

# ExpAll.pdf

by

John S. Irwin<sup>1</sup>, Meteorologist  
NOAA Air Resources Laboratory  
Atmospheric Sciences Modeling Division  
Research Triangle Park, NC 27711

Draft: March 9, 2000

## Abstract

The following document is a work in progress and reflects work accomplished as of the date shown above. The purpose of this effort is to assess the usefulness of SF6 tracer data collected during the EPRI Kincaid Tracer Field Study (ref) to be interpreted to provide crosswind concentration profiles along 'arcs' at specified distances downwind from the release point. The SF6 samplers were placed 'close' to pseudo-arcs, and especially for the closer arcs (from 1 to 5 km downwind) depending on the transport direction, the samplers may not provide reliable crosswind profiles of the dispersing plume (either because of gaps in spacing of the samplers, or because the samplers are not very close to the distance chosen for an arc).

There are two sets of plots that have been generated. In this set, we present the crosswind concentration profiles for each arc (traverse) where there is at least 5 nonzero concentration values observed. The results for each traverse are 'stacked' so that one can assess whether the dispersing plume may be missing the samplers along one traverse, but being well characterized along another. It is intended that these summary plots (one for each hour of sampling, an 'experiment'), can be used in conjunction with the other set of plots, which presents a more detailed view of the results for each arc.

You will notice that just below "TRAV" are a series of numbers. In most cases, you will see something like "2/3." In these cases, you are provided the values of  $i_{view}/i_{arc}$ , which should be identical to the values shown in KinPlotsAll.pdf. You will also see on occasion something like "2/3-2." In these cases, you are provided the values of  $i_{view}/i_{arc}$  (as before), and the "-2" is my personal 'best-judgement' value for  $i_{arc}$ .

It was my intention for the  $i_{view}$  values to have the following meaning: 1) receptors are not along an arc; 2) receptors are within 30% of being along an arc (fairly good), and 3) receptors are for all practical purposes along an arc.

---

<sup>1</sup>On assignment to the Environmental Protection Agency Office of Air Quality Planning and Standards, Mail Drop 14, Research Triangle Park, NC 27711 (irwin.john@epa.gov).

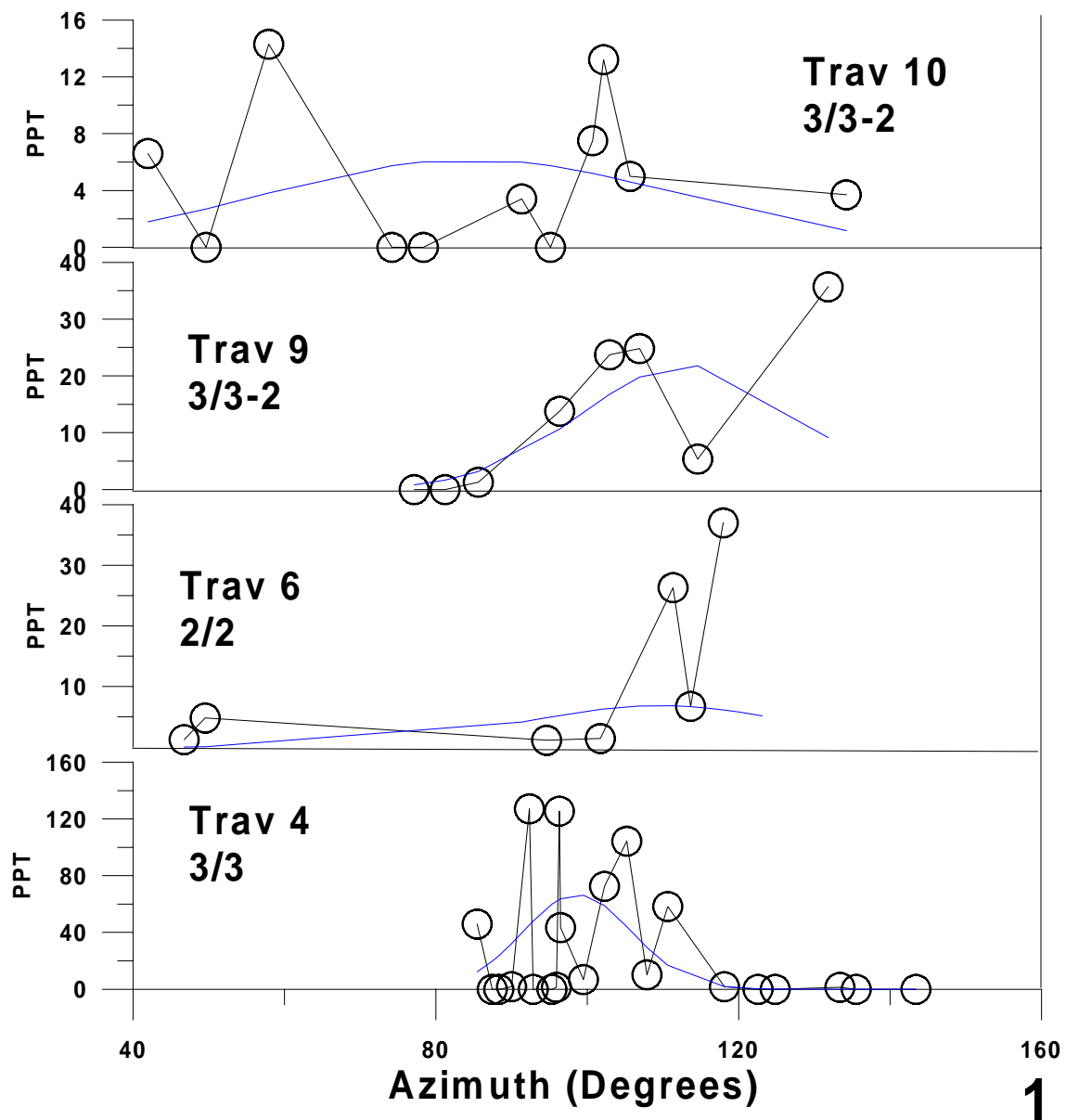
It was my intention for the iarc values have the following meanings: 1) questionable data, not sure how to interpret; 2) not a complete sample across the arc, but we may have captured something close to the maximum concentration value, and 3) looks like we have reasonable sampling across the arc, which implies we may not only have captured the maximum concentration value, but also should be able to compute a crosswind integrated concentration for the arc.

For convenience, I have used the Traverse numbers (from 1 to 13) to indicate results for each arc. The actual average distance to each traverse will change slightly depending on where the plume passes over the sampling traverse. The intended distance to each traverse is shown below, to see the actual average distance, you should inspect the results shown in KinPlotsAll.pdf.

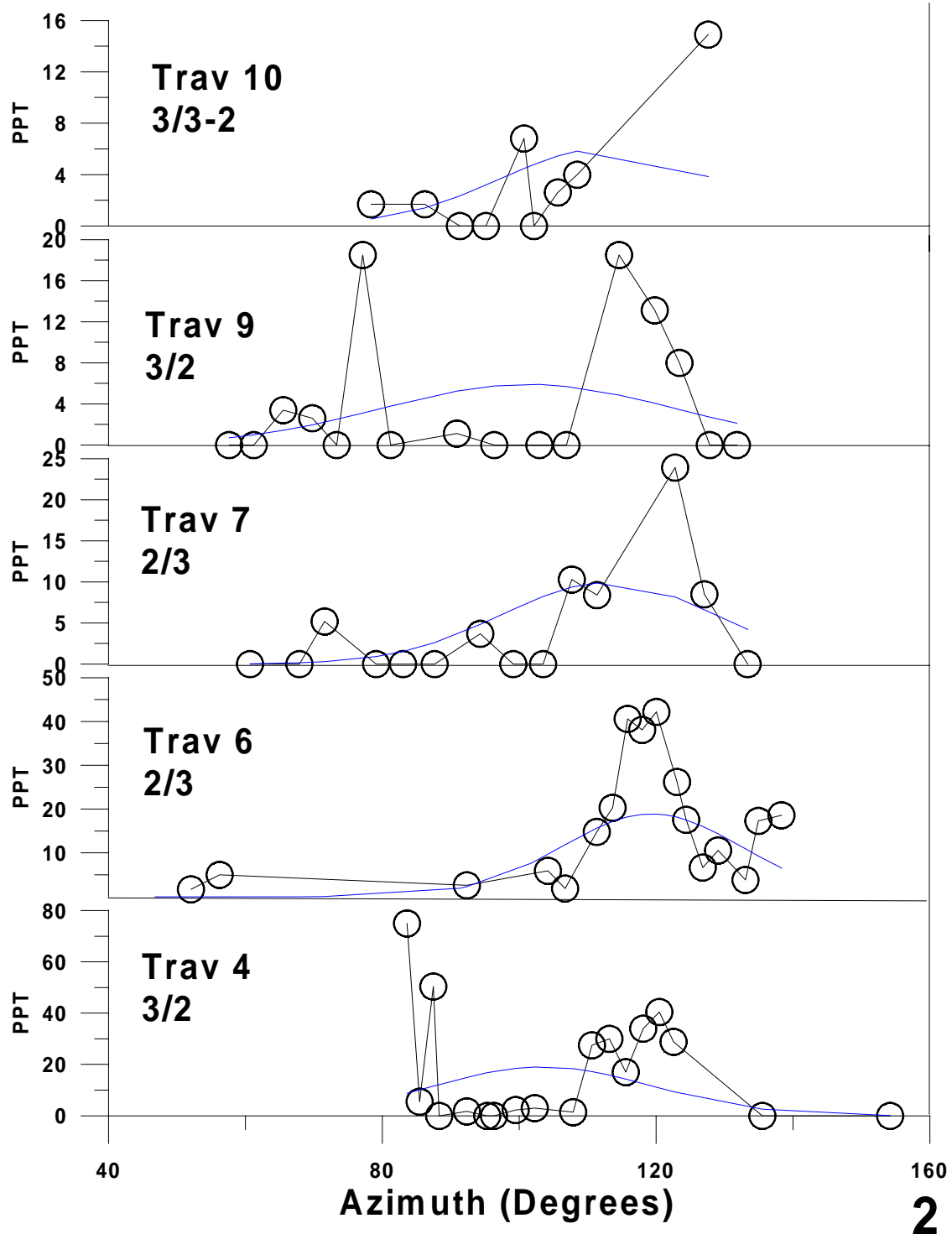
Traverse	Distance (km)
1	0.5
2	1
3	2
4	3
5	4
6	5
7	7
8	10
9	15
10	20
11	30
12	40
13	50
99	~120

