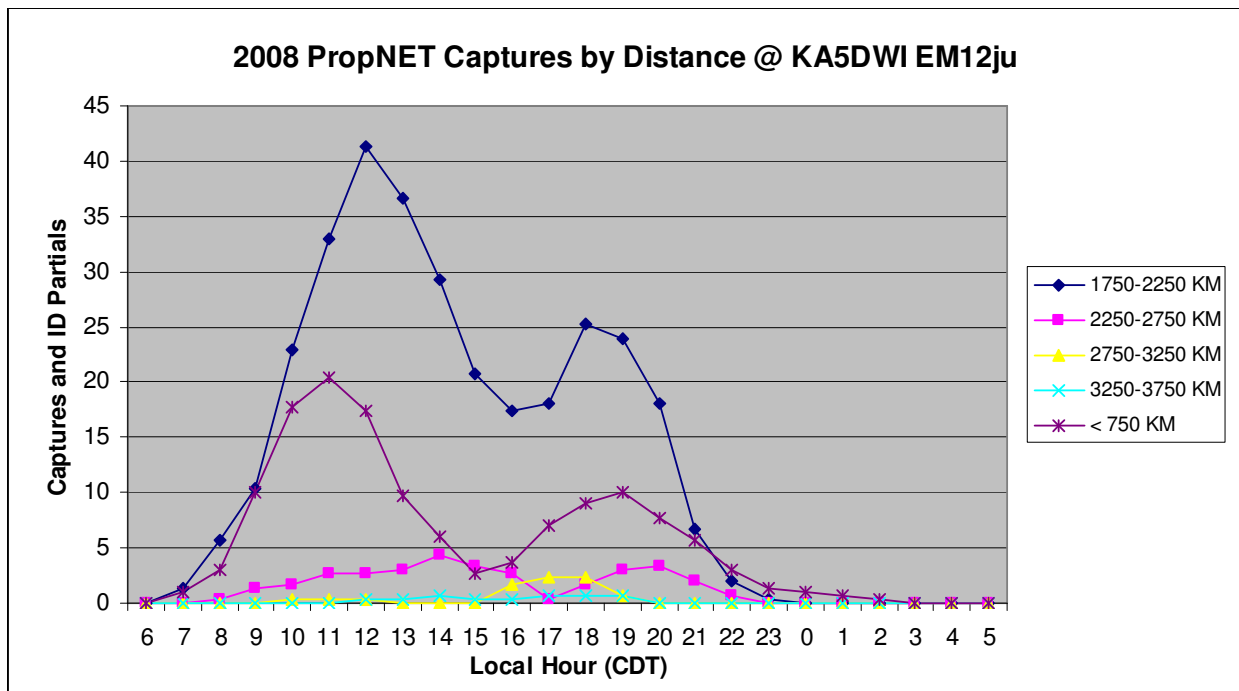


This chart represents the actual number of captures for each hour of the day from April 20 to August 15. It also displays a 3-hour average to central activity to a specific hour. Example, the 6 AM (6) local hour is the average of 5, 6 and 7 AM. The dual-peaked diurnal (daytime) pattern matched what occurred in 2006 and 2007.

Distance (calculations based on the 3-Hour Average)



