

2007 10-Meter Sporadic Es Season Art Jackson KA5DWI EM12ju

Background

The following summary of the 2007 Sporadic Es season is based upon "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 receptions were of the mode PSK31 of other participants of PropNet (www.propnet.org). All data is based on reception of other participants at KA5DWI on 10-Meters (28.131 MHz) at KA5DWI. None of the data includes reception (Capture) of KA5DWI, or any other frequencies used on PropNet.

I will make reference to past years in this summary, but a 3-year study of 10-Meter Sporadic Es will be written and published in 2008.

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

Operating

QTH: Located in North Richland Hills, Texas, a northeastern suburb of Fort Worth (or a western suburb of Dallas) 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:

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 – 35 year old 3-Element Yagi @ 30 feet.

Secondary – Cushcraft ATV-3 Vertical @ 10 feet and 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).

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 – 23:00 UTC hour on April 21, 2007 (WP4JMN)

Last identified partial or capture – 02:00 UTC hour on August 15, 2007 (KD5LWU)

Totals 2007:

Total Captures and identified partials – 16975 (9919 Captures, 7056 Identified Partial/Fragments)
10836 Total Partial/Fragments during the full season. 3780 partials were eliminated as duplicates or unidentifiable.

Year's Challenges

- 1. Computer** – I lost and had to reconstruct a lot of data last year on the home desktop whenever that computer was doing other functions. This year I removed the “other functions” by using another desktop. As luck would have it, the older desktop began to have drive problems (read or write errors) and would not boot up after power down. The problems were always temporary. Therefore in order to stay up more reliably, I had to switch everything over to the other desktop. It worked for the best. I transceived on the new desktop and lurked with the old one. I transferred via my network the Catch data to the new computer in case of failure of the old one. On rare occasions I used a laptop on 6 Meters.
- 2. Software** - I used PropNetPSK Version 2.1.0.2 for most of the season. Upgrading troubles from others made me decide on stability rather than doing any upgrades. I believed that these later versions perform differently than the older do. My capture to partial ratio was much closer to one to one this year. I also noticed more double and triple captures from a single signal. I also noticed (heard) a few signals that never registered as a capture or a partial. I decided not to change any settings during the season nor upgrade PropNet. I will adjust settings and upgrade in the off-season.
- 3. Weather** – We had the 2nd rainiest first half of 2007 in history. The day before July 4th we had 3.5 inches of rain and measurable rainfall for 13 straight days. We also had a vicious hail-storm (tennis-ball sized), but no major antenna damage (just \$6,000 on the roof and screens). I was plugging and unplugging rigs and antennas on a consistent basis, but usually tried to stay on. The nearest lightning strike was to an electric feeder line across the street. I am sure the captures would have been even higher if the weather was better. It never did keep me off.
- 4. Equipment**
 - Interference – The new televisions produce a lot of birdies. I could not use DCD Data Carrier Detect.
 - Rig – The Yaesu FT747GX USB Filter Circuit went on the fritz. I used LSB at 28.134.0 all season. It goes to Vertex Standard's repair shop this fall.

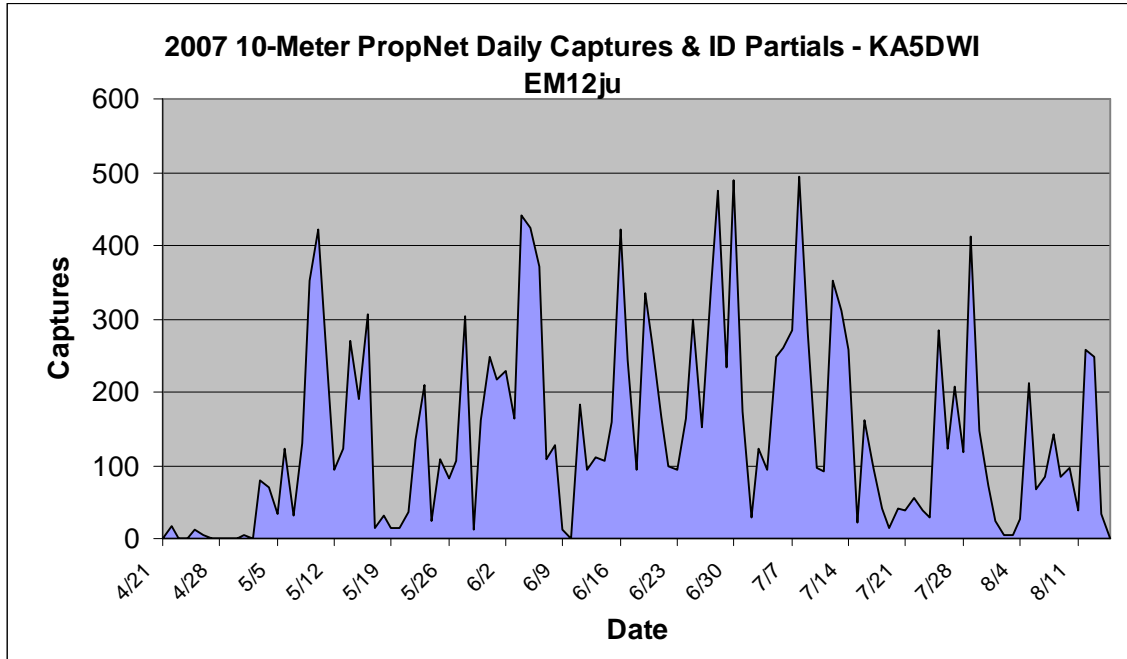
Normal Operations

Transceive - Yaesu FT-747GX @ 15 watts into 3-Element Yagi pointed 60 degrees
Lurker – Radio Shack HTX-10 into Cushcraft ATV3 Vertical.