# Exp 1

# Kincaid

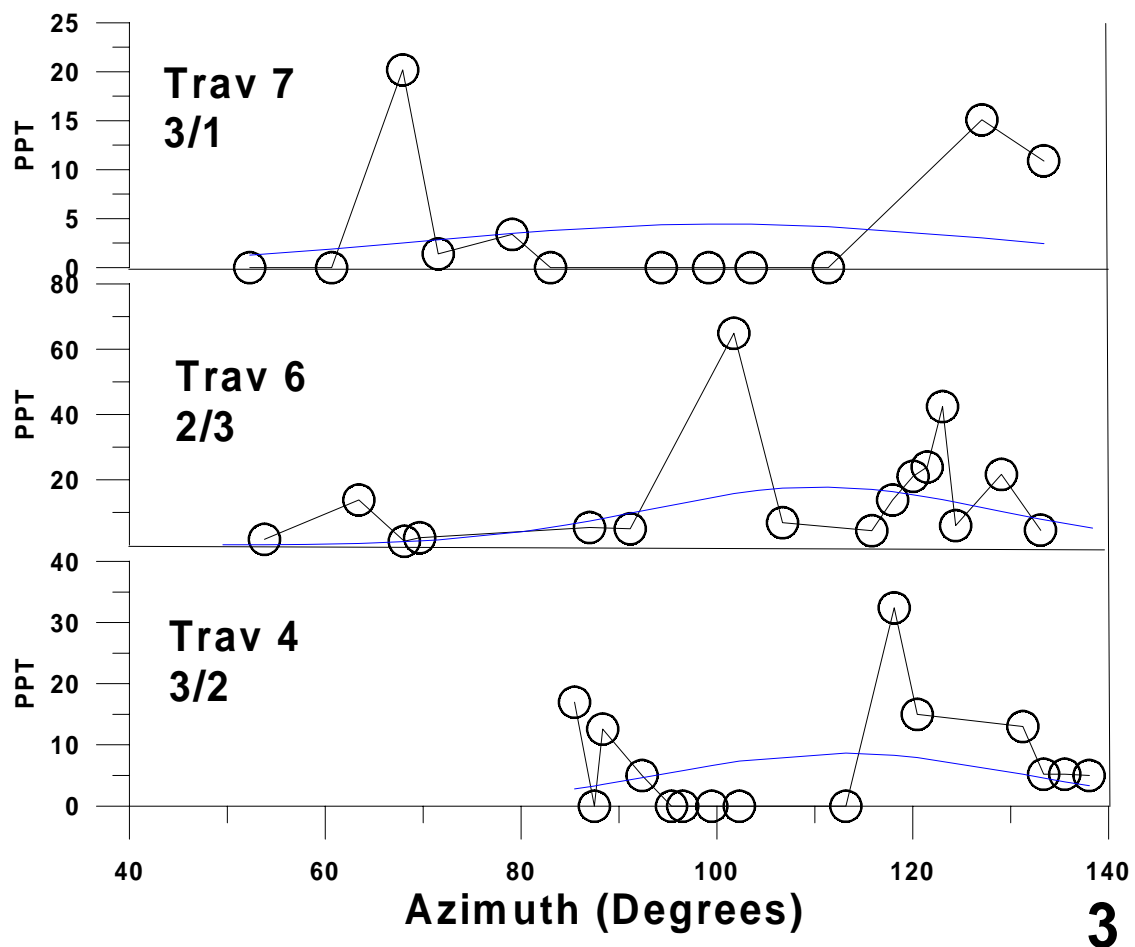


# Exp 2 Kincaid

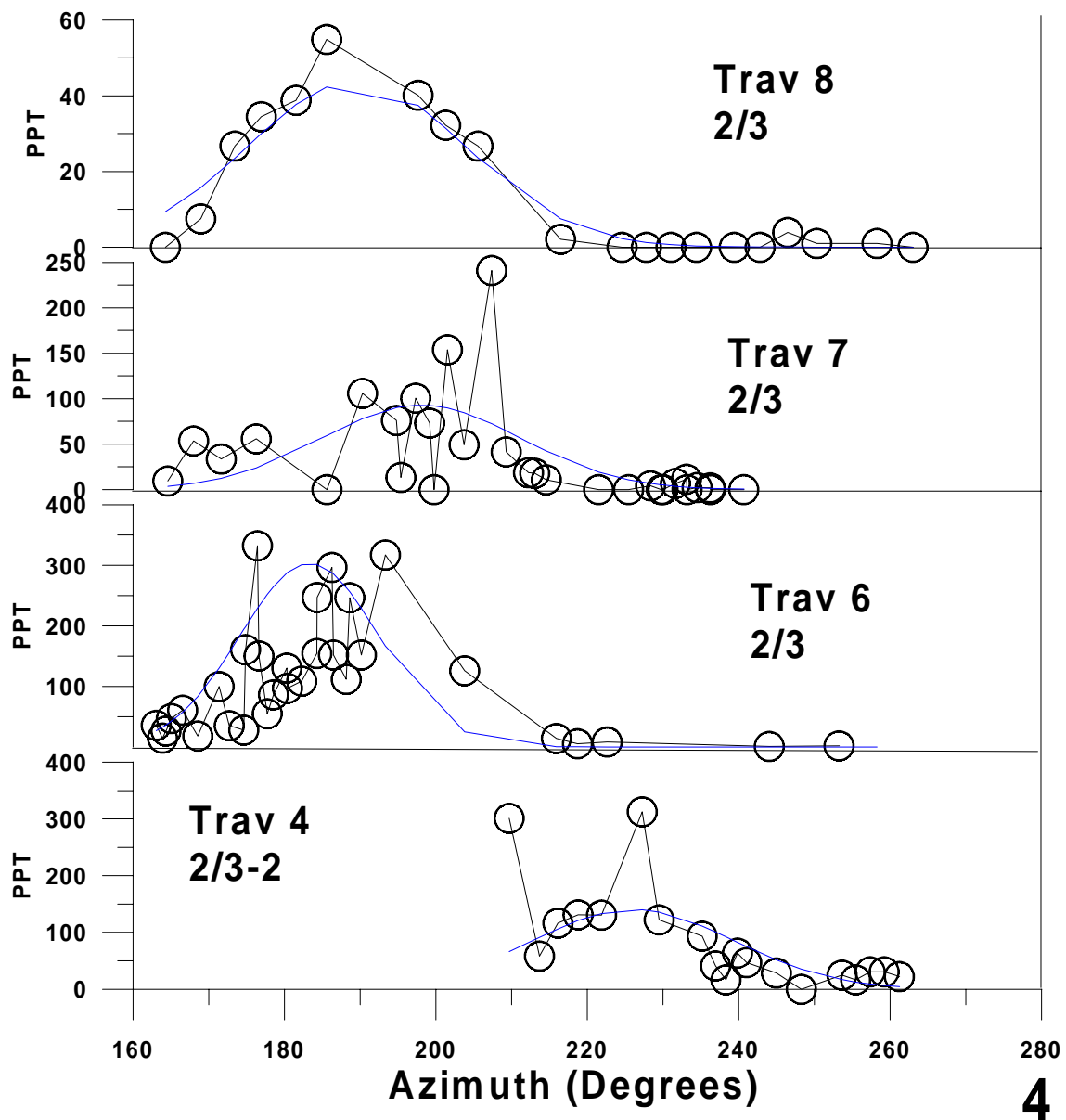




# Exp 3 Kincaid

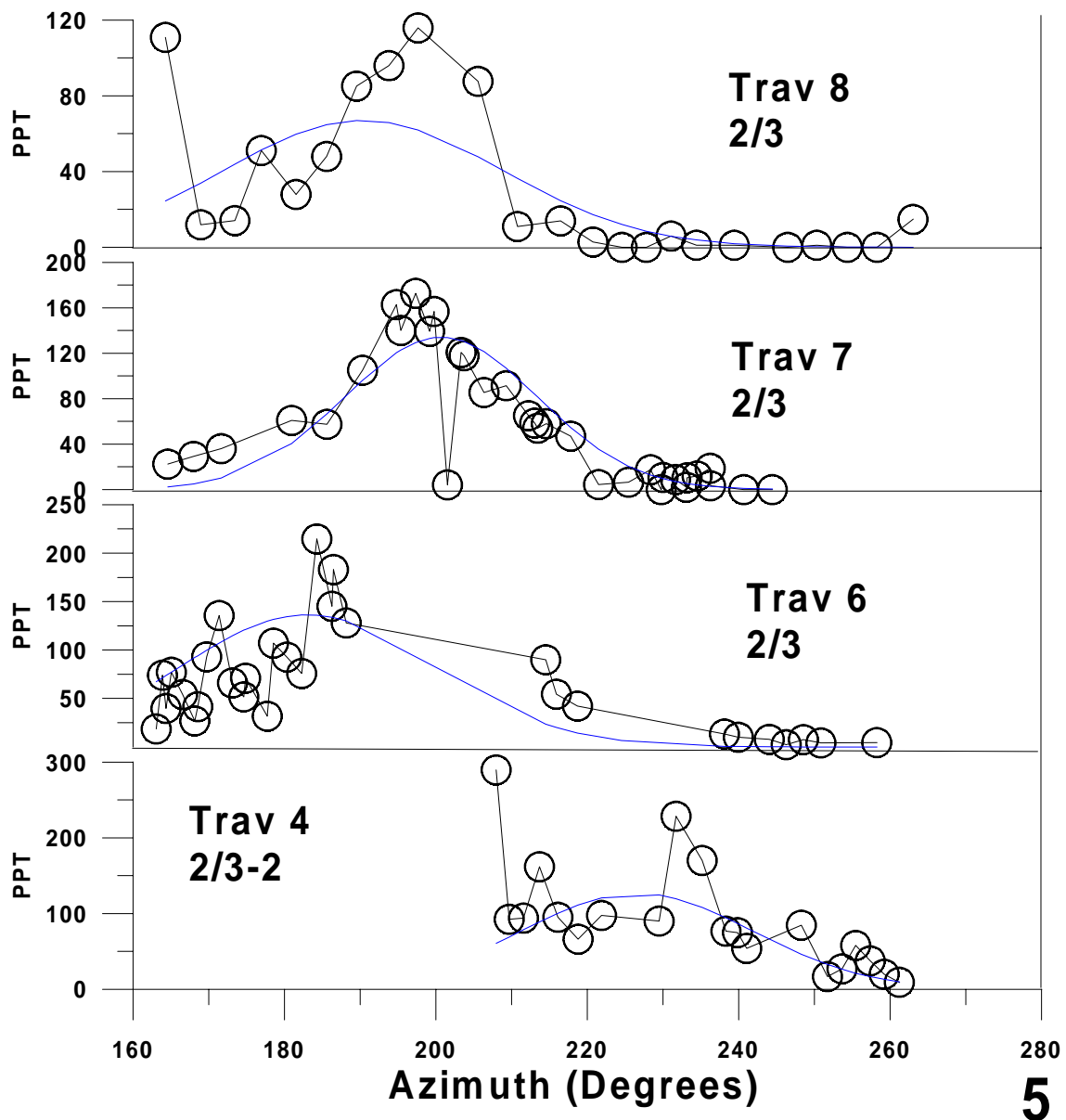


# Exp 4 Kincaid



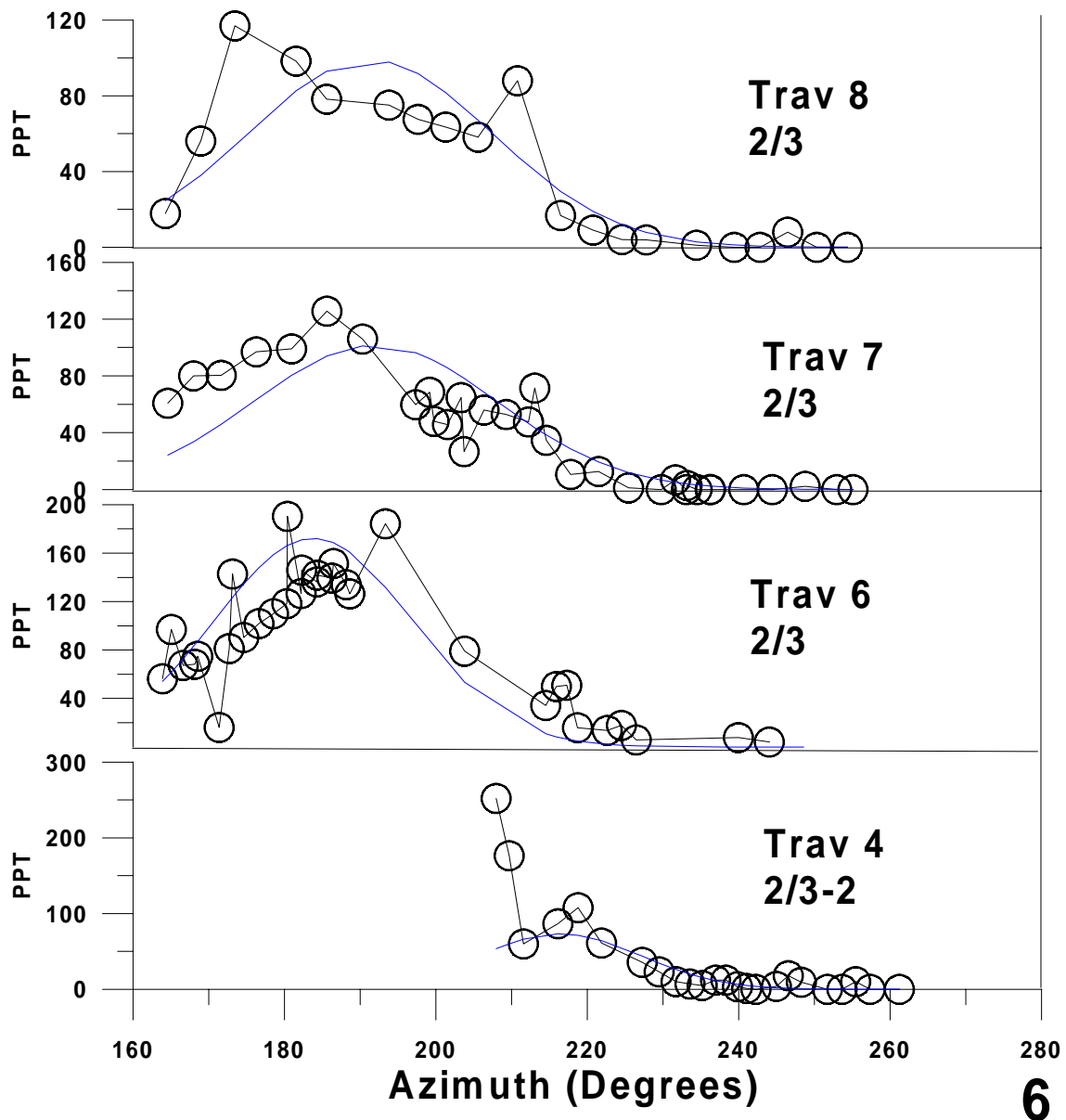
# Exp 5

# Kincaid



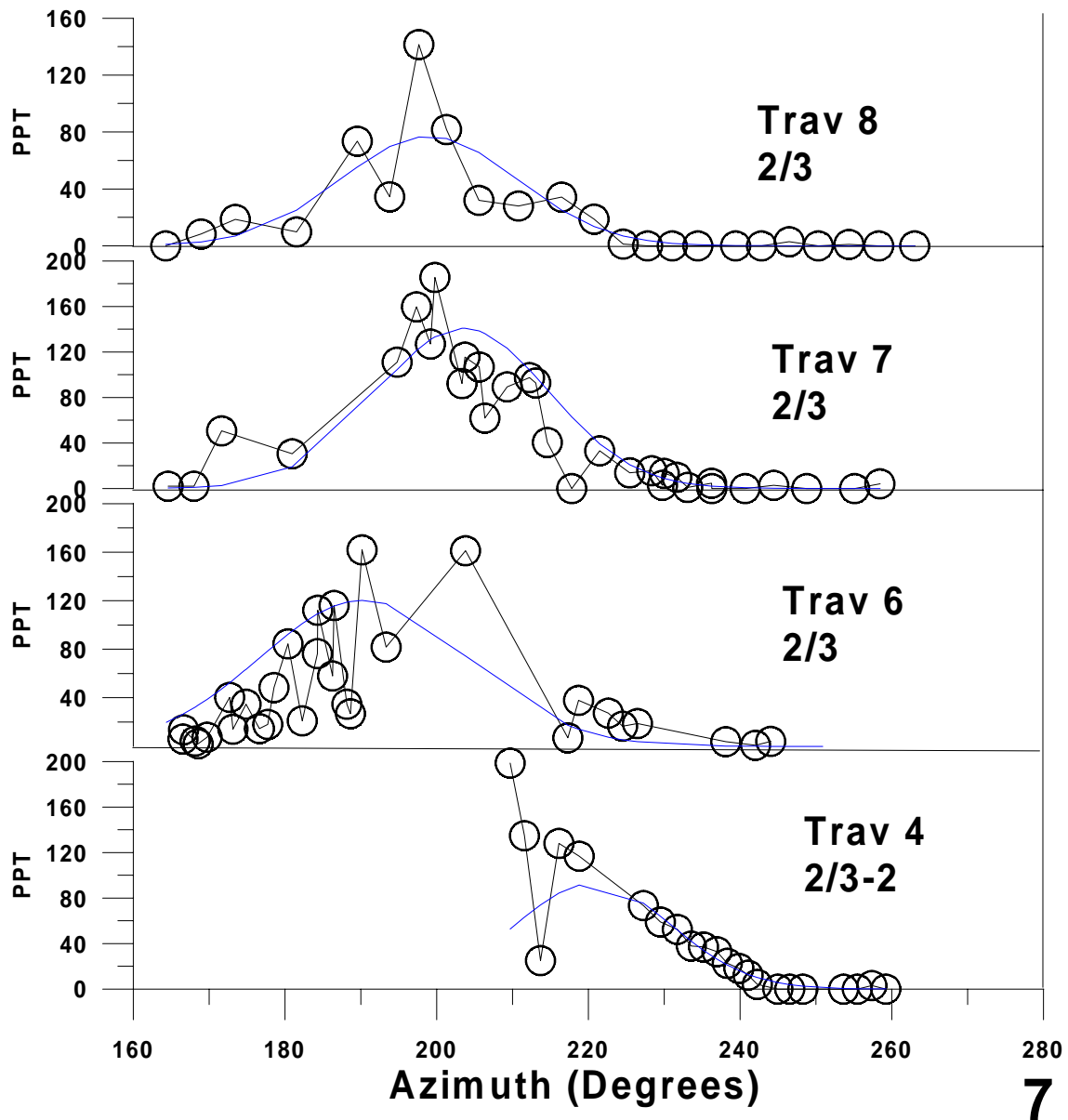
# Exp 6

# Kincaid

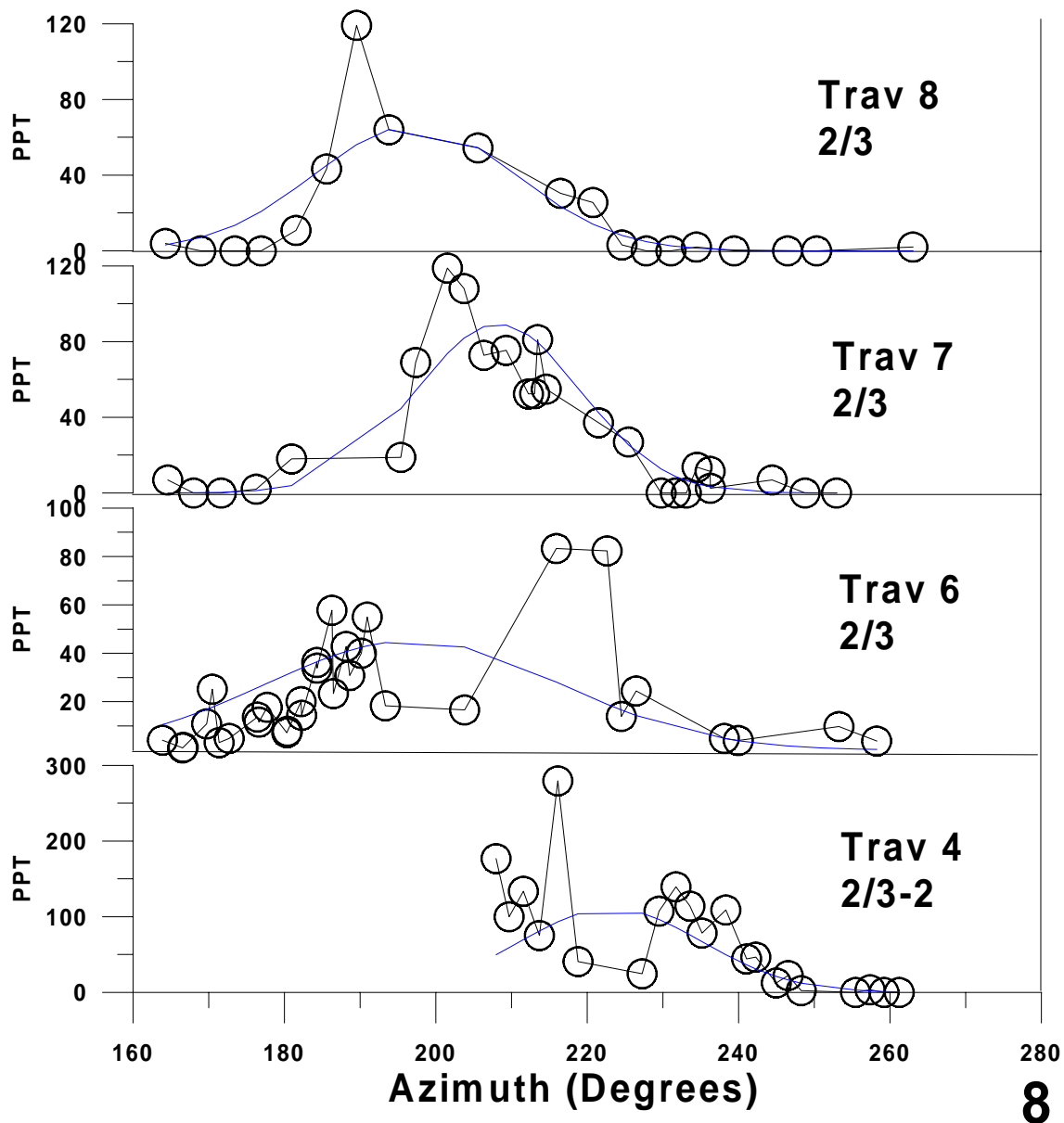


# Exp 7

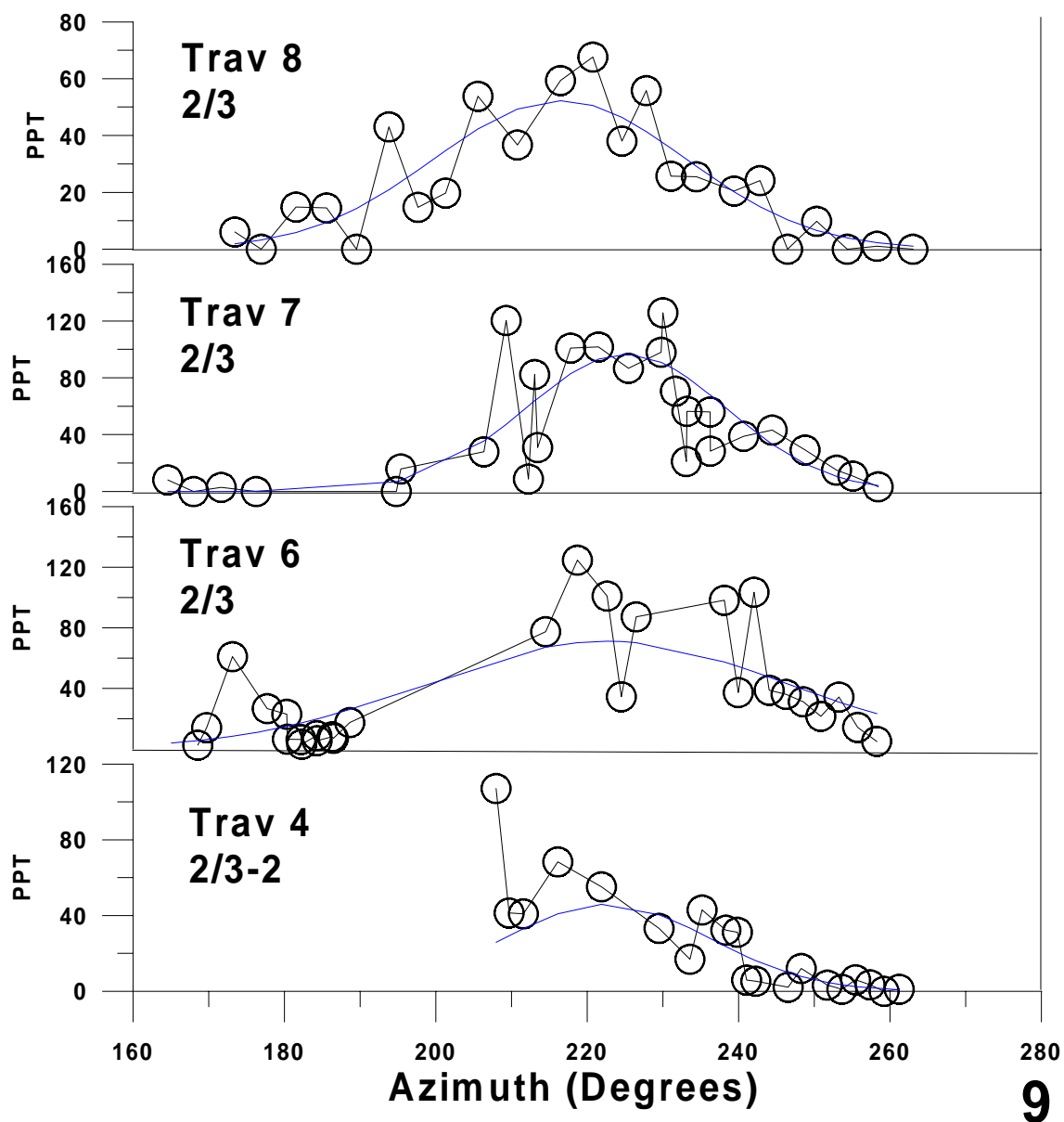
# Kincaid



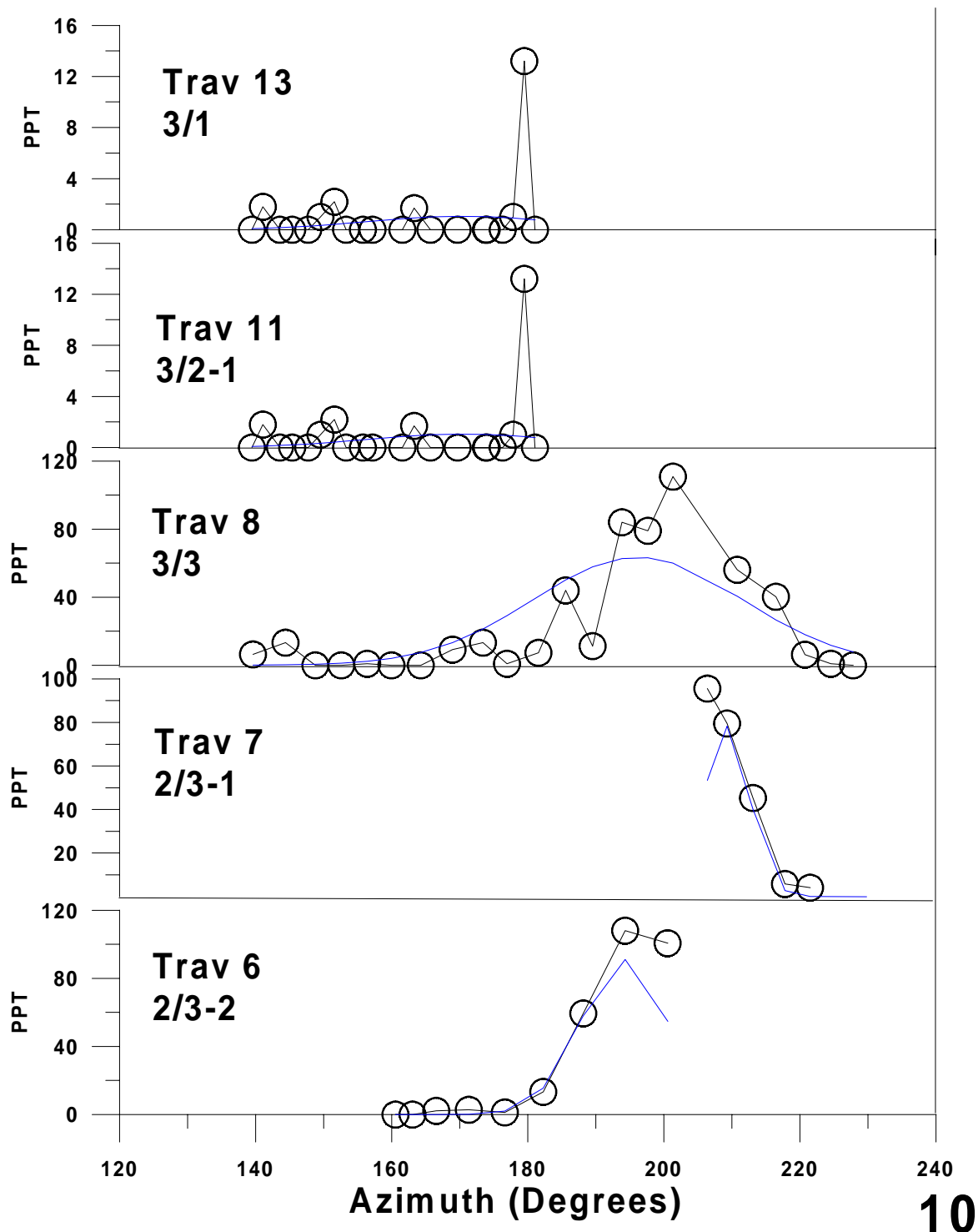
# Exp 8 Kincaid



# Exp 9 Kincaid



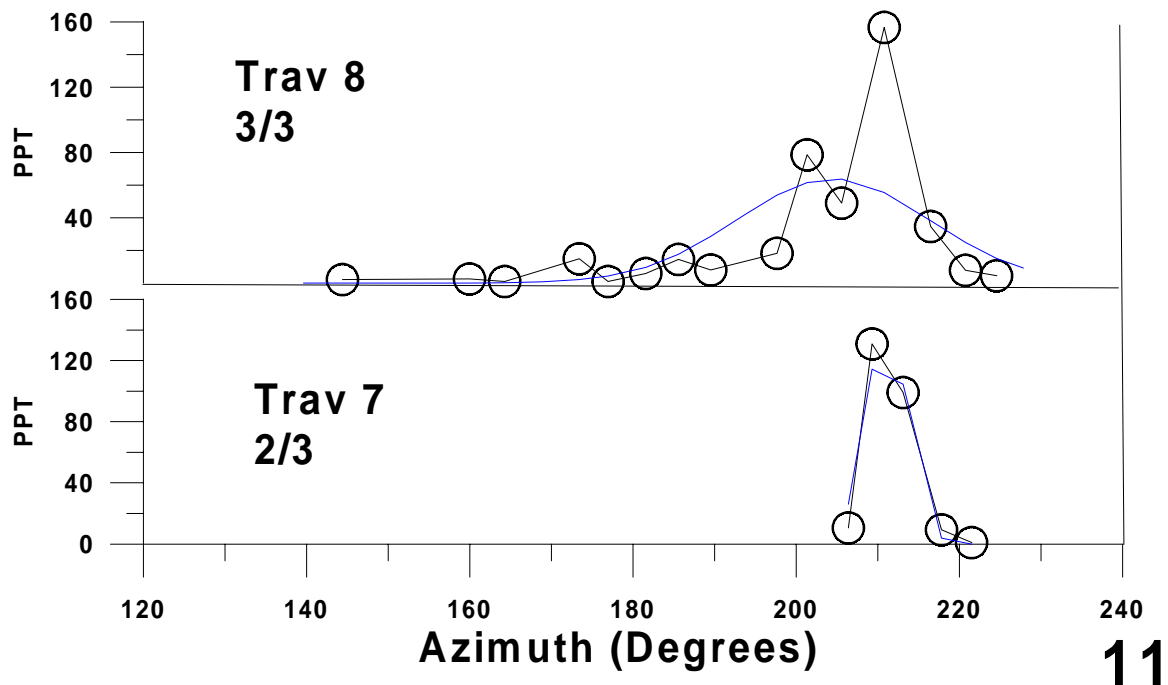
# Exp 10 Kincaid



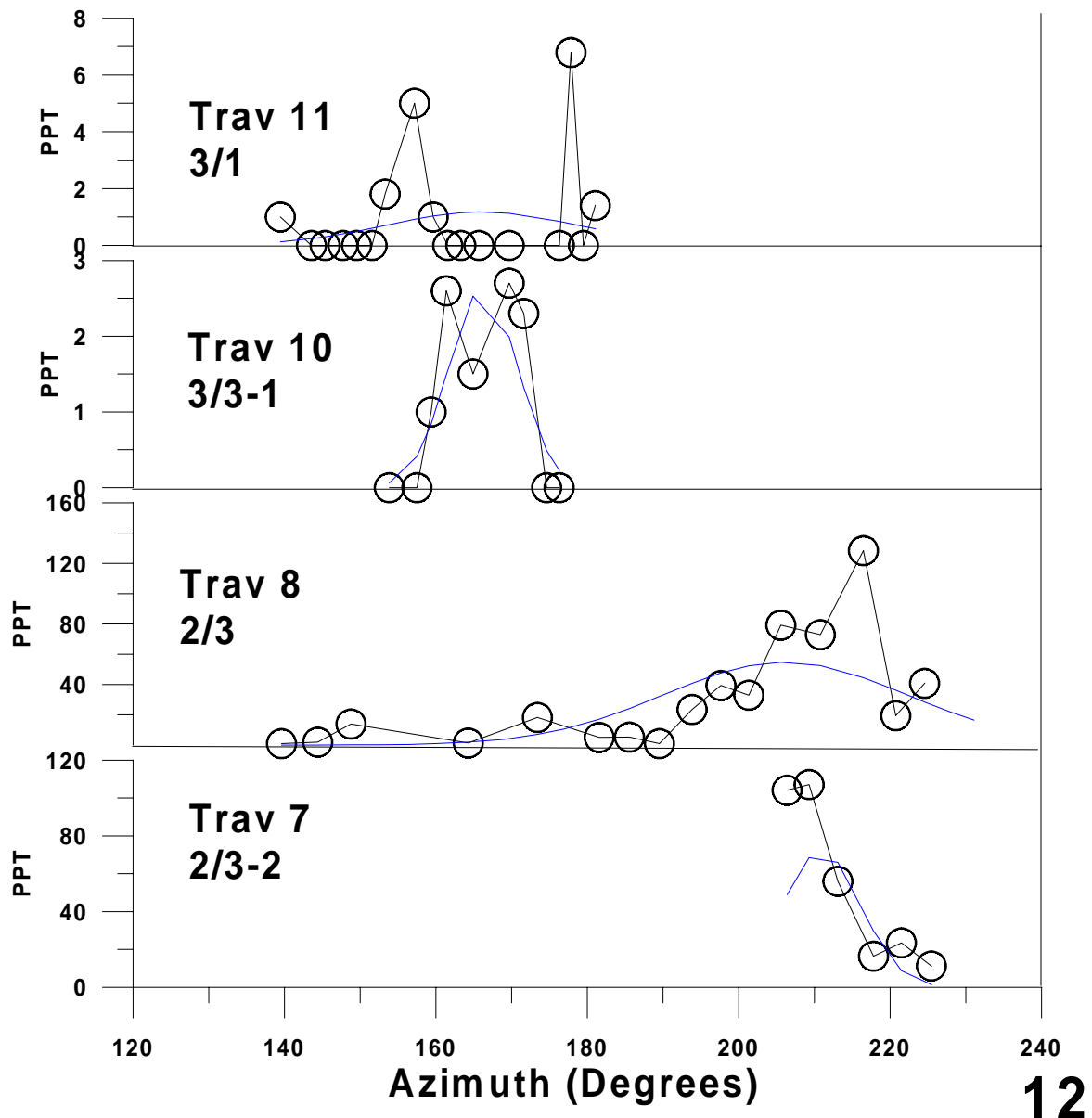


# Exp 11

# Kincaid

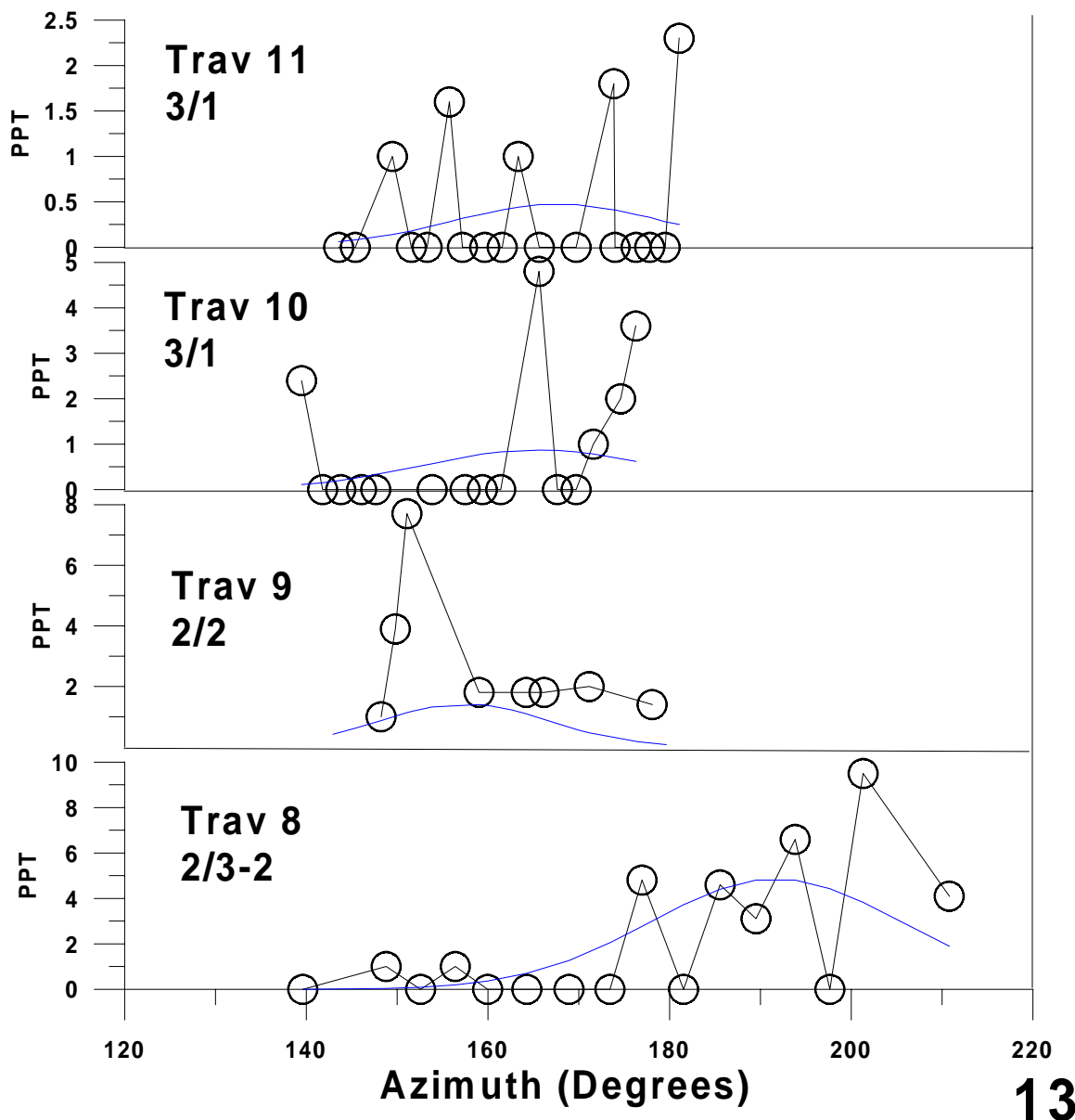


# Exp 12 Kincaid



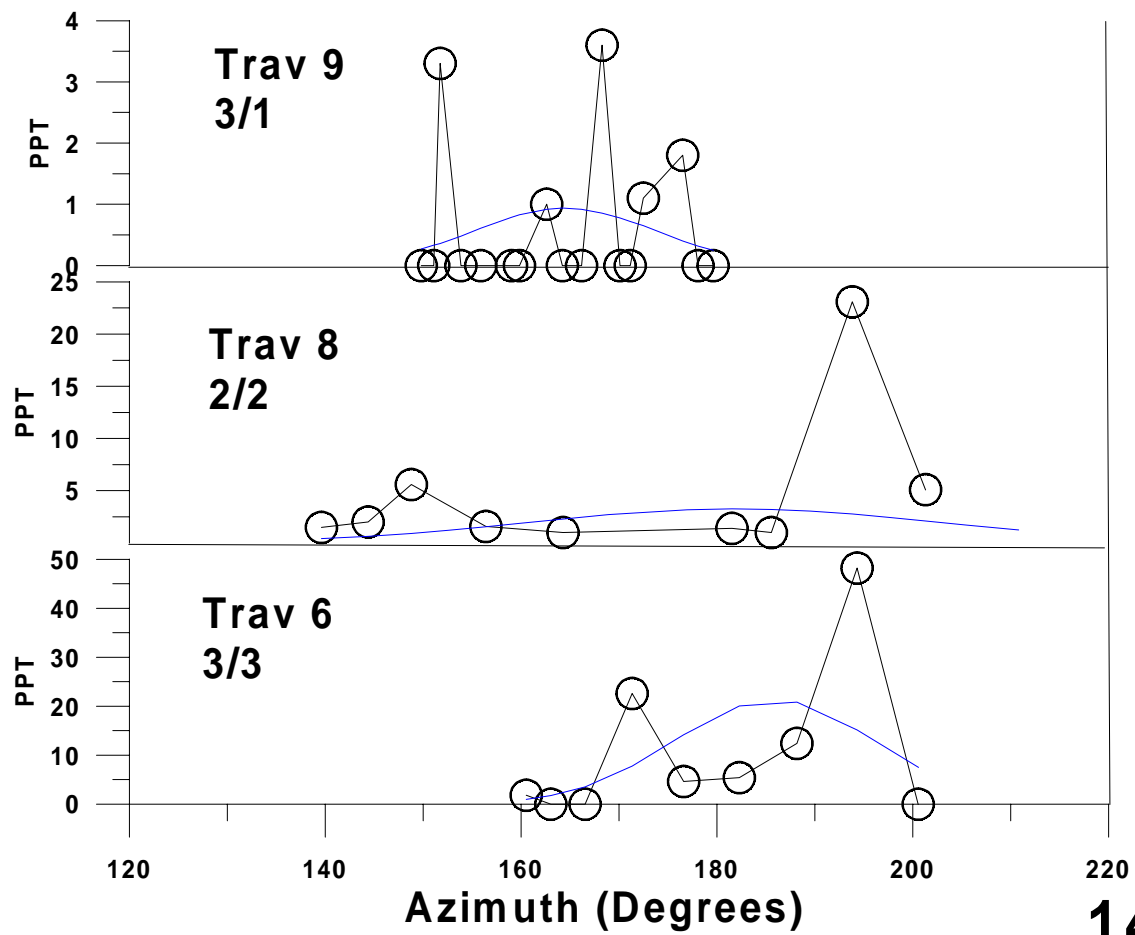
# Exp 13

# Kincaid



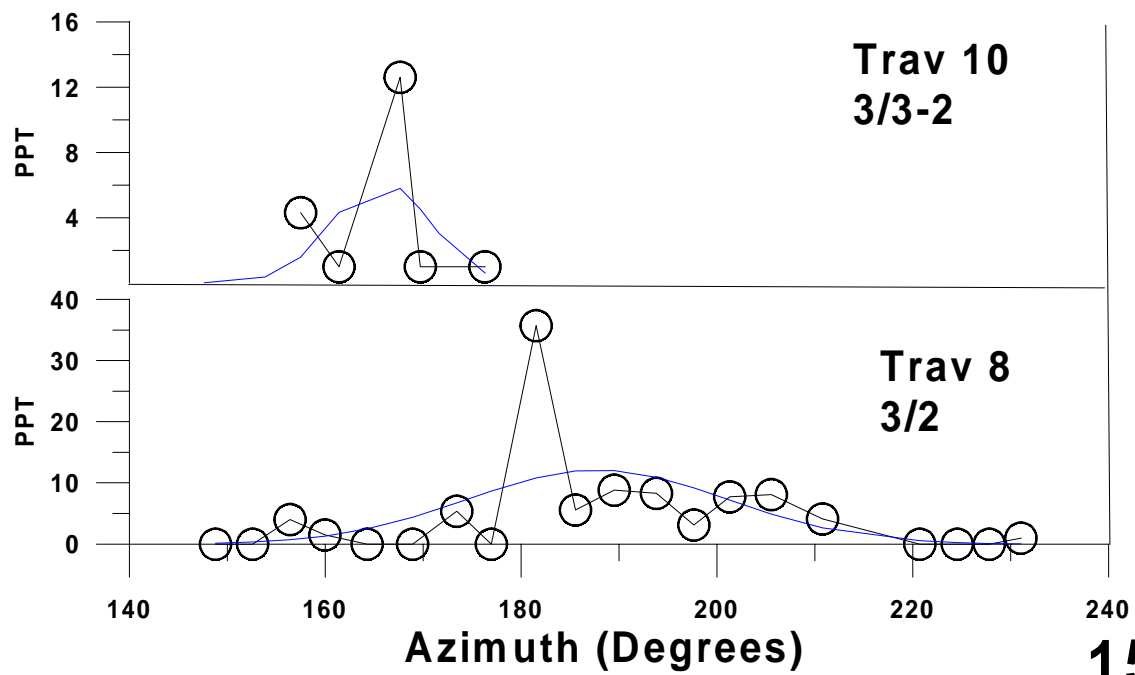
# Exp 14

# Kincaid



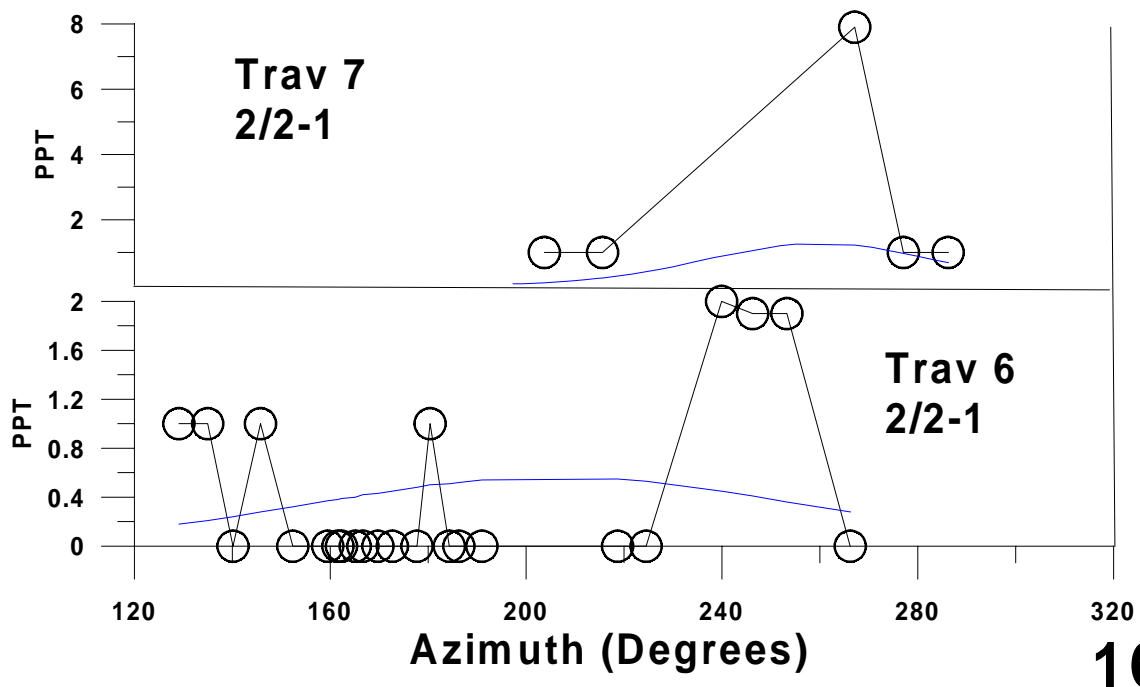
# Exp 15

# Kincaid



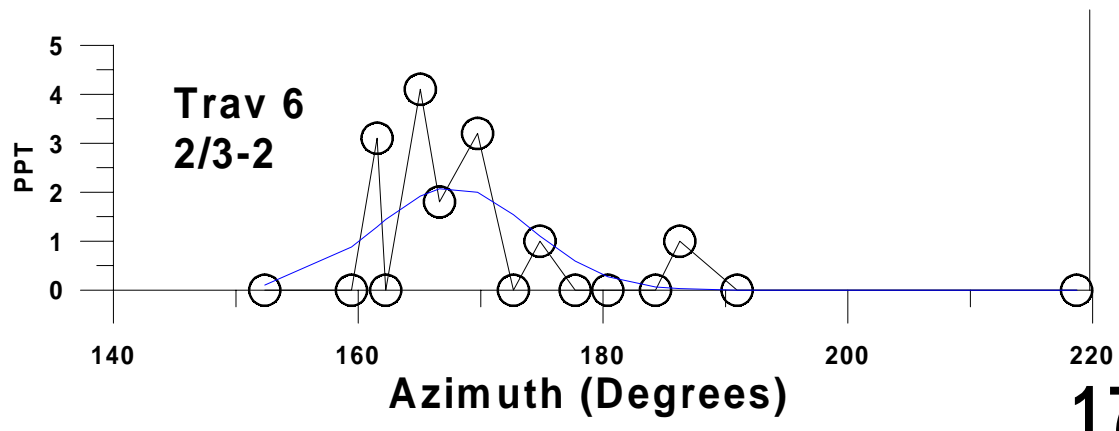
# Exp 16

# Kincaid



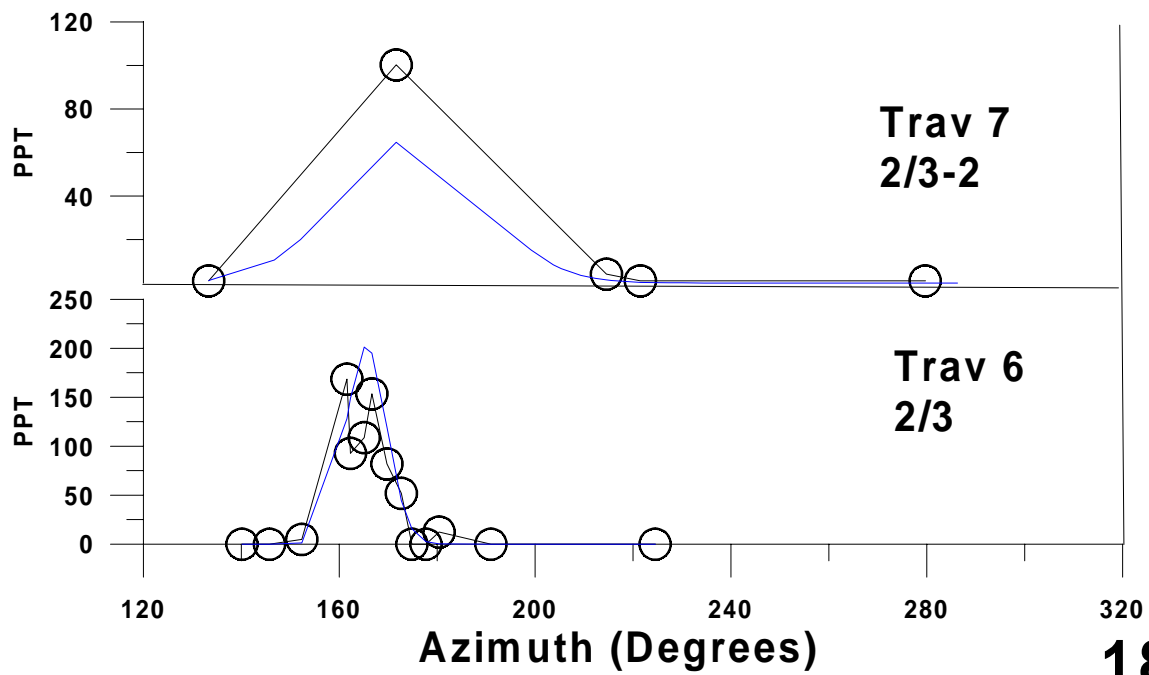