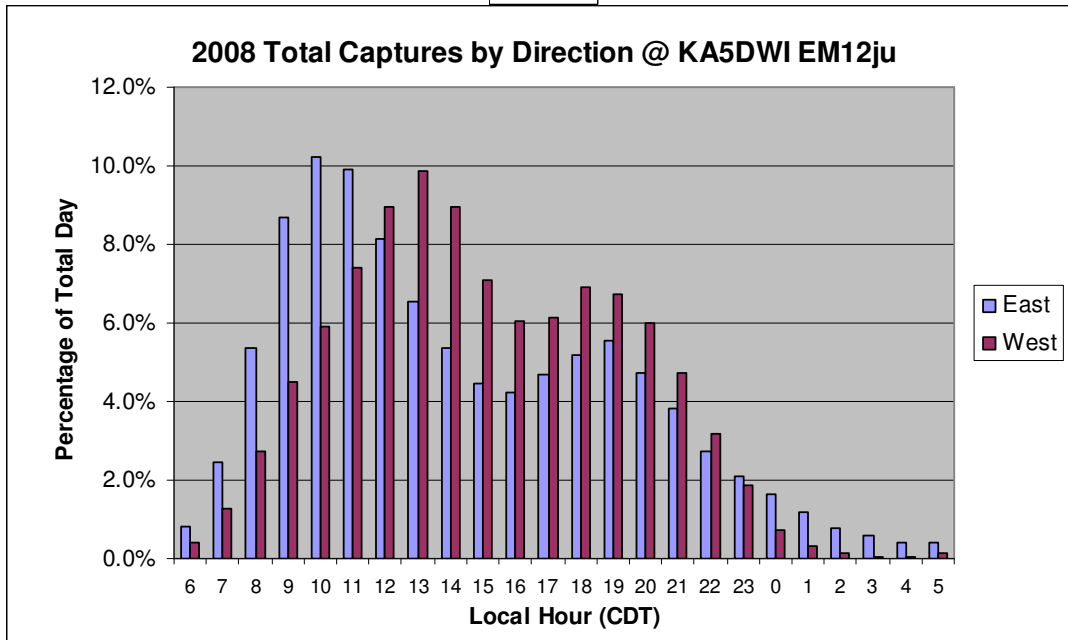
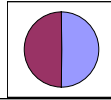
The vast majority of PropNET captures at this QTH occur near the 1250 kilometer mark. The dual-peaked diurnal pattern is evident at these distances and influences the overall trends.



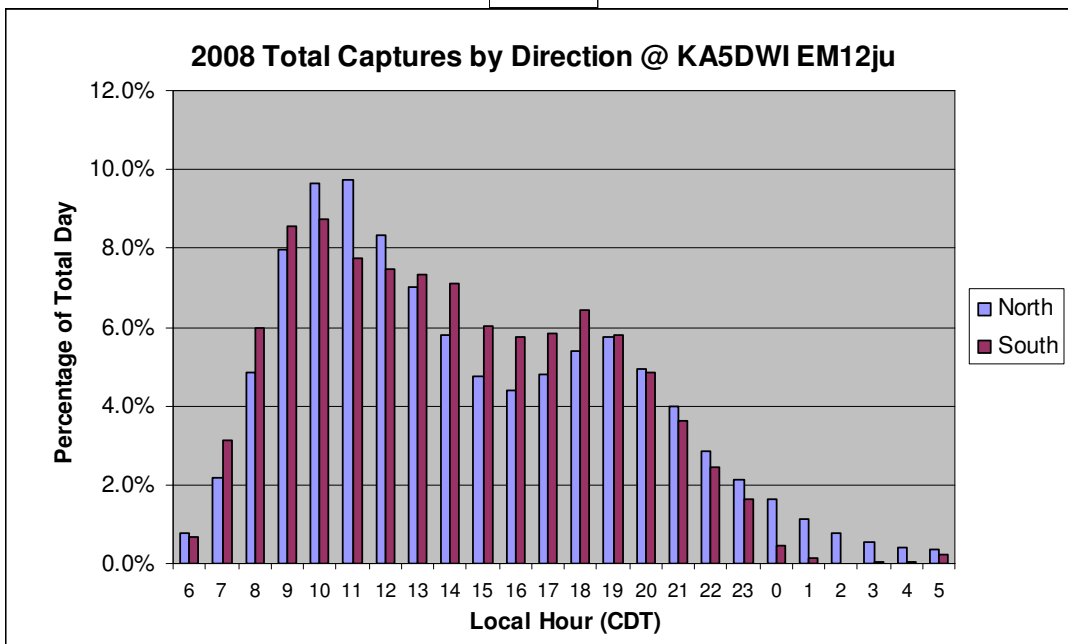
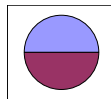
Captures less than 750 kilometers and those from 1750 to 2250 kilometers are the only other distance groups that influence the overall numbers. When Es occur at distances less than 750 kilometers, conditions are intense and should have a high MUF. For the first time in 4 years, I noted backscatter from stations approximately 150 kilometers away in high MUF conditions. Those PropNET captures from 1750 to 2250 kilometers are multi-hop Es.