Thank you again. Enjoy!
Art Jackson

Results – 2007 10-Meter Sporadic Es Season KA5DWI EM12ju

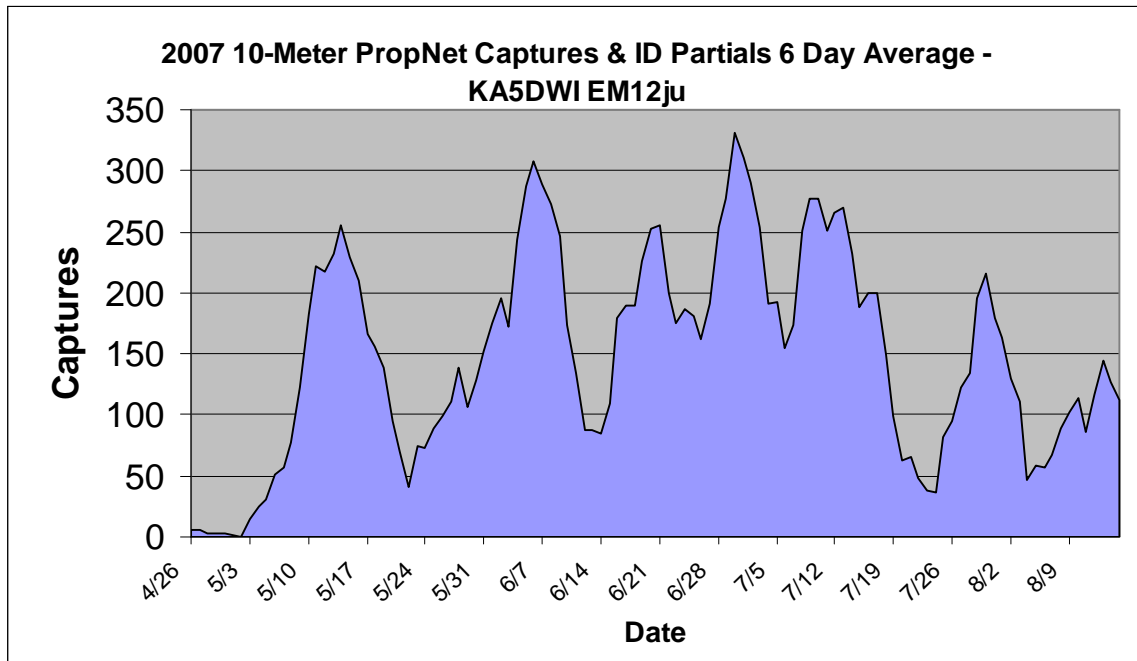
I believe that this year's study would be highly important. We are at solar minimum. A much less active sun would also have less influence on Es. Reading materials and data from other amateur radio operators led me to believe that "Es" activity is higher and best during this period. I was not disappointed in that conclusion.



I experienced Es from southern latitudes on 6-Meters by the second week of April. I worked a number of stations in Mexico and Central America. I wasn't to be disappointed. On April 21, I captured WP4JMN in Puerto Rico and K4RKM and W4JKL the next day to start the 10-Meter "Es" season with a bang. It did get quiet after that, but within 10 days the season was in full swing.

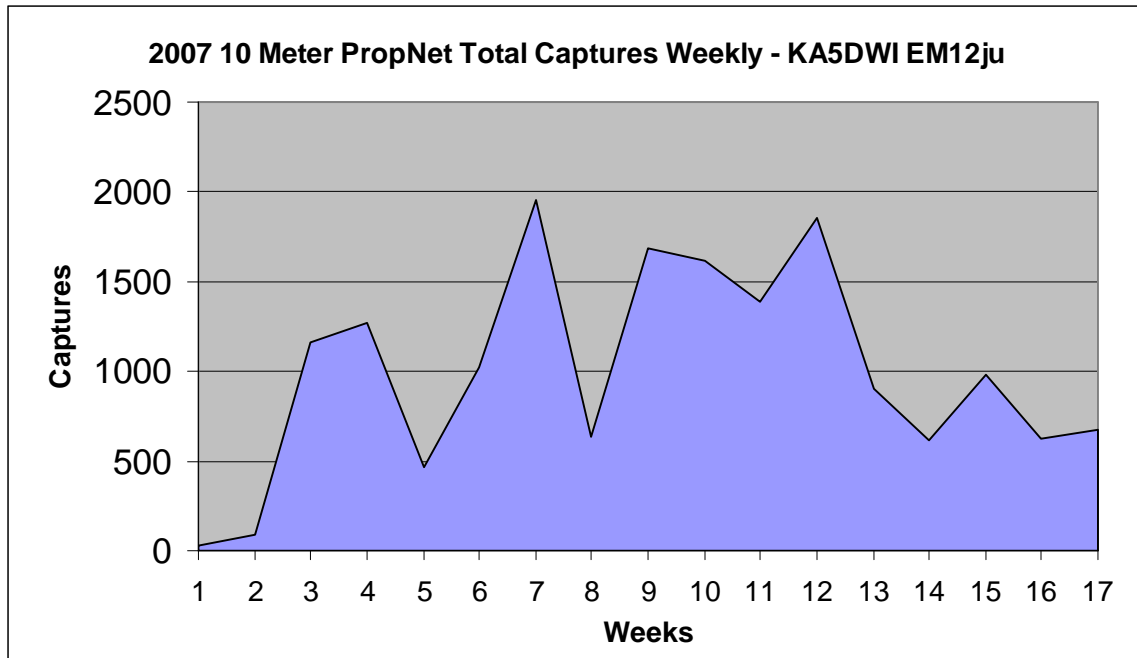
Usually Es do not take off until the first week of May. When they finally did on May 3, I registered at least one capture or identified partial for the remainder of the season (ended August 15). The slowest days of the season seem to occur before and during contests that can take advantage of these conditions (most notable, ARRL VHF SS). There were as many high peak days in 2007 as there were in 2006. No daily total records for PropNet occurred this year. July 8 was the most active capture day (493) and on June 30, 17 different stations were captured for this highest number.

The 6-Day Average chart (the average number of captures for 5 days prior and including the day charted) showed some rather unique trends.



This year showed much more cycling than prior years. There were 7 or 8 distinctive peaks and valleys of activity. Notice that they are clustered around the Summer solstice, the accepted peak of the Summer Es season. The tallest peak (June 30) occurred near the same day as it did in 2006. A final active peak has occurred just after August 9 each of the 3 years that have been studied.