# Exp 18

# Kincaid



# Exp 19

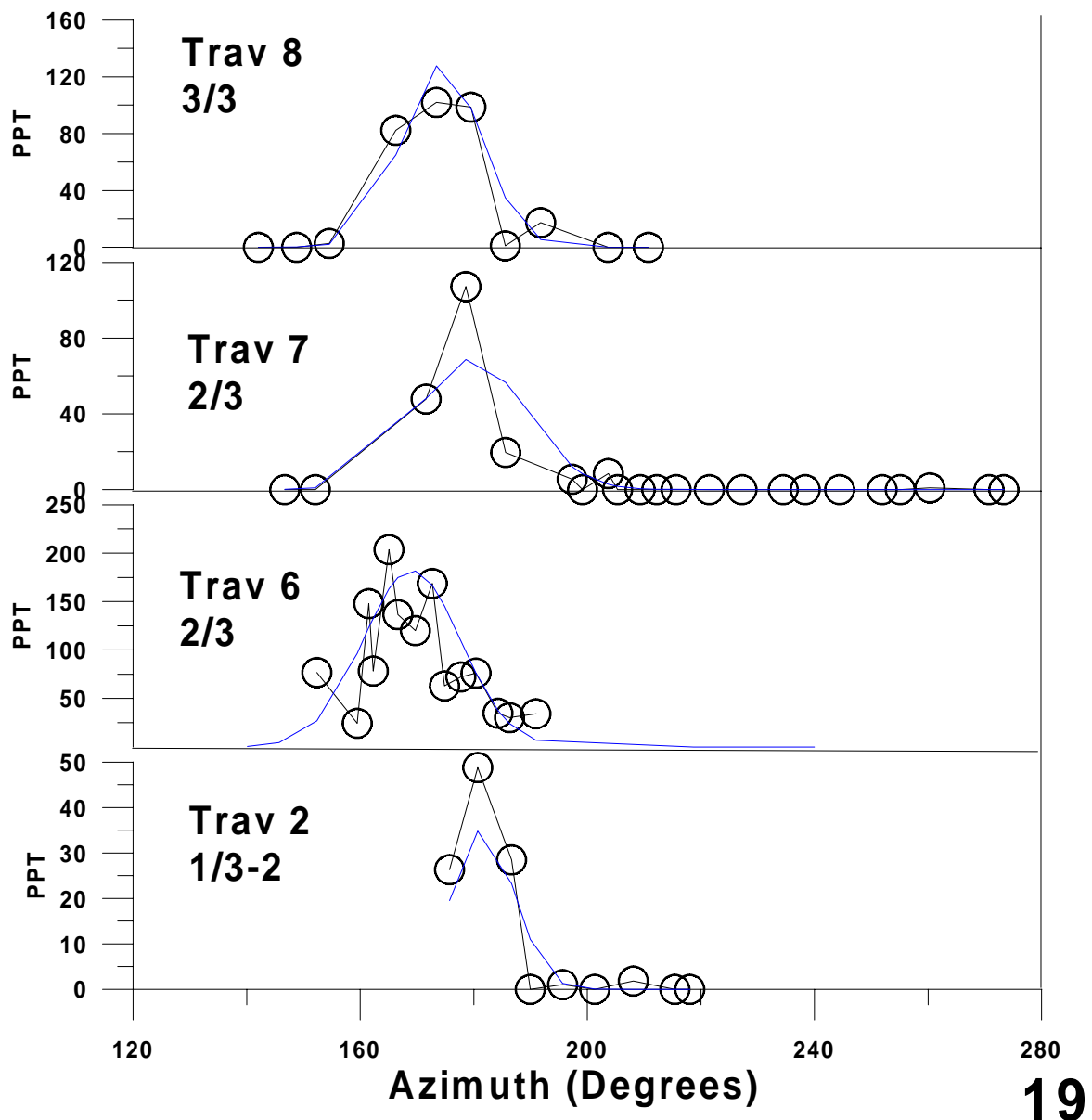
# Kincaid



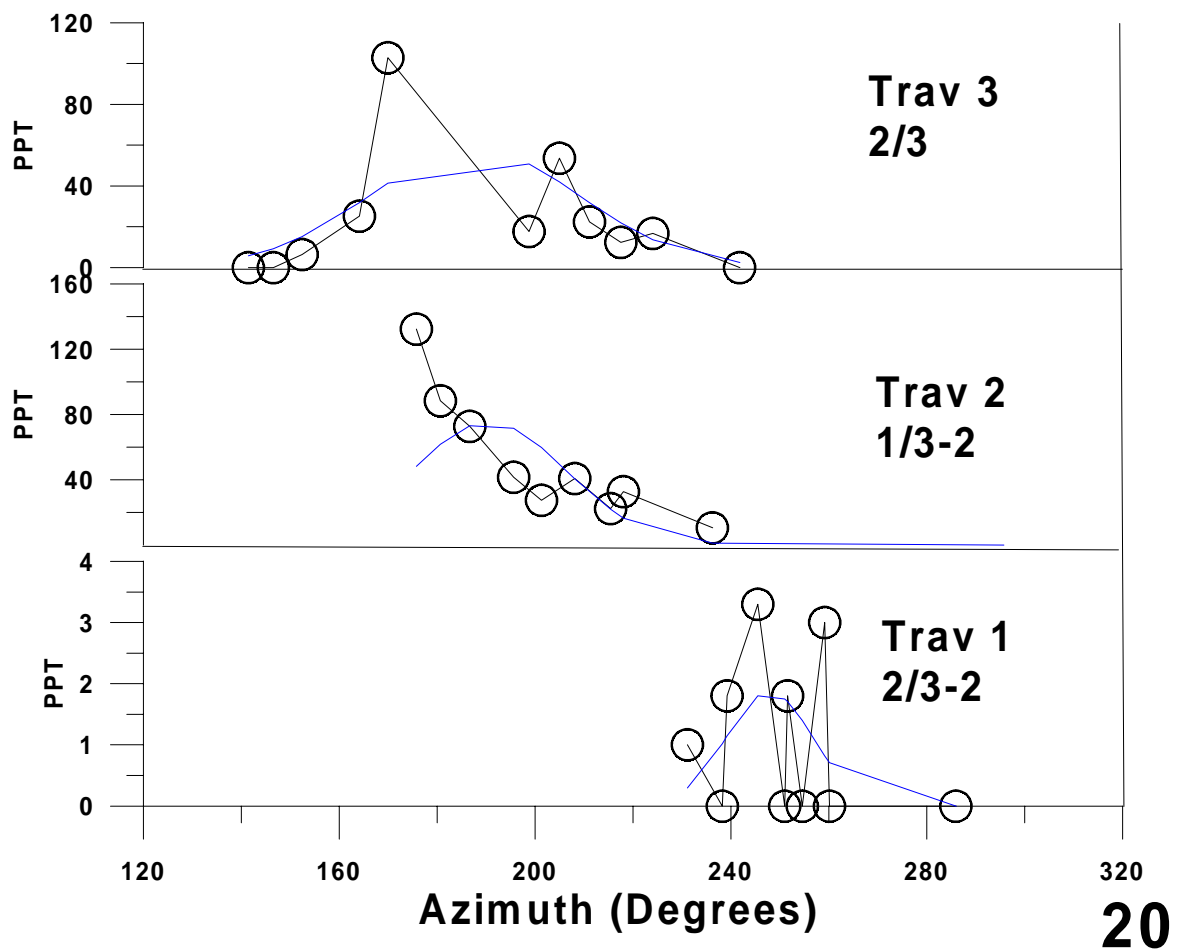


# Exp 20

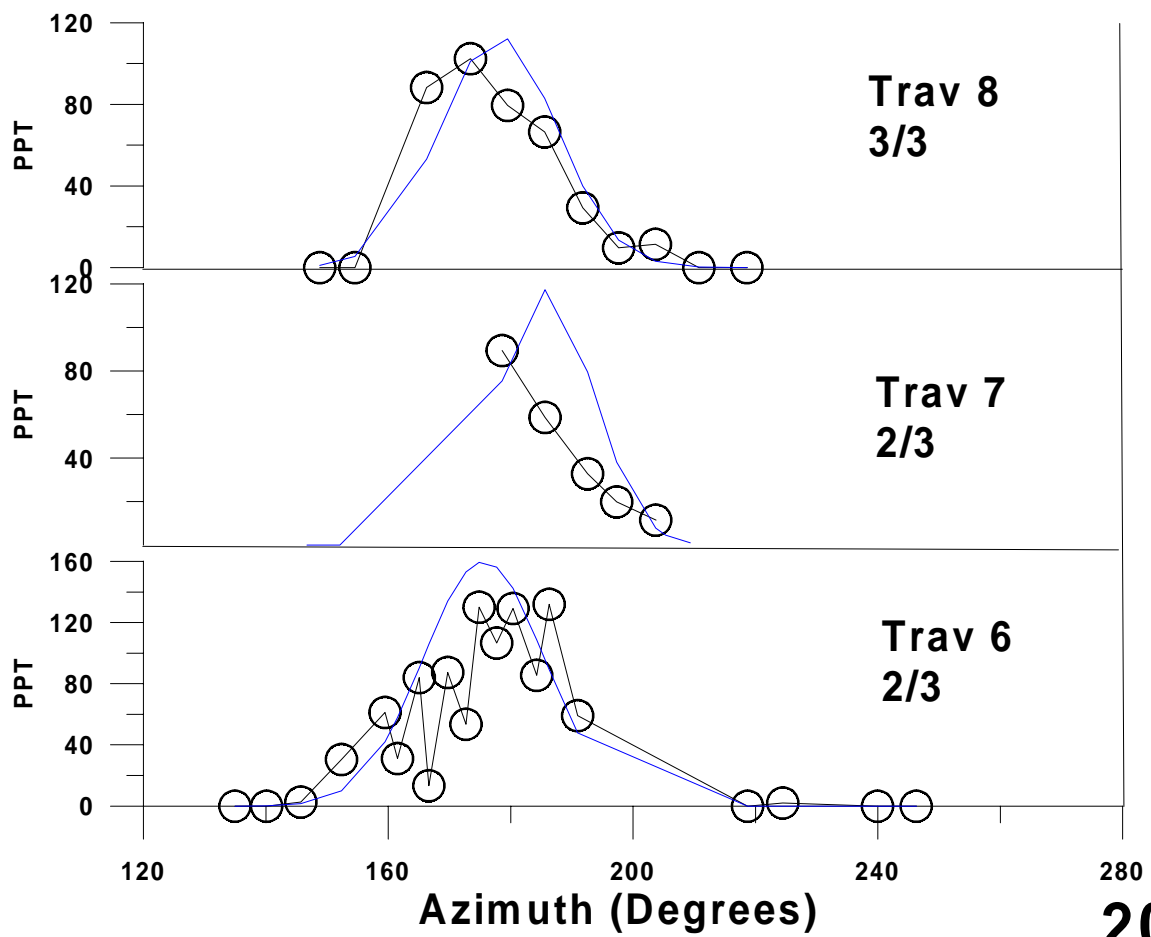
# Kincaid



# Exp 21(a) Kincaid

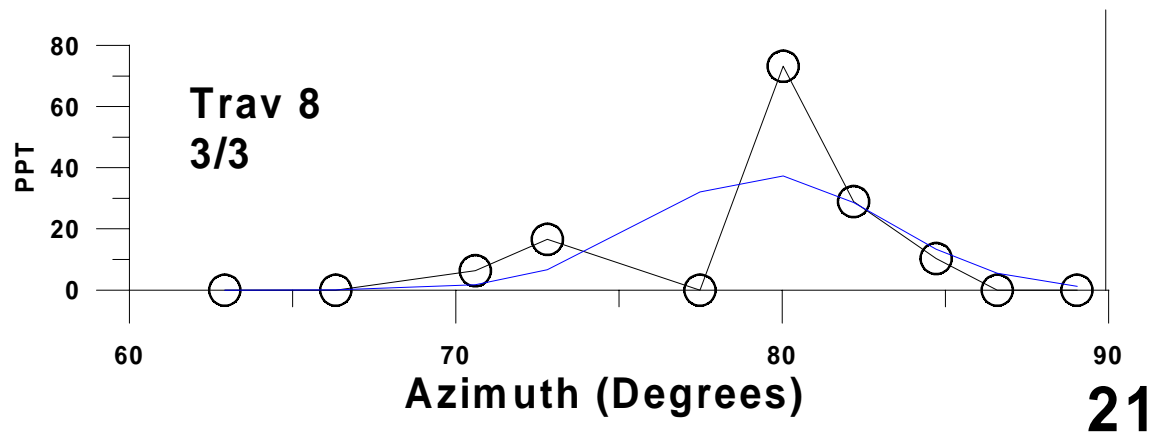


# Exp 21(b) Kincaid



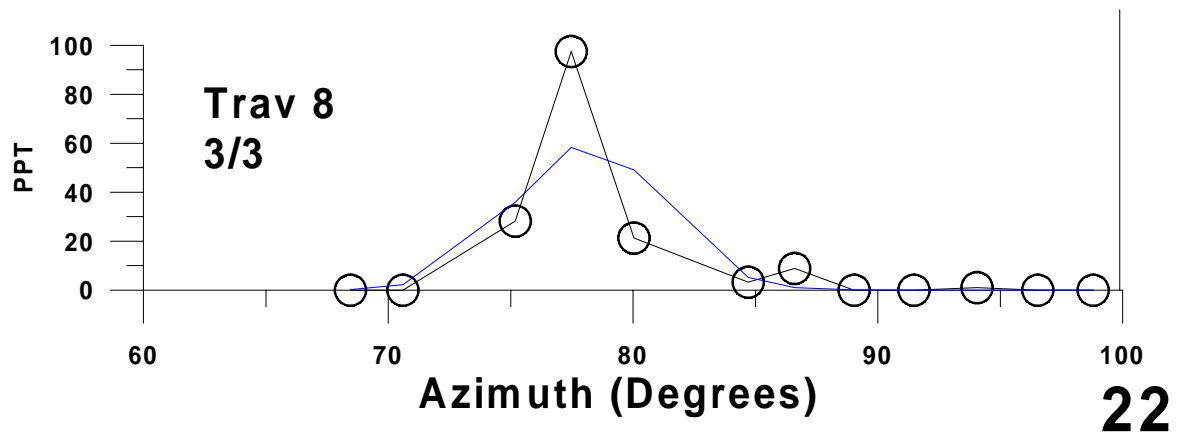
# Exp 26

# Kincaid



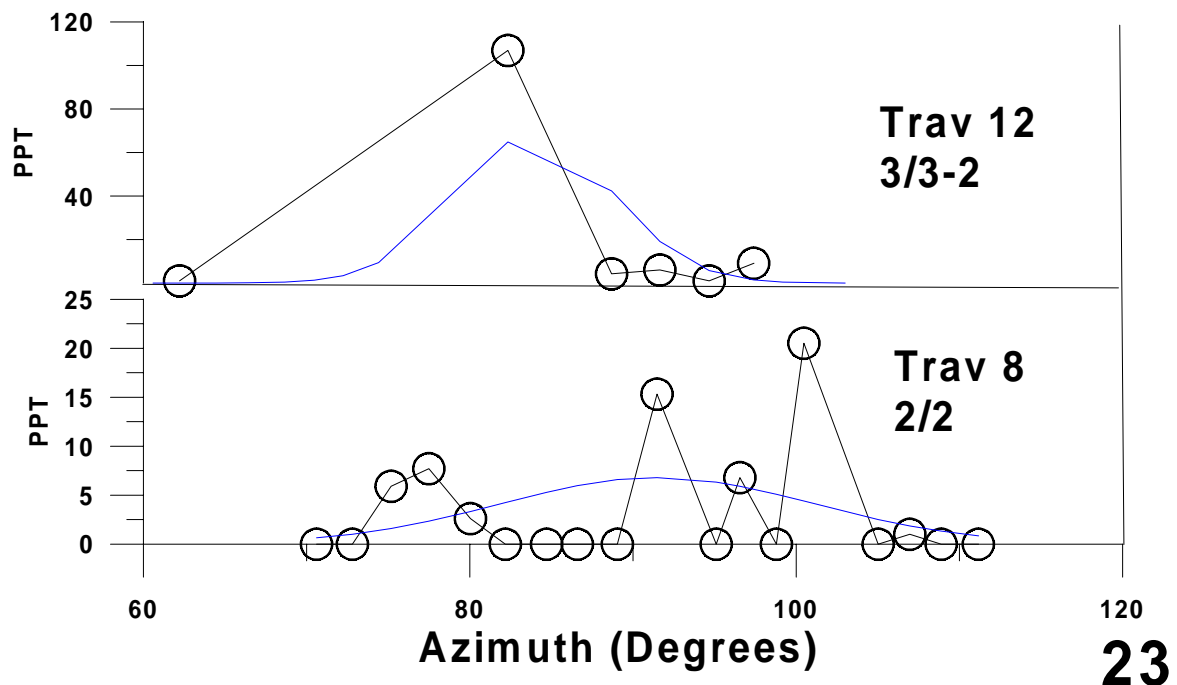
# Exp 27

# Kincaid



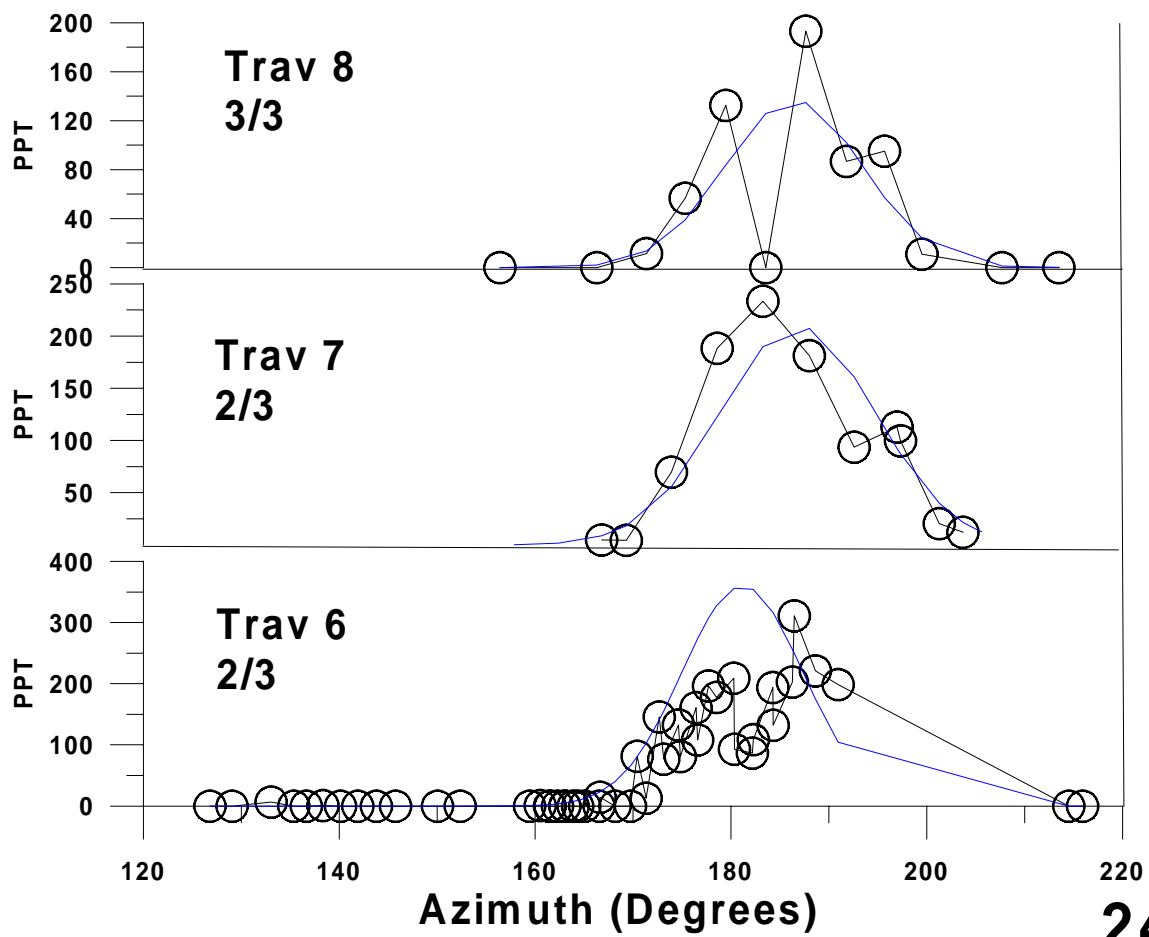
# Exp 28

# Kincaid



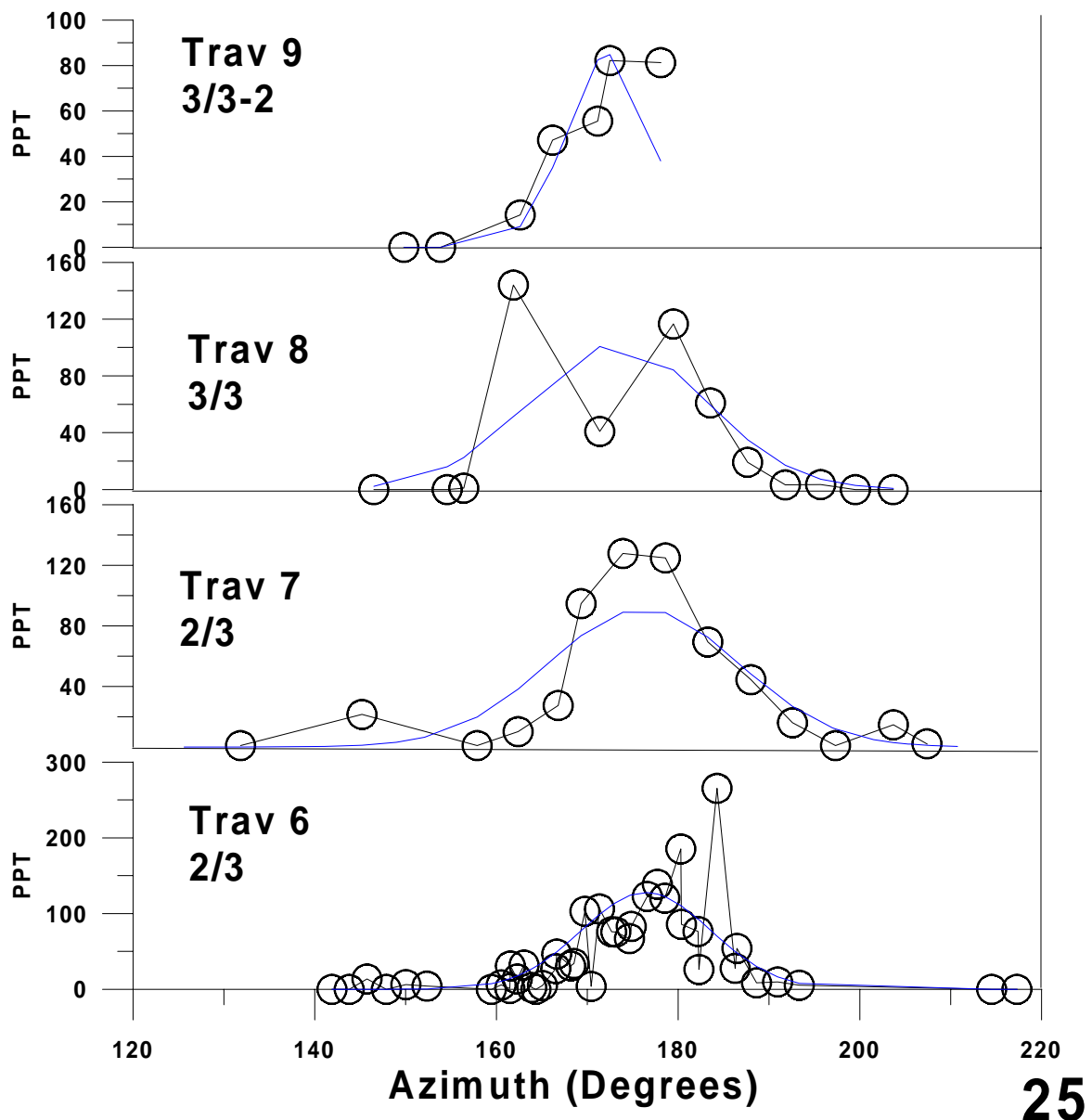
# Exp 29

# Kincaid



# Exp 30

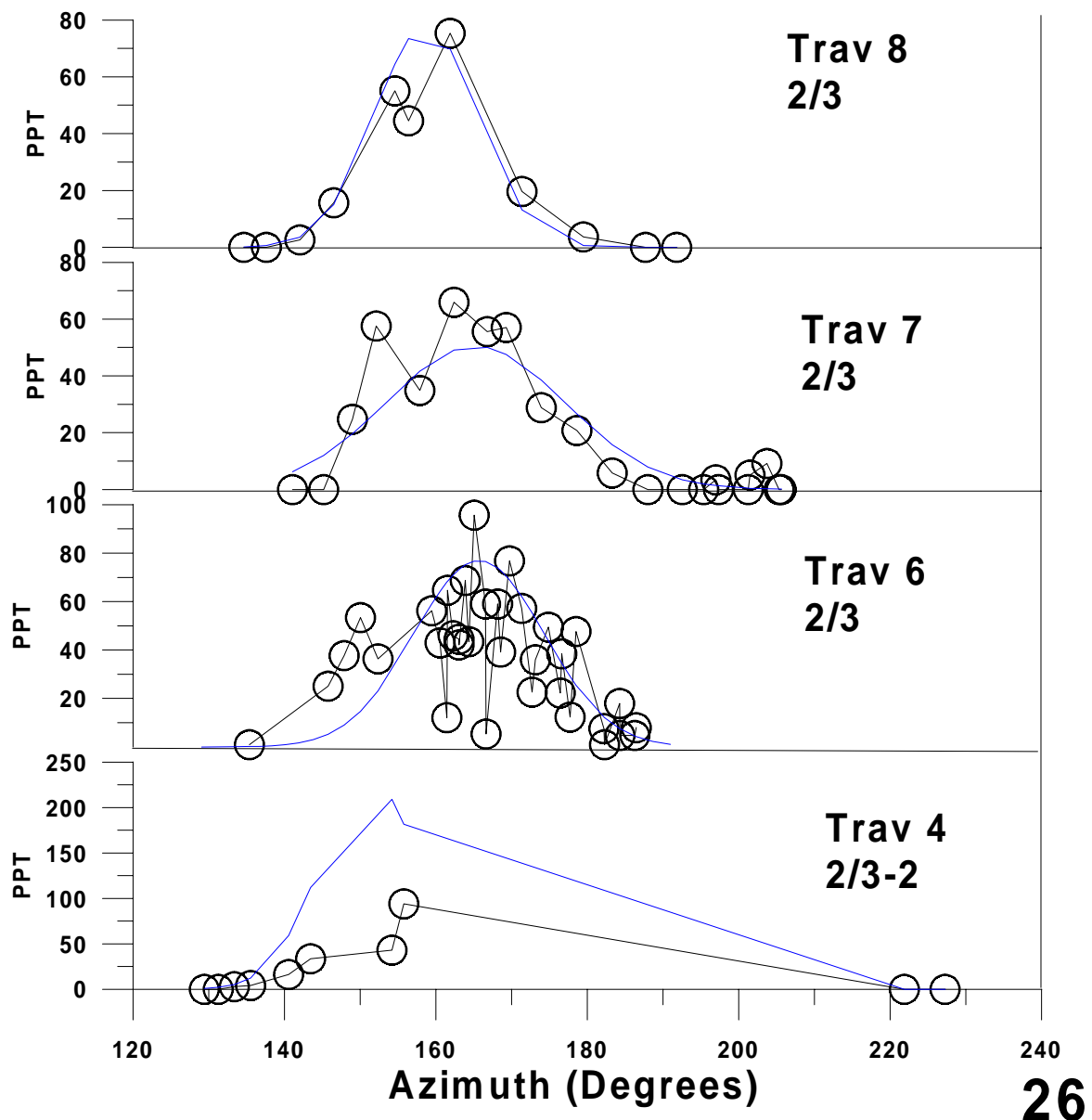
# Kincaid



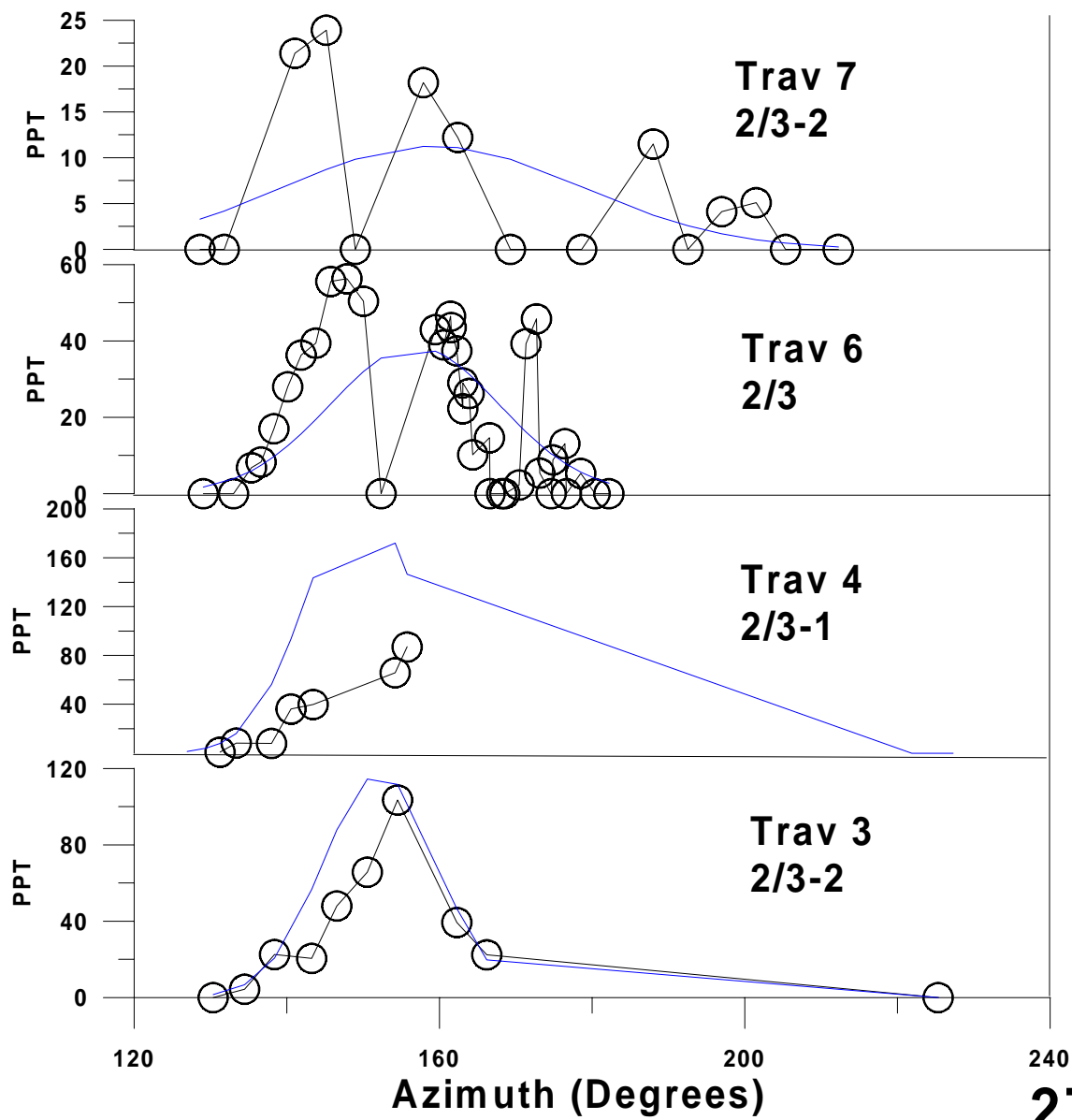


# Exp 31

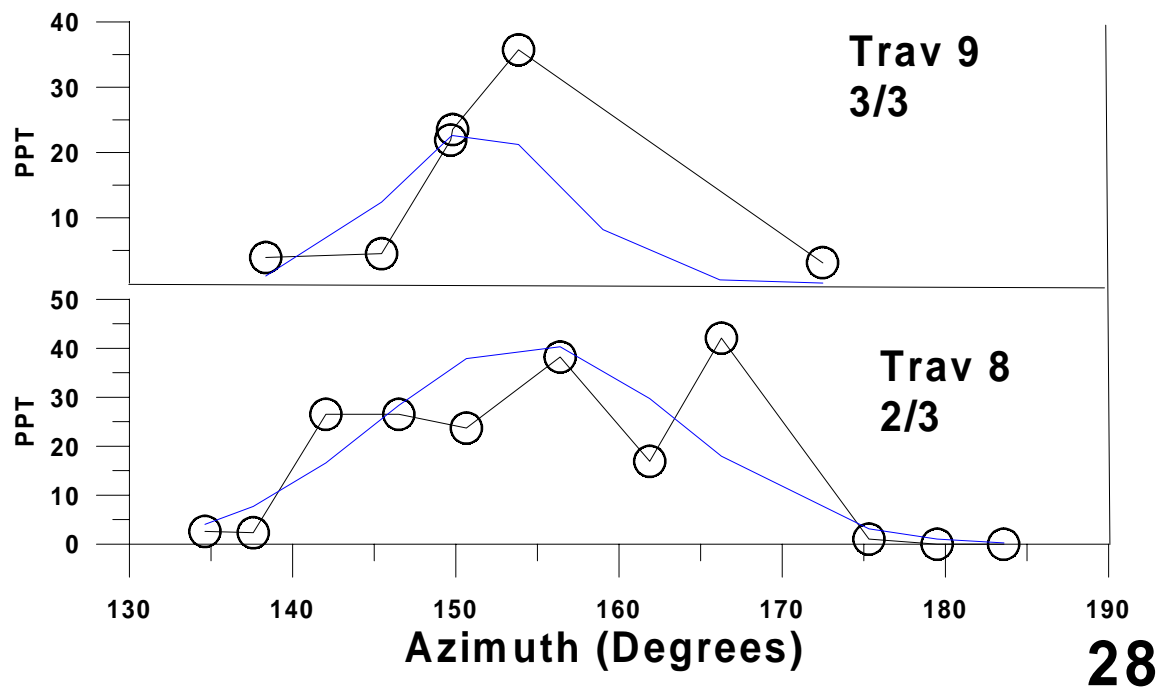
# Kincaid



# Exp 32(a) Kincaid

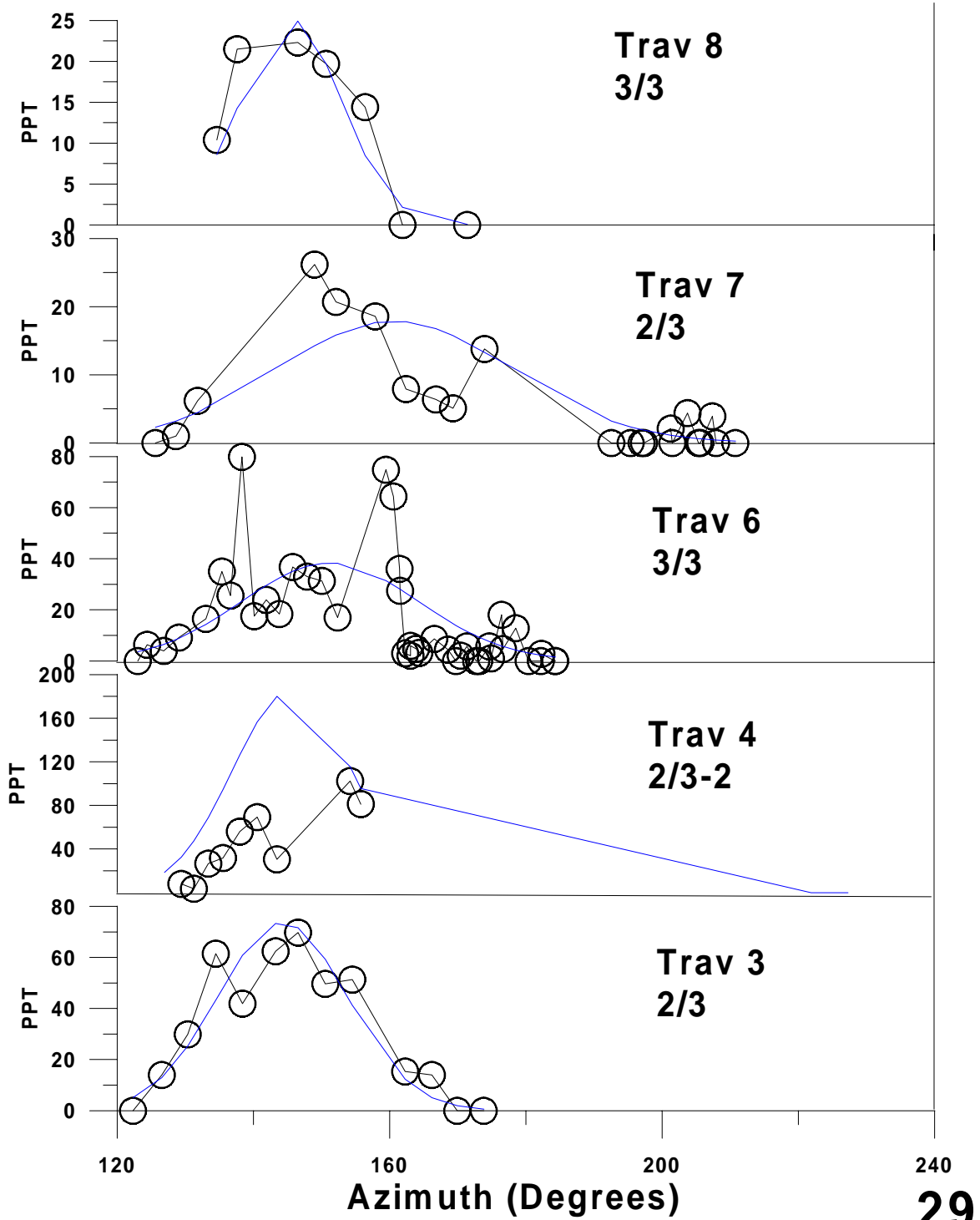


# Exp 32(b) Kincaid



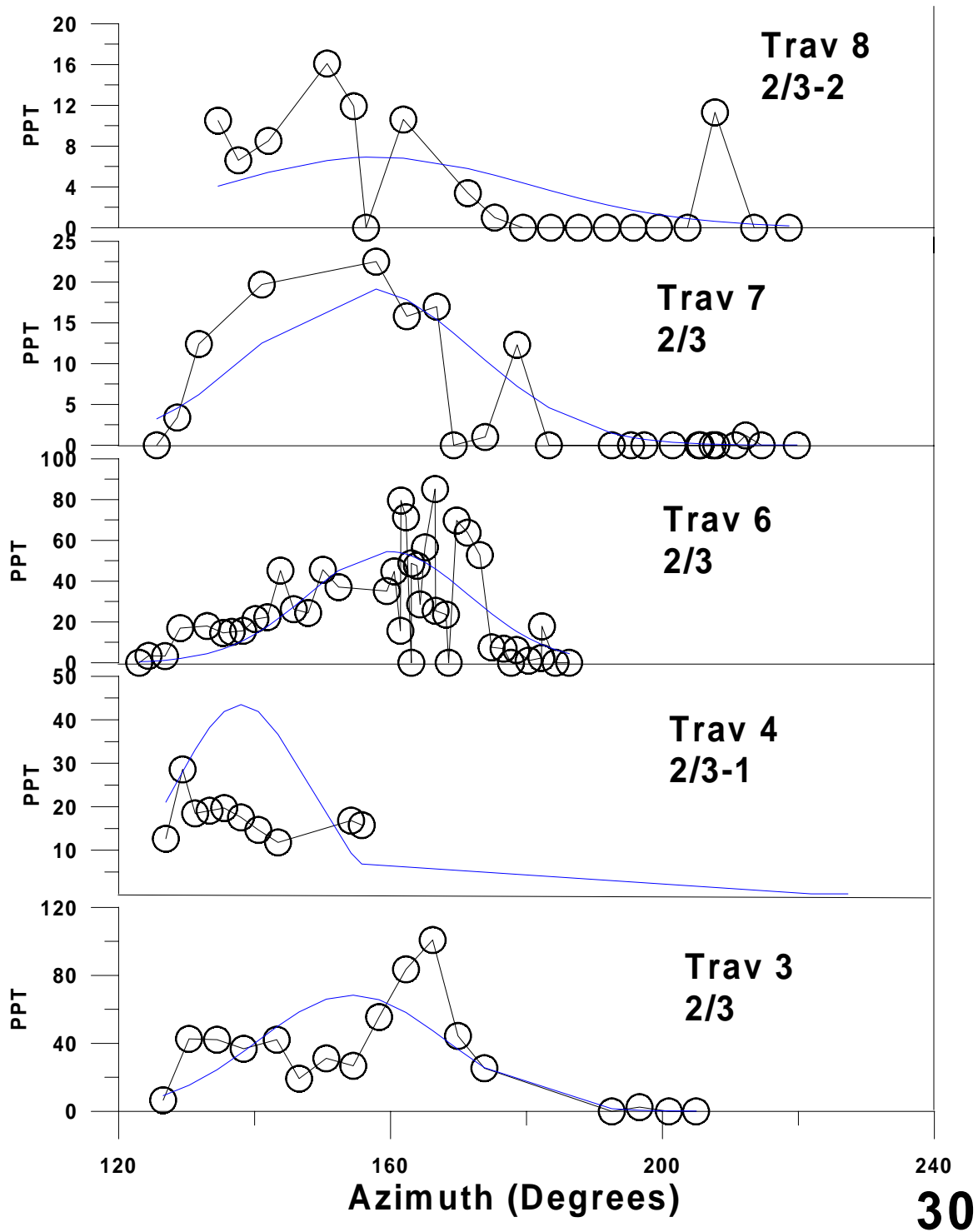
# Exp 33

# Kincaid

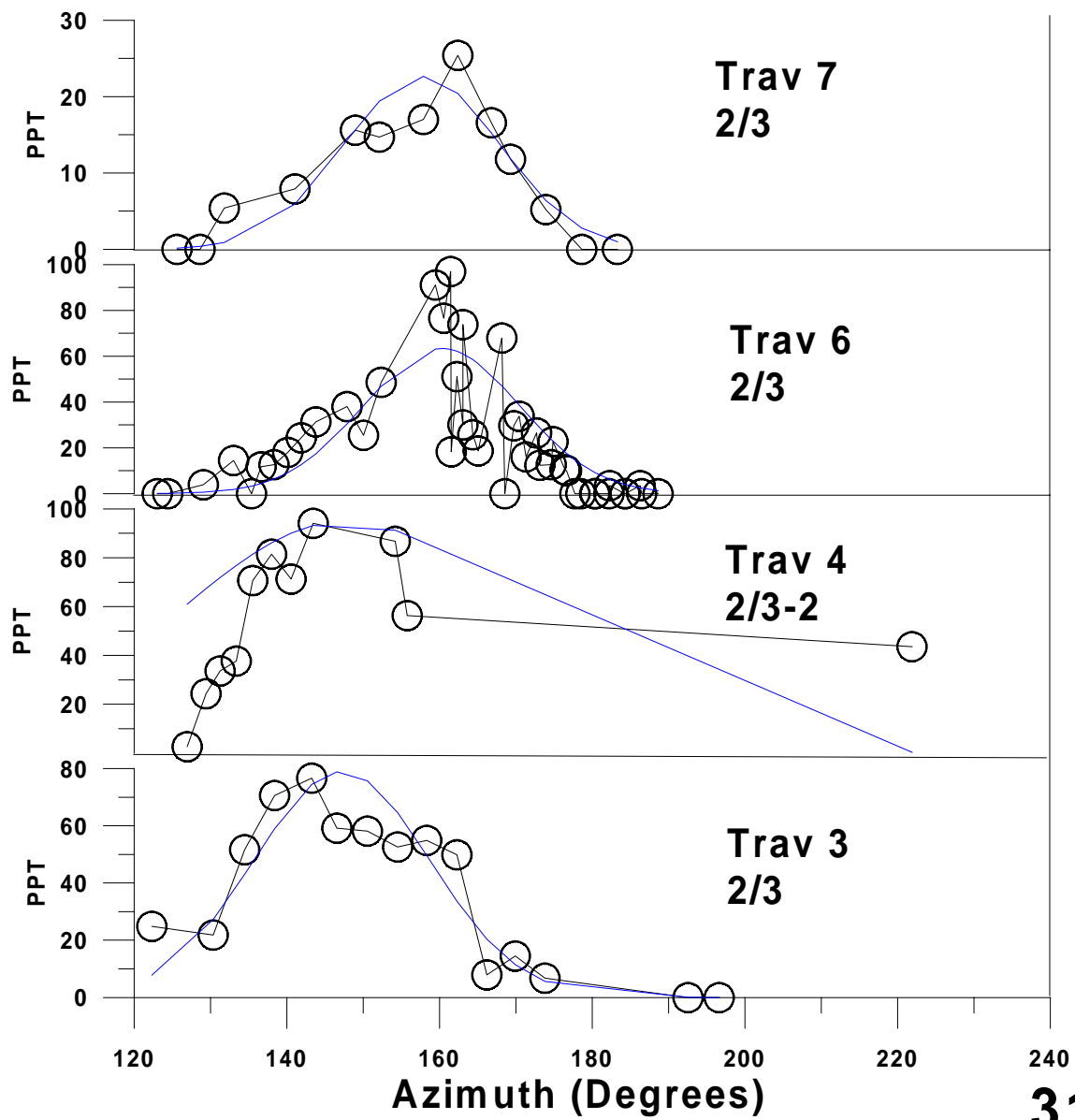


# Exp 34

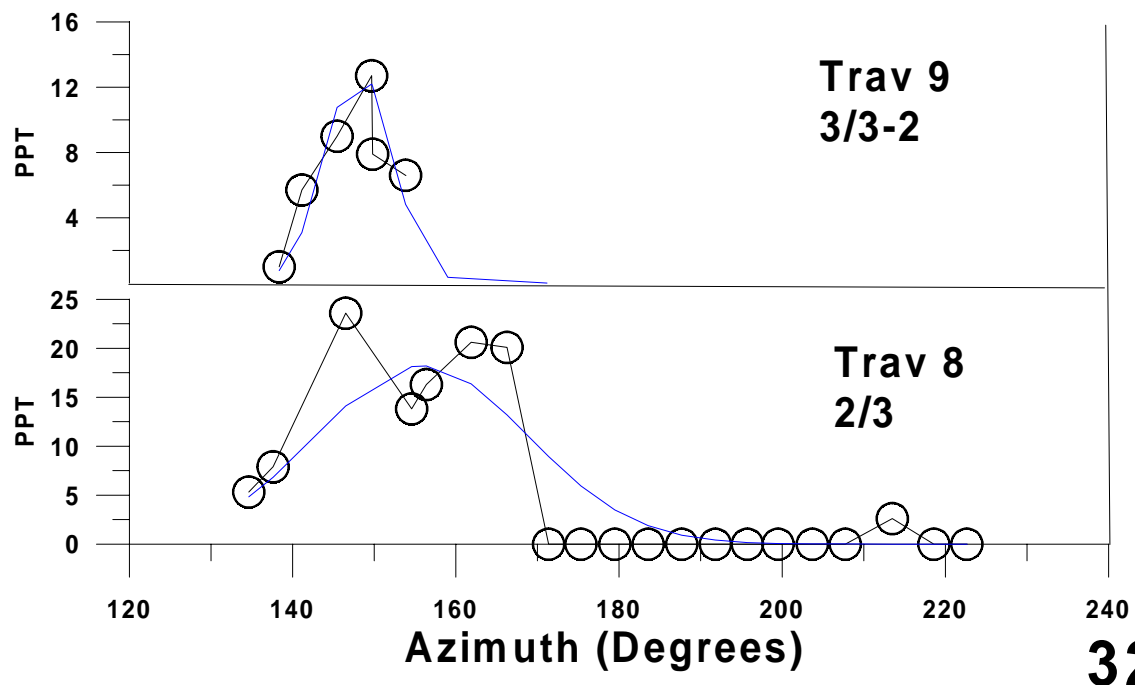
# Kincaid



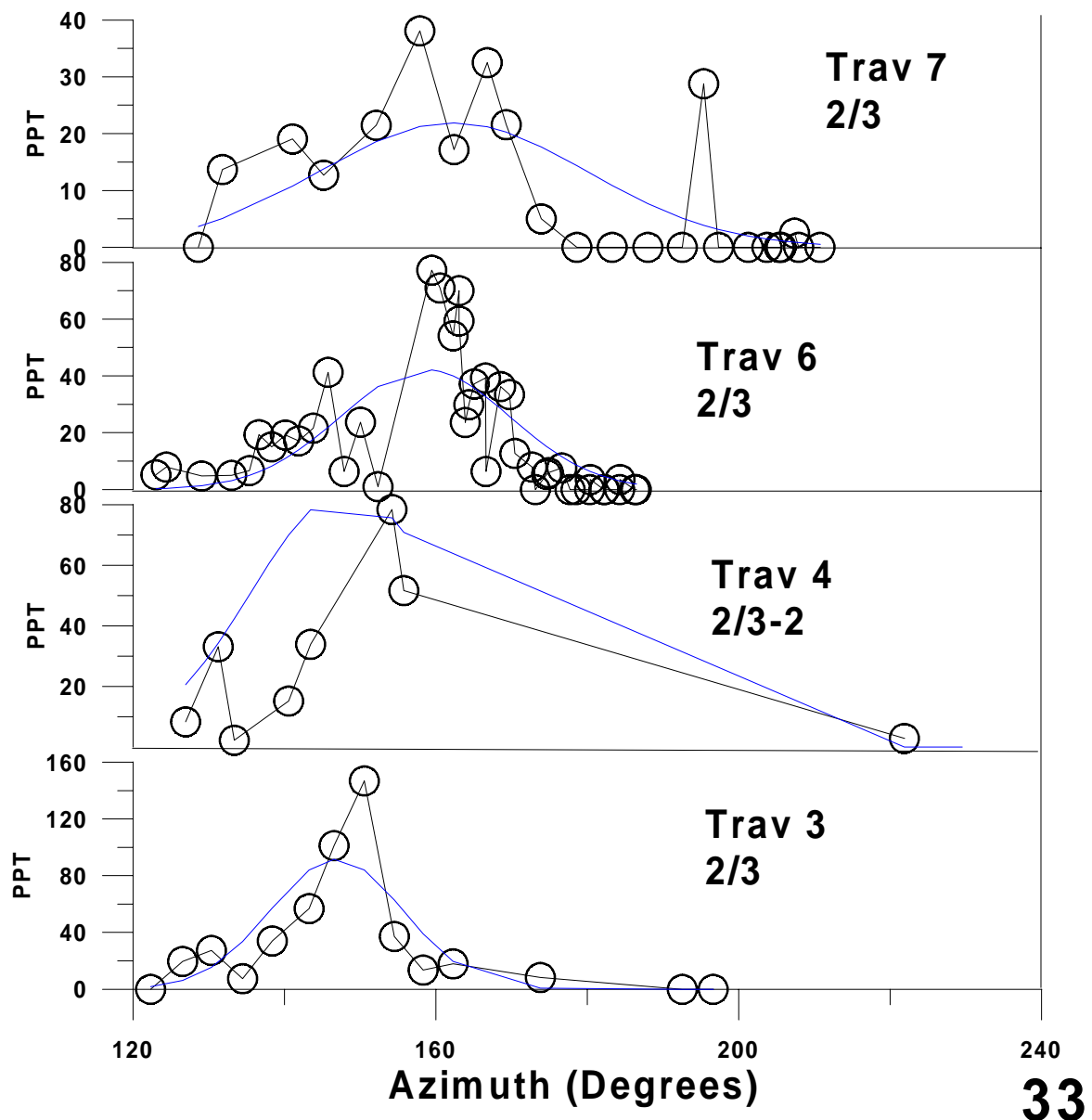