Hourly Directional Trends:

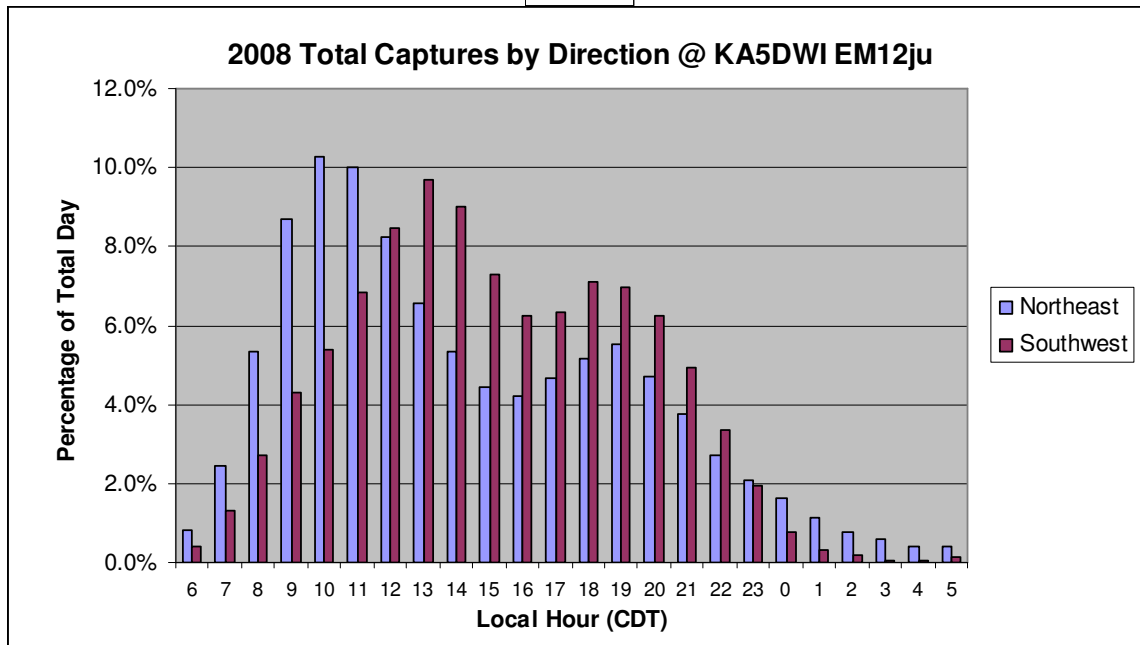
A way to determine what directions are best by the time of day is to separate all captures into directional half-groups. The next chart was to divide the captures easterly (0-179.9 degrees azimuth) and those westerly (180-359.9 degrees azimuth) and then break each group into the hourly percent of the daily total. This method eliminates skewing due to the differences in volume by directional group.