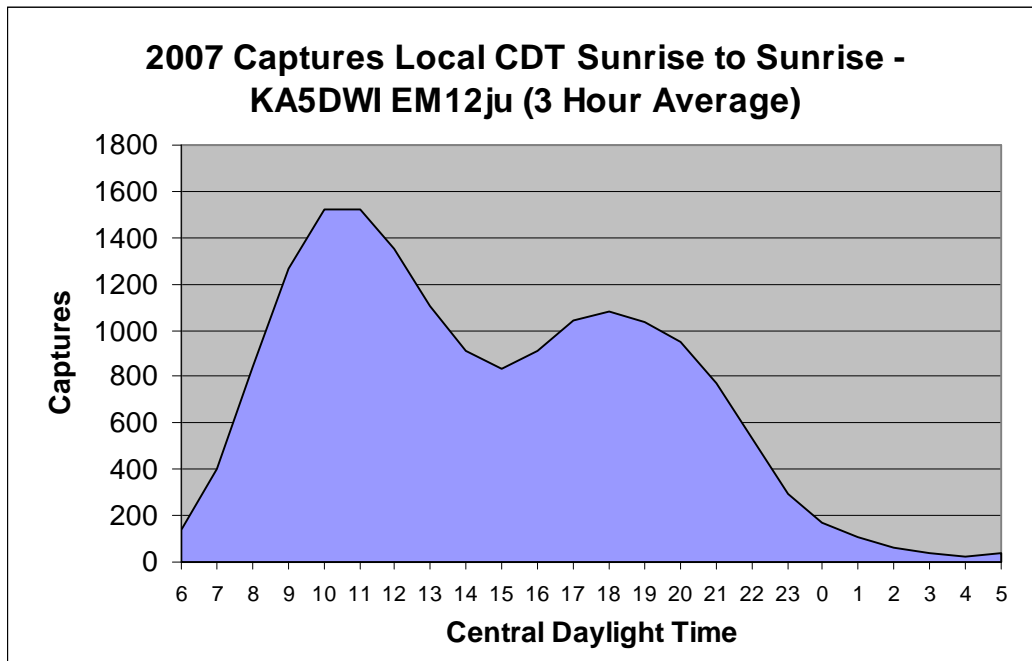
Prior to these studies, I believed that the Spring/Summer Es season occurred 8 weeks (16 Total) each side of the solstice. Experience now indicates that is really 9 to 10 weeks each side of the solstice. The following chart displays the total number of captures for one week periods beginning April 21:



Once again the activity clusters around the Summer solstice and tends to be better overall the second half of the season.

What time of the day did “Es” occur?

The following chart showed trends similar to, but not exact to other years. This year shows a distinctive lull after noon until 3 PM local time. Last year, it was generally active the entire afternoon.

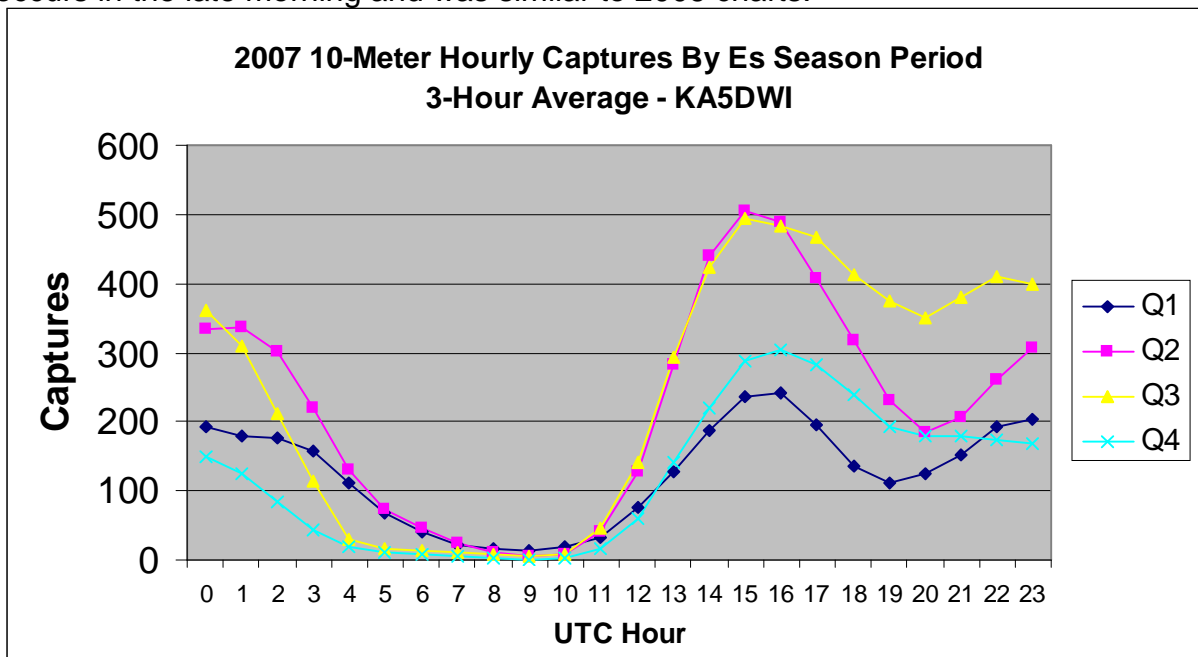


There is no doubt that Es are best during the late morning hours and that sunlight is its creator. The “3 Hour Average” is the average number of captures of the hour measured, the hour prior and after (Ex. 06 CDT is an average of 05, 06, & 07 CDT).

Was the overall trend of time consistent during the season?

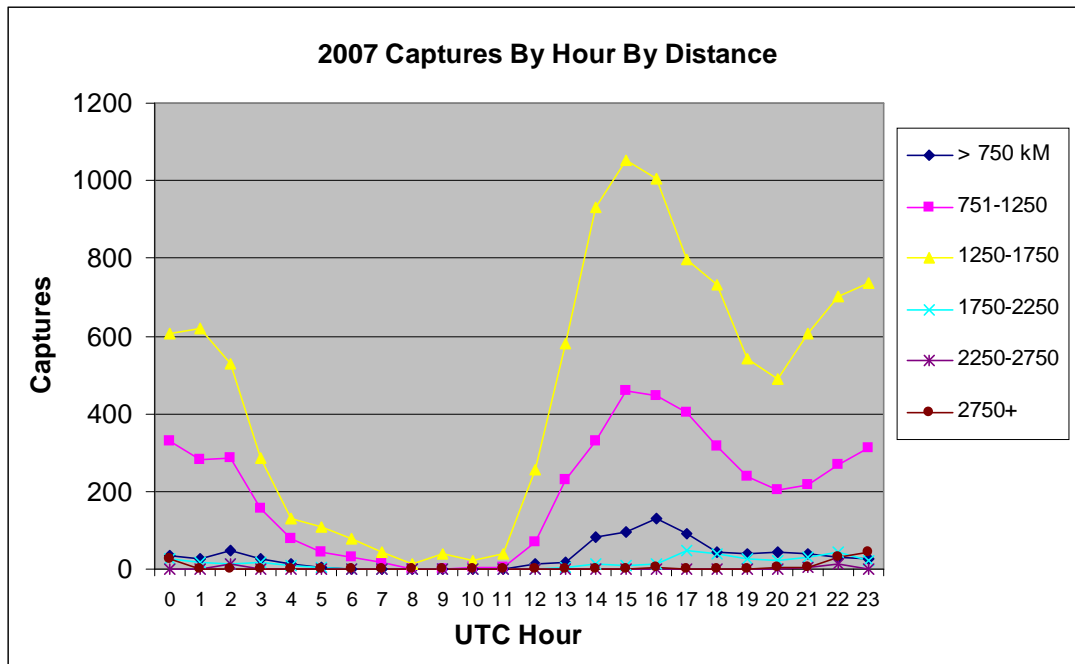
Local Time is Central Daylight (-5 hours UTC) Sunrise before 12:00 UTC, Sunset after 02:00 UTC

The chart displays 3-hour averages into 4 quarters of the season. Quarters 1, 2 and 4 favored the overall trend for the year. Quarter 3 closely resembled the 2006 plots. The highest activity at quarters near the Summer solstice peaked one hour earlier than those further away. The highest activity always occurs in the late morning and was similar to 2006 charts.