# Exp 35(a) Kincaid



# Exp 35(b) Kincaid

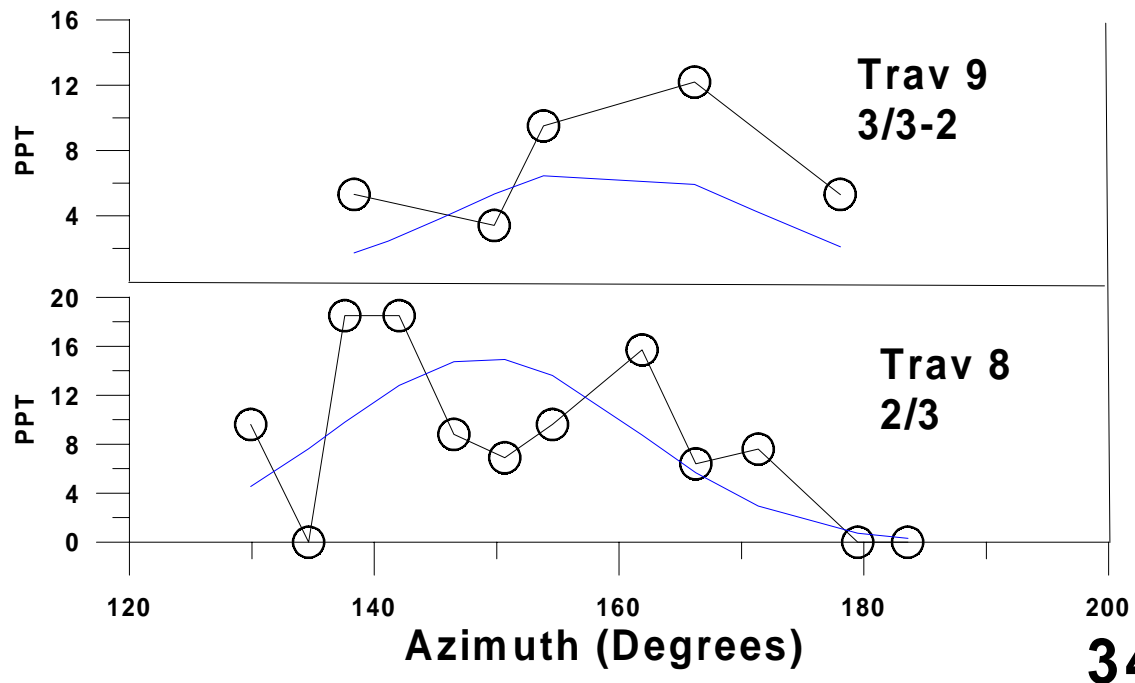


# Exp 36(a) Kincaid



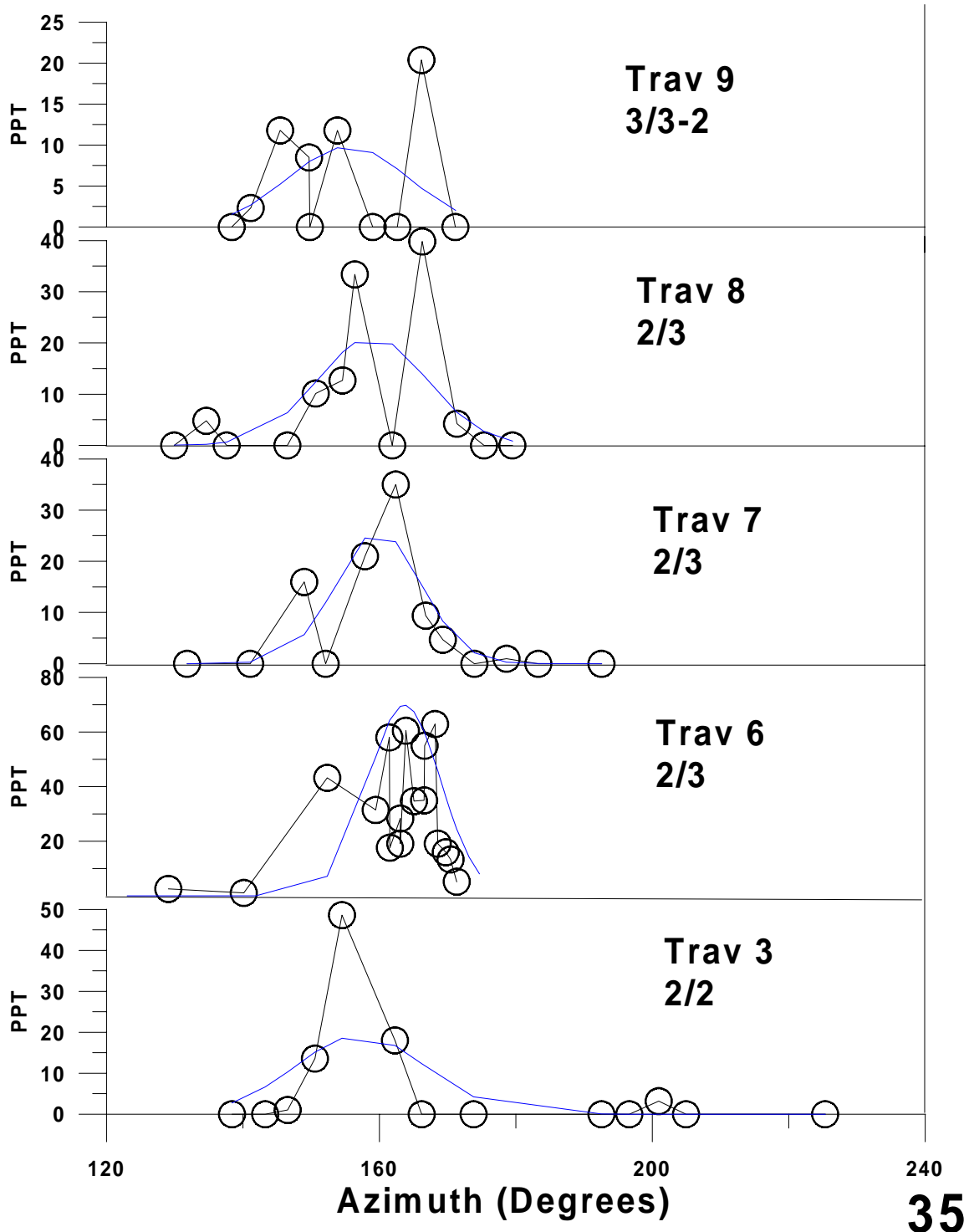


# Exp 36(b) Kincaid

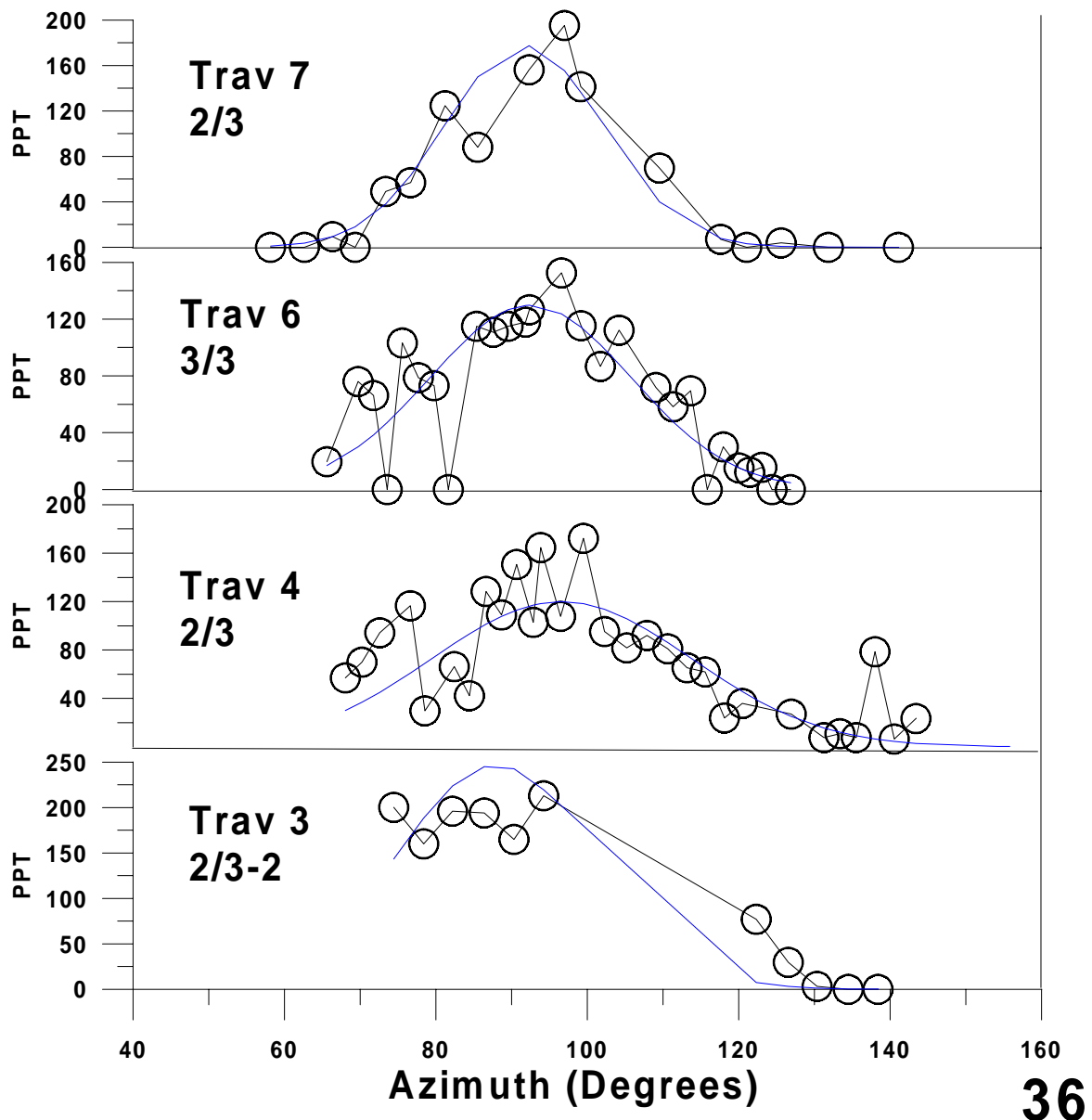


# Exp 37

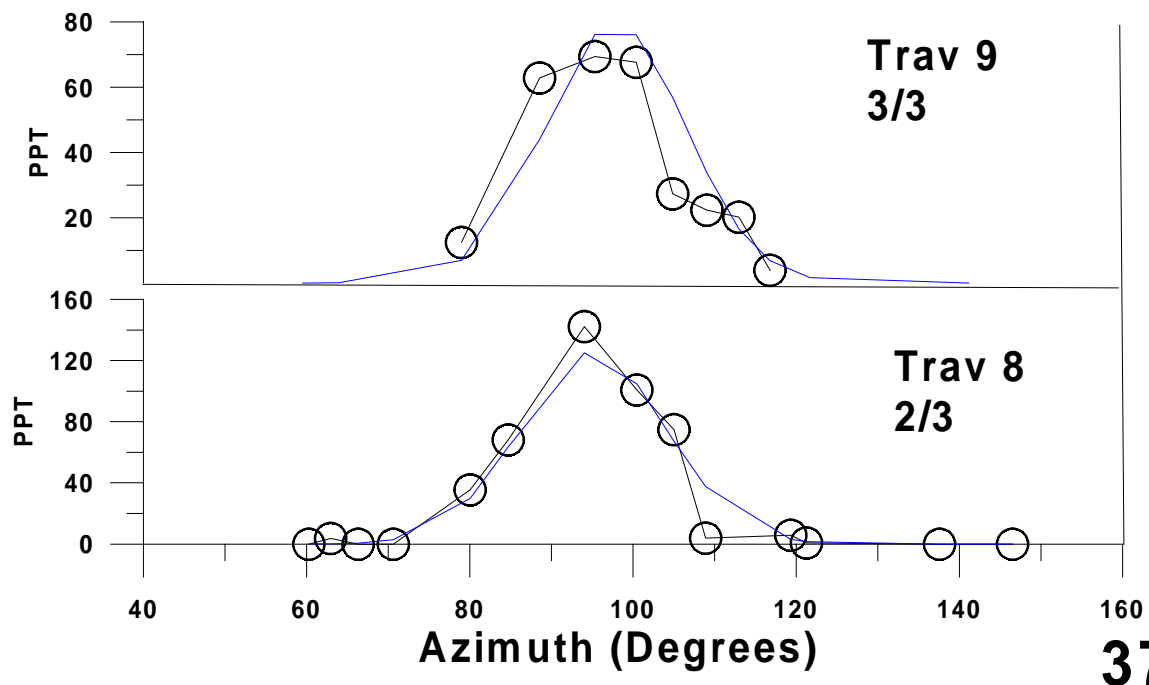
# Kincaid



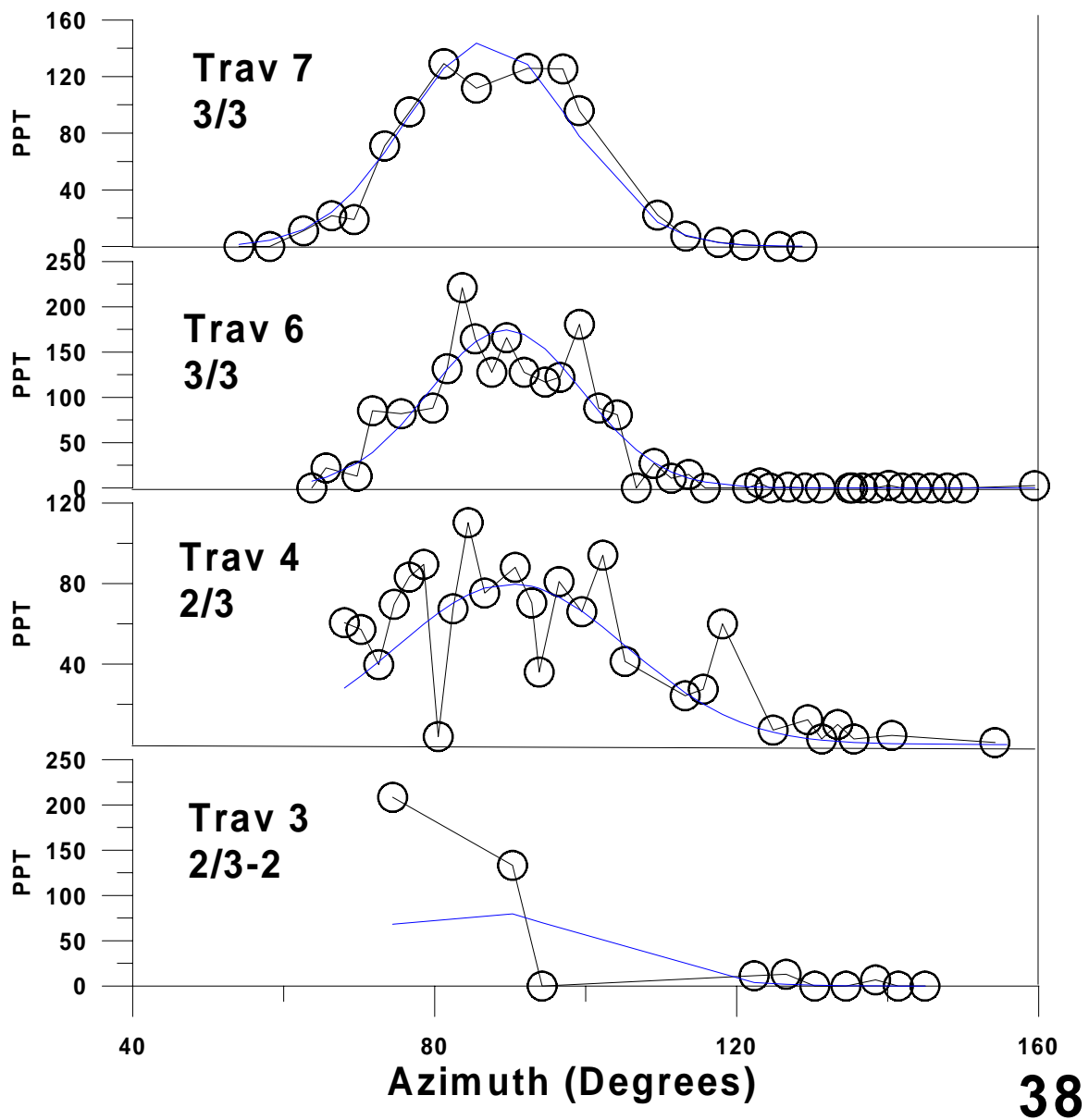
# Exp 38(a) Kincaid



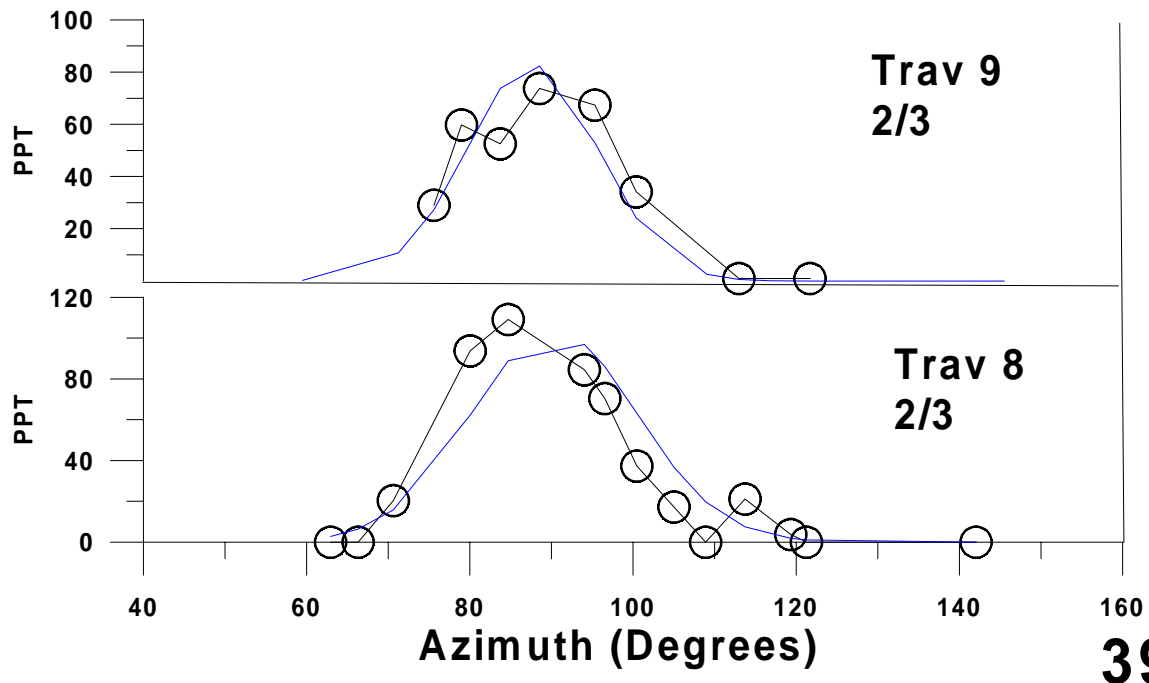
# Exp 38(b) Kincaid



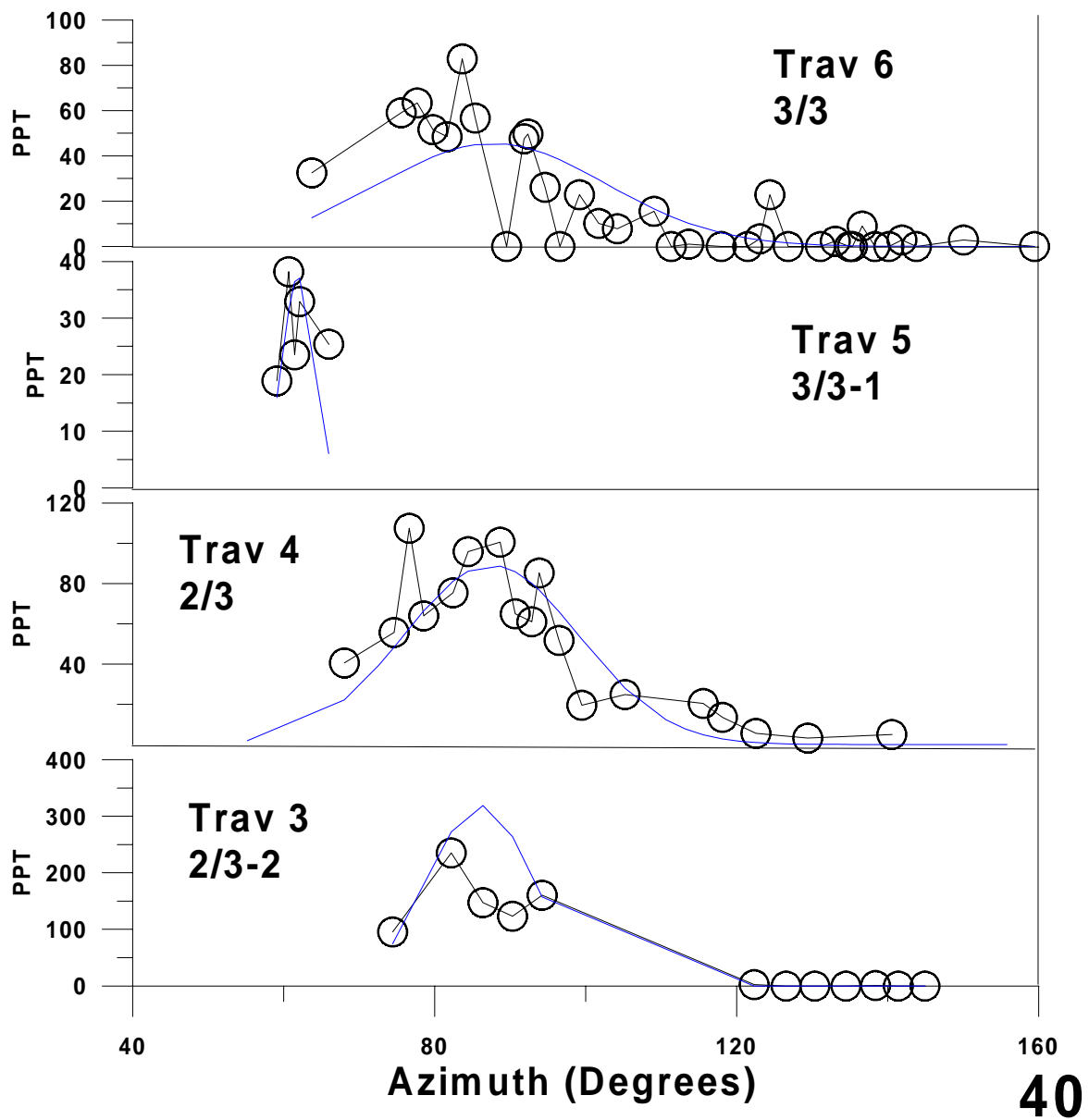
# Exp 39(a) Kincaid



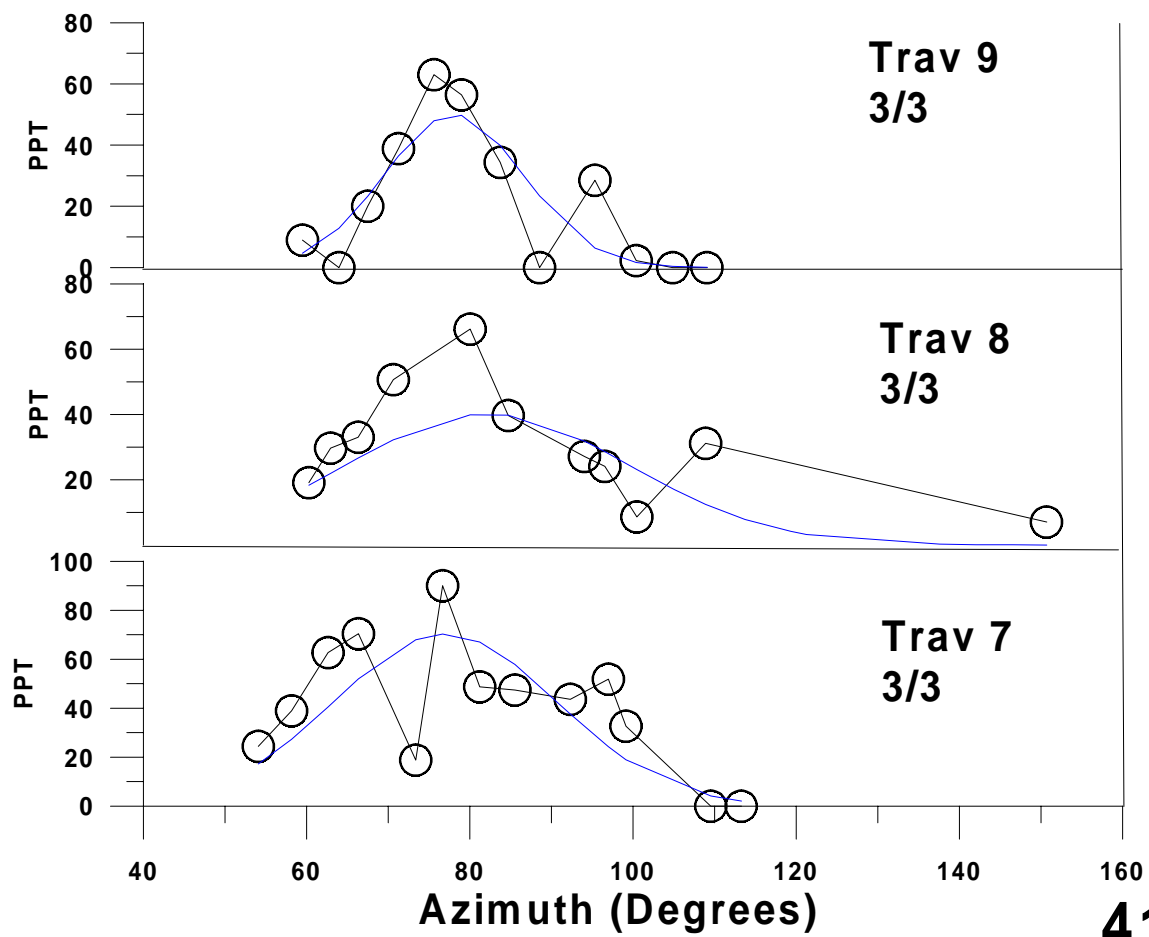
# Exp 39(b) Kincaid



# Exp 40(a) Kincaid

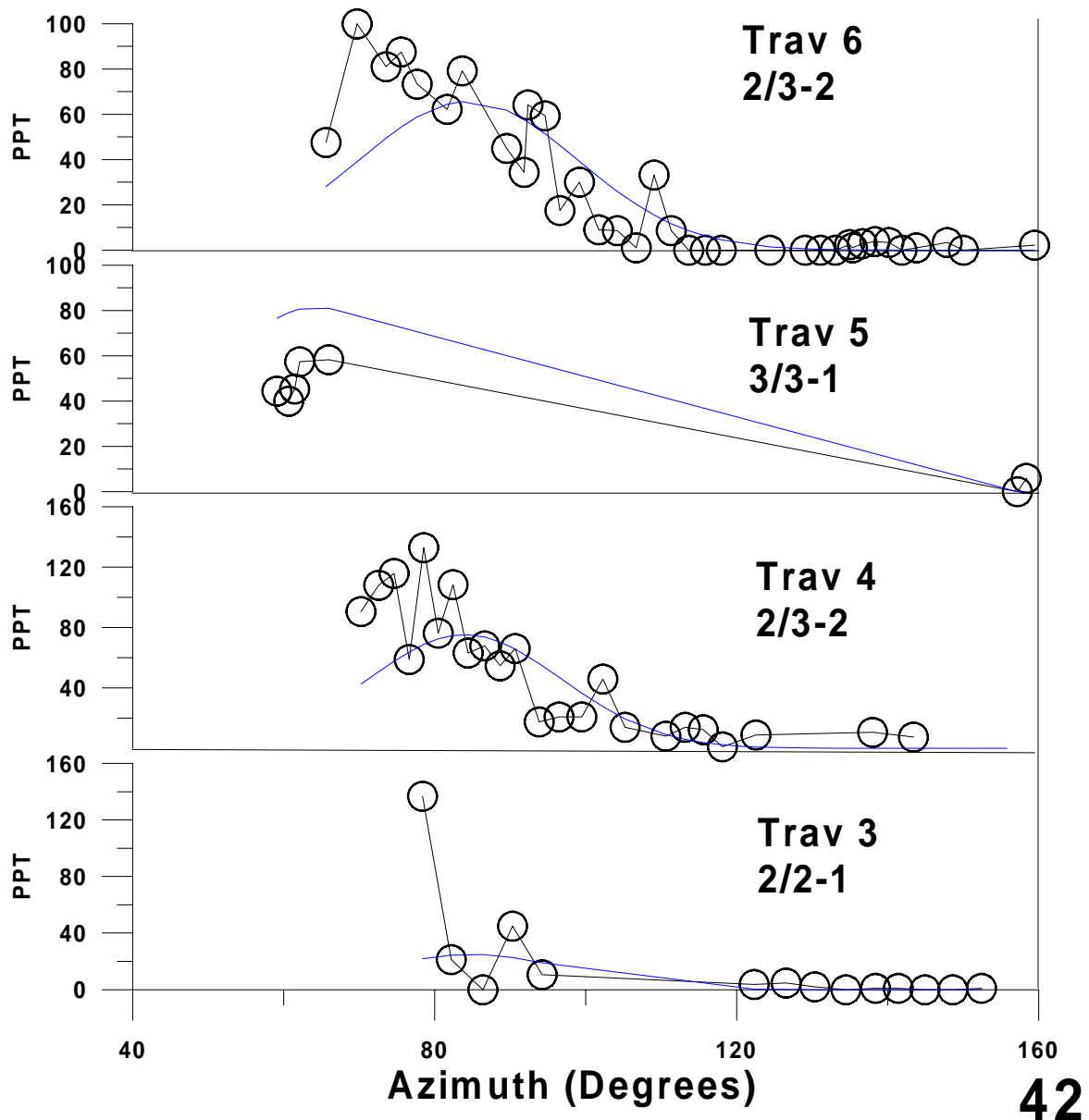


# Exp 40(b) Kincaid

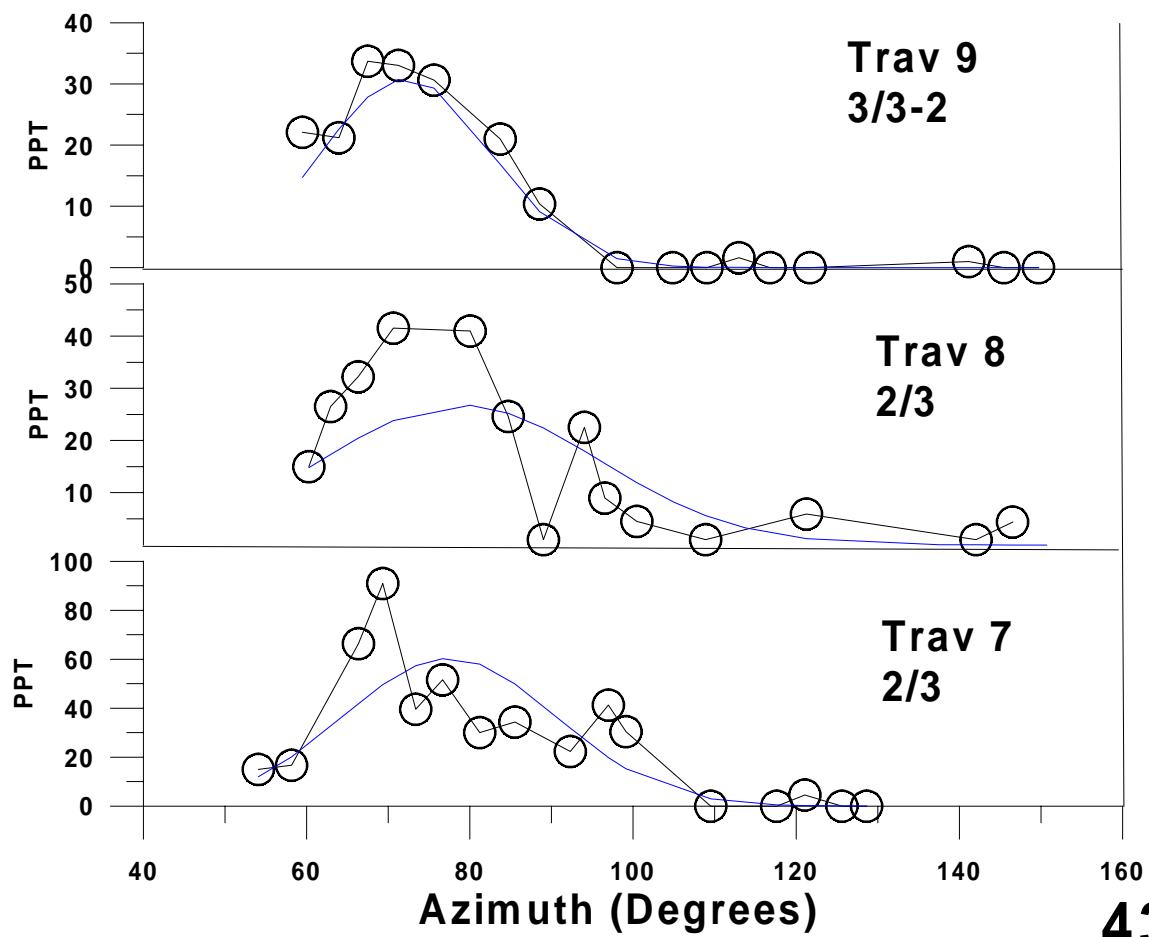




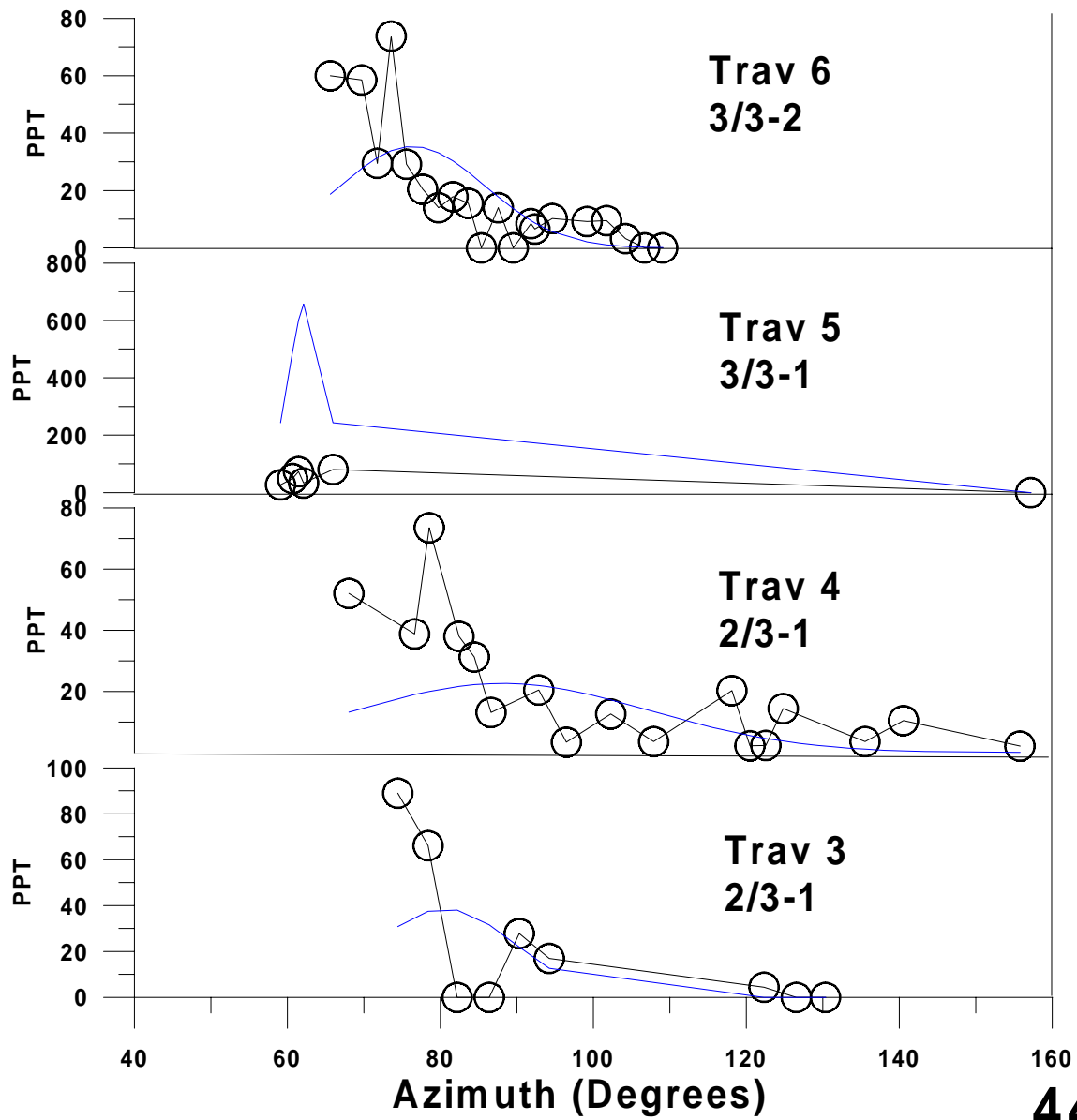
# Exp 41(a) Kincaid



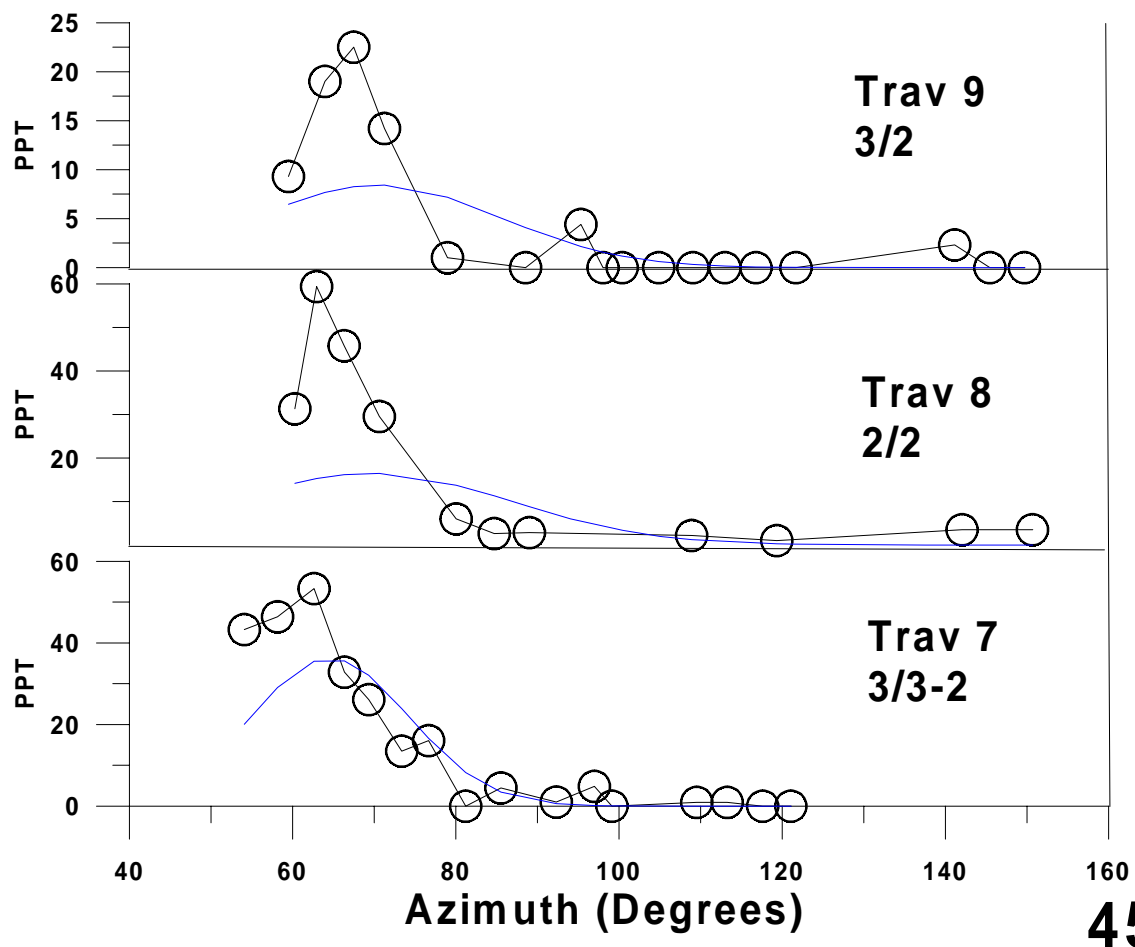
# Exp 41(b) Kincaid



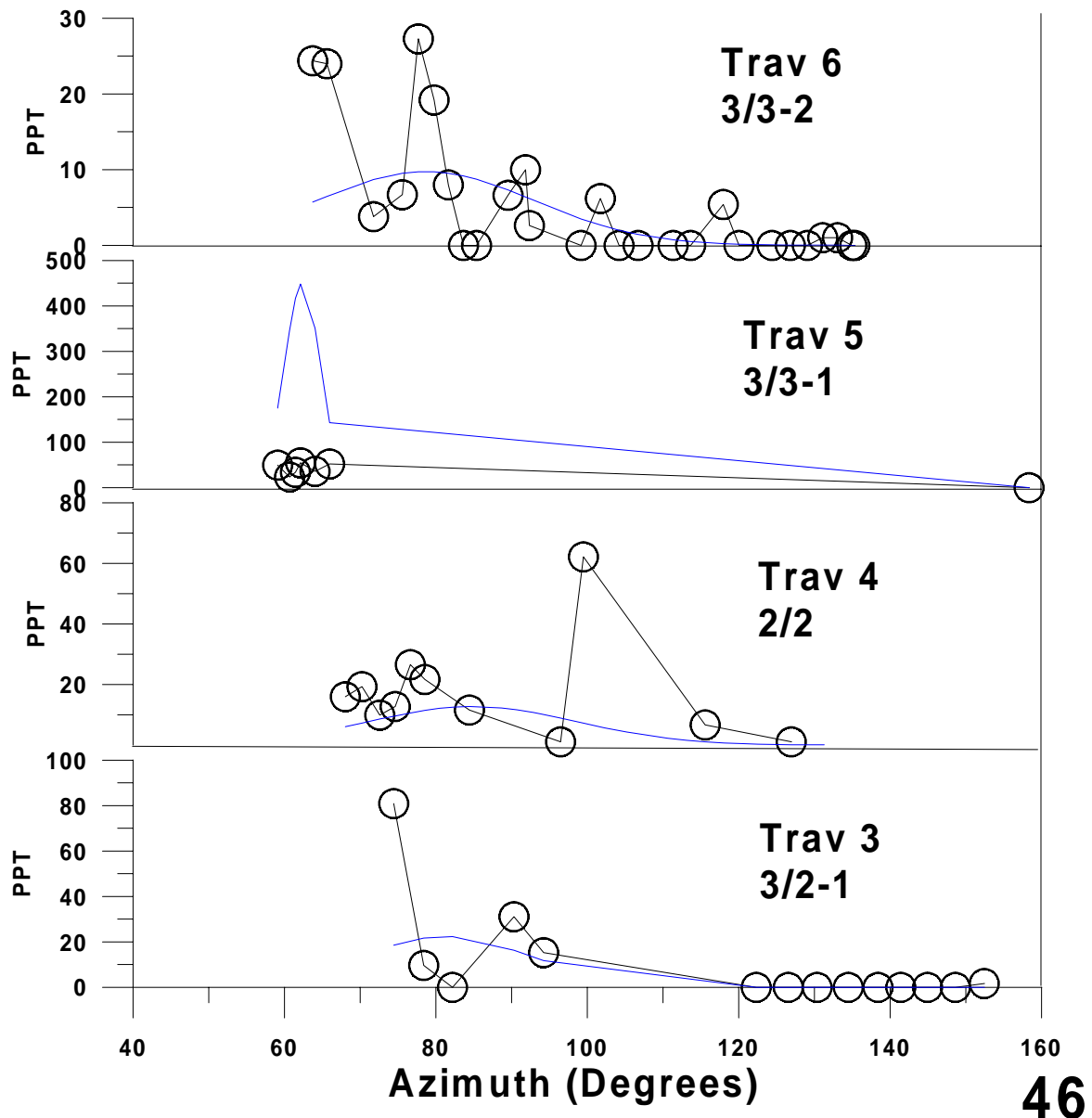
# Exp 42(a) Kincaid



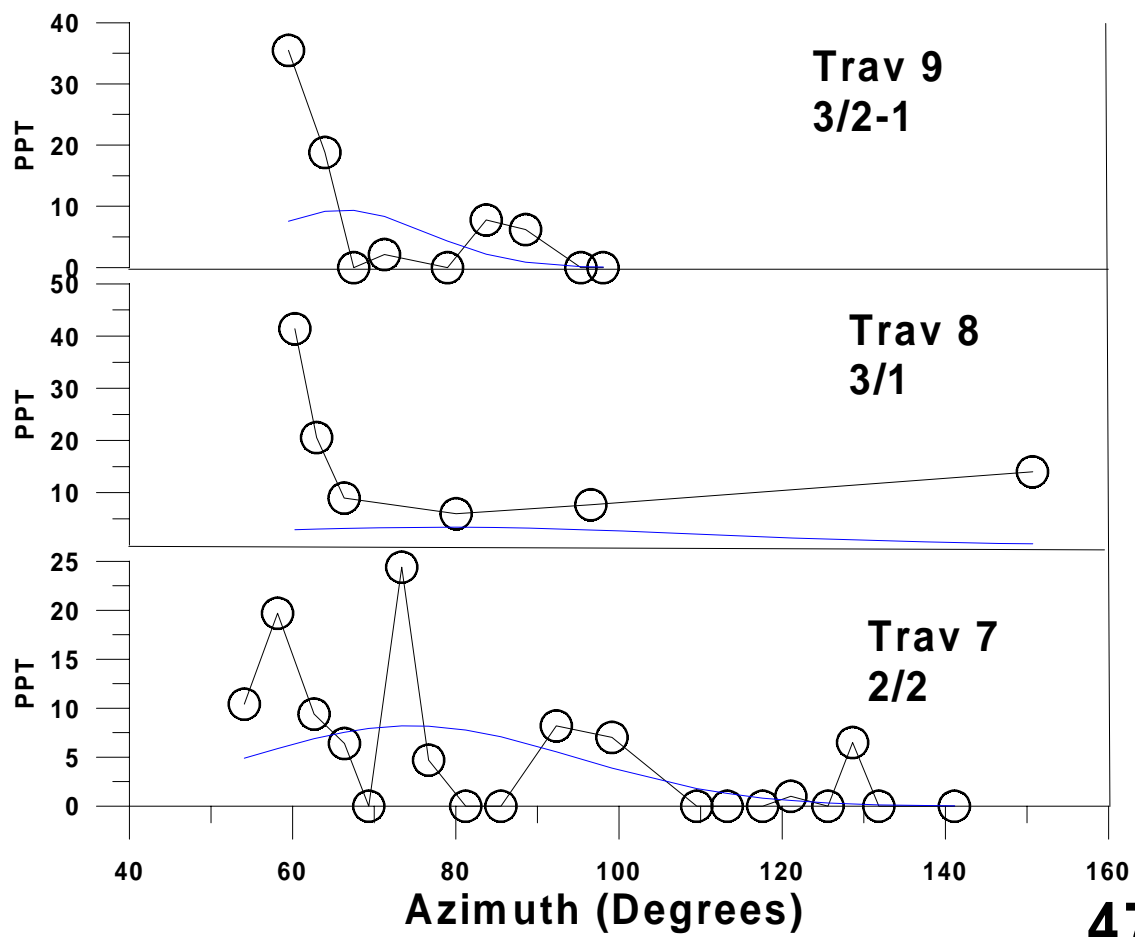
# Exp 42(b) Kincaid



# Exp 43(a) Kincaid

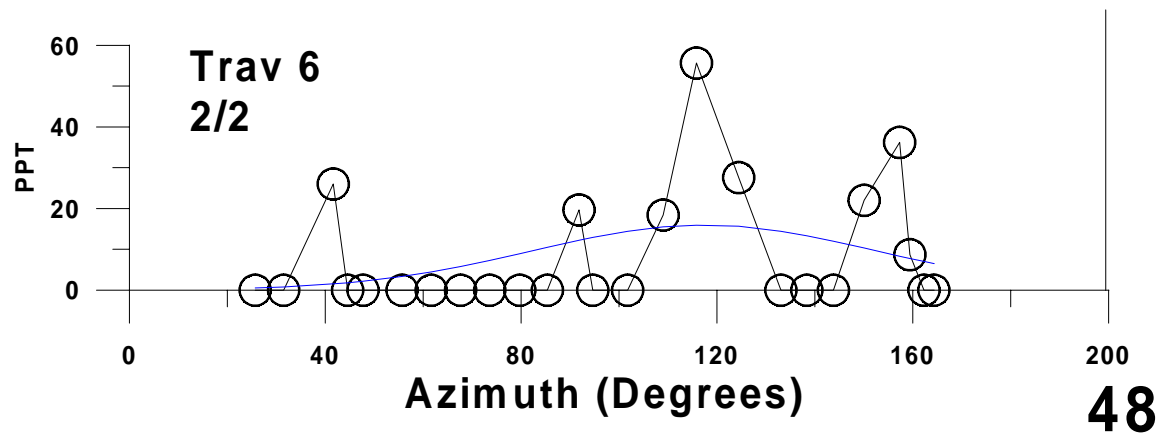