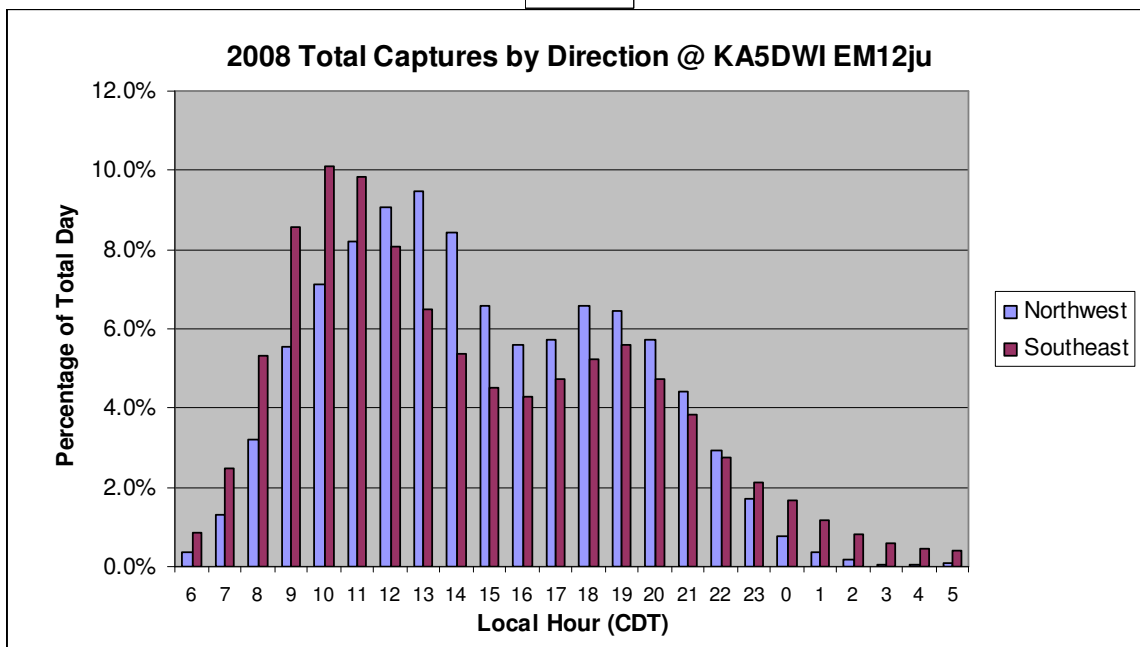
As noted, easterly directions are best as the sun rises. Westerly opportunities peaked 3 hours after easterly ones and the secondary peak is stronger to the west as sun faces that direction. Note the easterly twilight activity.



As noted, as the sun rises activity in southerly directions are better than northerly ones and peak slightly earlier. By the late morning northerly ones are better and decline greater later in the afternoon. Twilight activity is better towards the north.



As we divide all PropNET captures into northeastern and southwestern halves, the same trends seen before between the prior east-west and north-south charts become more evident. Northeastern paths peak 3 hours before southwestern ones in the morning. In the afternoon, northeastern activity will peak an hour before the southwestern ones.