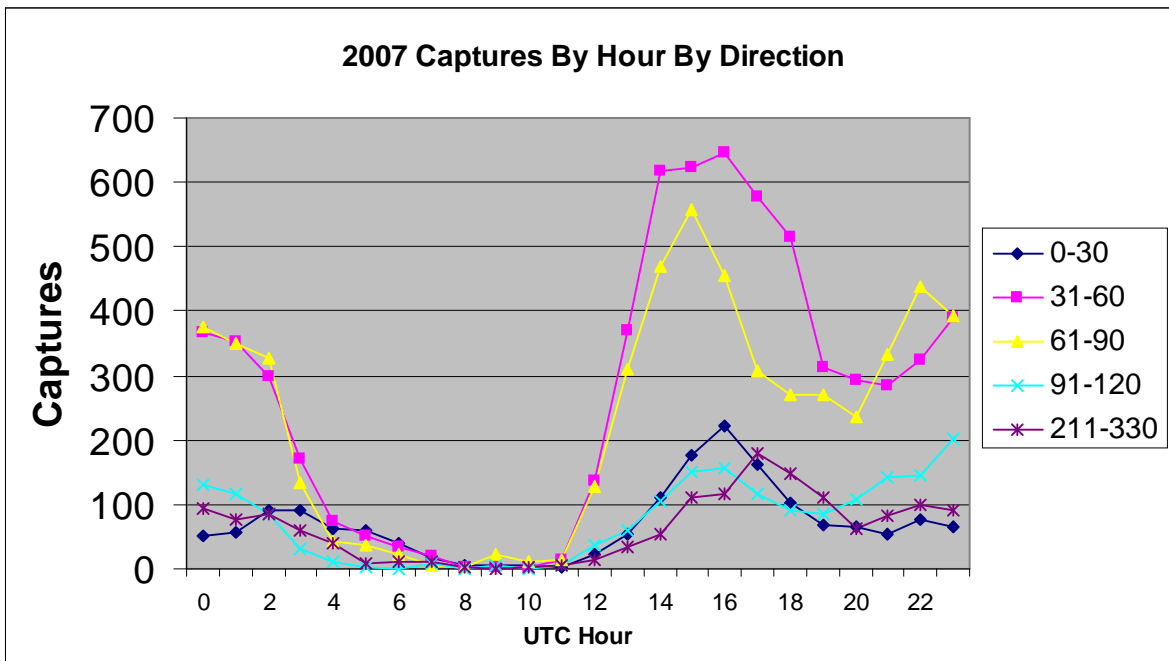
Does distance have any bearing on peak activity?

The chart shows hourly activity in 500 km increments beginning at 750 km. The optimal distances for Sporadic Es (751-1750 km) peak at similar times for the most part. Short distances peak a little later. The farther distances (1750 km +) show very little similarity to the other distances.



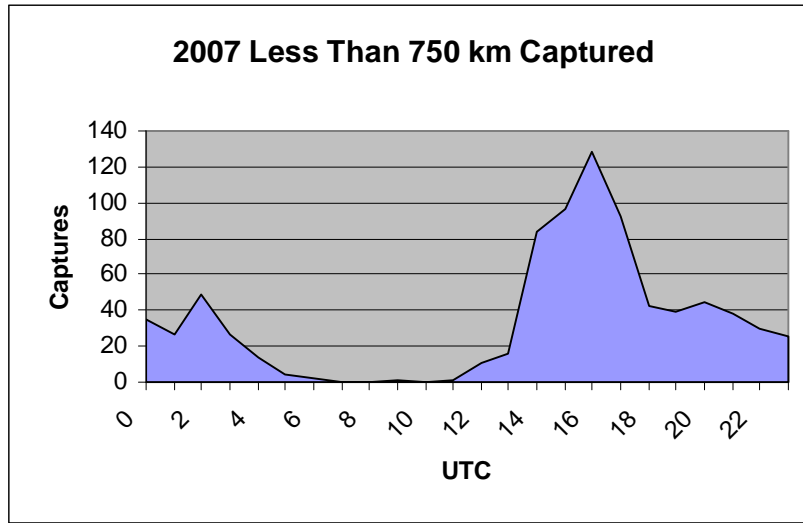
Did direction have any affect on peak times?

It appeared to have an affect. East to northeast paths tend to peak earlier, as northerly and southeasterly peak an hour later. As expected, westerly paths peak the latest around noon local time. Easterly activity drops dramatically at sundown, westerly drop off more slowly.

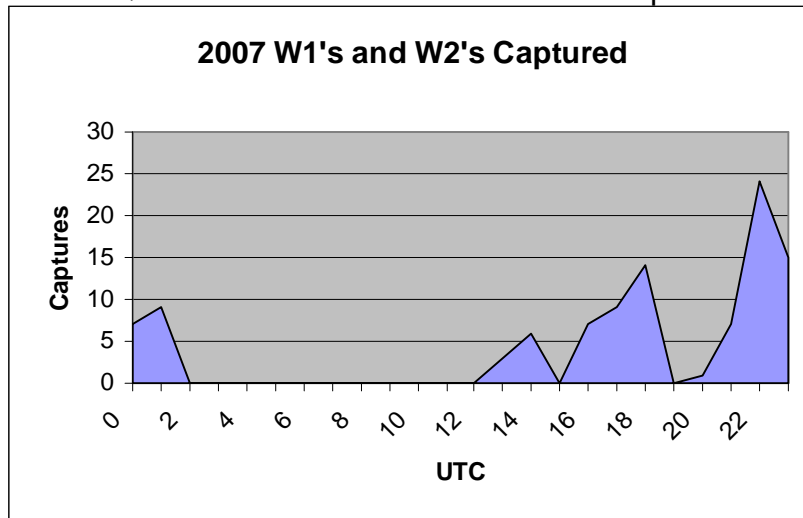


What were the best times for specific areas of the country, short-skip, and DX?