# Exp 43(b) Kincaid



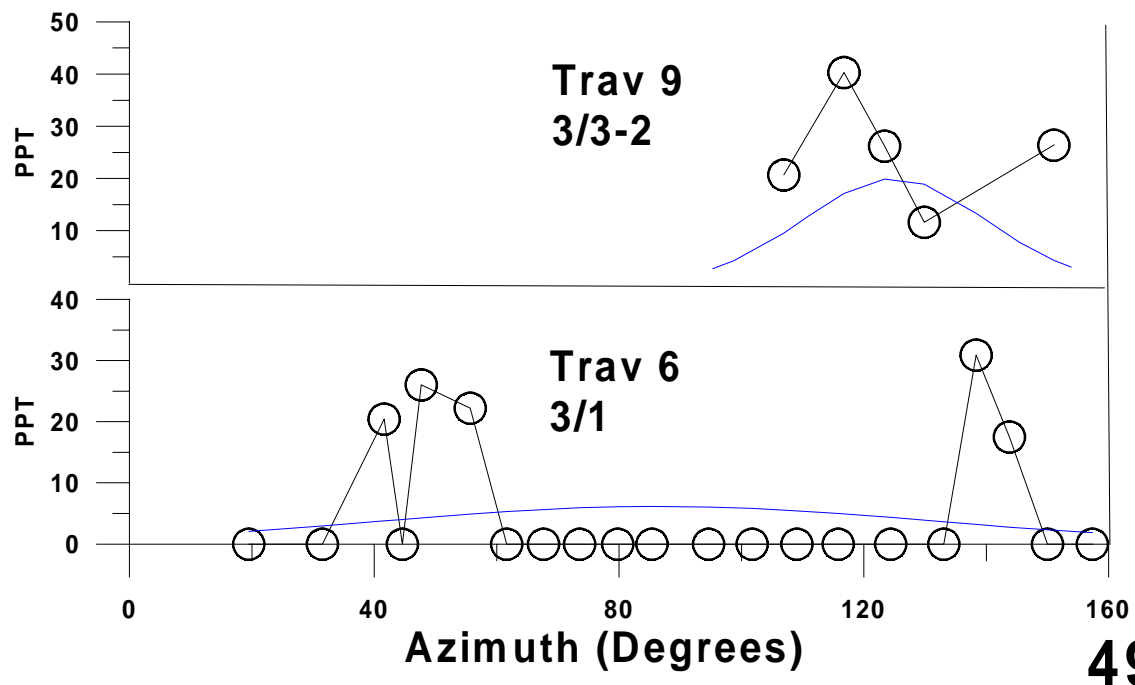
# Exp 45

# Kincaid



# Exp 46

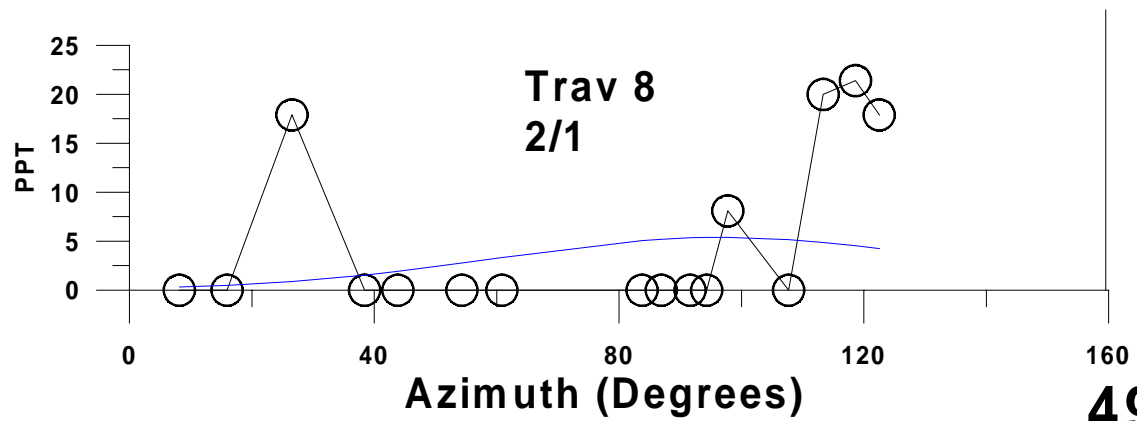
# Kincaid





**Exp 47**

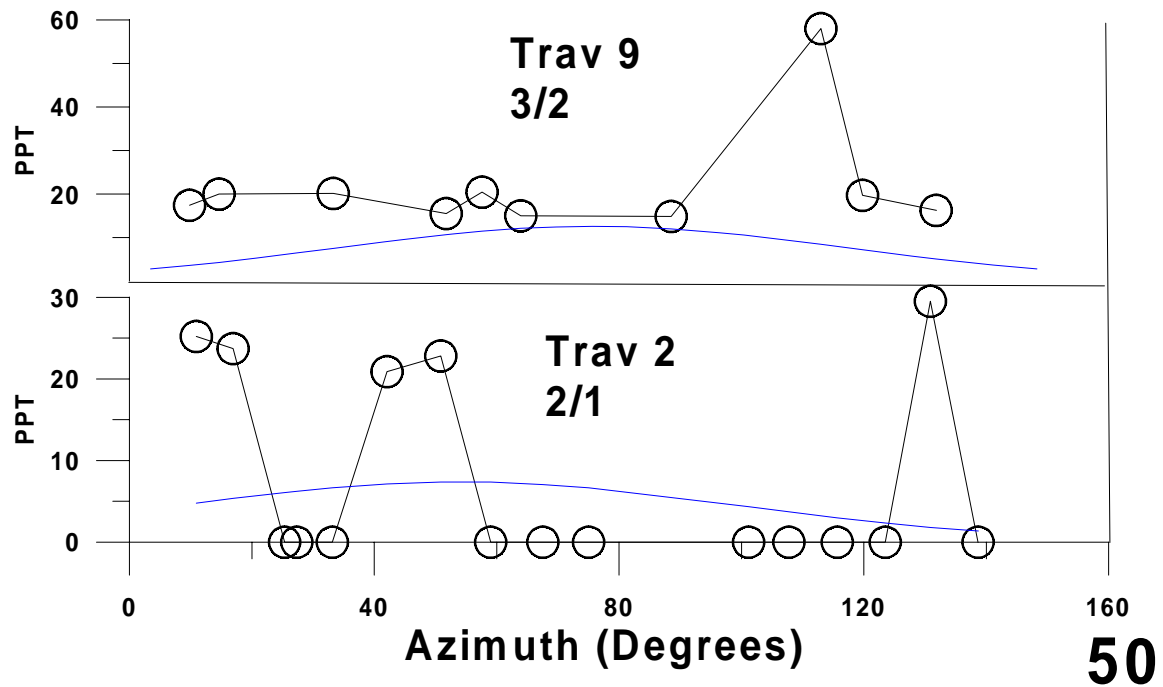
**Kincaid**



**49A**

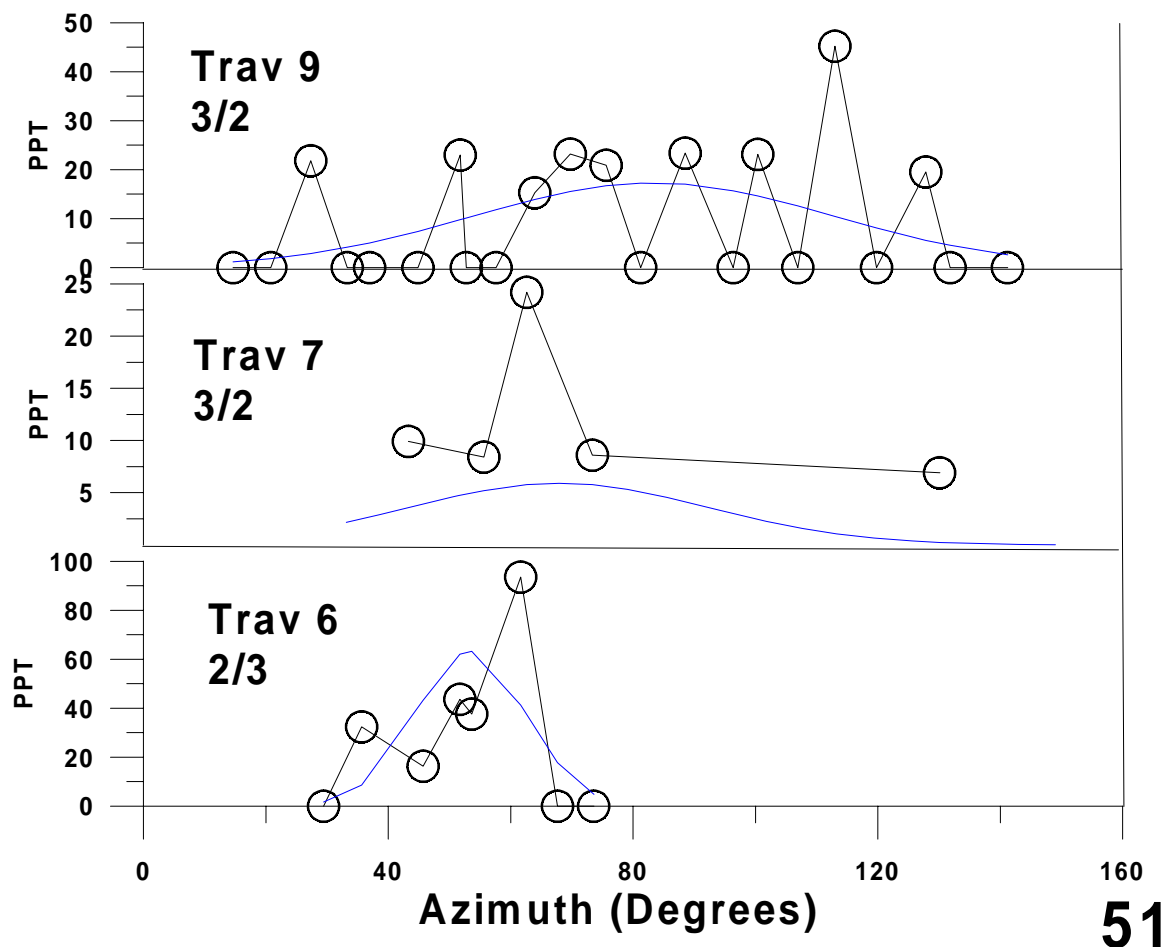
# Exp 50

# Kincaid



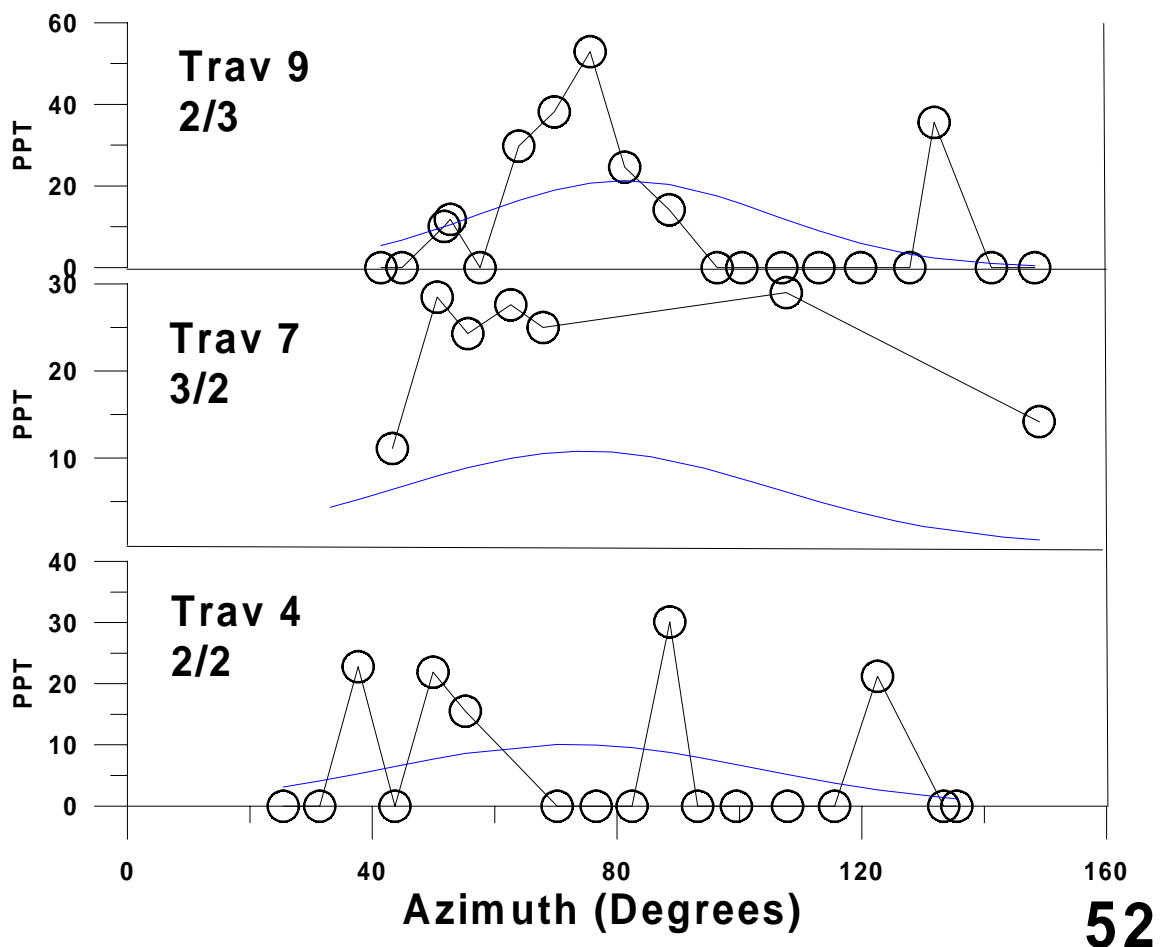
# Exp 51

# Kincaid



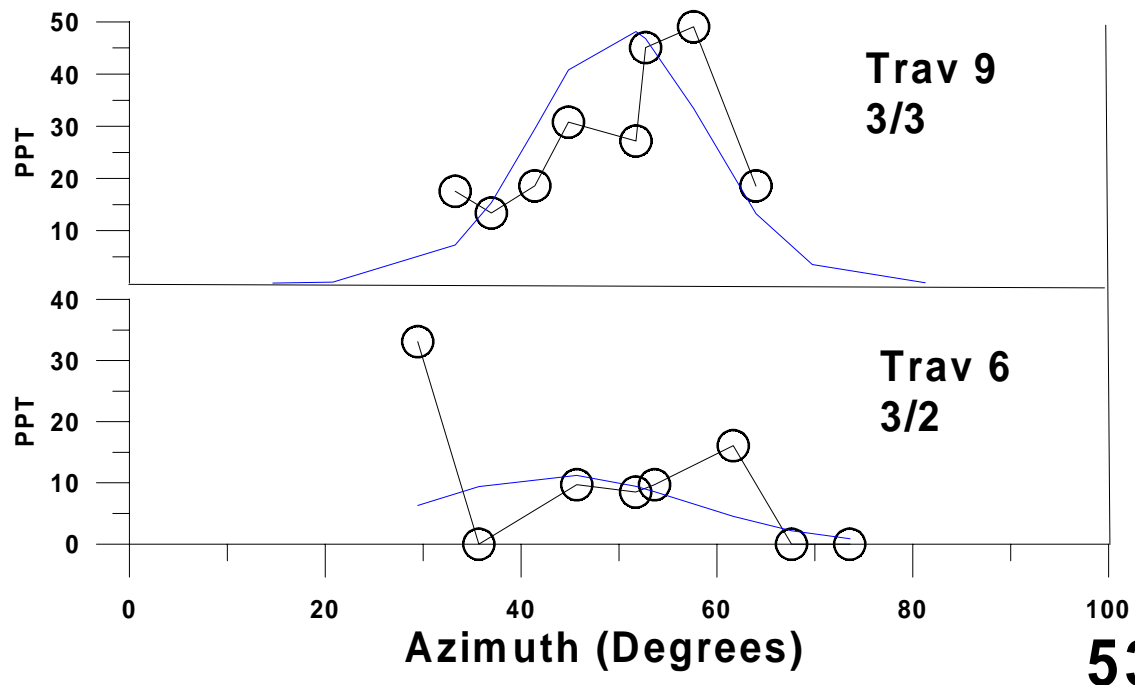
# Exp 52

# Kincaid



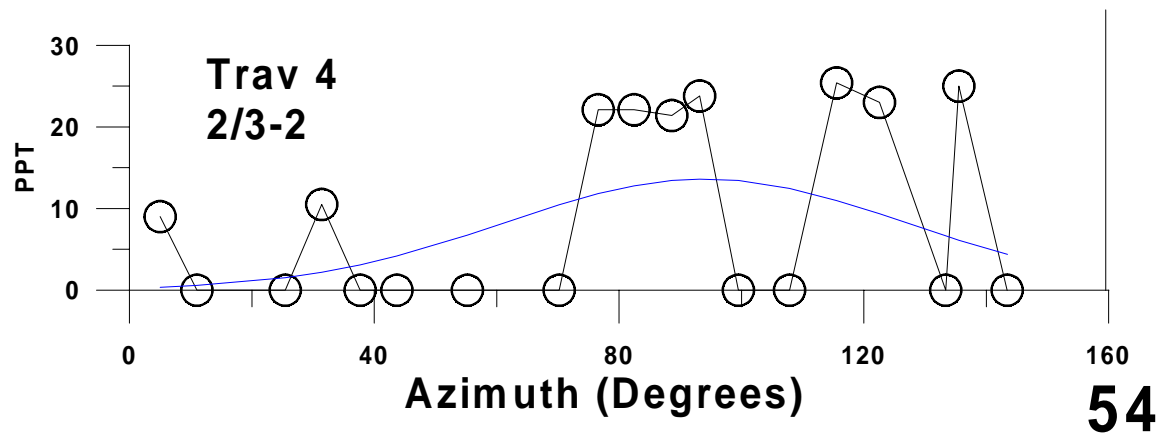
**Exp 53**

**Kincaid**



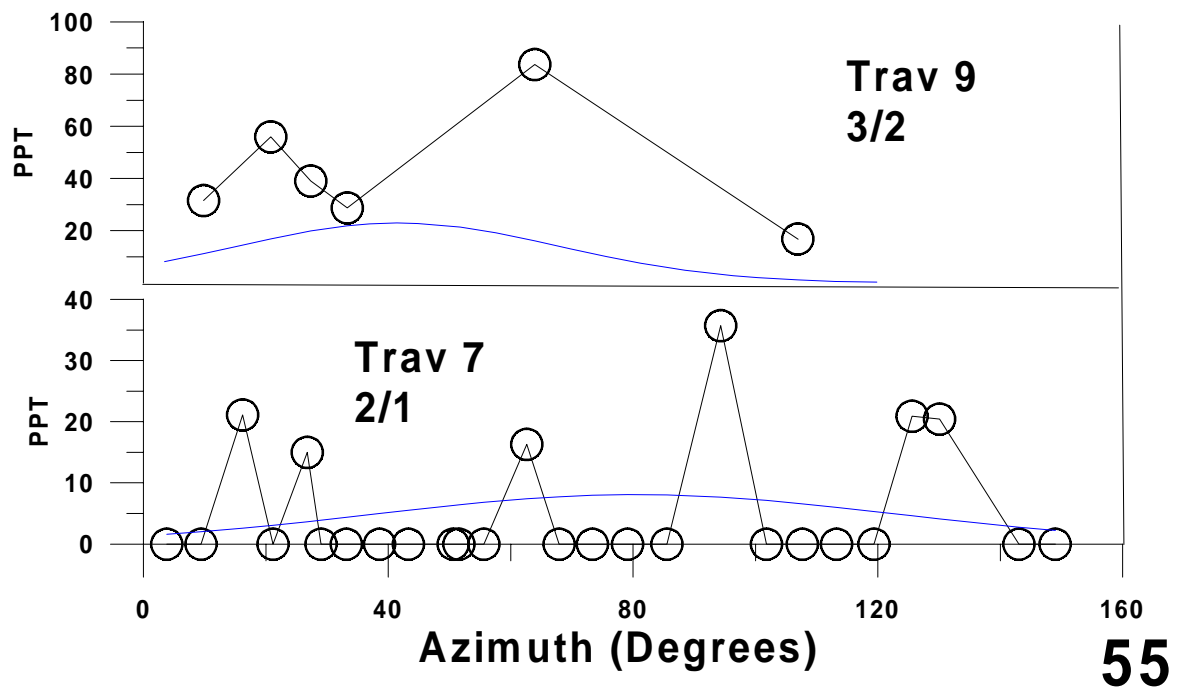
# Exp 55

# Kincaid



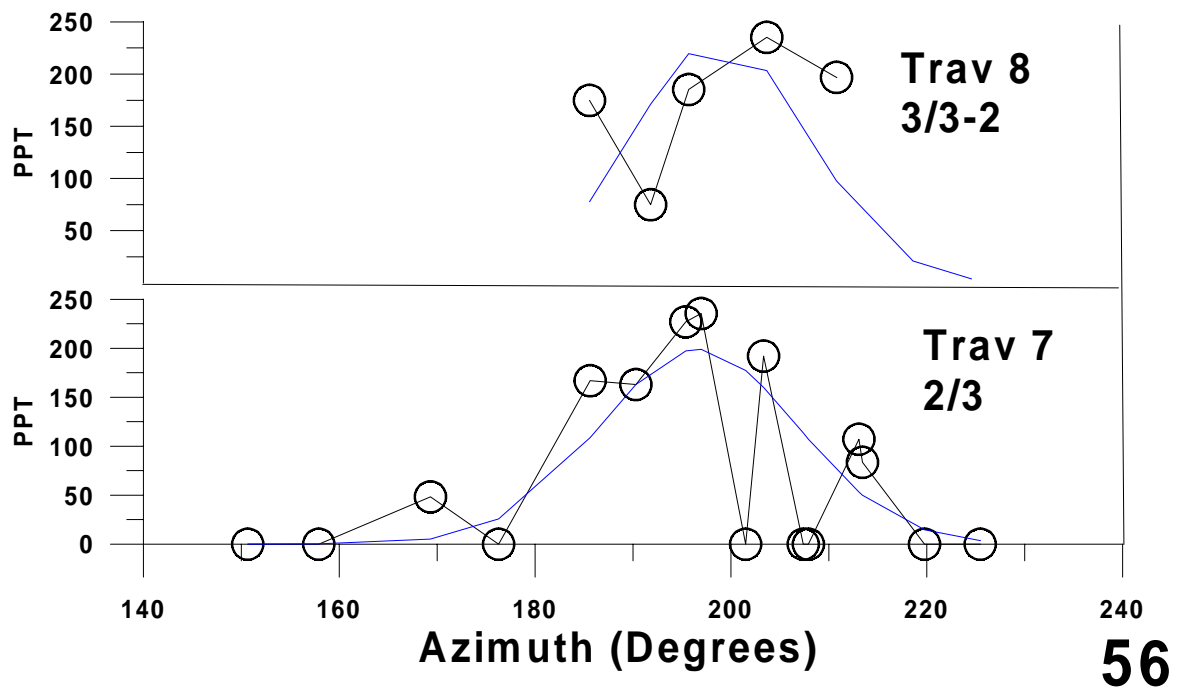
# Exp 56

# Kincaid



# Exp 59

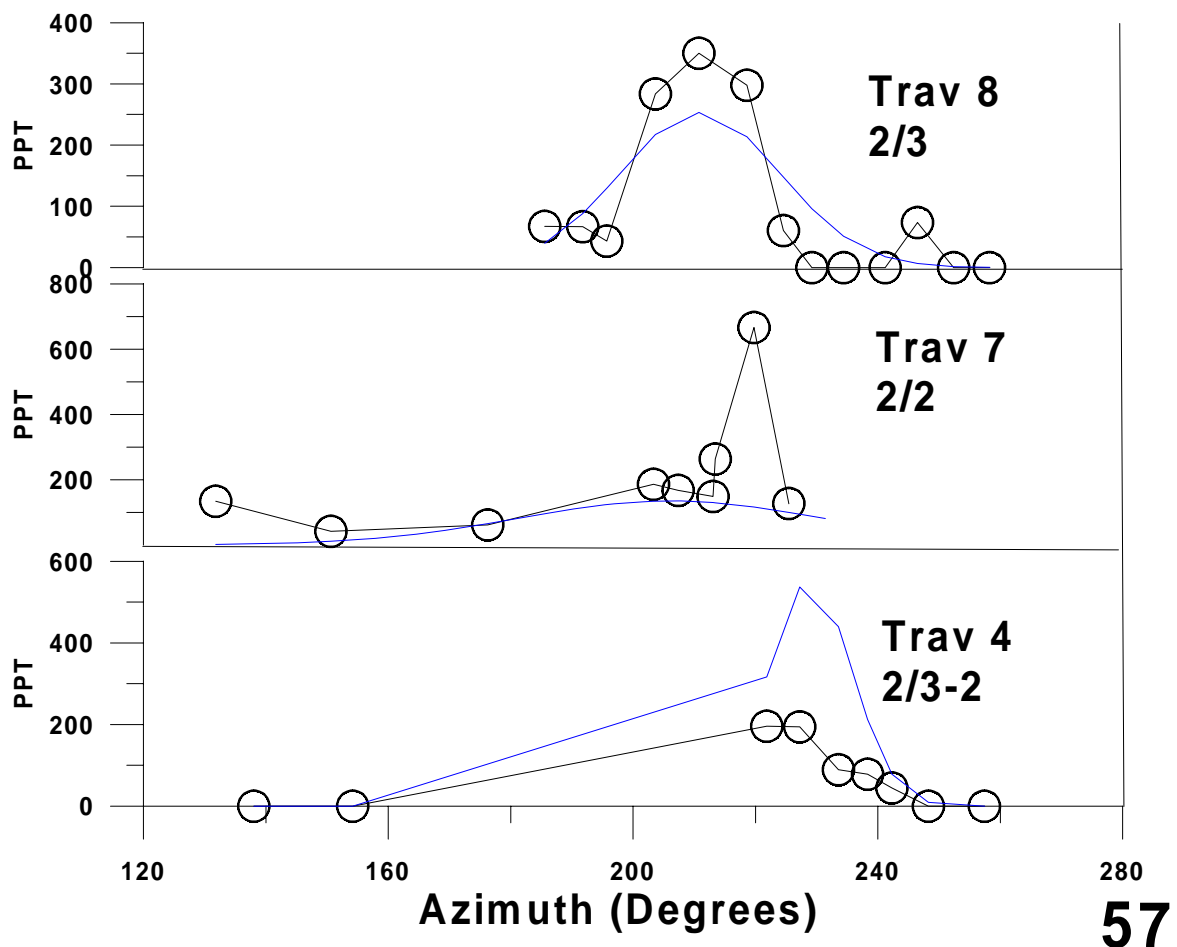
# Kincaid





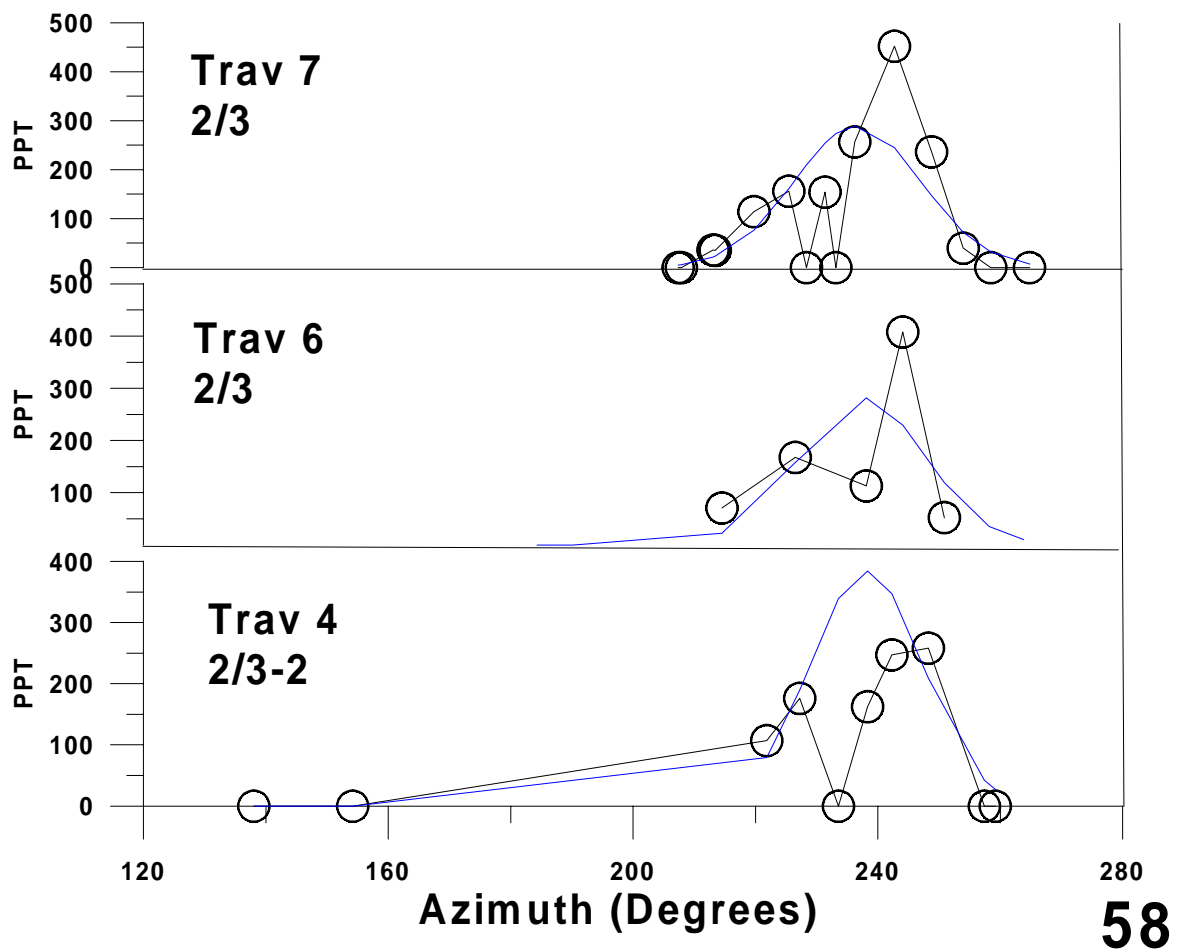
# Exp 60

# Kincaid



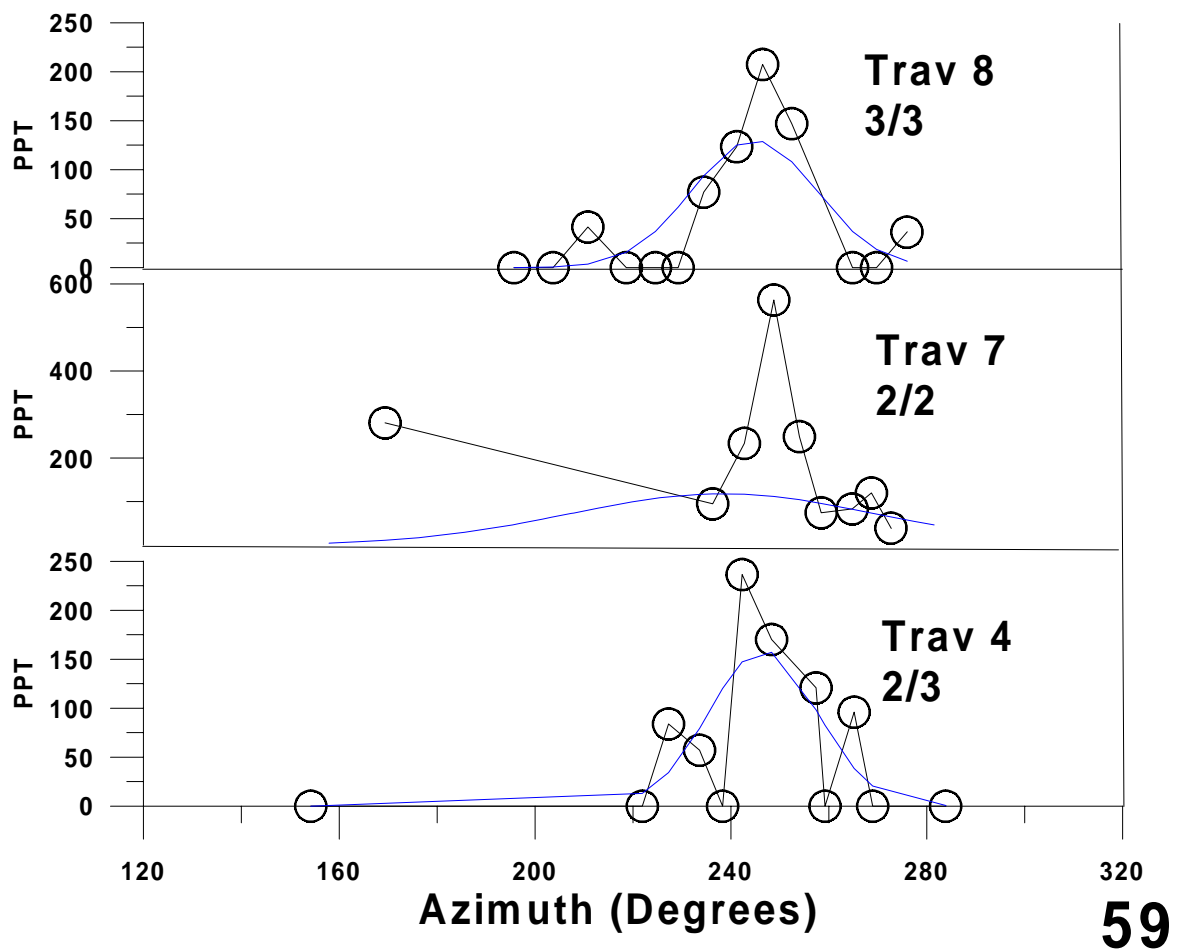
# Exp 61

# Kincaid



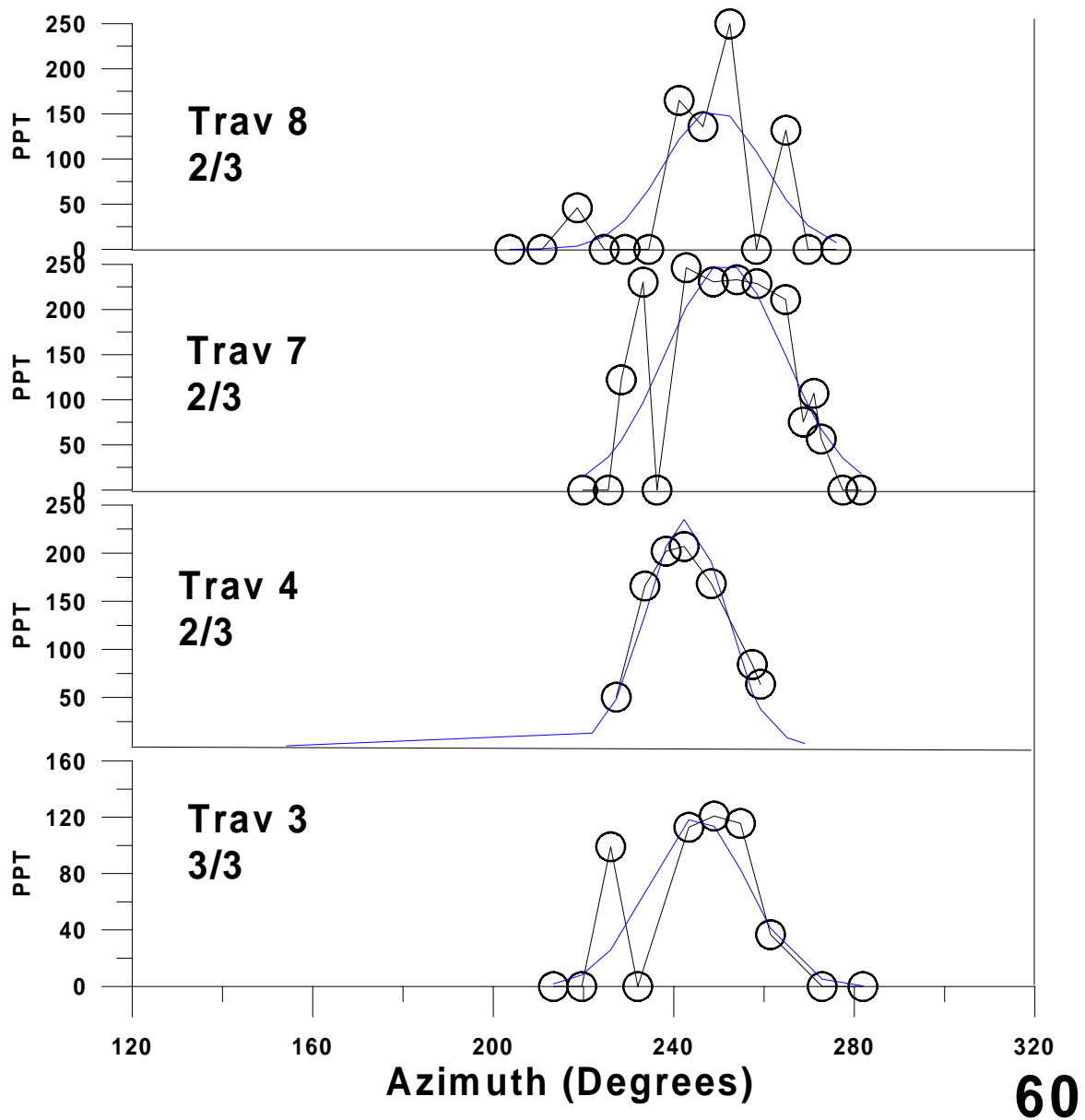
# Exp 62

# Kincaid



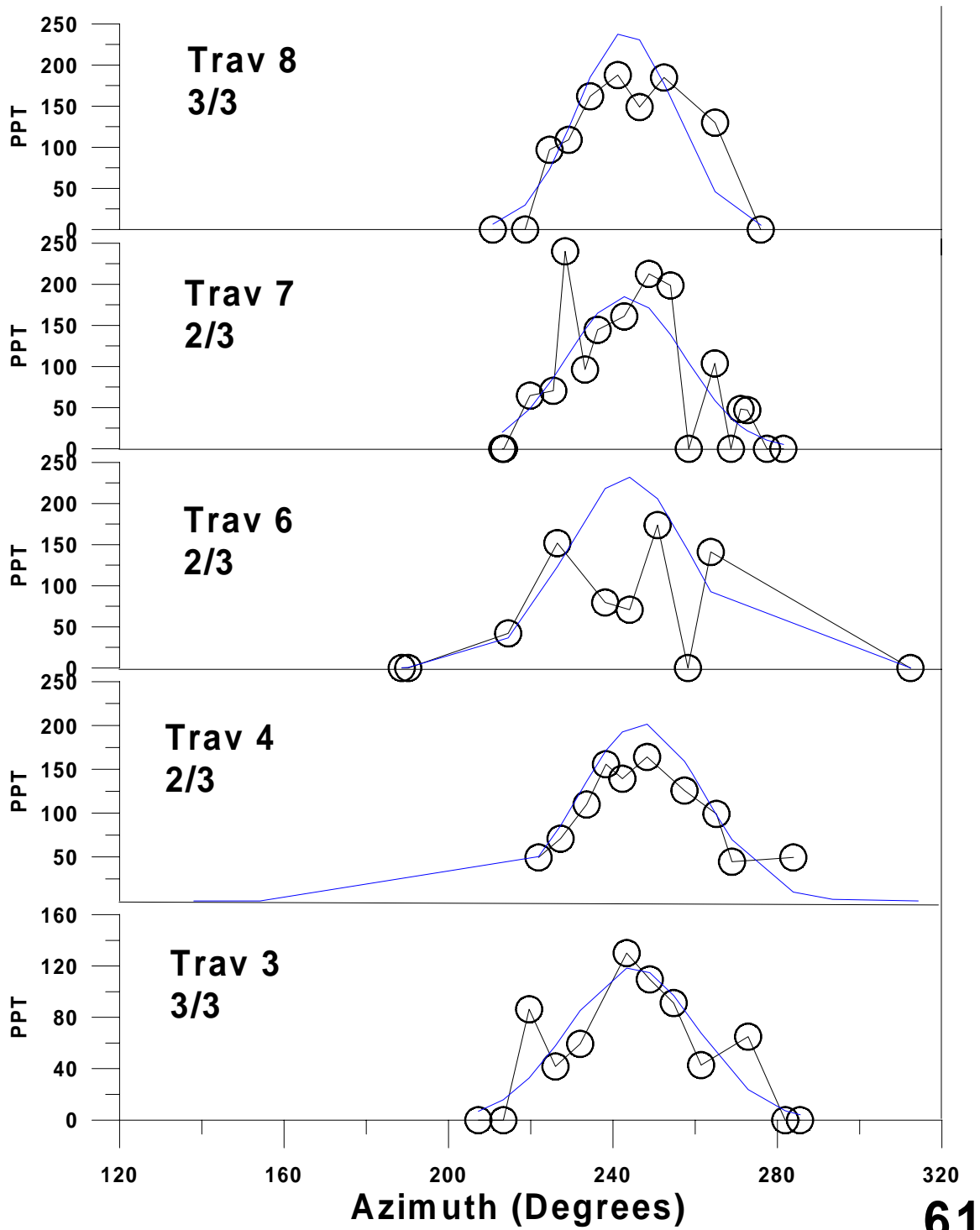
# Exp 63

# Kincaid



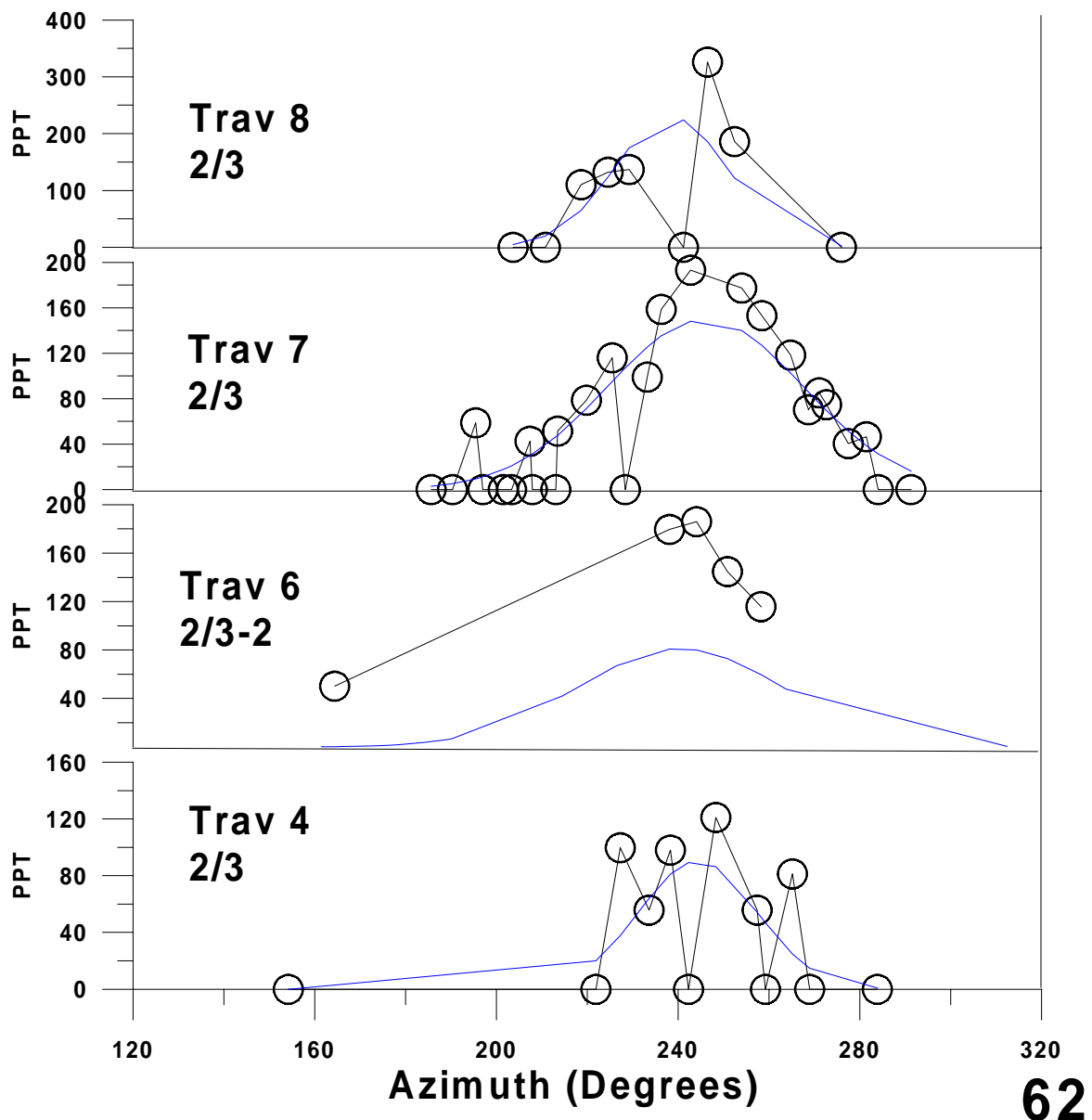