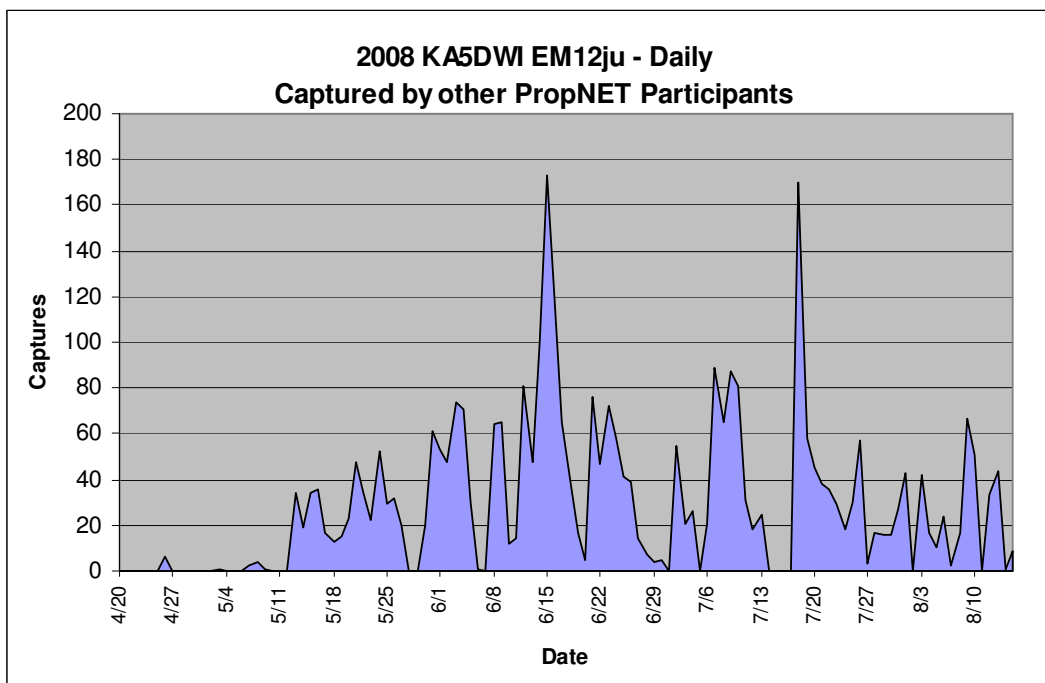
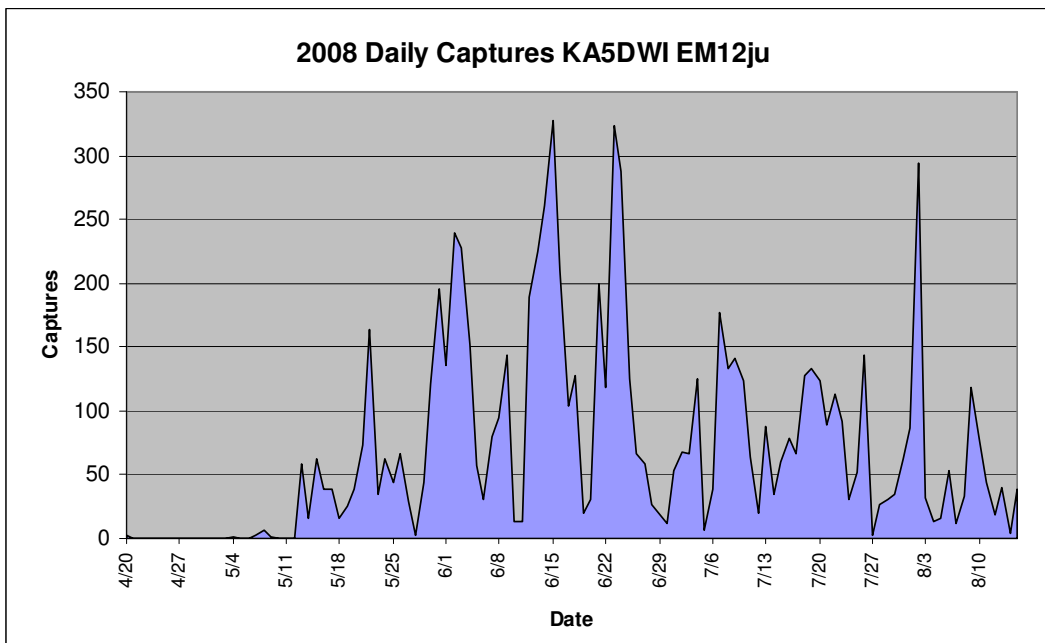
This chart is almost a duplication of the prior chart. The southeasterly opportunities are best as the sun rises and peak first. Northwestern activity peaks first in the afternoon hours.

Note that for all charts and for all directions that each shows a dual peaked diurnal pattern.