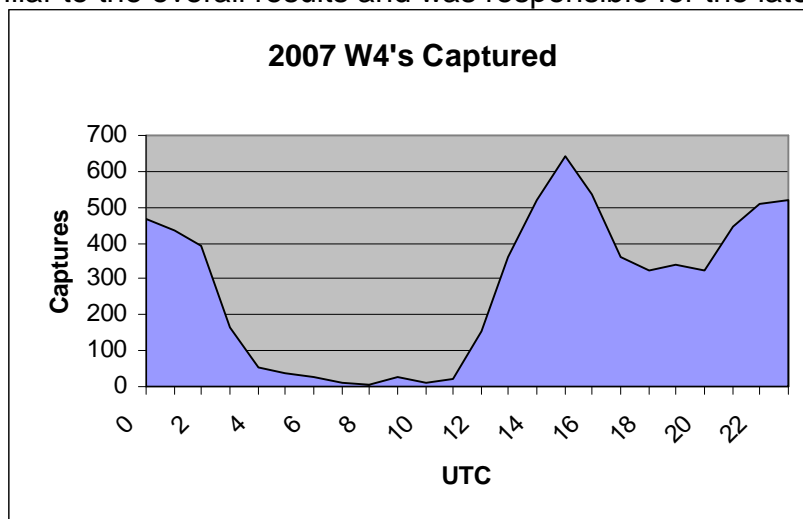
I was happy to have more close-by participants this year and many more captures. This chart was still similar to 2006.



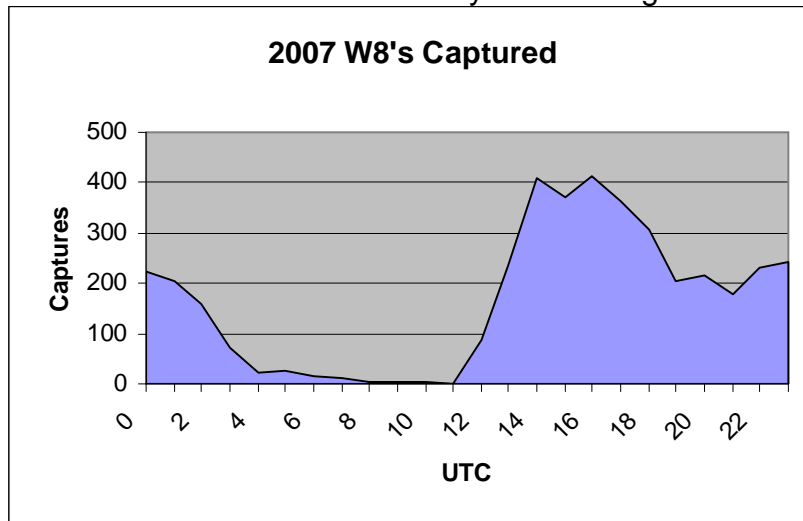
On the other hand, captures from the northeast U.S were much more far and few between. Active stations and more QRM were to blame. The chart was representative of distant results.



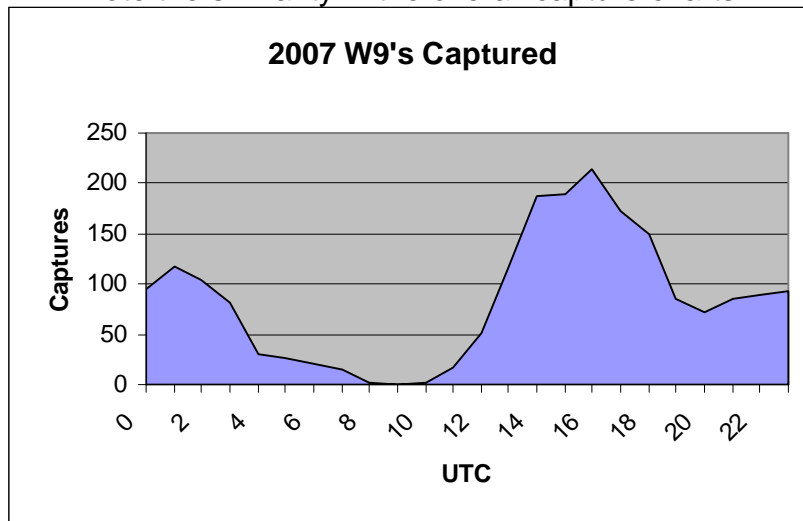
Every year I can depend on the 4th Call area. This year was no exception. The chart is similar to the overall results and was responsible for the late afternoon peak.



2007 saw a vast increase in activity from Michigan and Ohio.

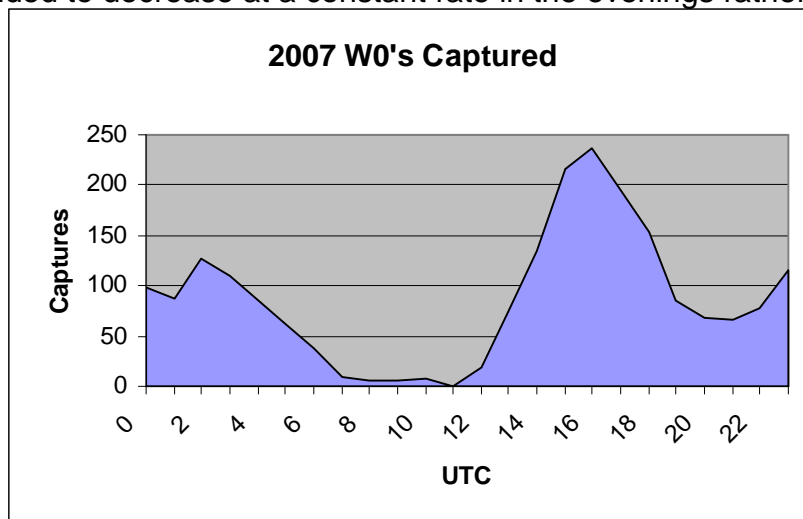


As well, a large increase in the 9th Call areas occurred. Note the similarity in the overall capture charts.

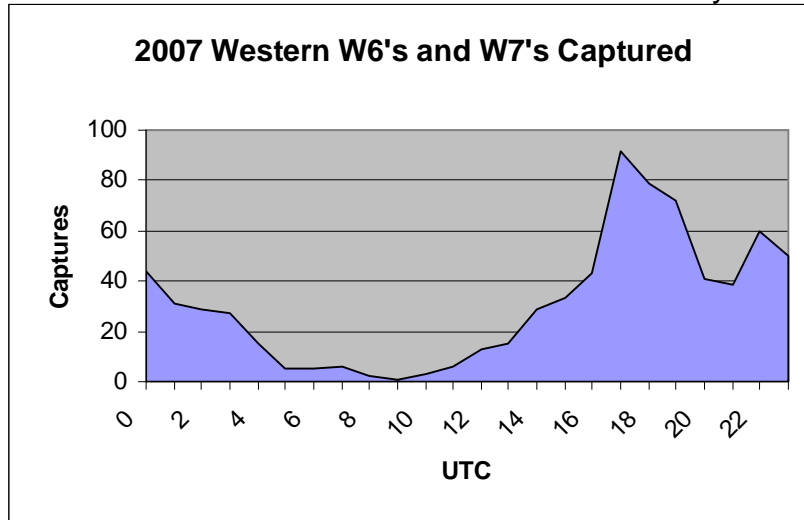


This chart is interesting.