# Exp 64

# Kincaid



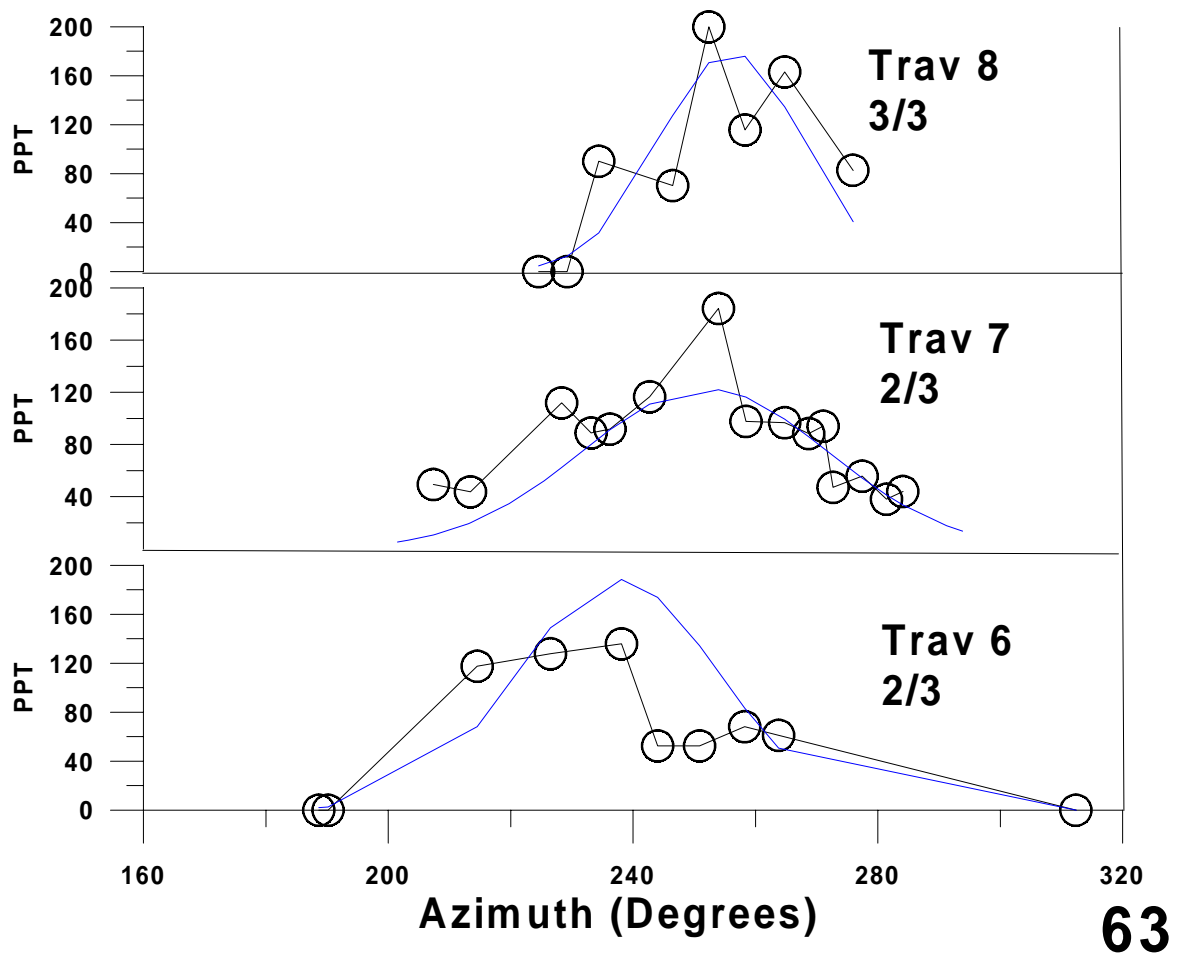
# Exp 65

# Kincaid



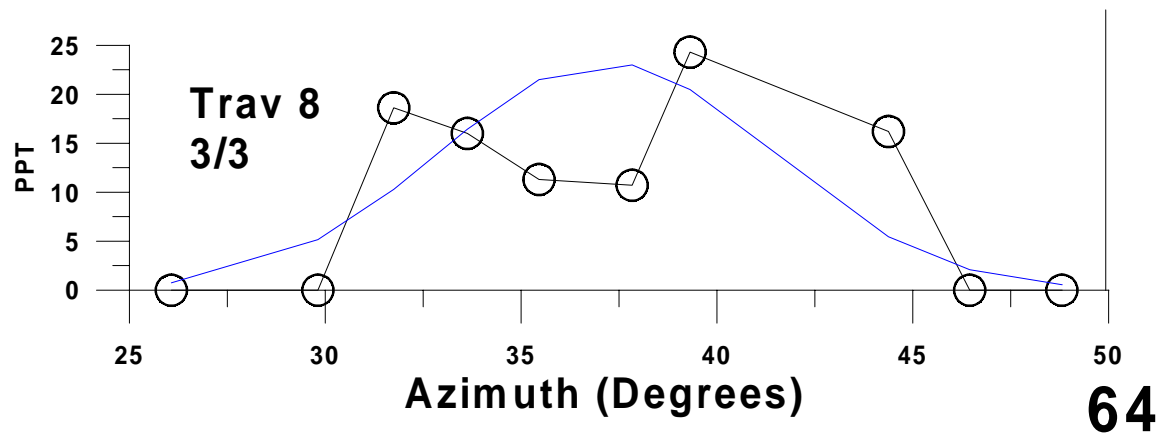
# Exp 66

# Kincaid



**Exp 74**

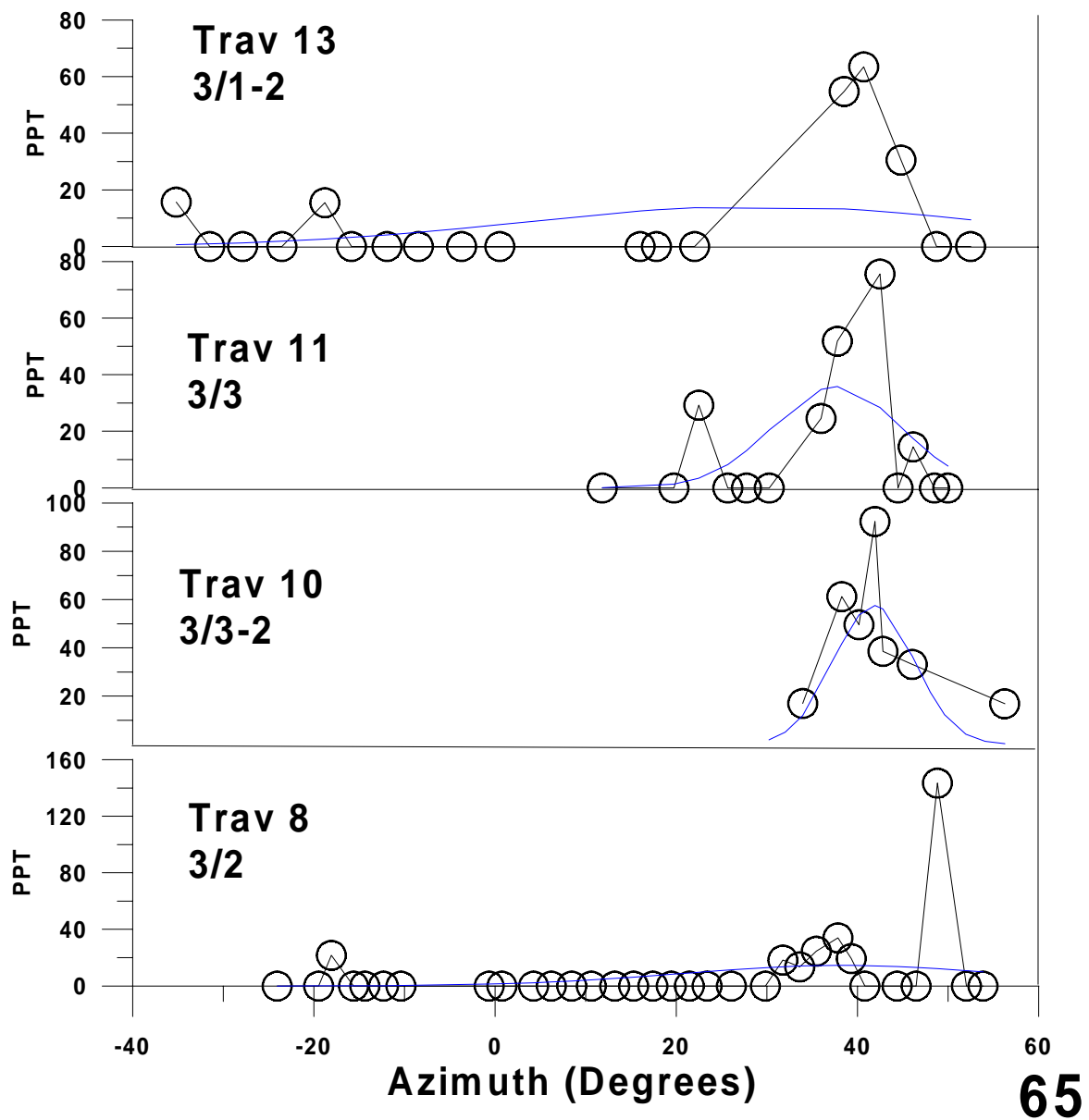
**Kincaid**





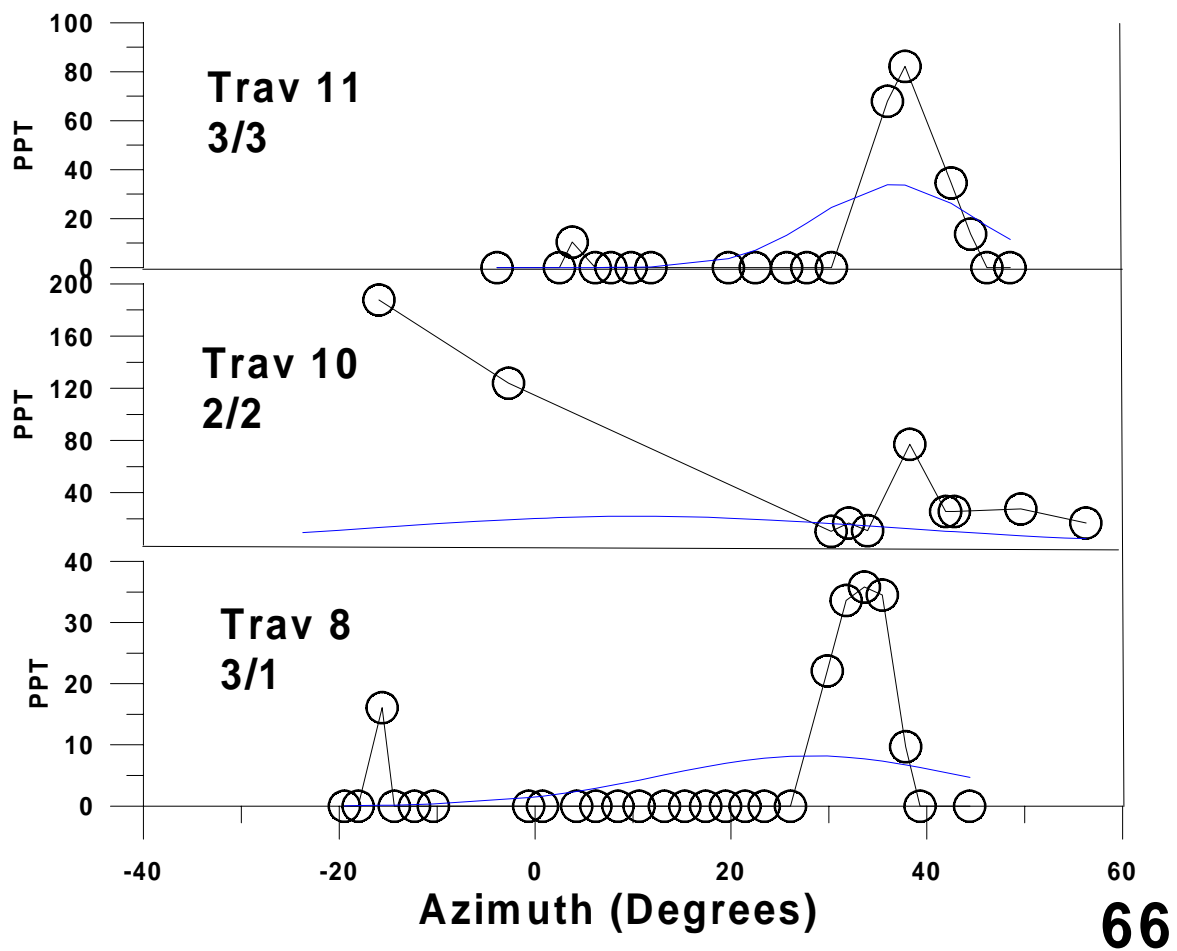
# Exp 75

# Kincaid



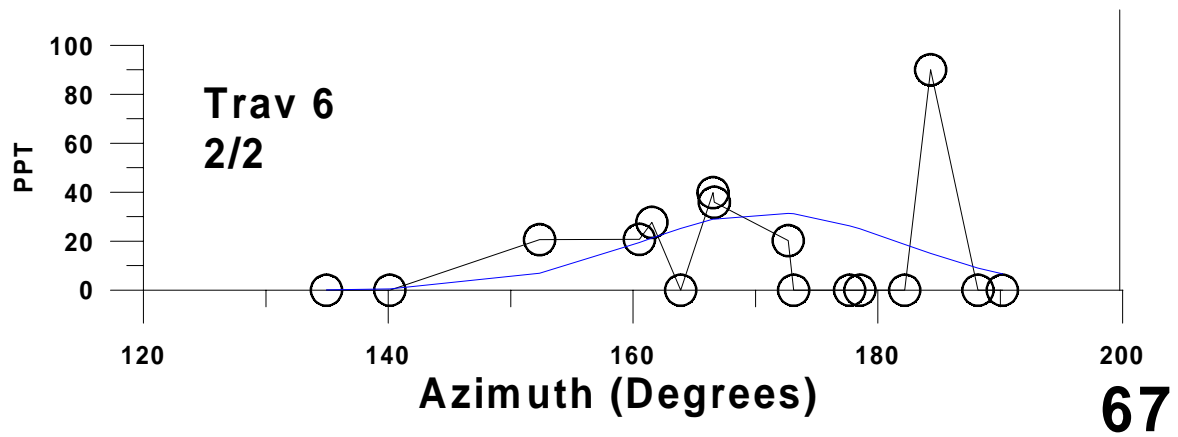
# Exp 76

# Kincaid



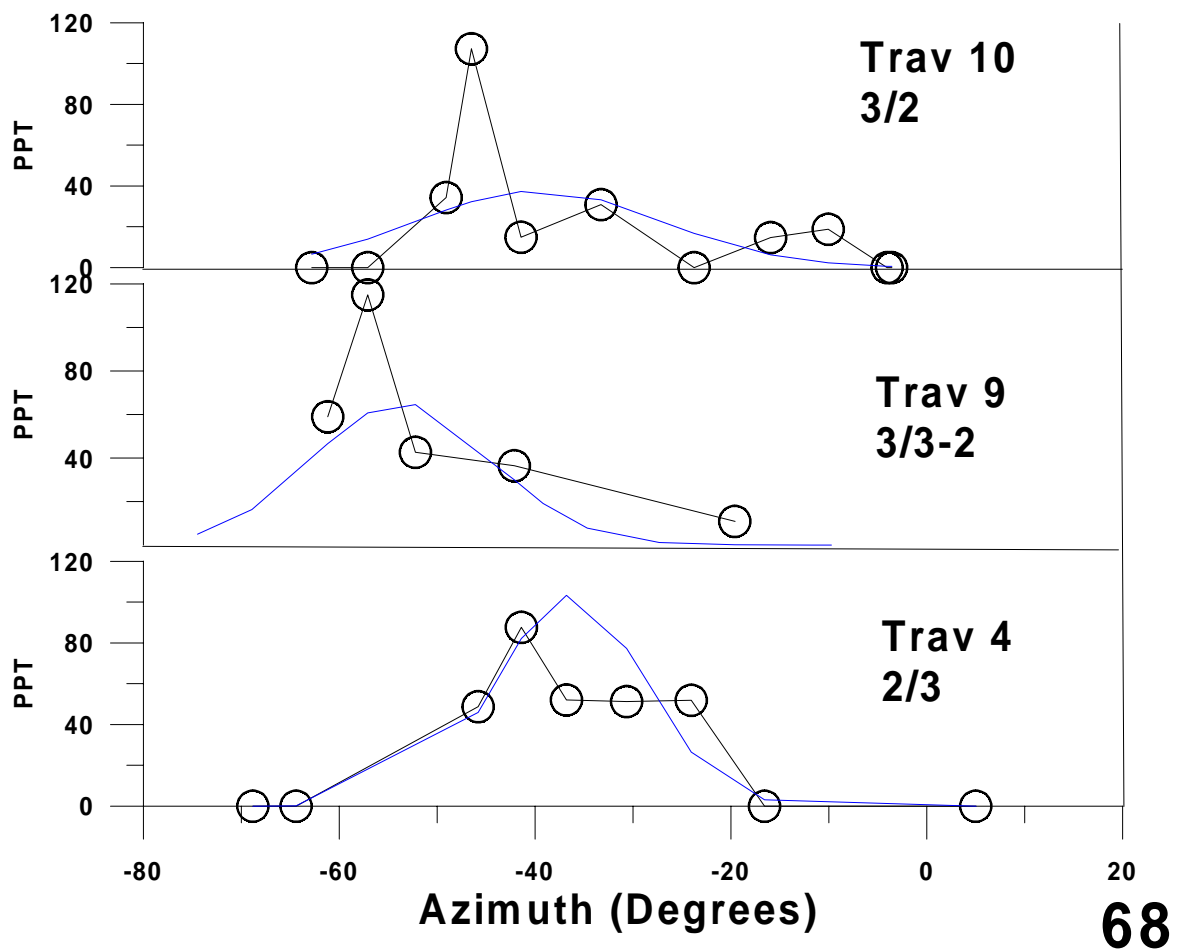
**Exp 81**

**Kincaid**



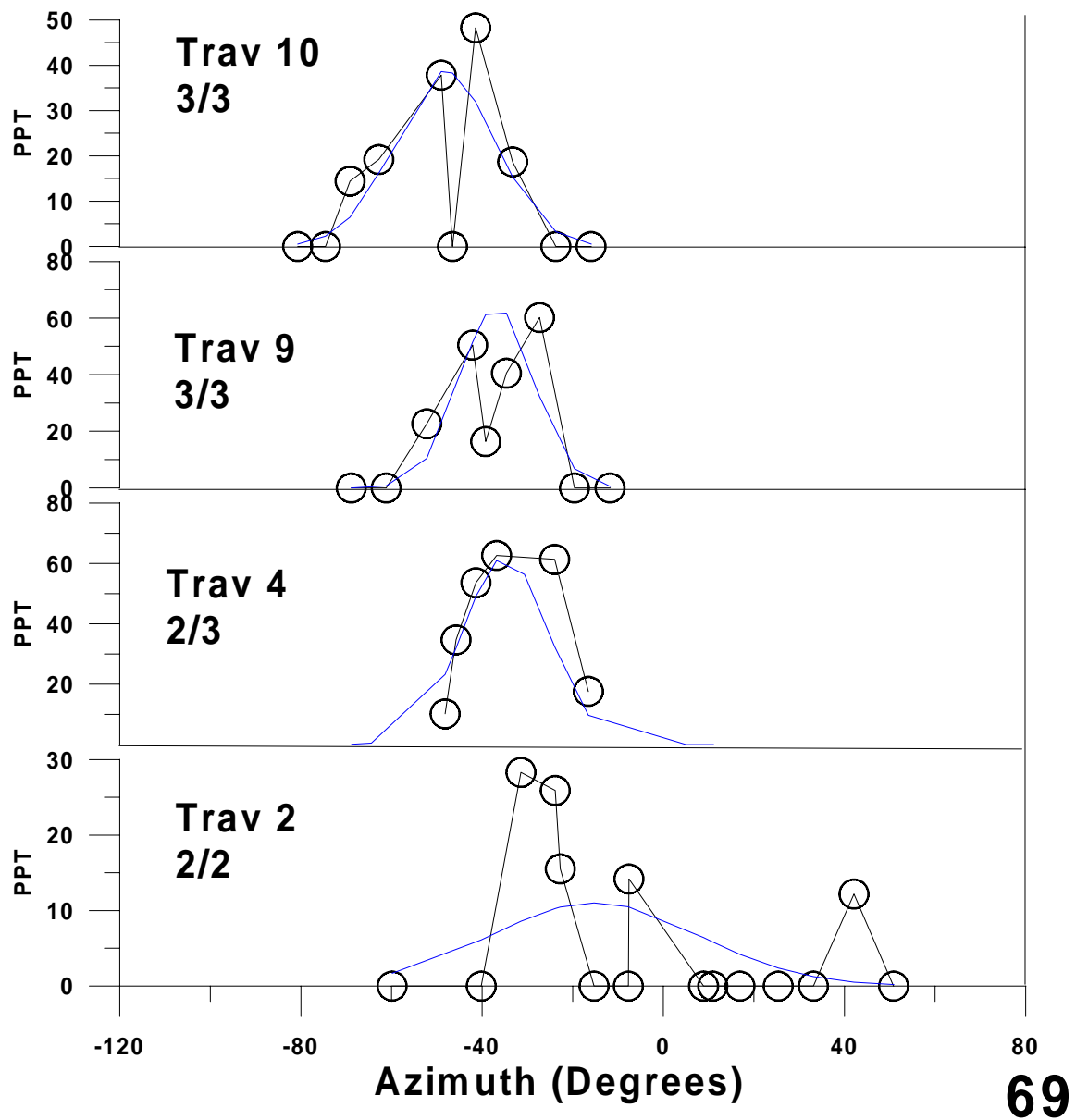
# Exp 88

# Kincaid



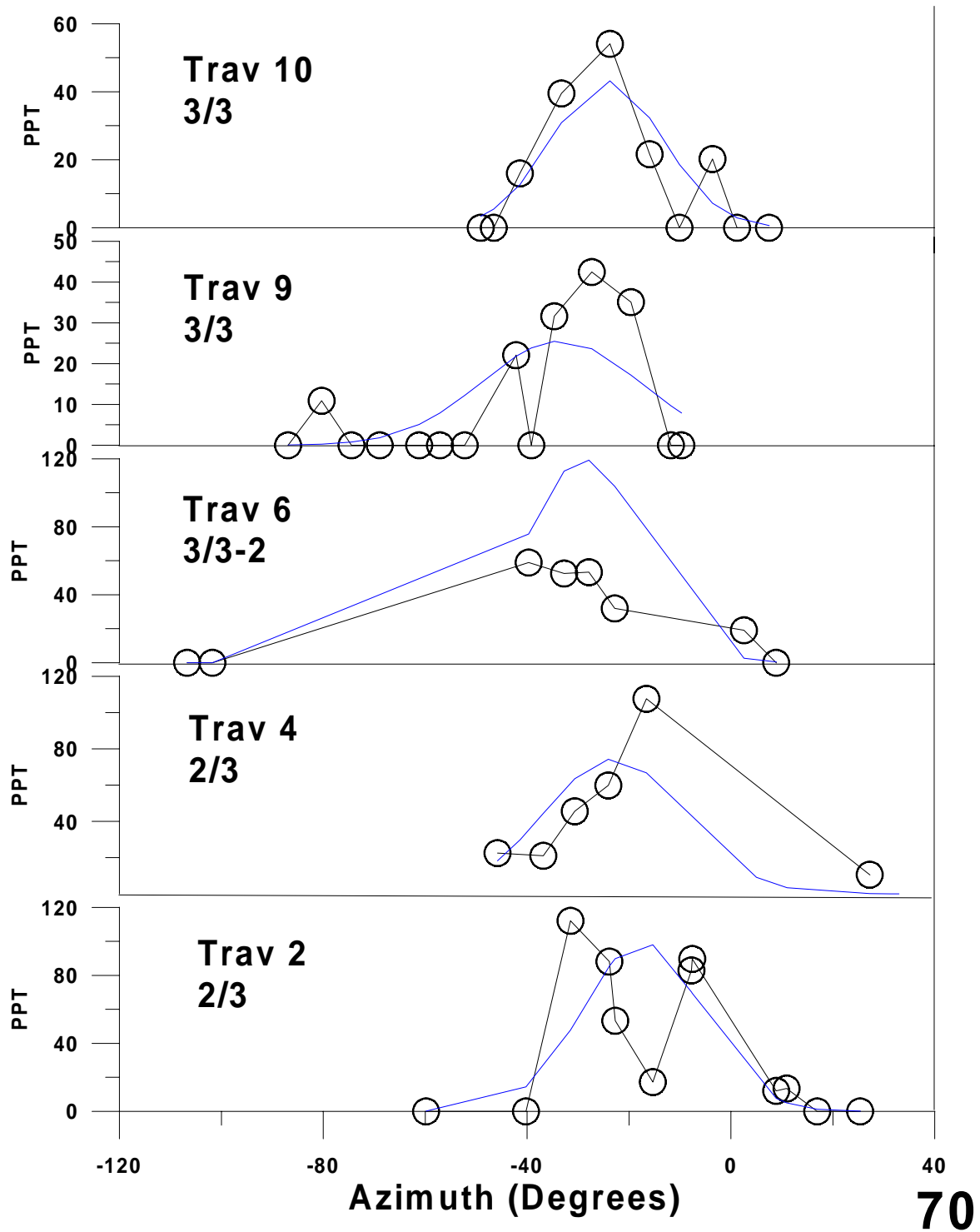
# Exp 89

# Kincaid



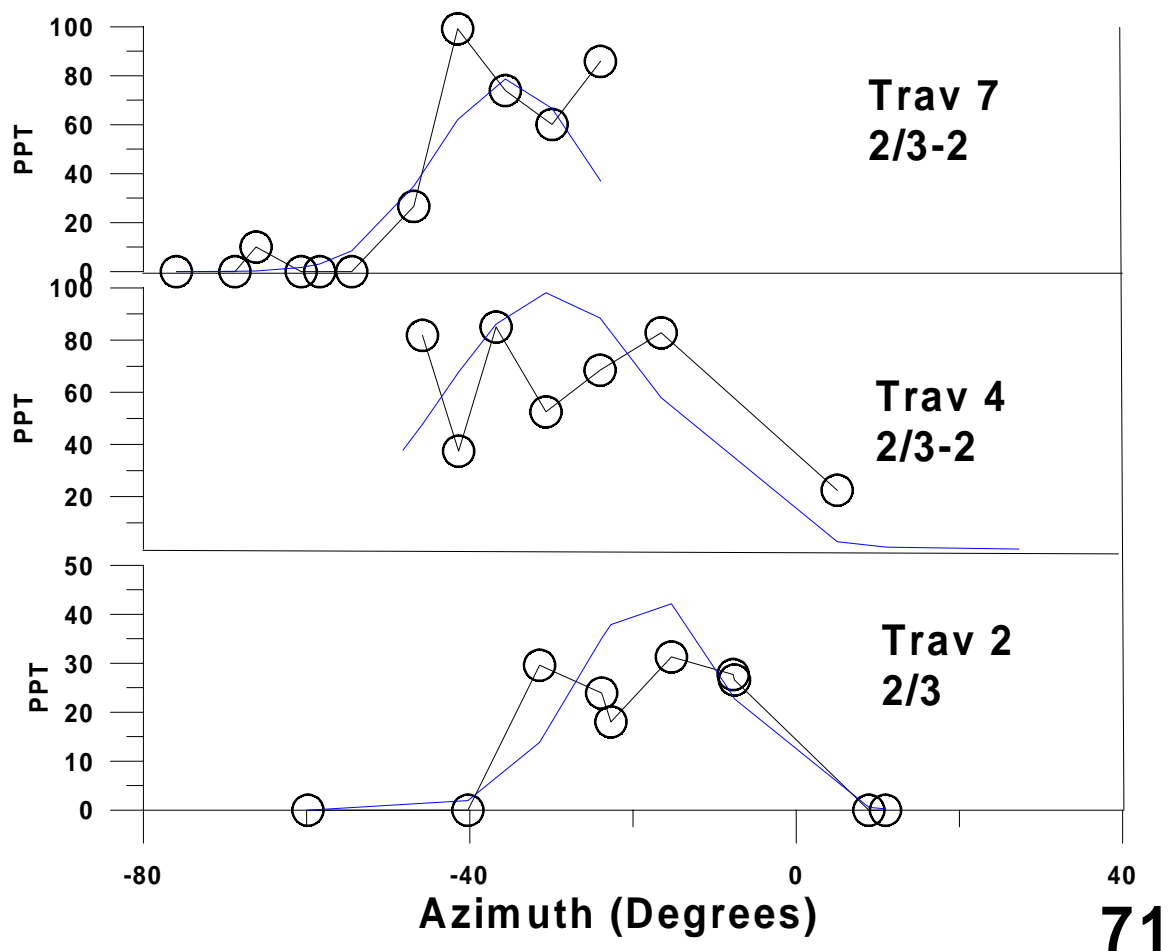
# Exp 90

# Kincaid



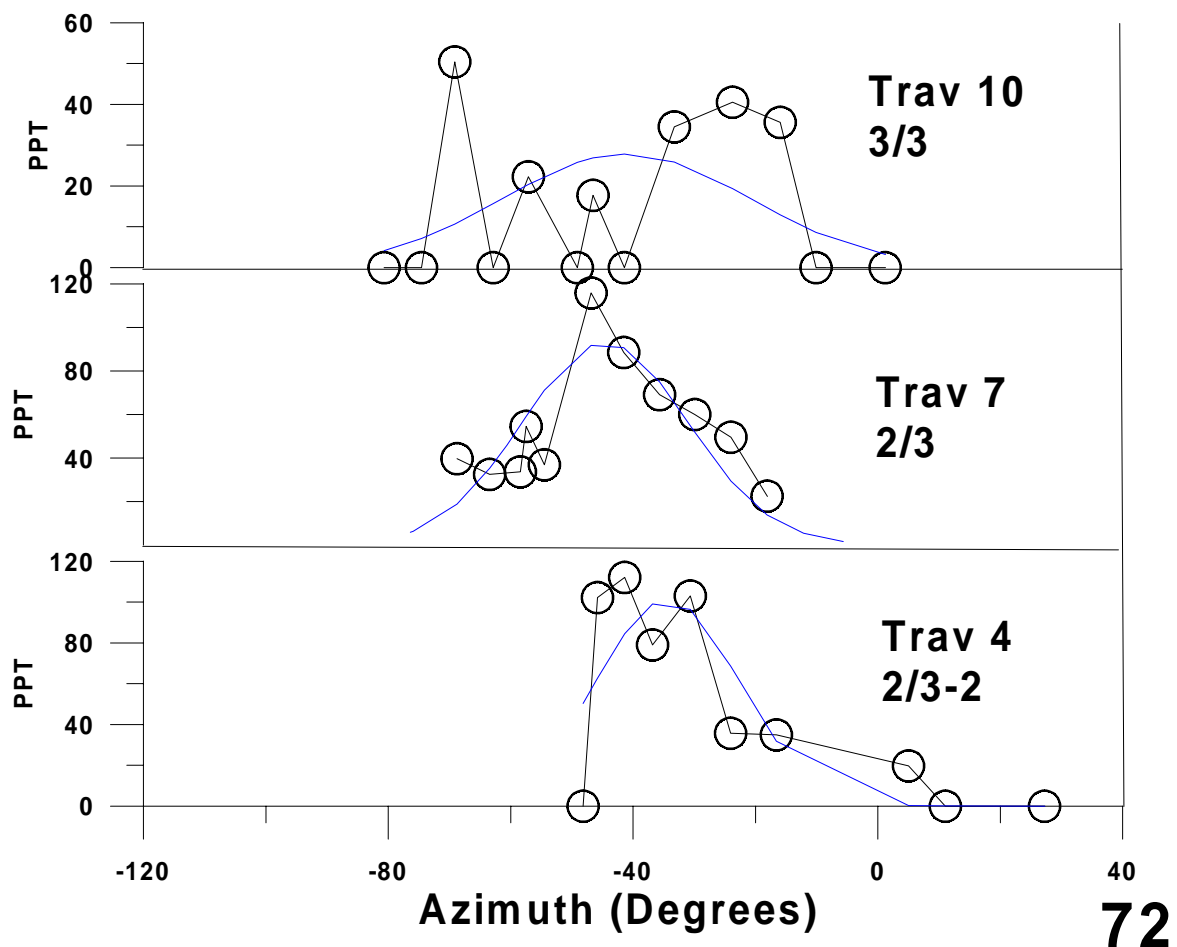
# Exp 91

# Kincaid



# Exp 92

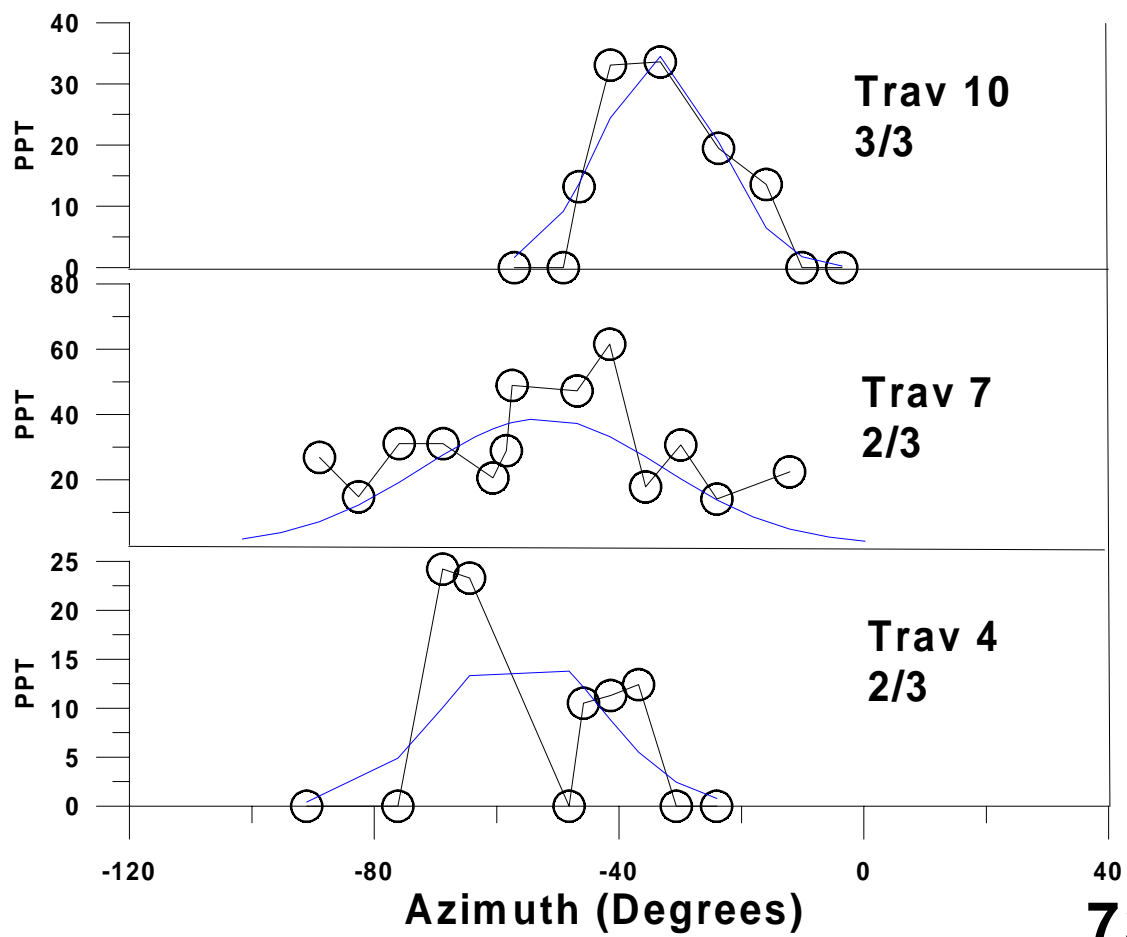
# Kincaid





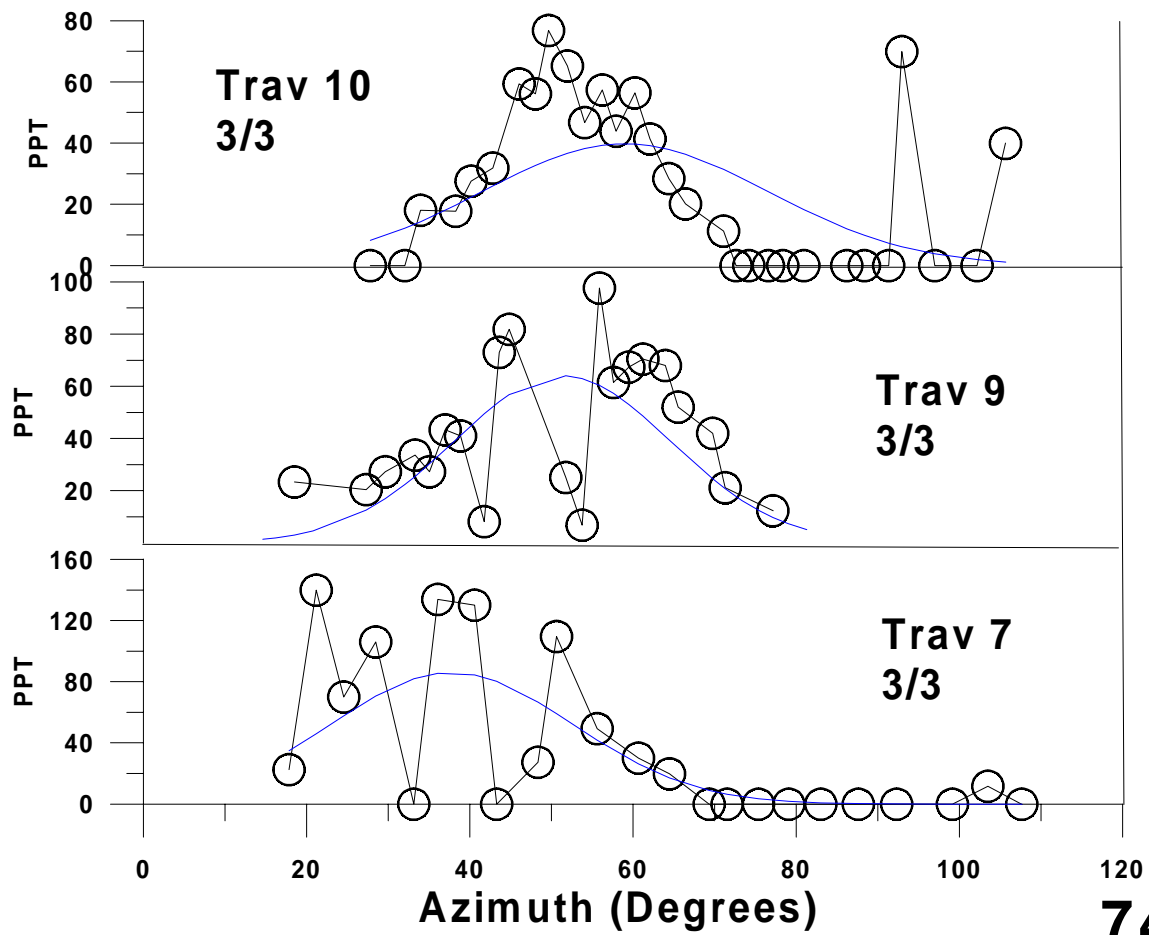
# Exp 93

# Kincaid



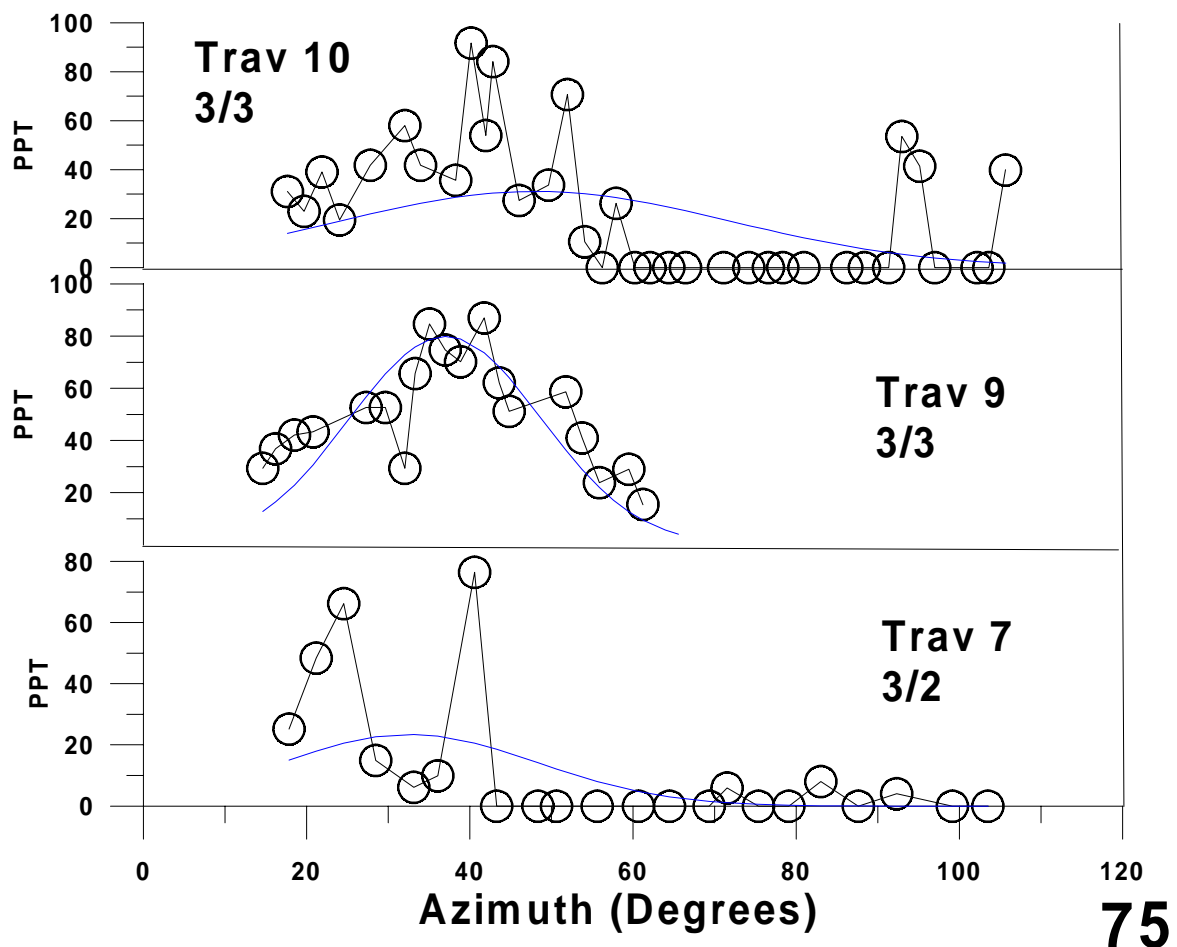
# Exp 94

# Kincaid



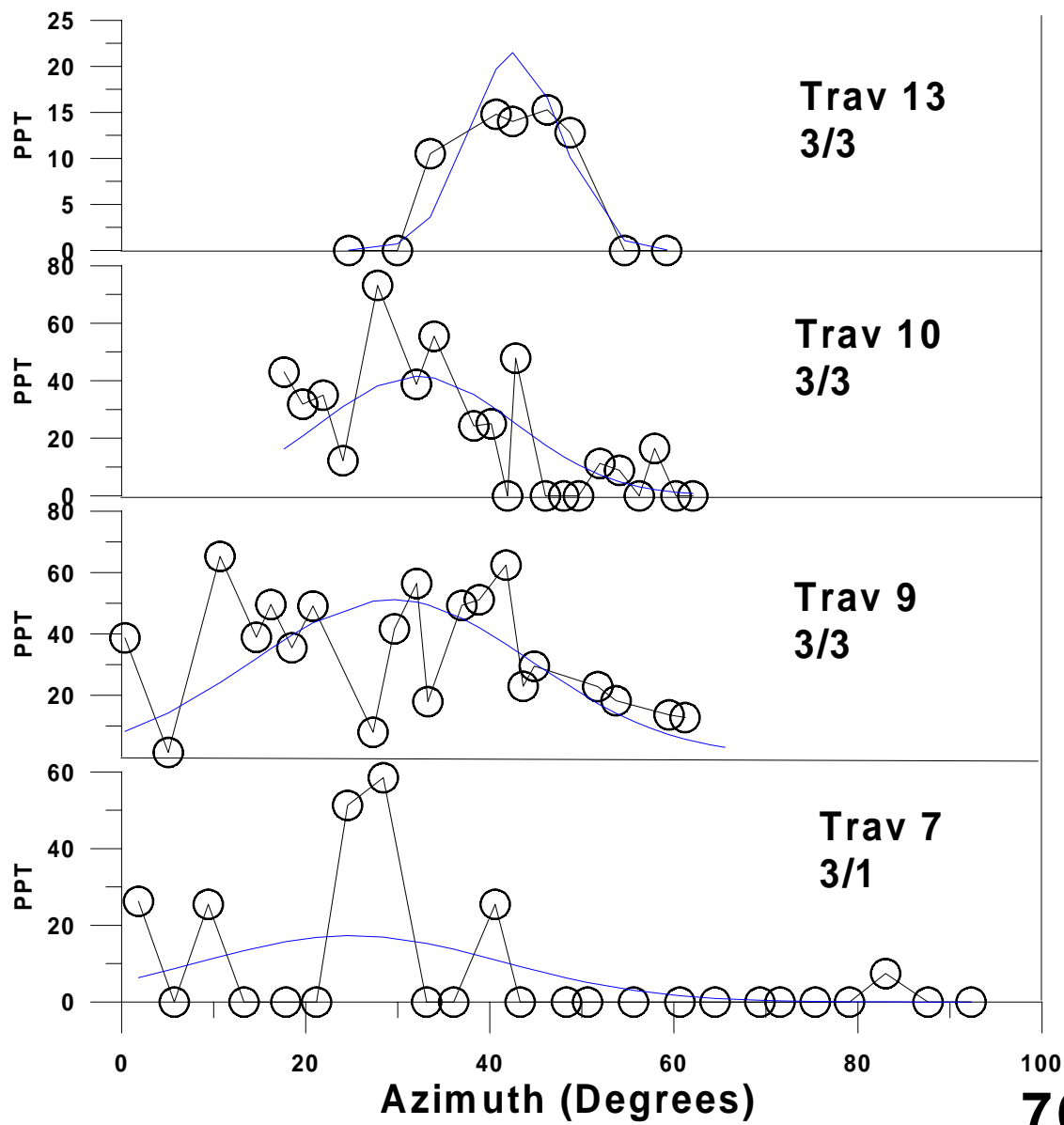
# Exp 95

# Kincaid



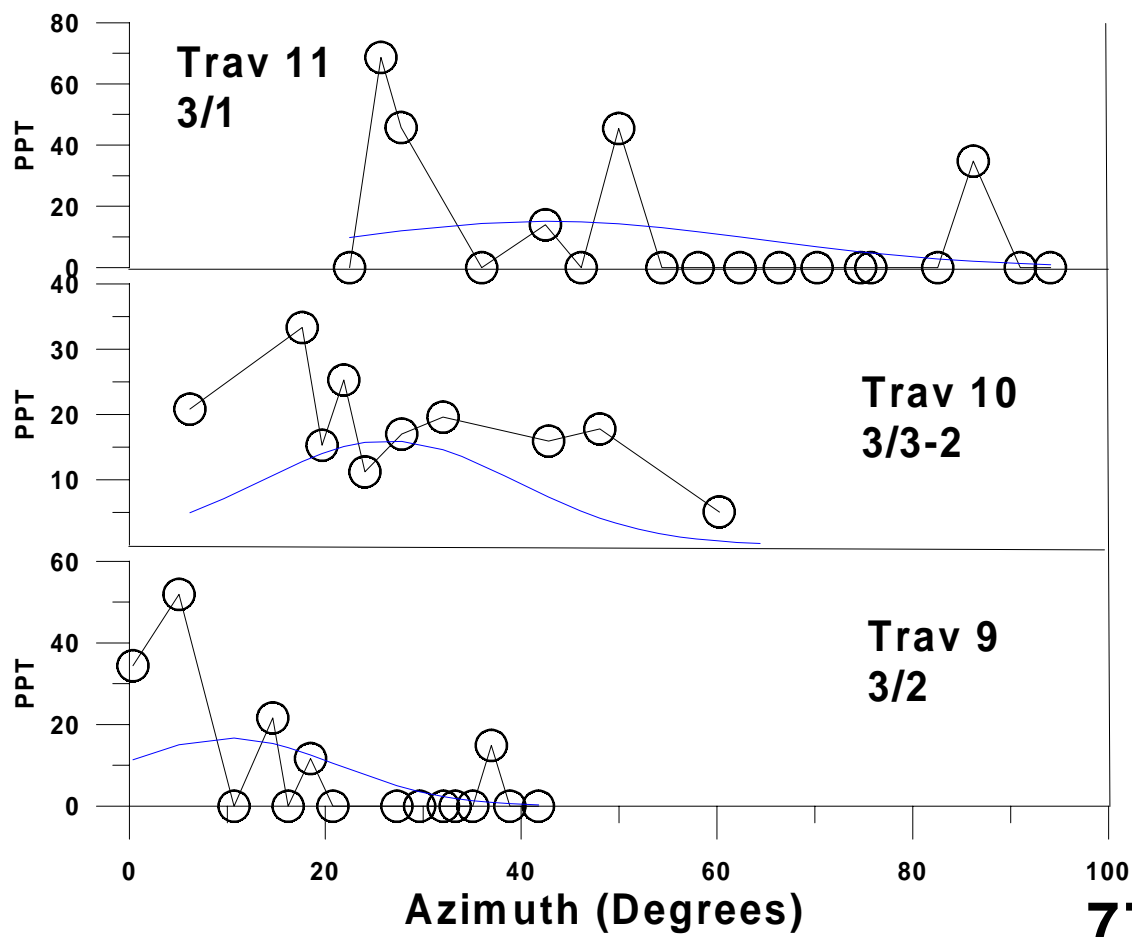
# Exp 96

# Kincaid



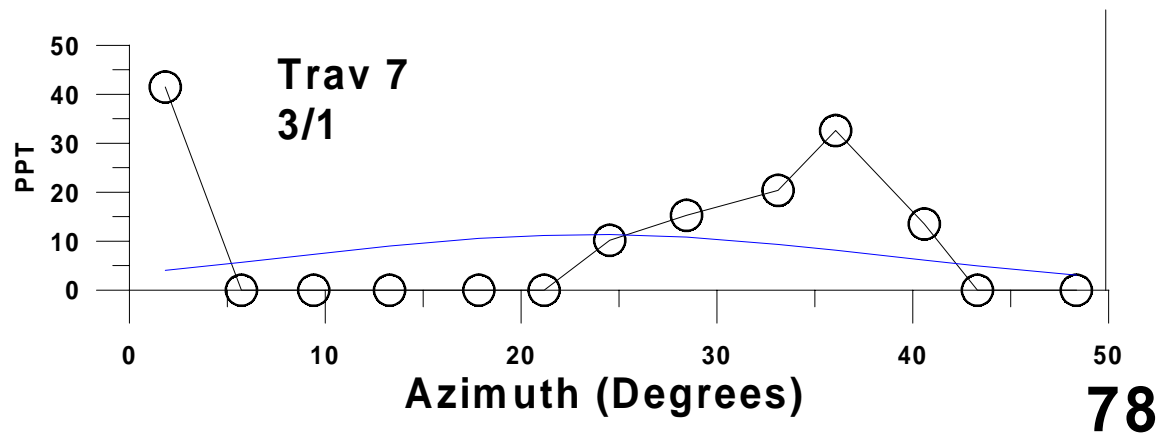