Comparing My Catches to Being Caught by Others

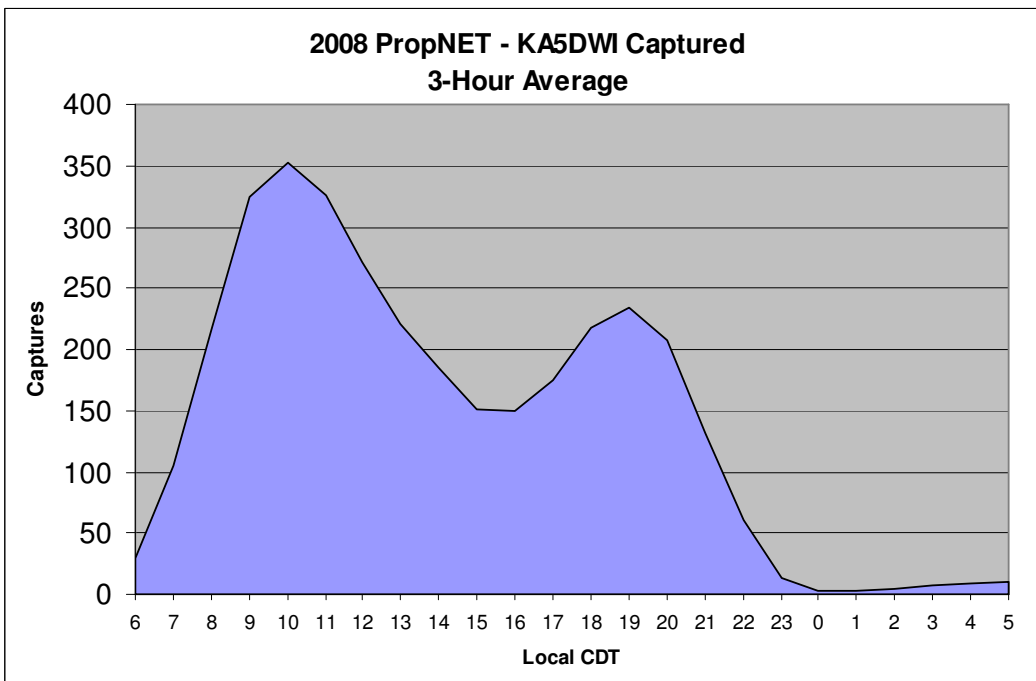
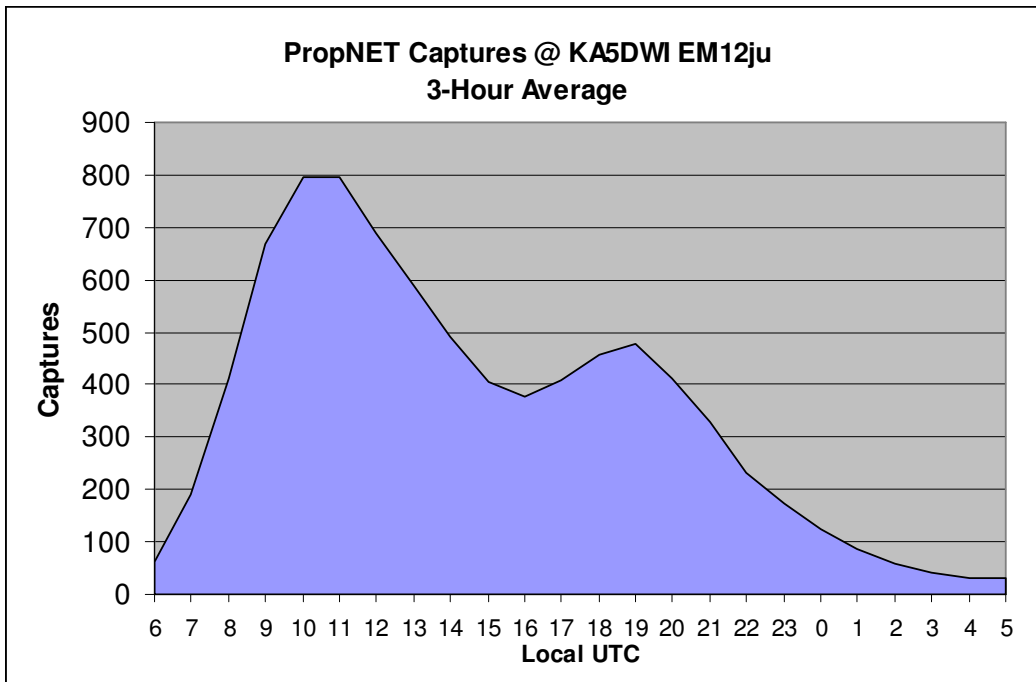
Daily Captures

This year thanks to the fine efforts of Dave Donnelly - KF6XA, I was able to extract Capture data from others that had captured me. Now I could easily compare how consistent my data accumulated was reflected by other PropNET participants.



Daily capture trends for 2008 were quite similar between my captures and being captured. The busiest day of the season occurred on June 15 from both sources. A couple of days extracted might be missing (7/15-16). Most of my capture records were not extracted by Dave's routine, but compiled from PropNETPSK capture and partial files.