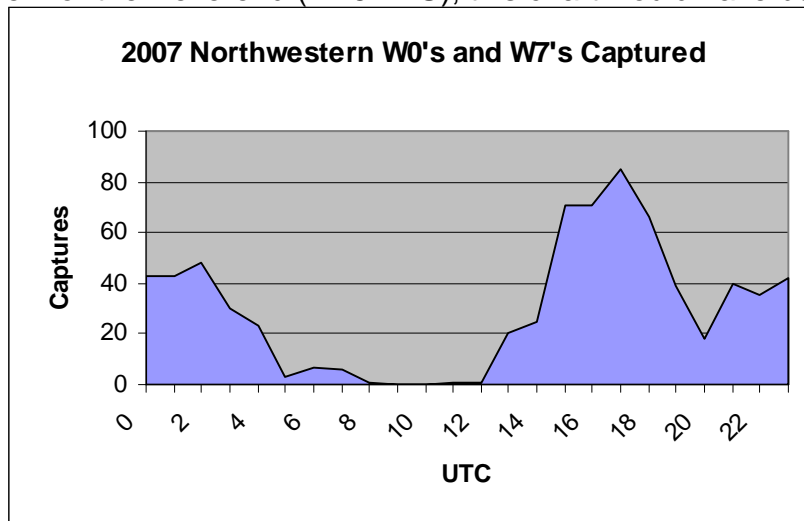
Northerly paths tended to decrease at a constant rate in the evenings rather than an abrupt halt.



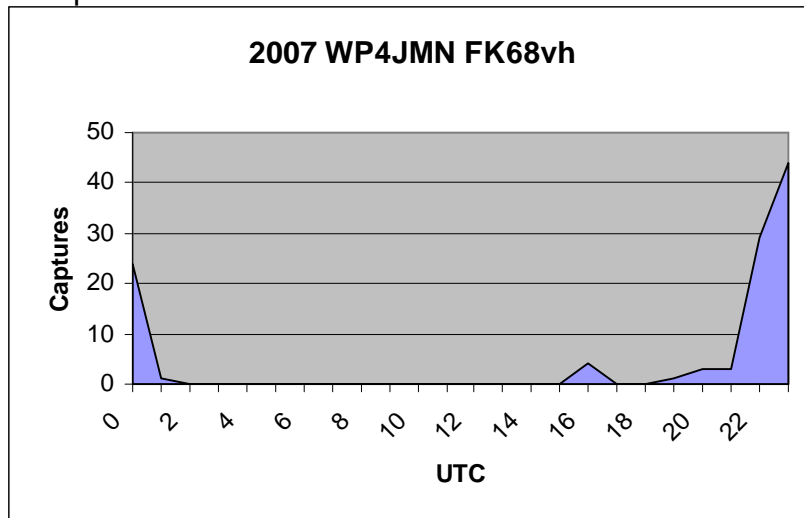
I was a little disappointed this year in results from the West Coast. My experience had been that signals off the back of my Yagi were as good as my Vertical performed. I will have to review what antennas to use next year.



Had it not been for the Reverend (KD5LWU), this chart would have been near zero.