# Exp 97

# Kincaid



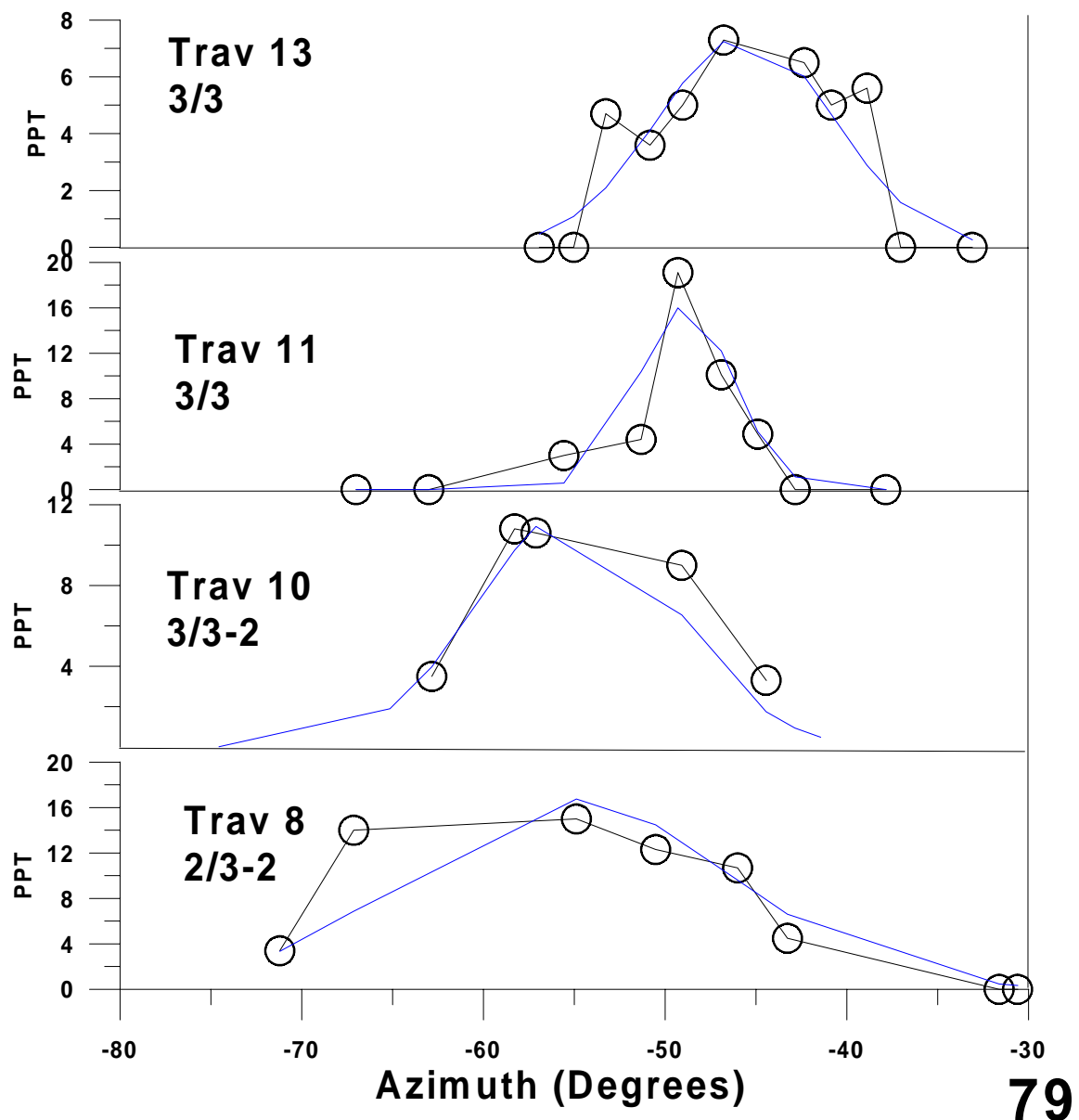
# Exp 99

# Kincaid

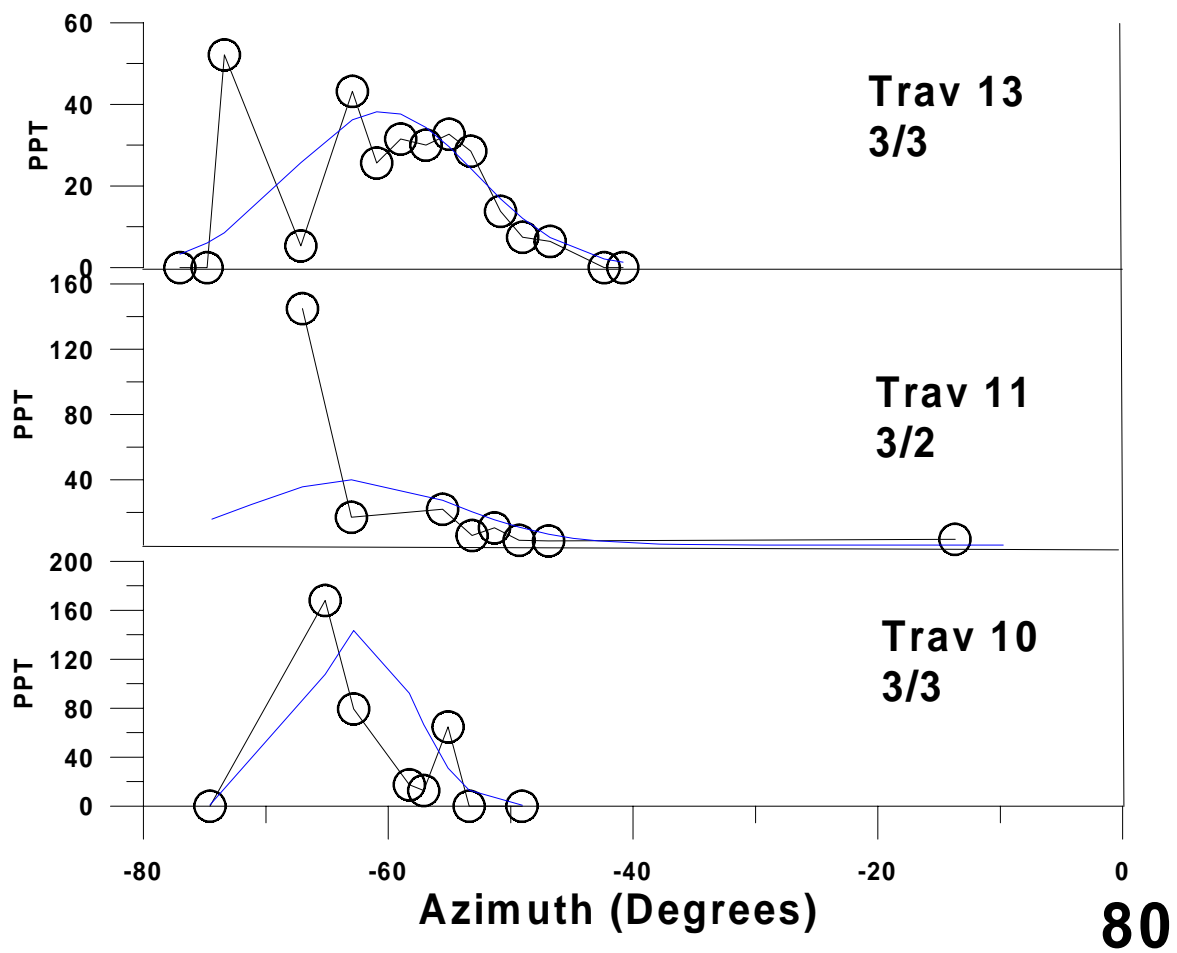


# Exp 102

# Kincaid



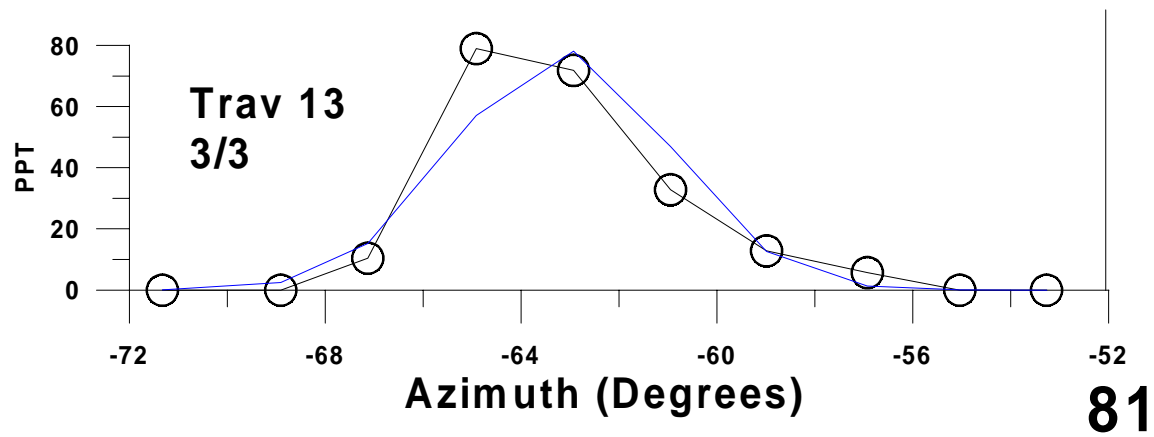
# Exp 103 Kincaid





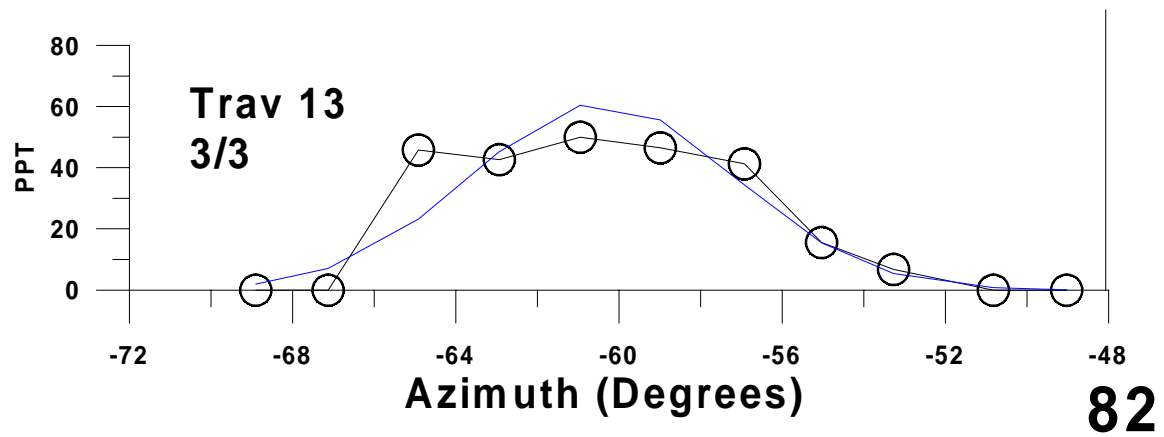
**Exp 104**

**Kincaid**



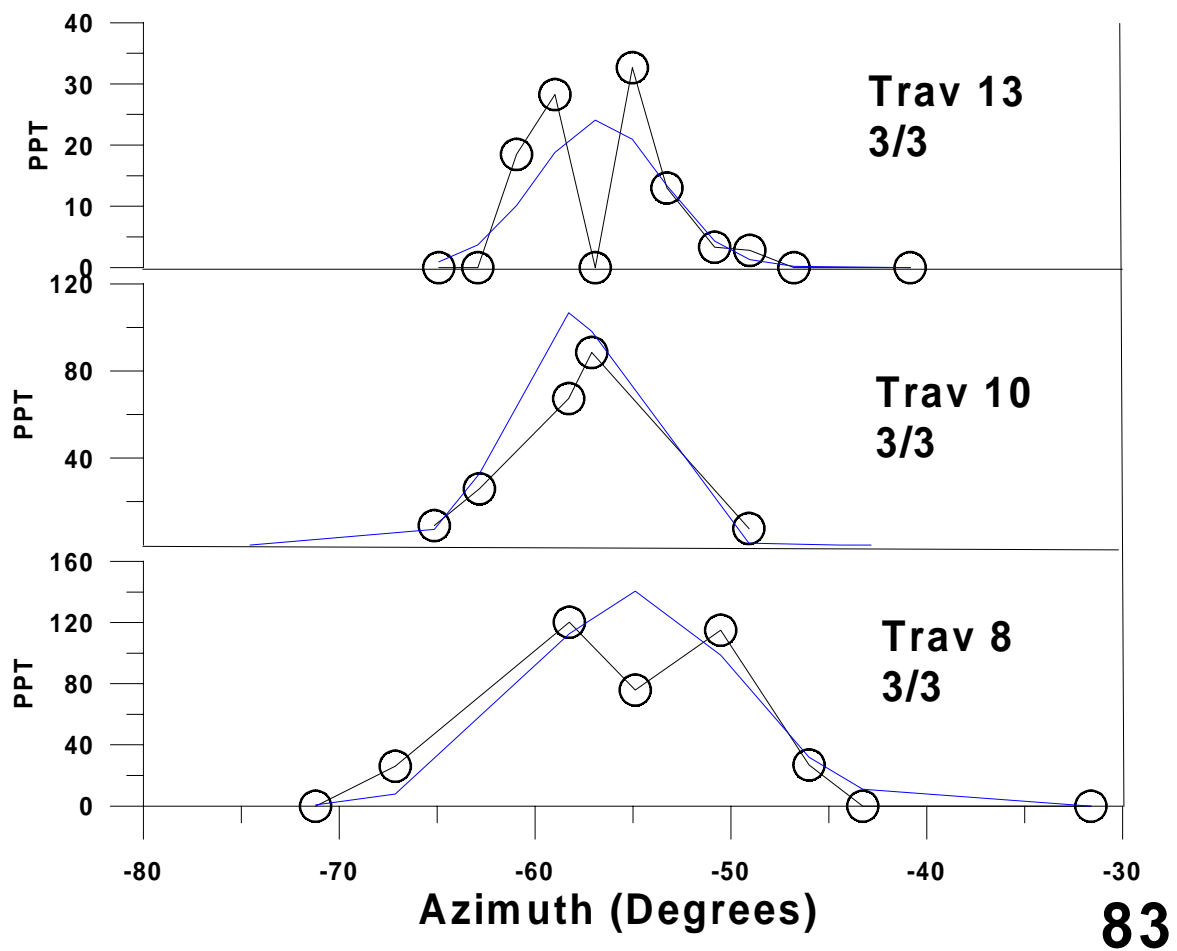
**Exp 105**

**Kincaid**



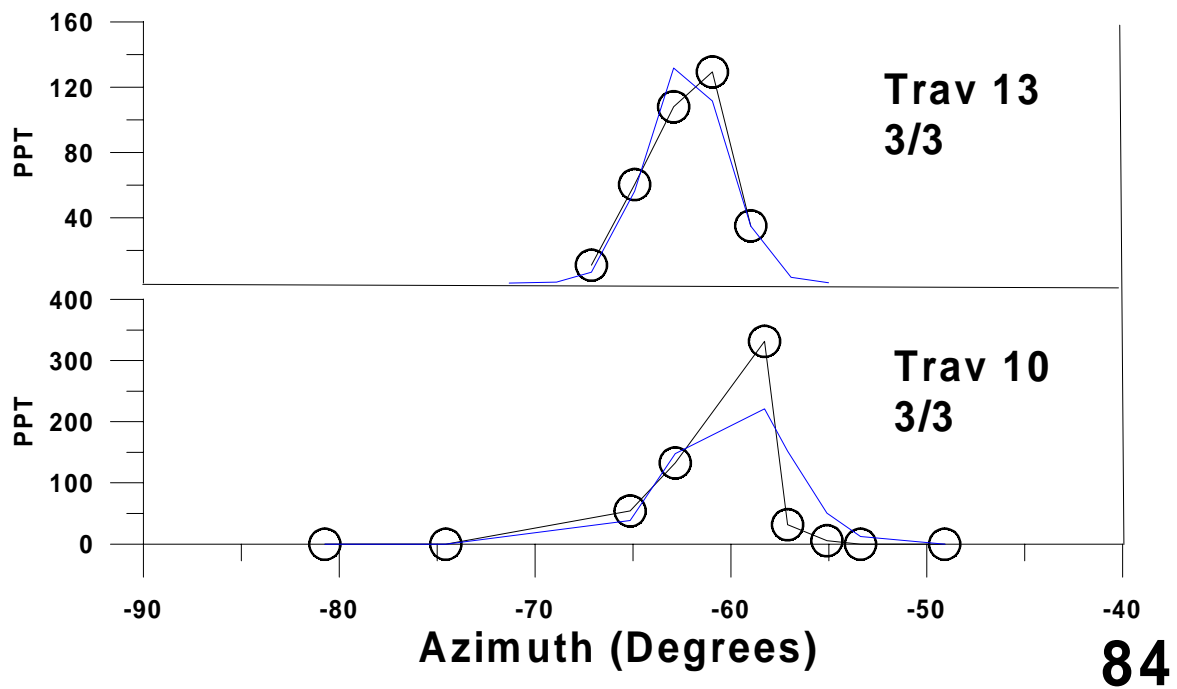
# Exp 106

# Kincaid



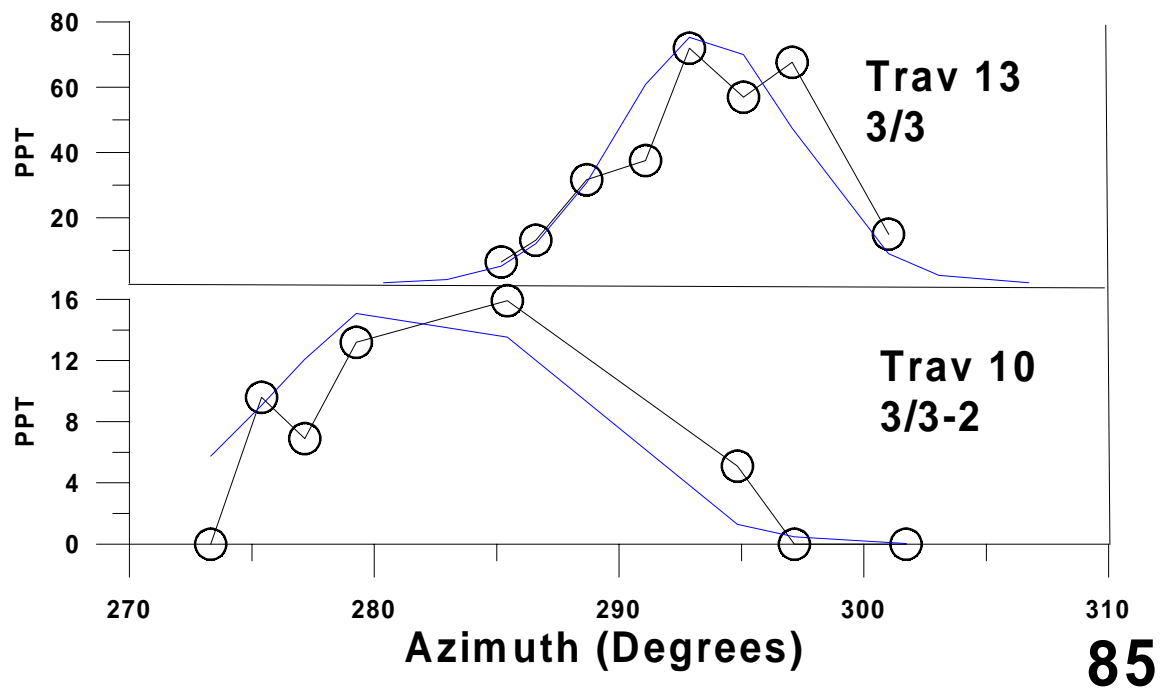
# Exp 108

# Kincaid



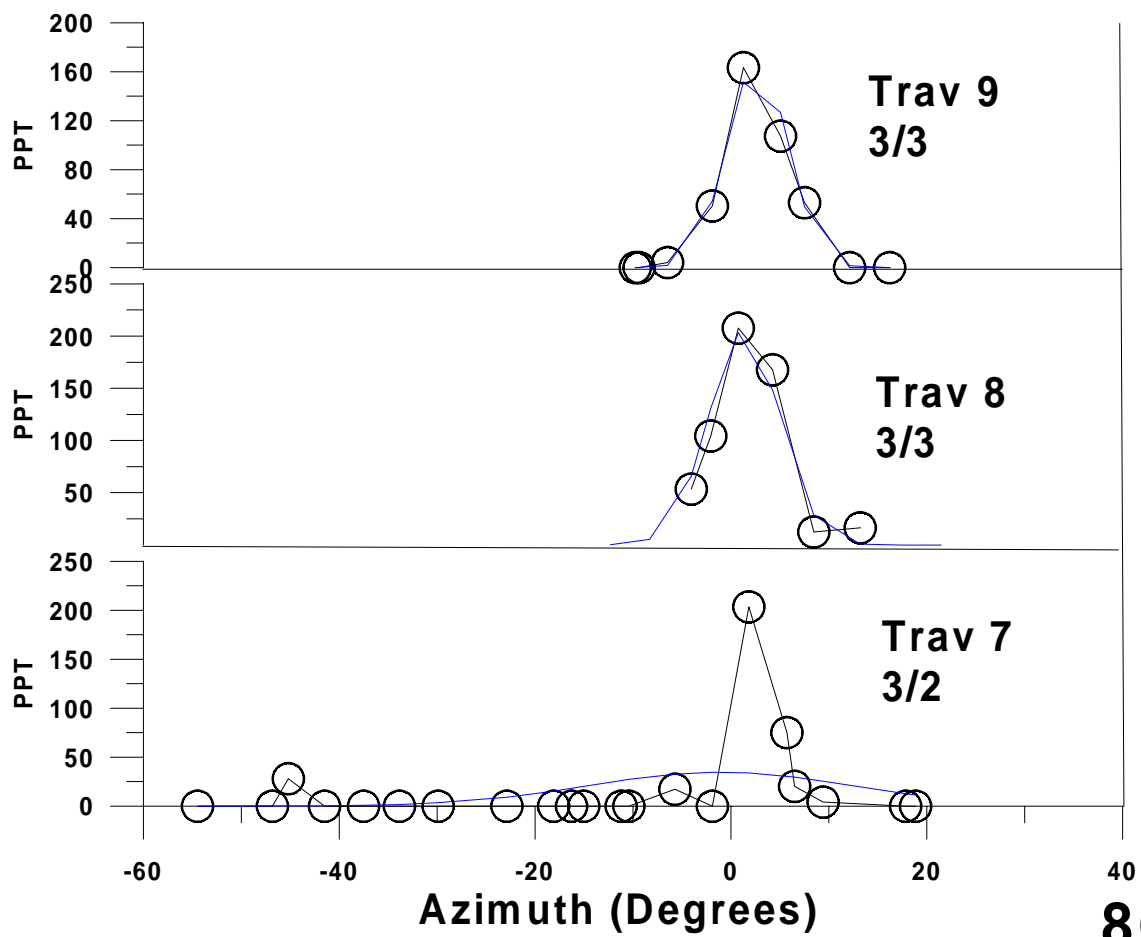
# Exp 109

# Kincaid



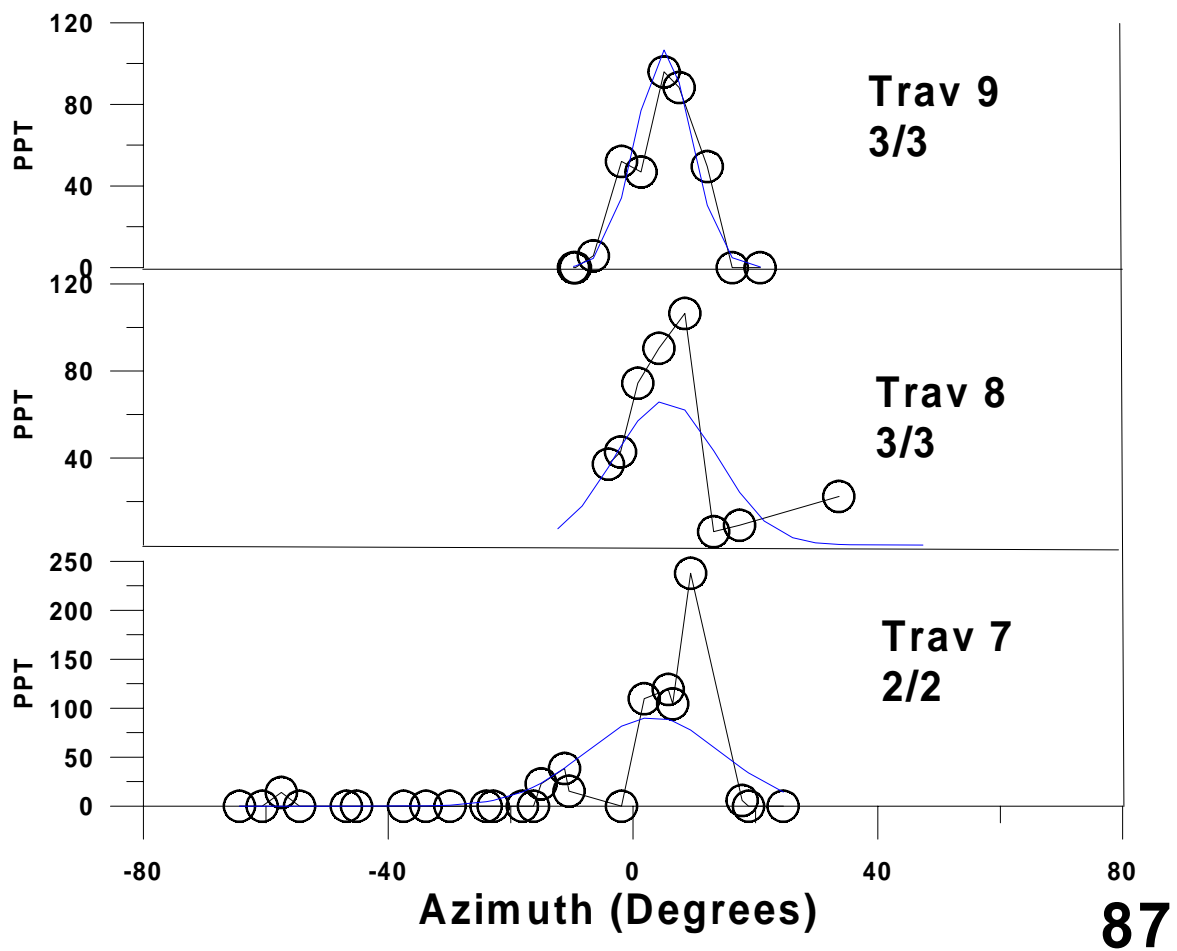
# Exp 110

# Kincaid



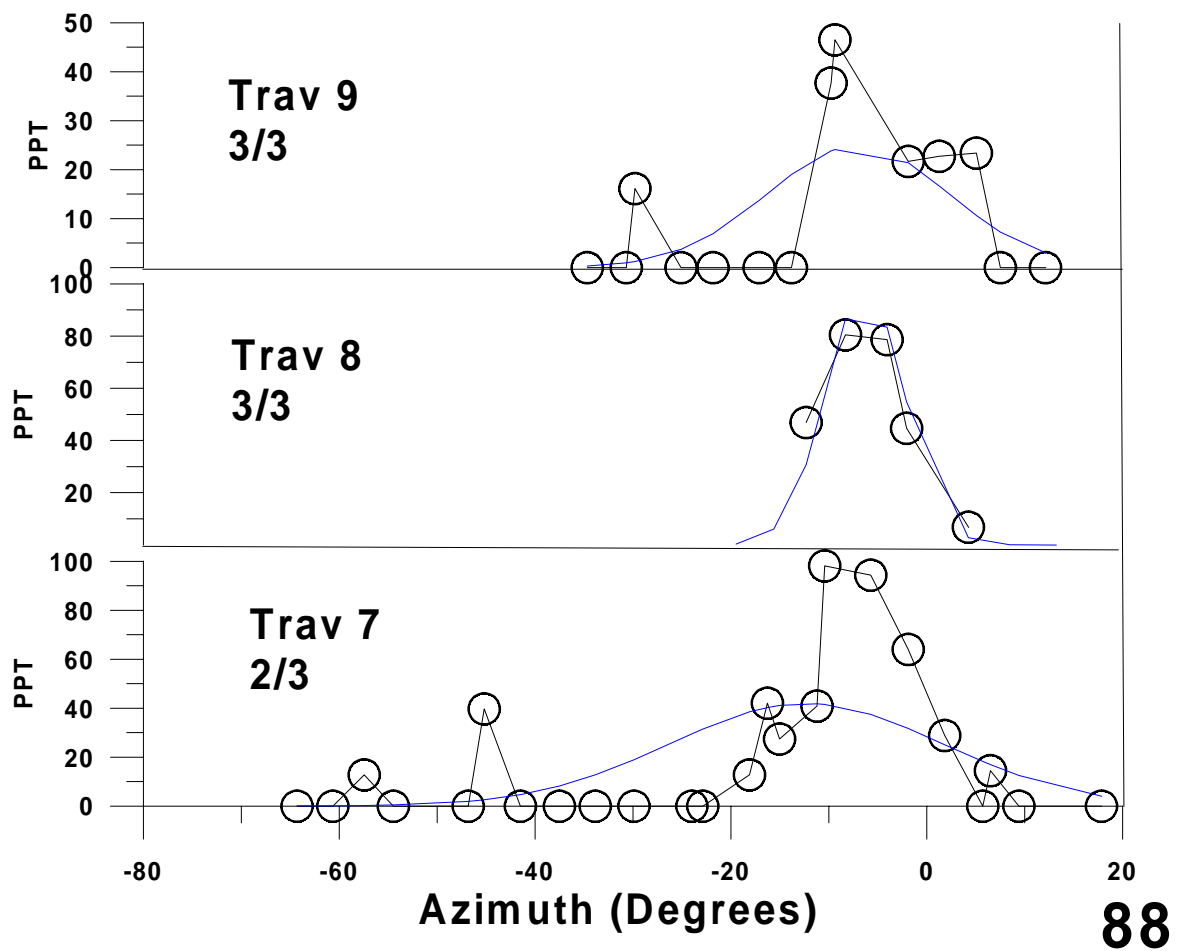
# Exp 111

# Kincaid



# Exp 112

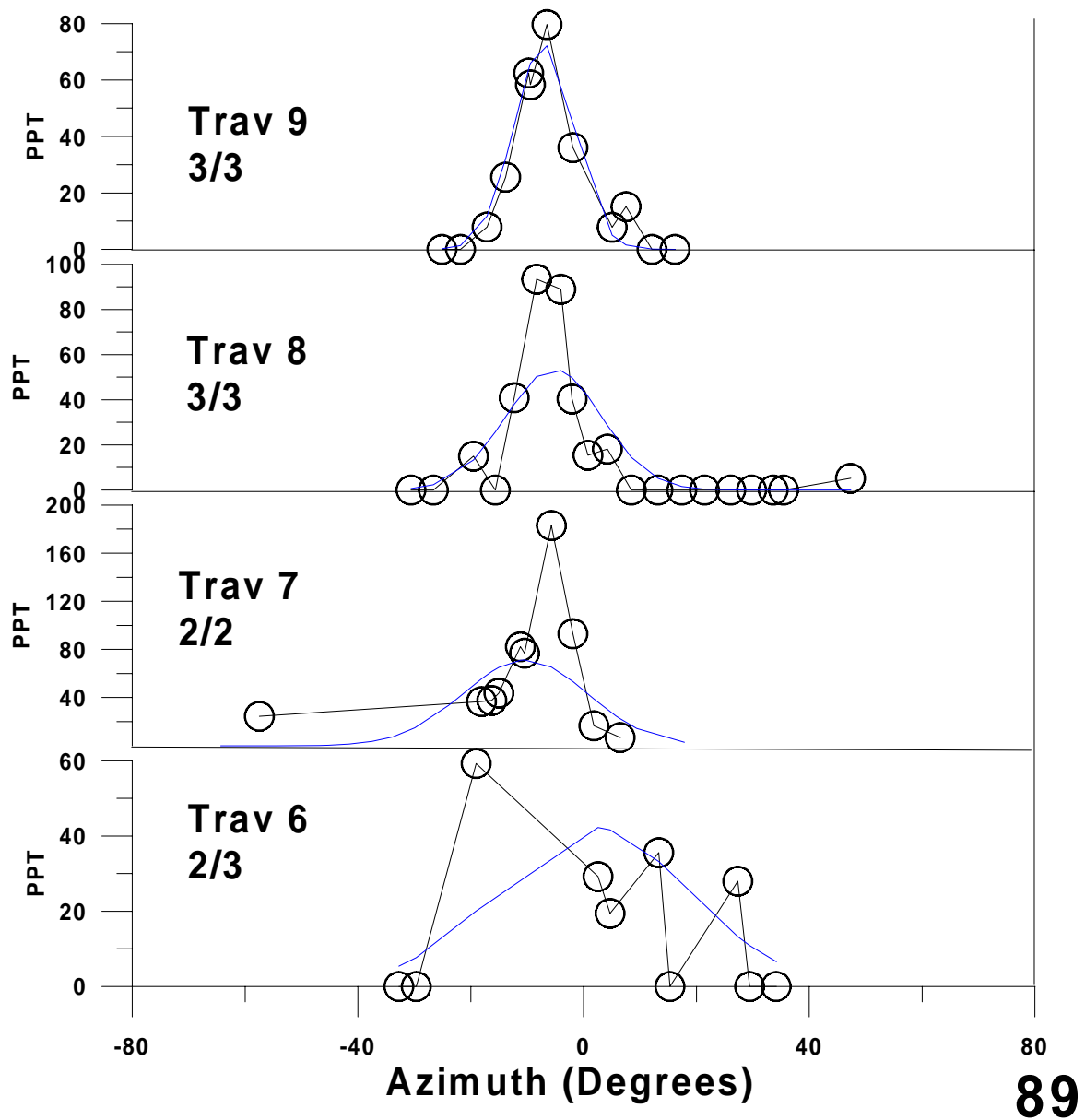
# Kincaid



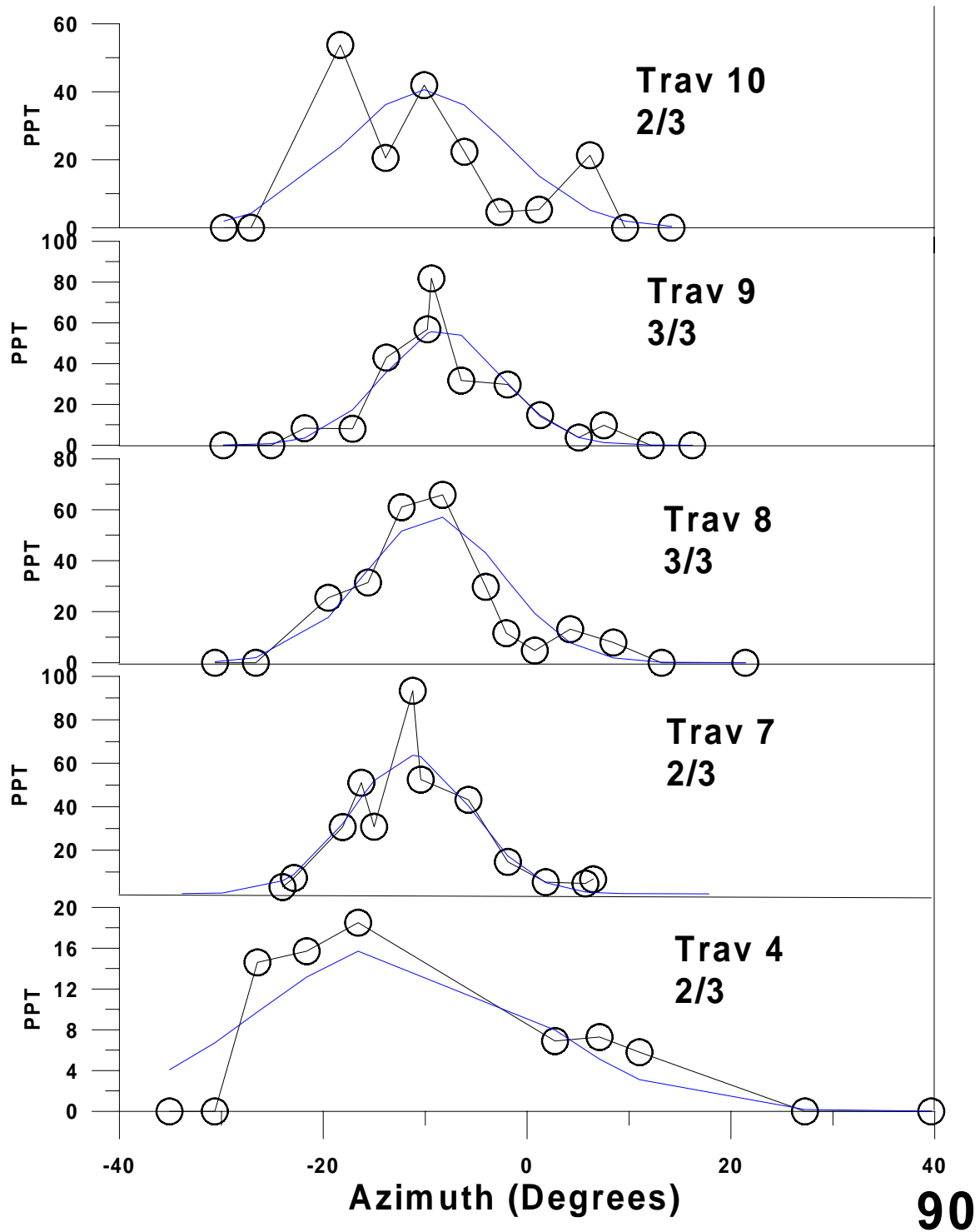


# Exp 113

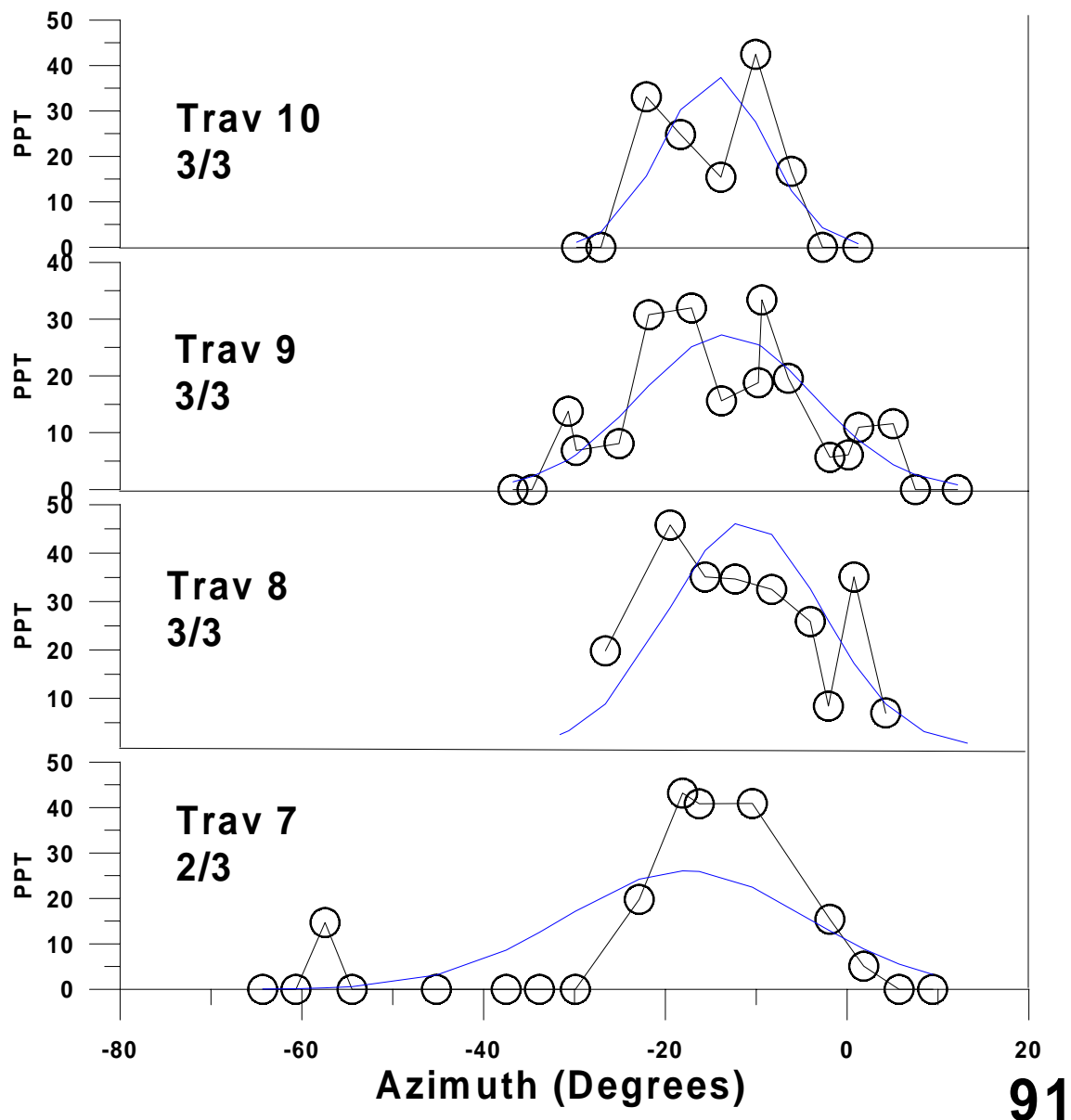
# Kincaid



# Exp 114 Kincaid

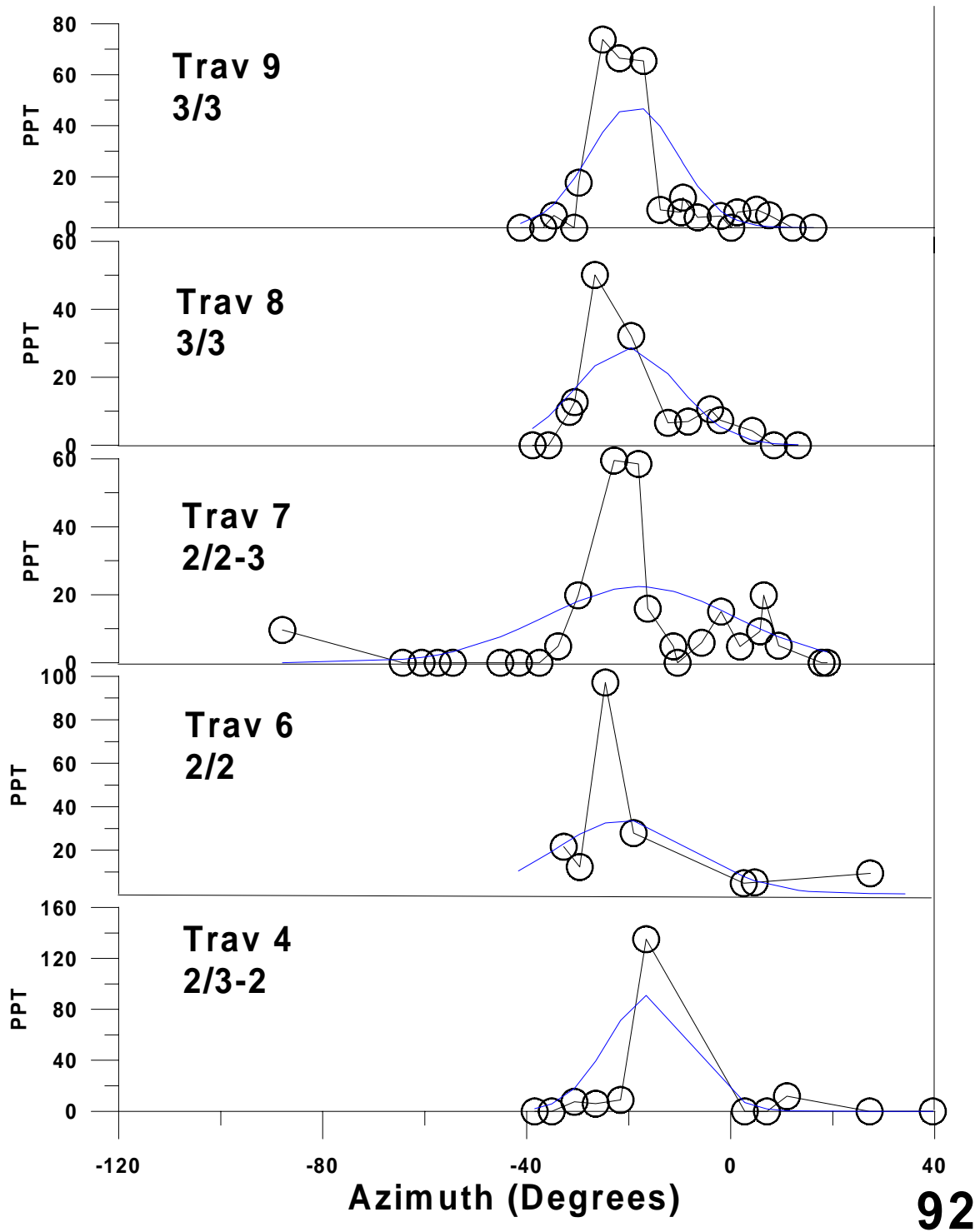


# Exp 115 Kincaid

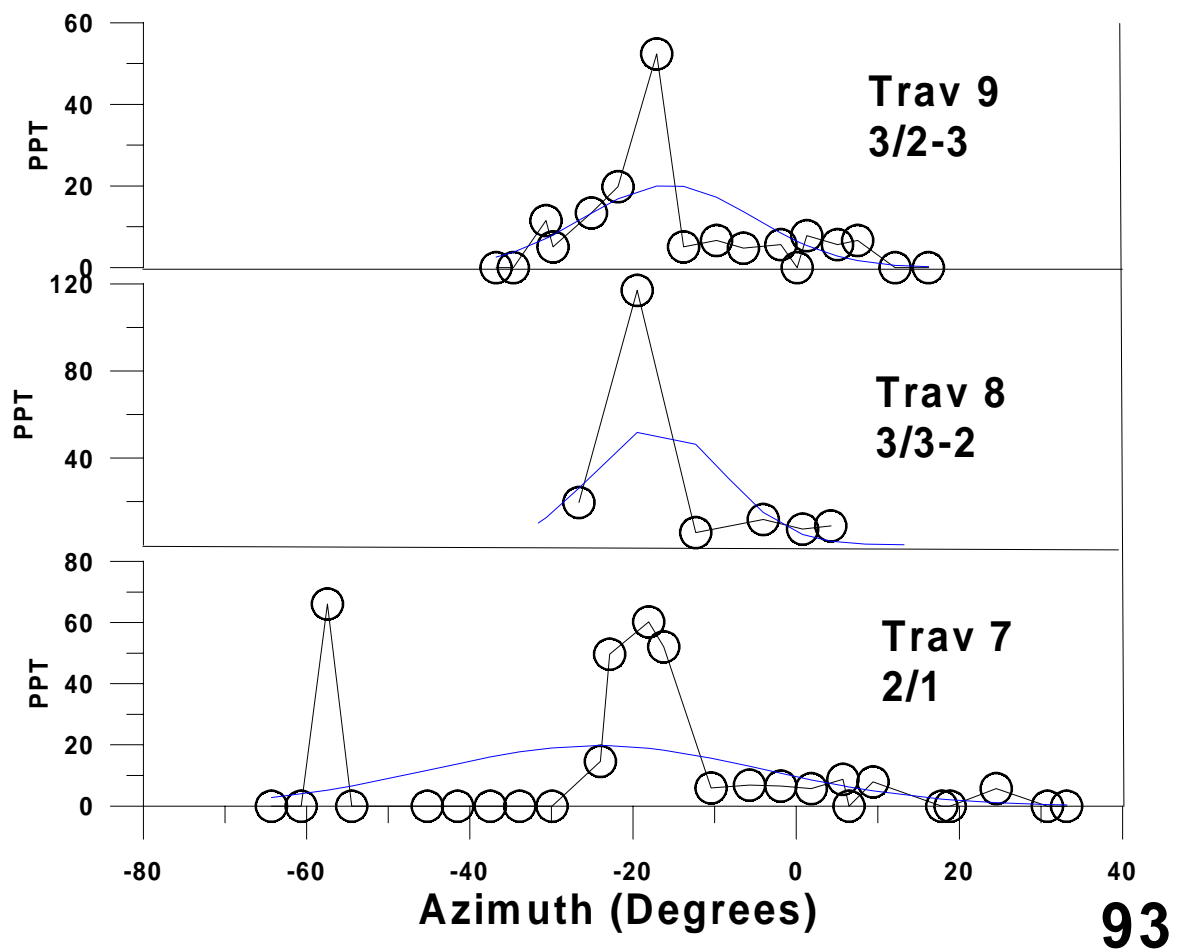