Hourly Figure Comparison

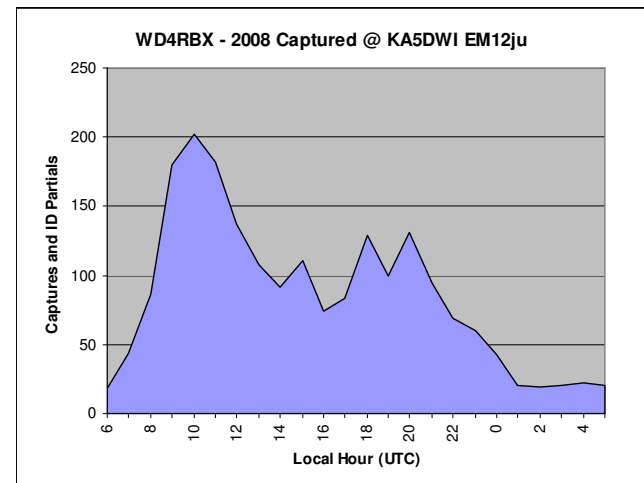
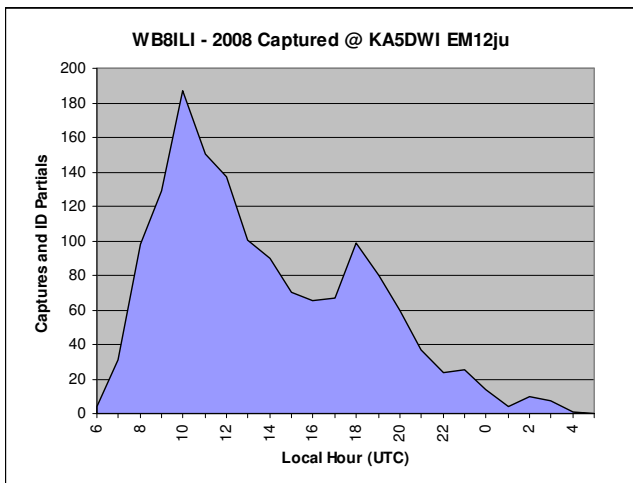
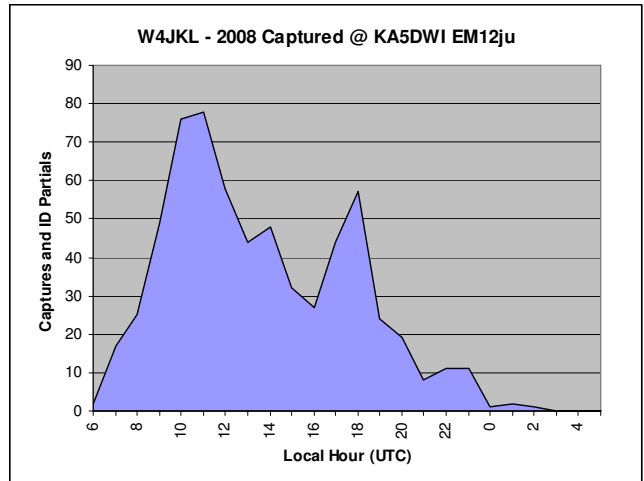
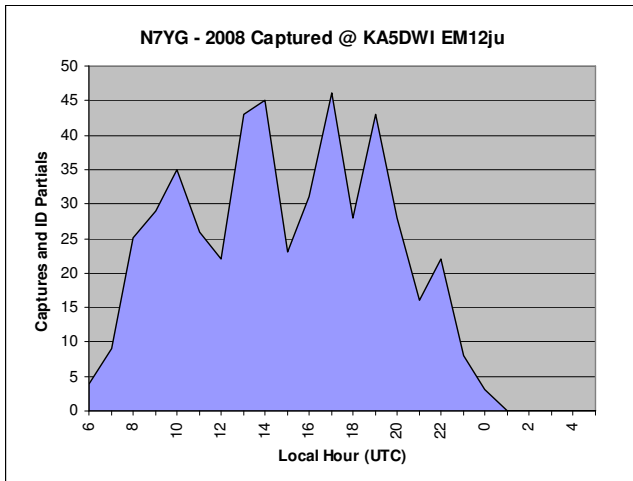
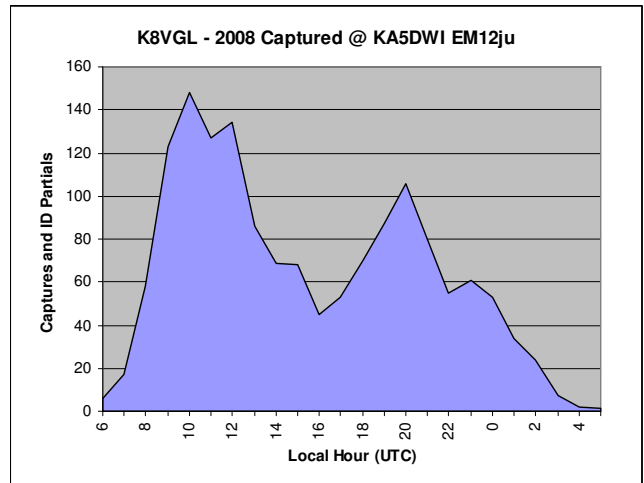
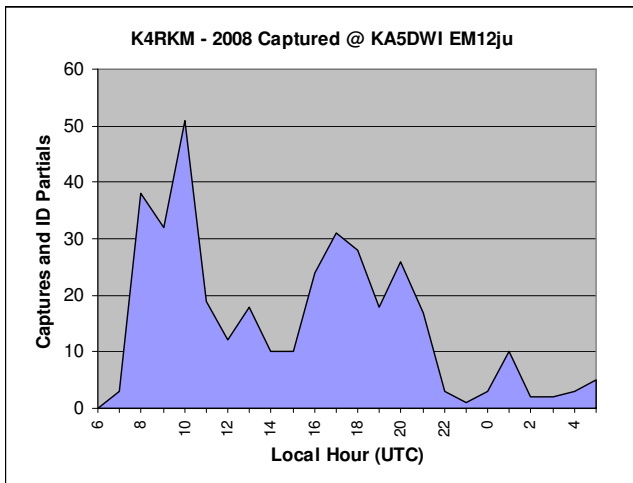