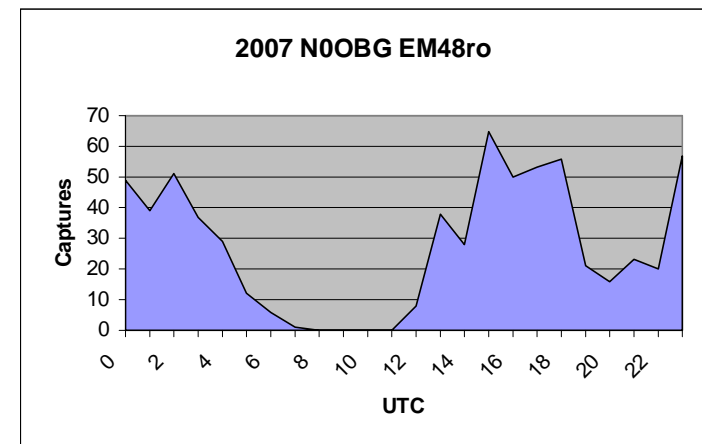
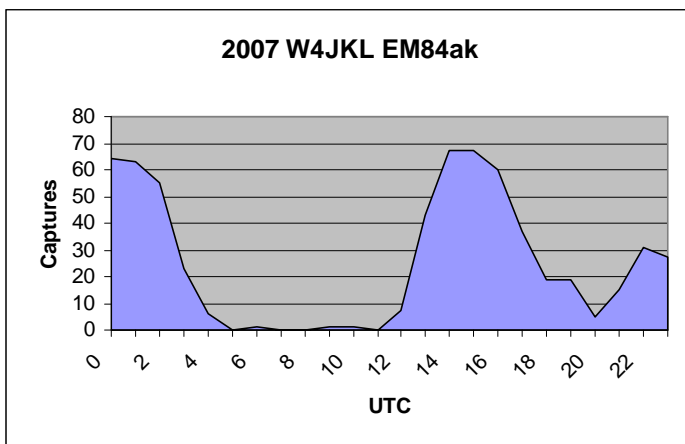
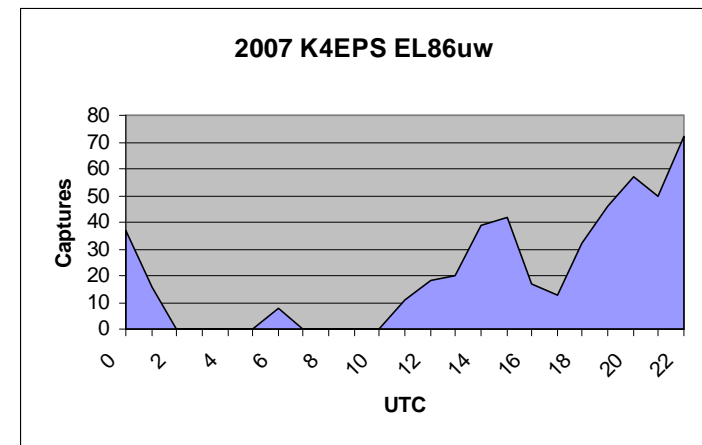
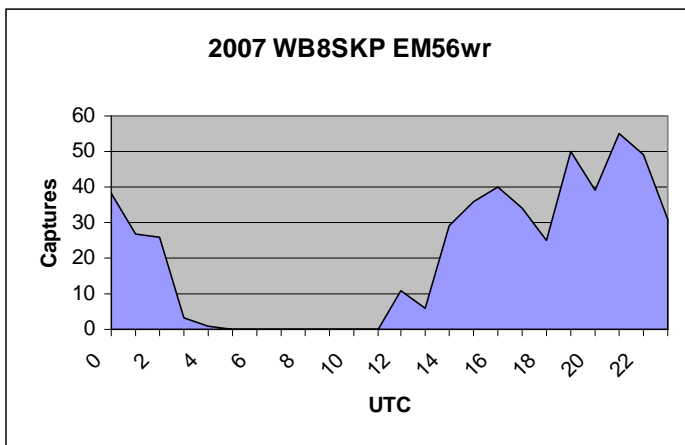
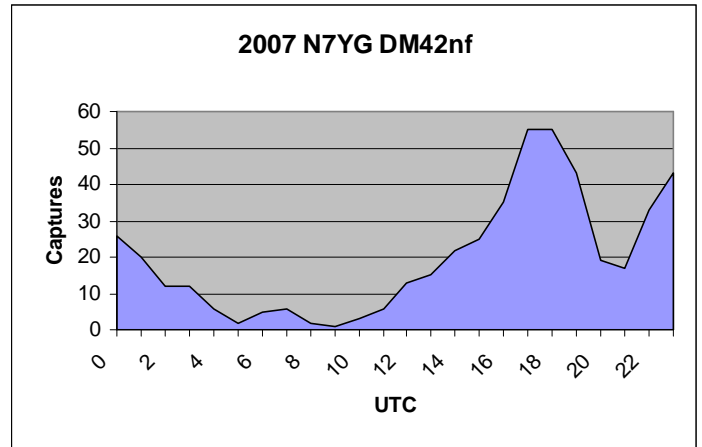
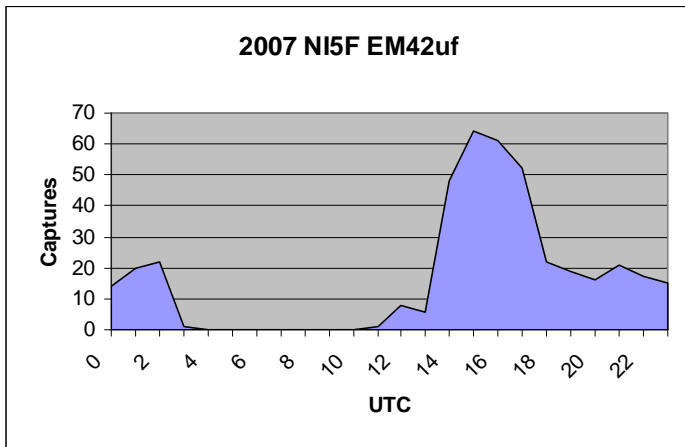


Thank you Cristino, WP4JMN for joining PropNet. He was my first capture this season. "Es" generally occur in southerly paths first and is the reason why they are "seasonal" first. Note that the captures occur late afternoon and it is the trait for distant captures.

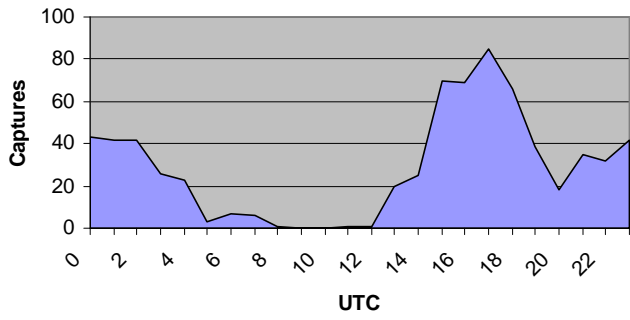


The PropNet Honor Roll

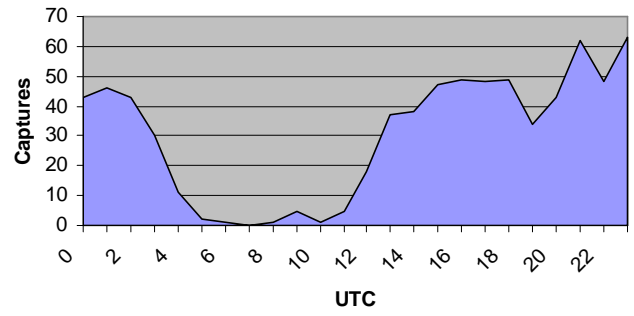
Each year I have charted all stations that have had 500 or more captures. I lowered in to 400 this year due to more short-skip and less western activity.



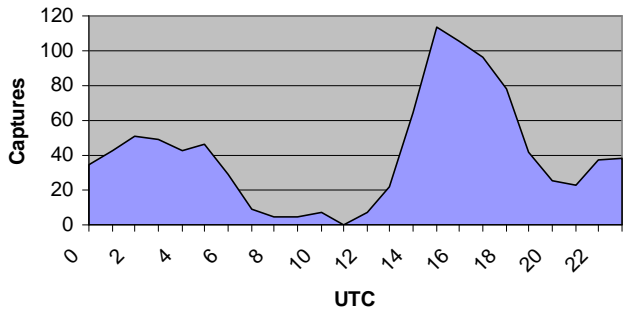
2007 KD5LWU DM57ri



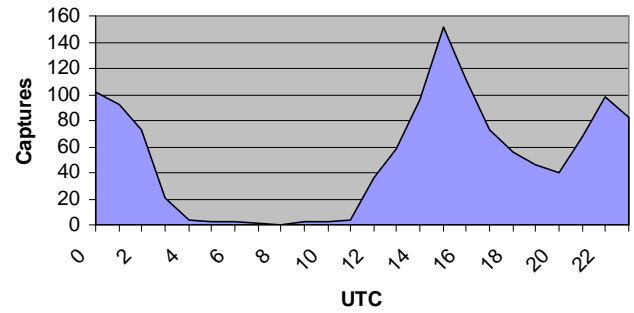
2007 AD4RX EL88ro



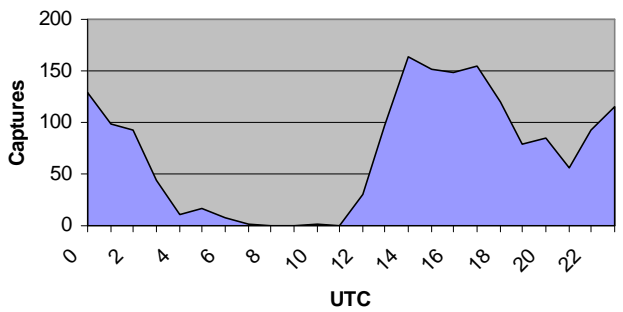
2007 KI0GU EN35hf



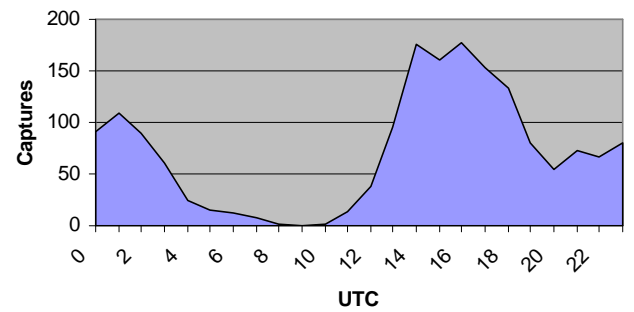
2007 K4RKM EM85VF



2007 K8VGL EM69ut

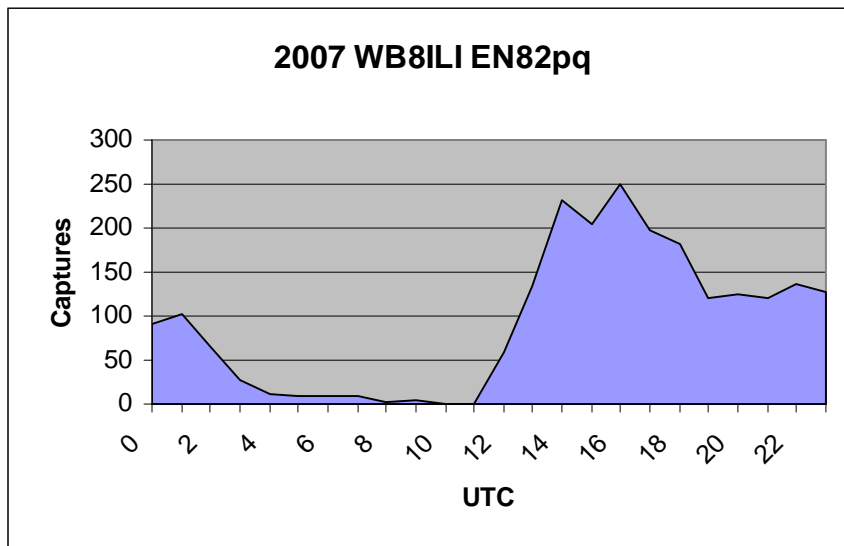
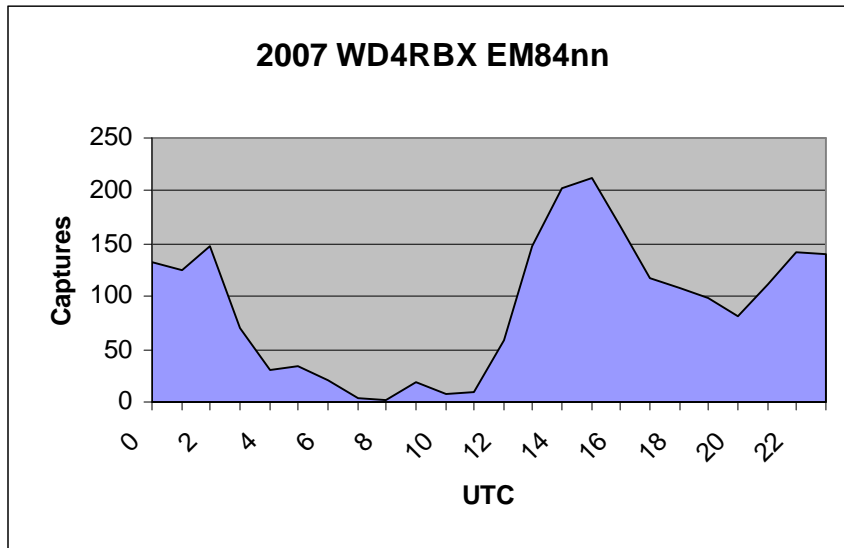


2007 NZ9Z EN64bd



Grand Champions of PropNet Captures

Rich WD4RBX and Robert WB8ILI were captured approximately 2200 times each this season.



Final 2007 Totals for PropNet Captures

CALL	GRID SQ.	TOTAL
K7EK	CN87TB	1
N6ERD	DM12KW	1
W8OKN	EN74GS	1
W8TZ	EM89LI	1
KC0RWZ	EN13OM	2
W8LEW	EN72QP	2
K4RKQ	FM08SD	6
KY7N	DN13UN	6
N6EMI	DM03XU	9
WB8JAY	EN90GL	13
WU9Q	EN41RL	13
K0OG	EM47CW	14
WB7AJP	CN87WL	15
AB9LA	EN61EK	16
WB2JEP	FM29LV	16
W2EV	FN03XD	18
N6TBQ	CM96BO	20
AG1H	EM78MP	23
AI4G	EM86IT	24
KC2GMM	FN21UC	33
N6OA	FN22QK	35
N8VMX	EM79WP	35
W3NRG	DM12JQ	39
K0EIA	EM28QX	45
N5XYO	DM90QQ	47
KA2OLL	EM70VJ	50
W6CGH	DM13BR	53
W0JAB	EM49LK	55
KC6QJO	DM05KH	60
KC0TLN	EM28QX	73
KF6XA	DM13JO	82
KC0TIK	EN41GP	91
WD4ELG	FM06LA	97
WP4JMN	FK68VH	109
KI4EIZ	EM63OG	132
KC0EFC	EM28OX	220
AB9MS	EN42XN	268
WB4JFI	EM92XU	314
WB4U	EM94QU	326
NI5F	EM42UF	407
N7YG	DM42NF	476
WB8SKP	EM56WR	500
K4EPS	EL86UW	515
W4JKL	EM84AK	611
N0OBG	EM48RO	659
KD5LWU	DM57RI	696
AD4RX	EL88OD	724
KI0GU	EN35HF	974
K4RKM	EM85VF	1225
K8VGL	EM69UT	1695
NZ9Z	EN64BD	1716
WD4RBX	EM84NN	2189
WB8ILI	EN82PQ	2223

Thank you all again my fellow PropNetters - Art KA5DWI