The “3-Hour Average” was fairly close for both sources. The peak occurs at 10 AM local time and the secondary peak both occurred at 1 PM. It was amusing that the minimum time that I was captured occurred at midnight local. My least captures here occurred at 4 AM.

2008 KA5DWI PropNET Honor Roll

Fewer stations appeared on this list this year, but these PropNET participants have appeared in prior years and have strongly influenced repetitive annual trends.

Oooops!!! Local Hour is Central Daylight Time



For two years in a row, WB8ILI, K8VGL, and WD4RBX have been captured more than any other participants. Rich, WD4RBX during the Es season was captured at least once each CDT hour.

WD4RBX	2044
K8VGL	1514
WB8ILI	1489
W4JKL	634
N7YG	486
K4RKM	366
K5BTV	319
WV5L	275
KD5LWU	195
AI4NV	185
WA6MTZ	116
KF9KV	70
KF6XA	65
NI5F	52
W0AEW	46
W8LIW	44
W6CGH	42
KB9PVH	33
VE3FGU	32
KK5XF	31
KC0EFC	28
KD4IZ	24
W5OP	24
KI4EIZ	21
N6OA/2	17
N8VMX	13
N4LNE	12
N9WCX	12
WB7AJP	11
N5XYO	10
W1COG	9
W2EV	9
KA0EZE	8
K7EV	7
K8WIW	7
KM6I	7
KB8TL	6
KC0TIK	6
N6TBQ	6
WB8SKP	6
WY5B	6
K4SHF	5
K0OG	4
W3NRG	4
WP4JMN	4
AA5IW	3
KU4BL	3
W5AER	3
W7HD	3
WA4ED	3
AC0GJ	2
K3FE	2
KA2OLL	2
KF5S	2
N5PJY	2
W0JAB	2
WE2M	2
AG1H	1
K0EWS	1
K5GM	1
KA9UDA	1
KD0BIK	1
KF2AT	1
KI7J	1
VE9GJ	1
W5QLF	1
W8OKN	1

2008 PropNET Capture List

Thank you all – Art KA5DWI