# Exp 116

# Kincaid

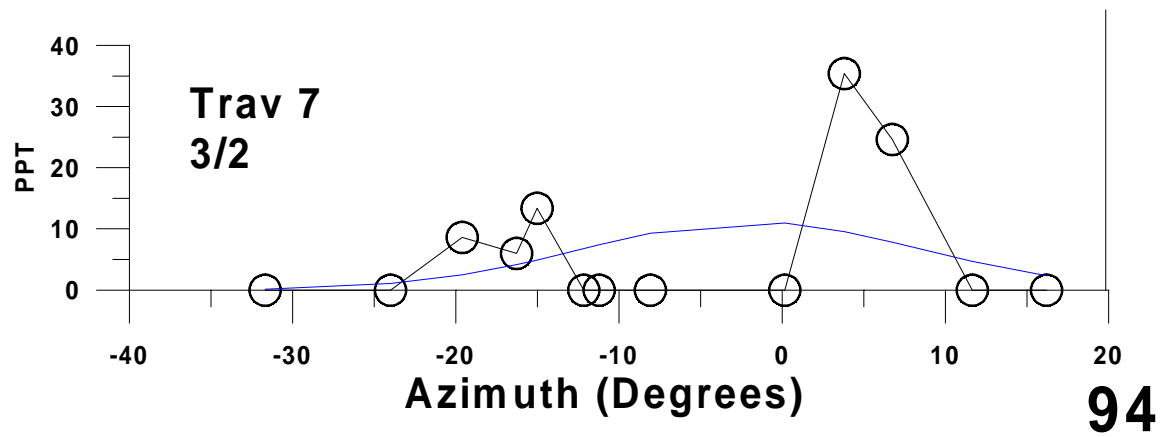


# Exp 117 Kincaid

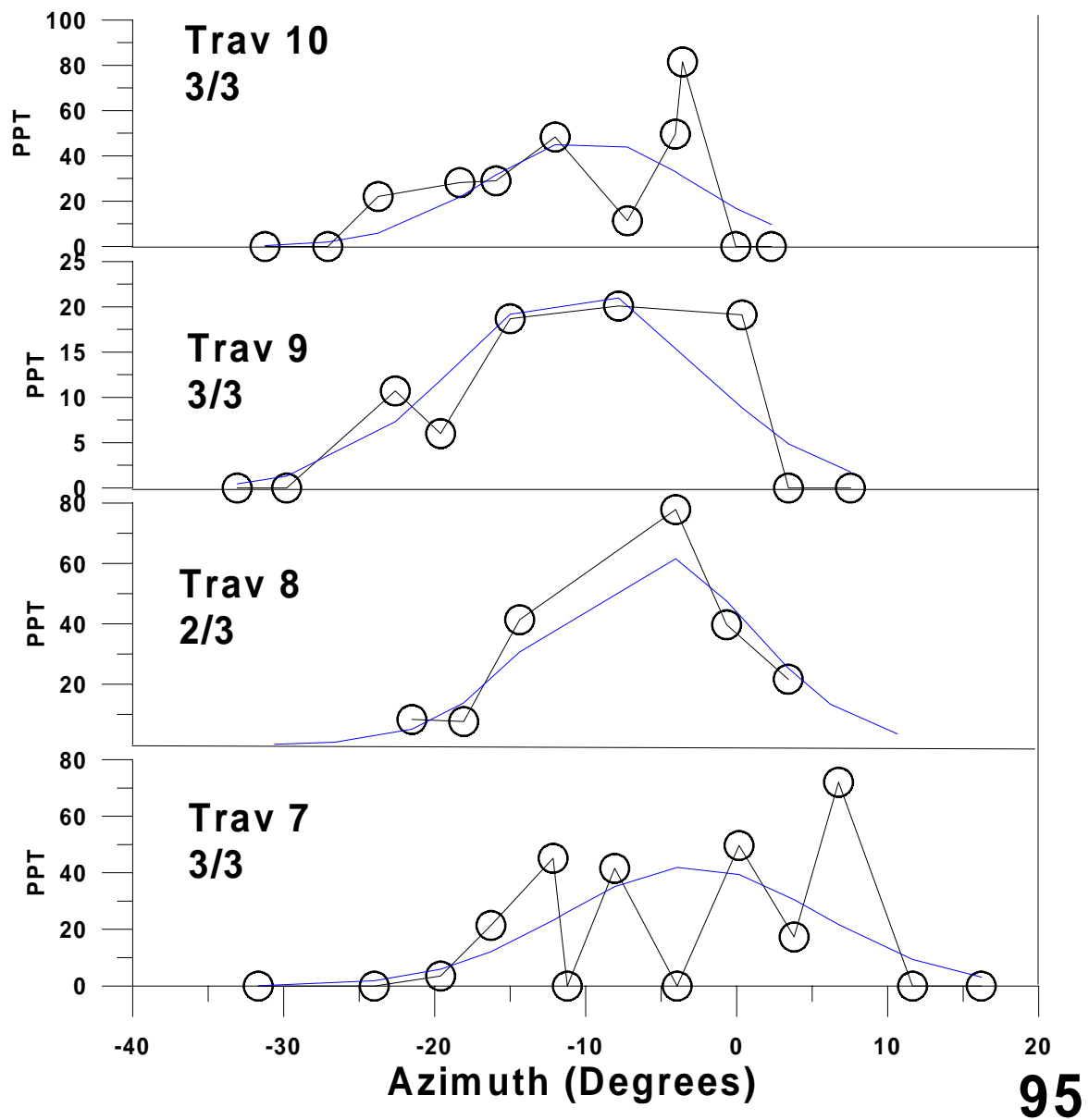


**Exp 118**

**Kincaid**

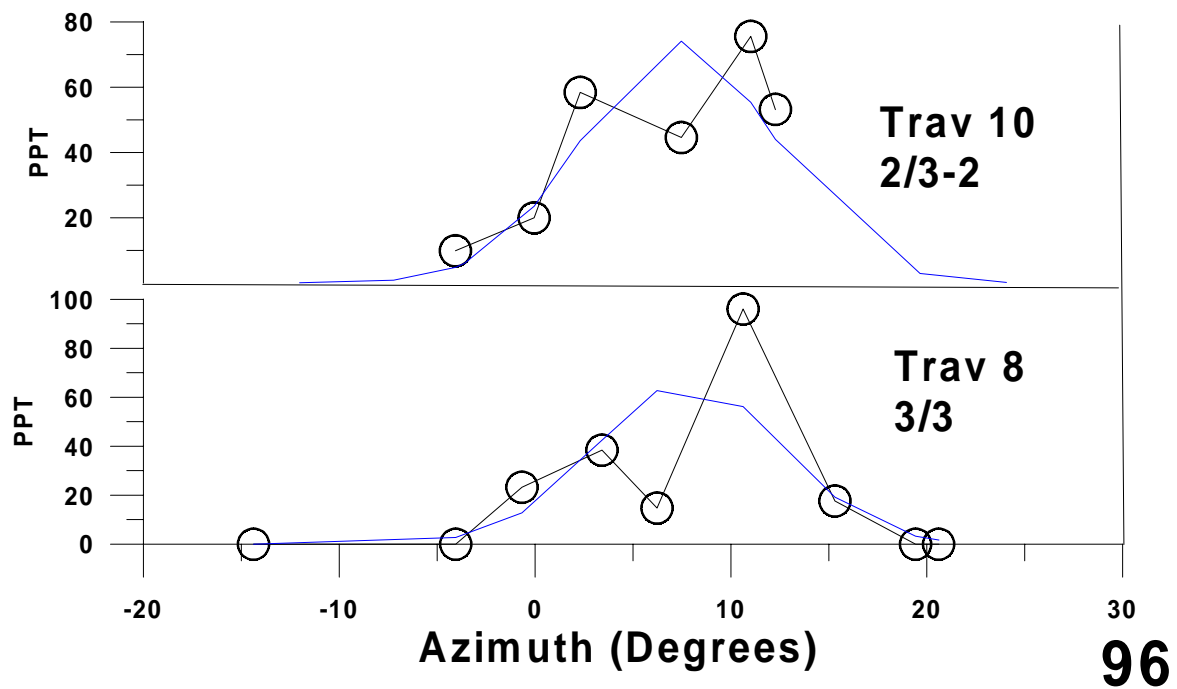


# Exp 119 Kincaid



**Exp 120**

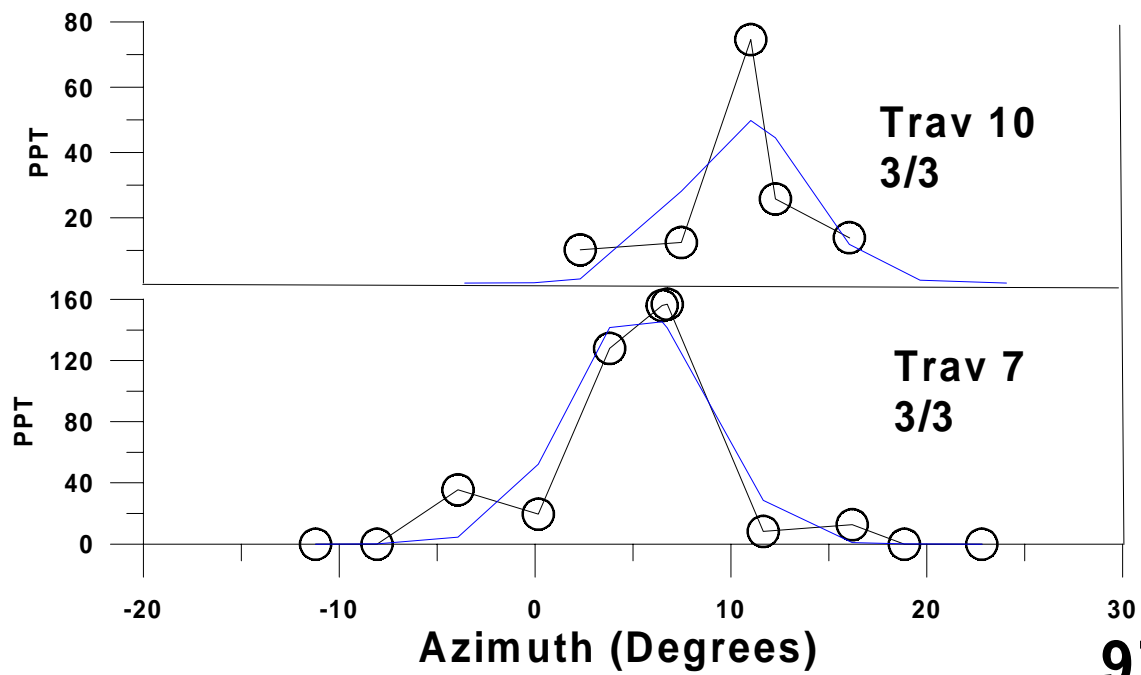
**Kincaid**





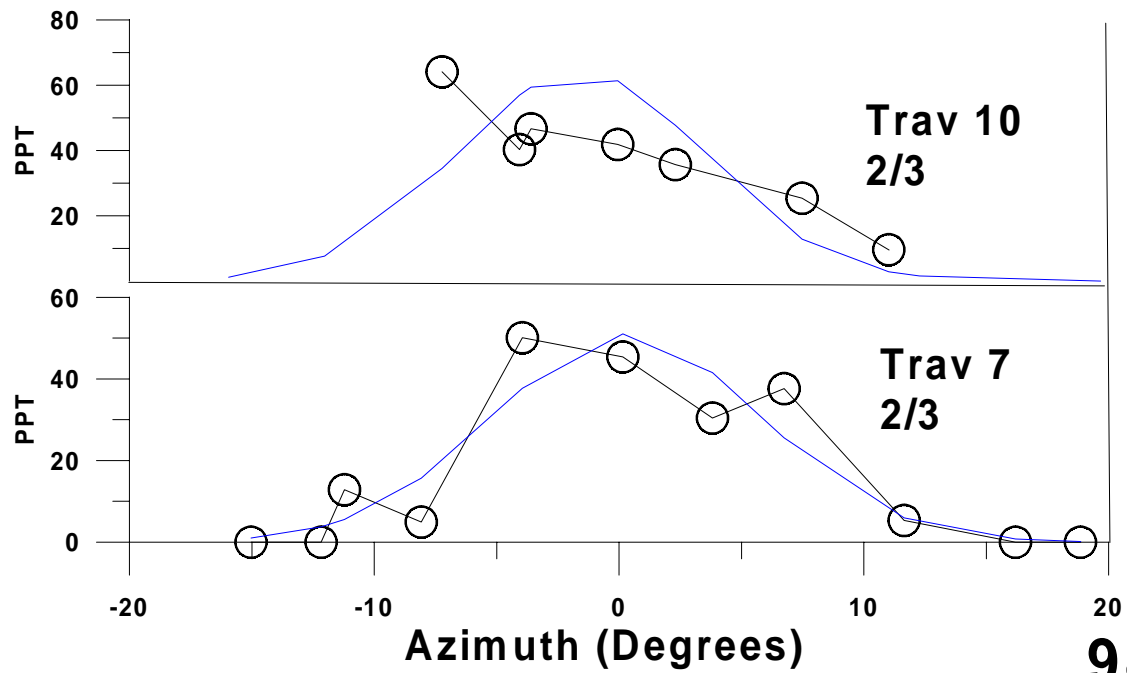
**Exp 121**

**Kincaid**



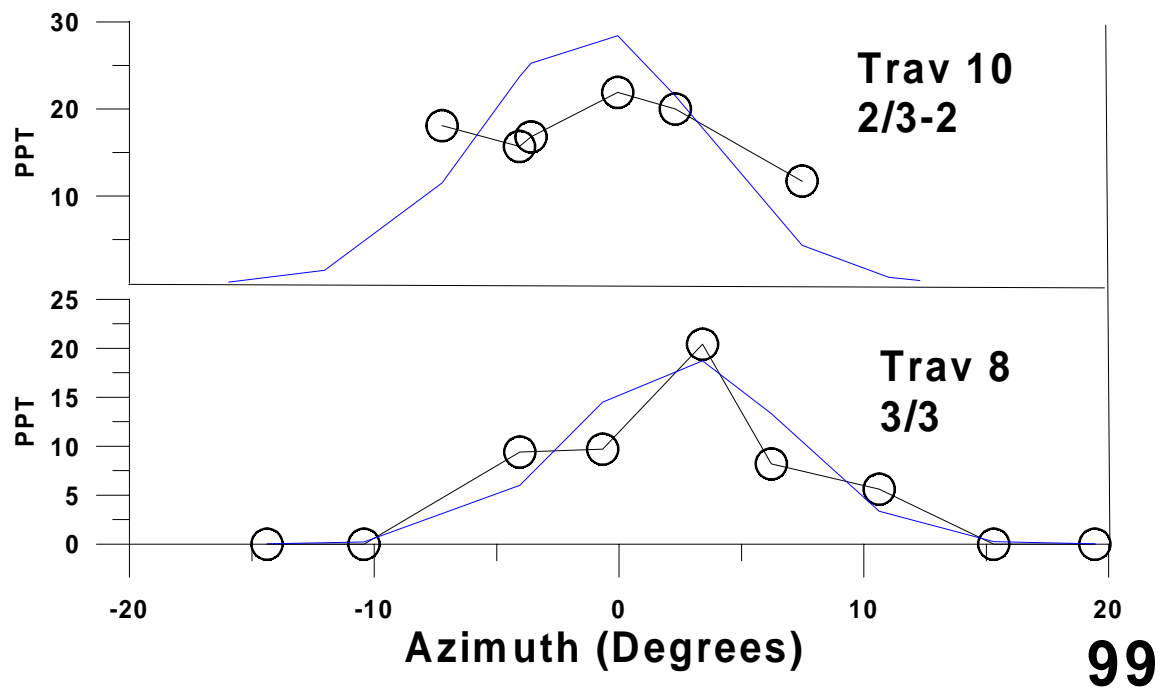
# Exp 122

# Kincaid

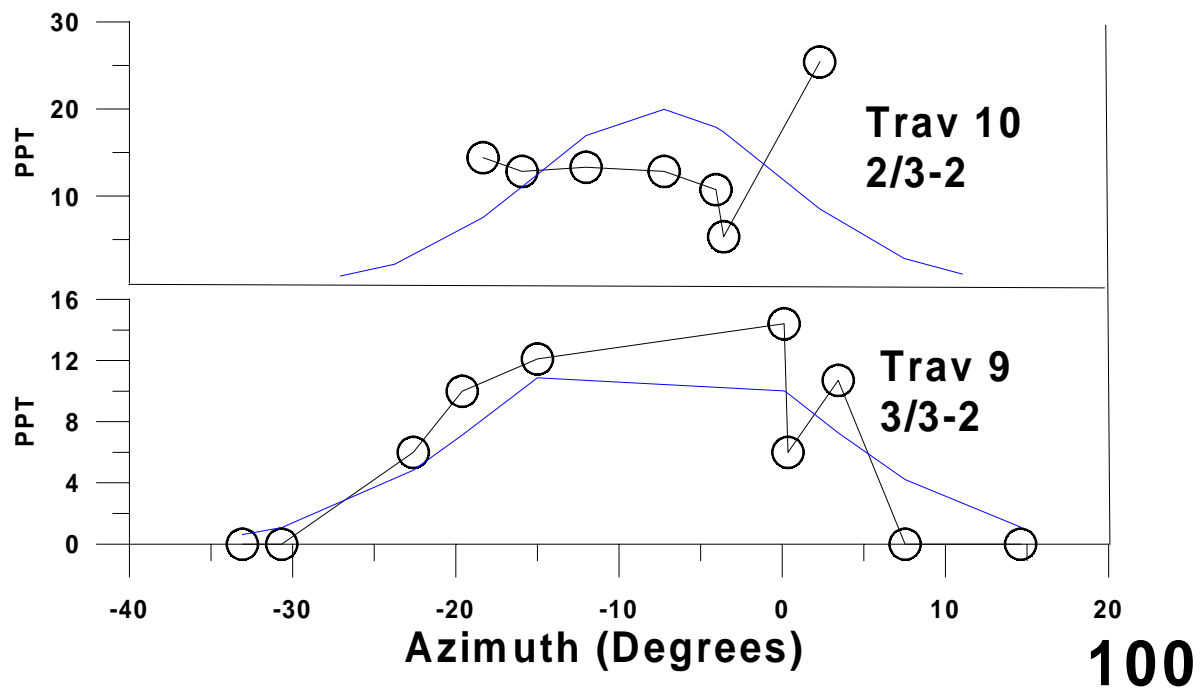


# Exp 123

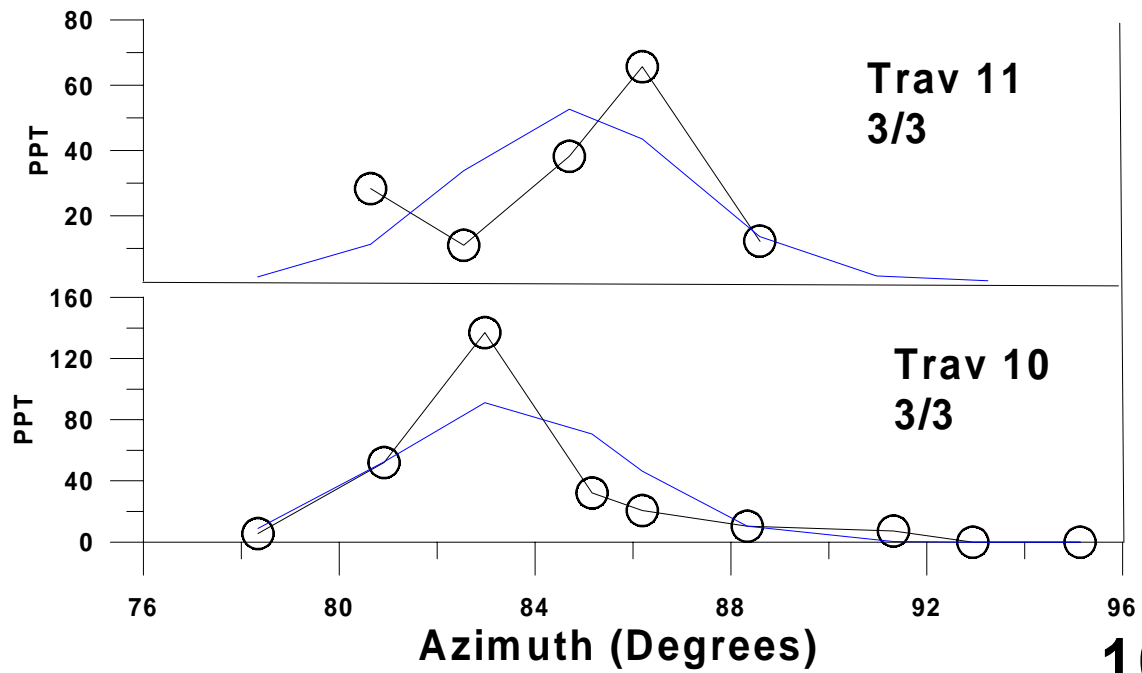
# Kincaid



# Exp 124 Kincaid

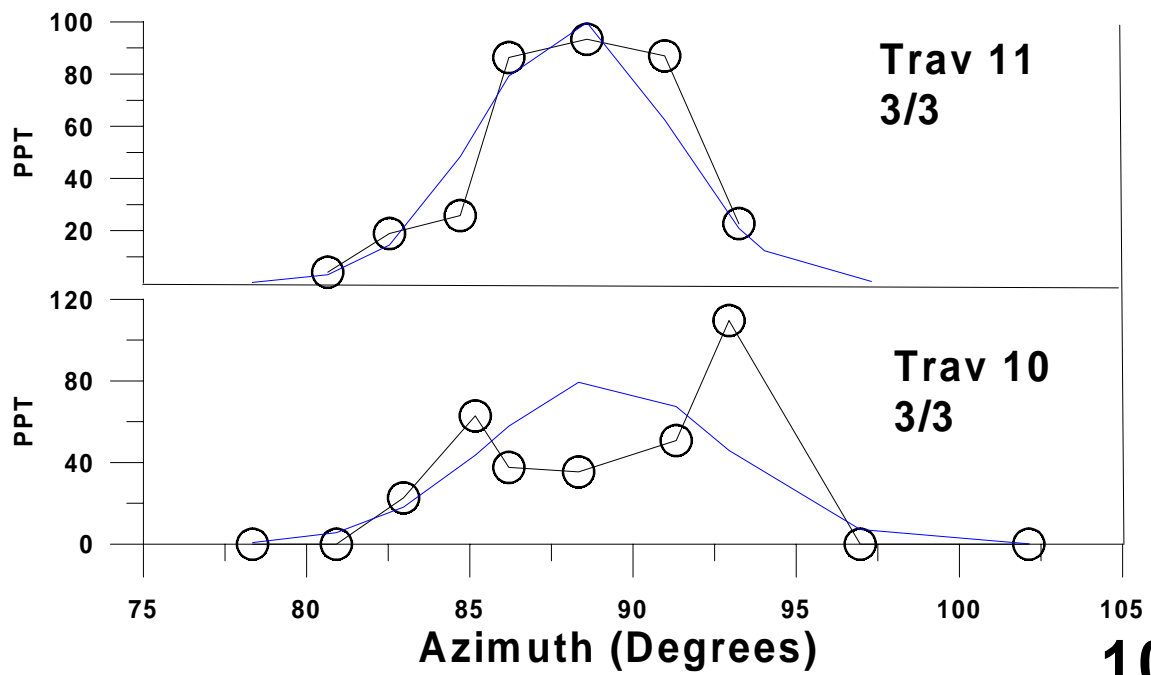


# Exp 127      Kincaid



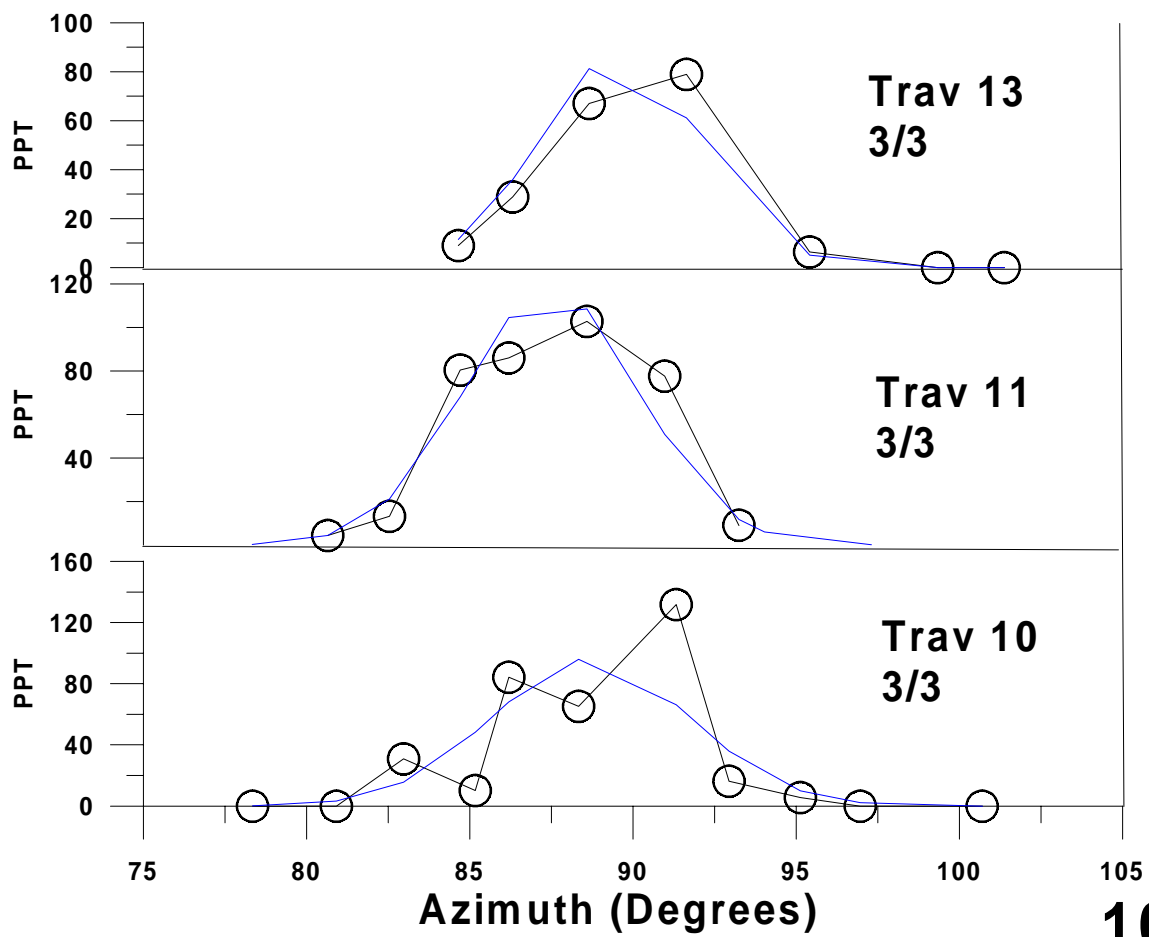
# Exp 128

# Kincaid



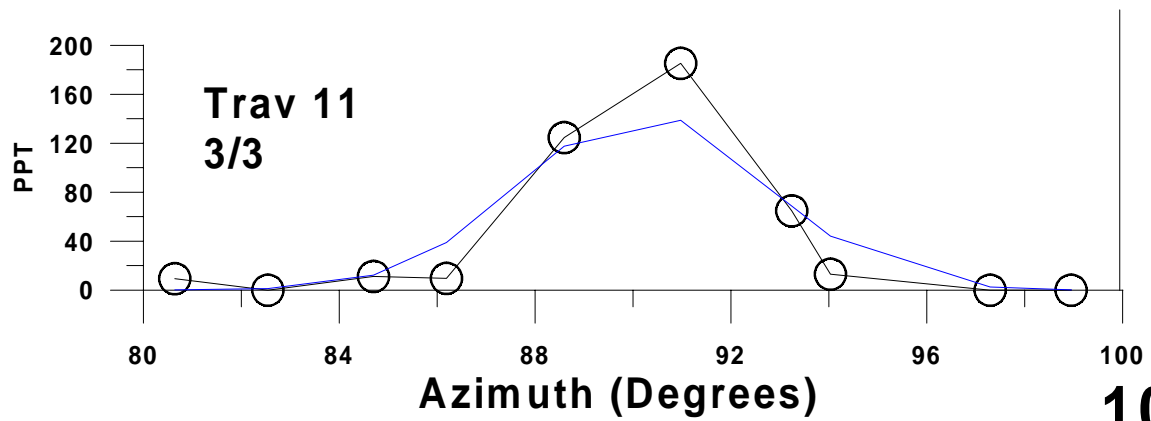
# Exp 129

# Kincaid



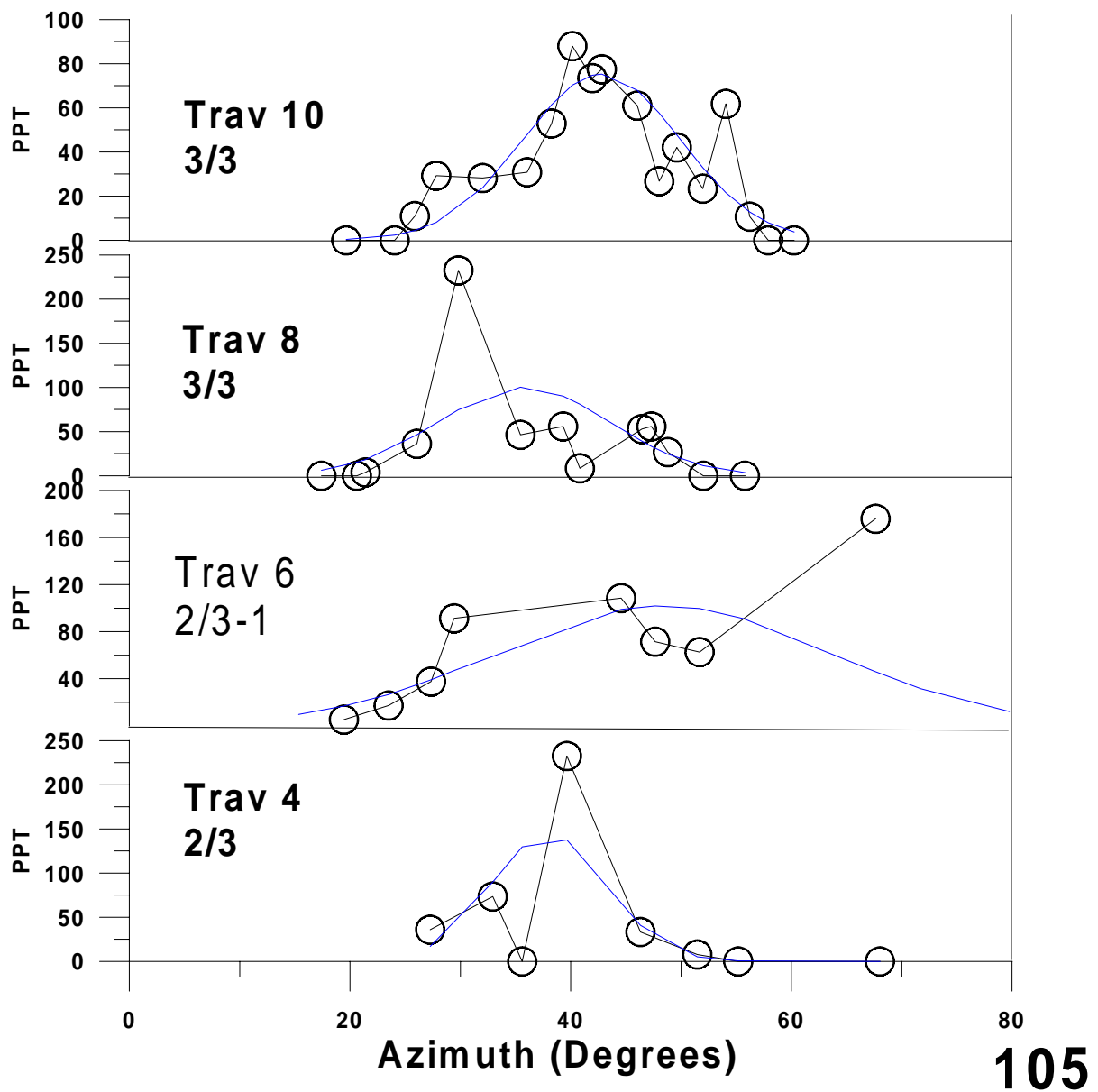
**Exp 130**

**Kincaid**

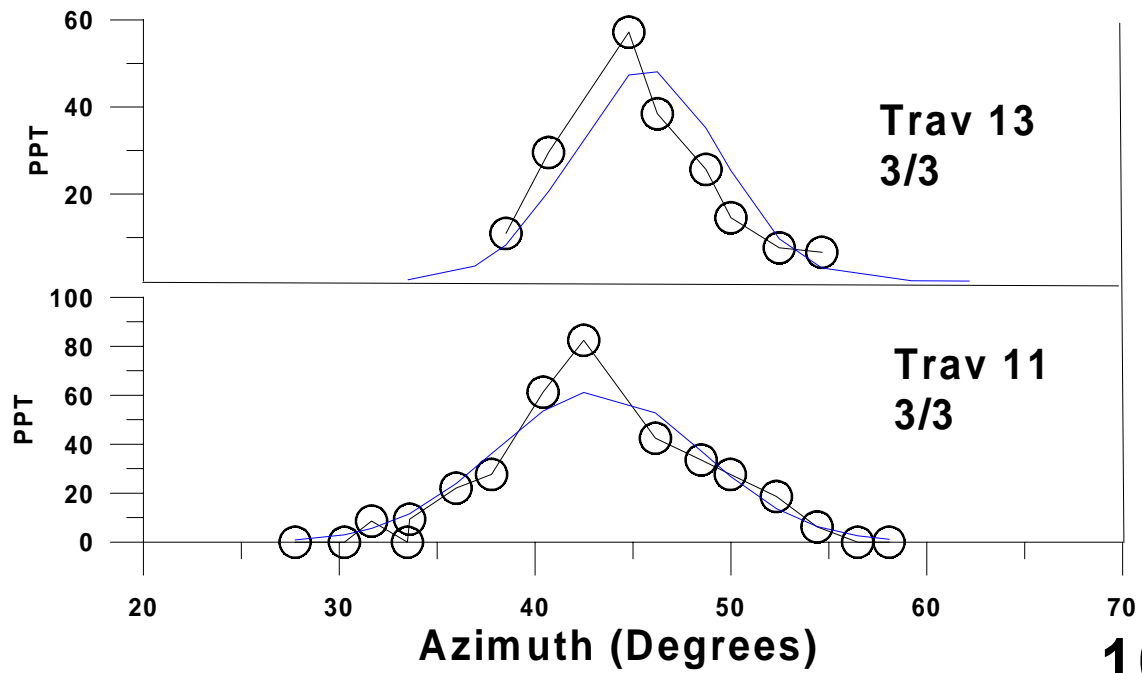




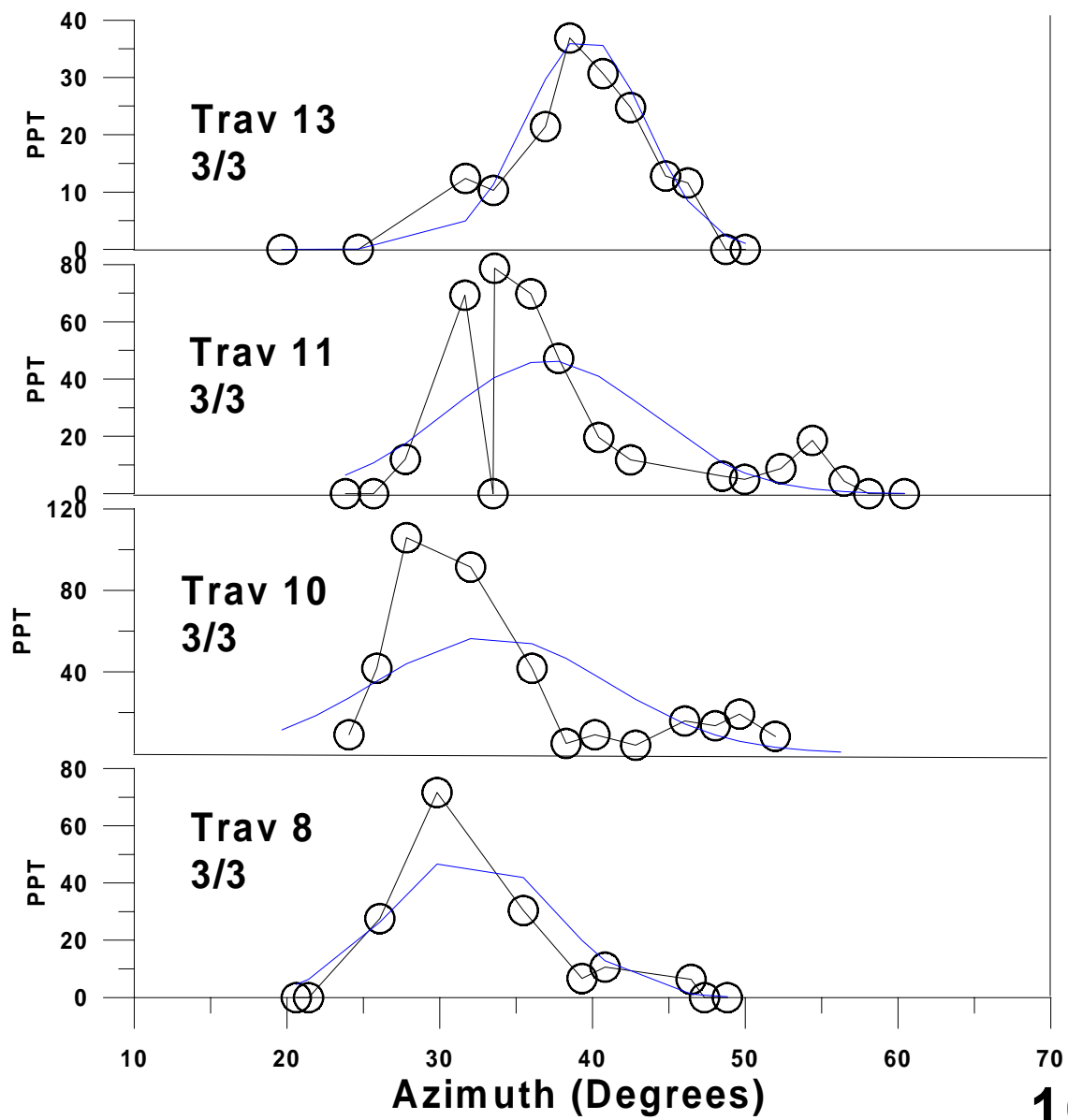
# Exp 133(a) Kincaid



## Exp 133(b) Kincaid

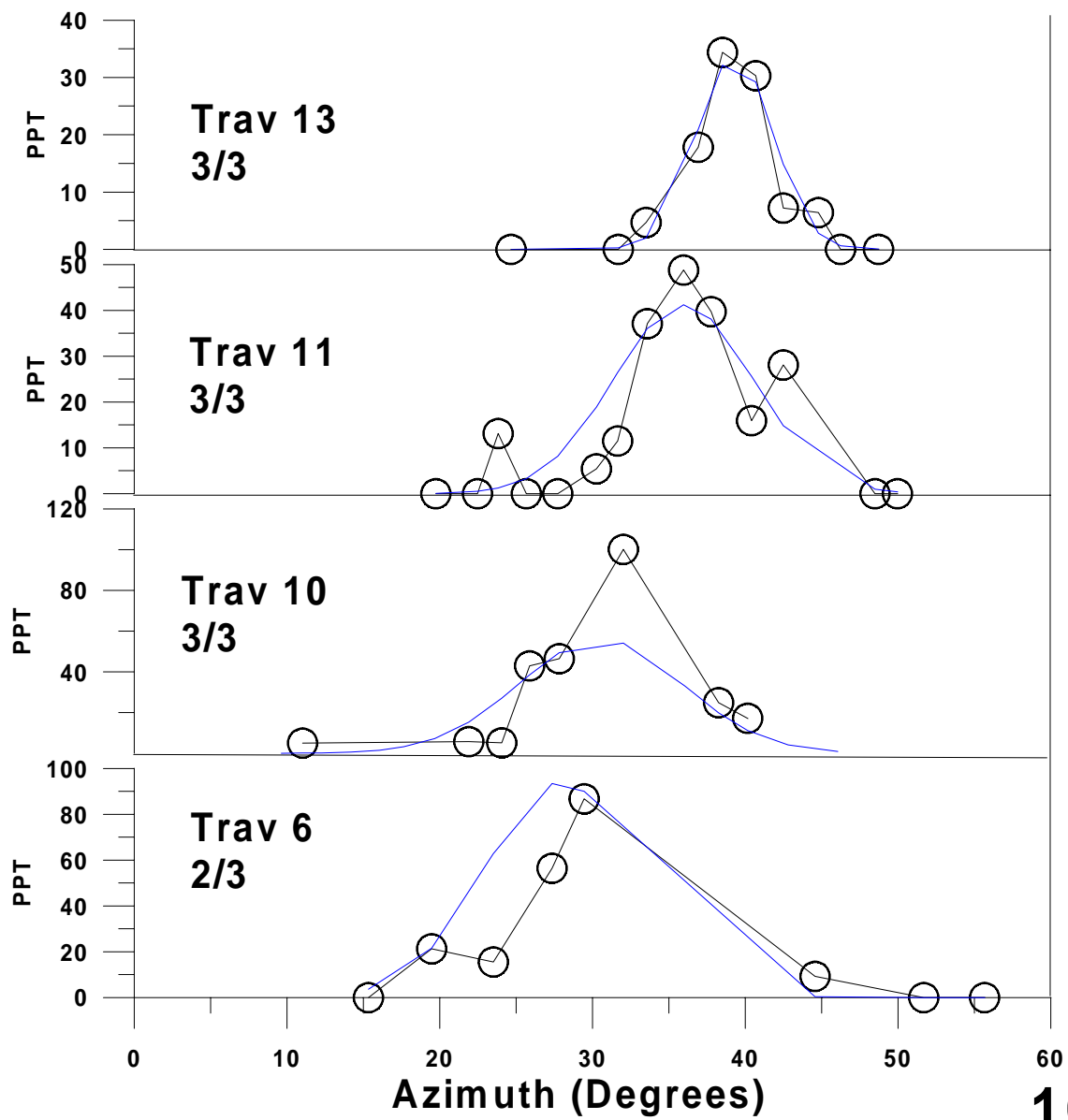


# Exp 134 Kincaid

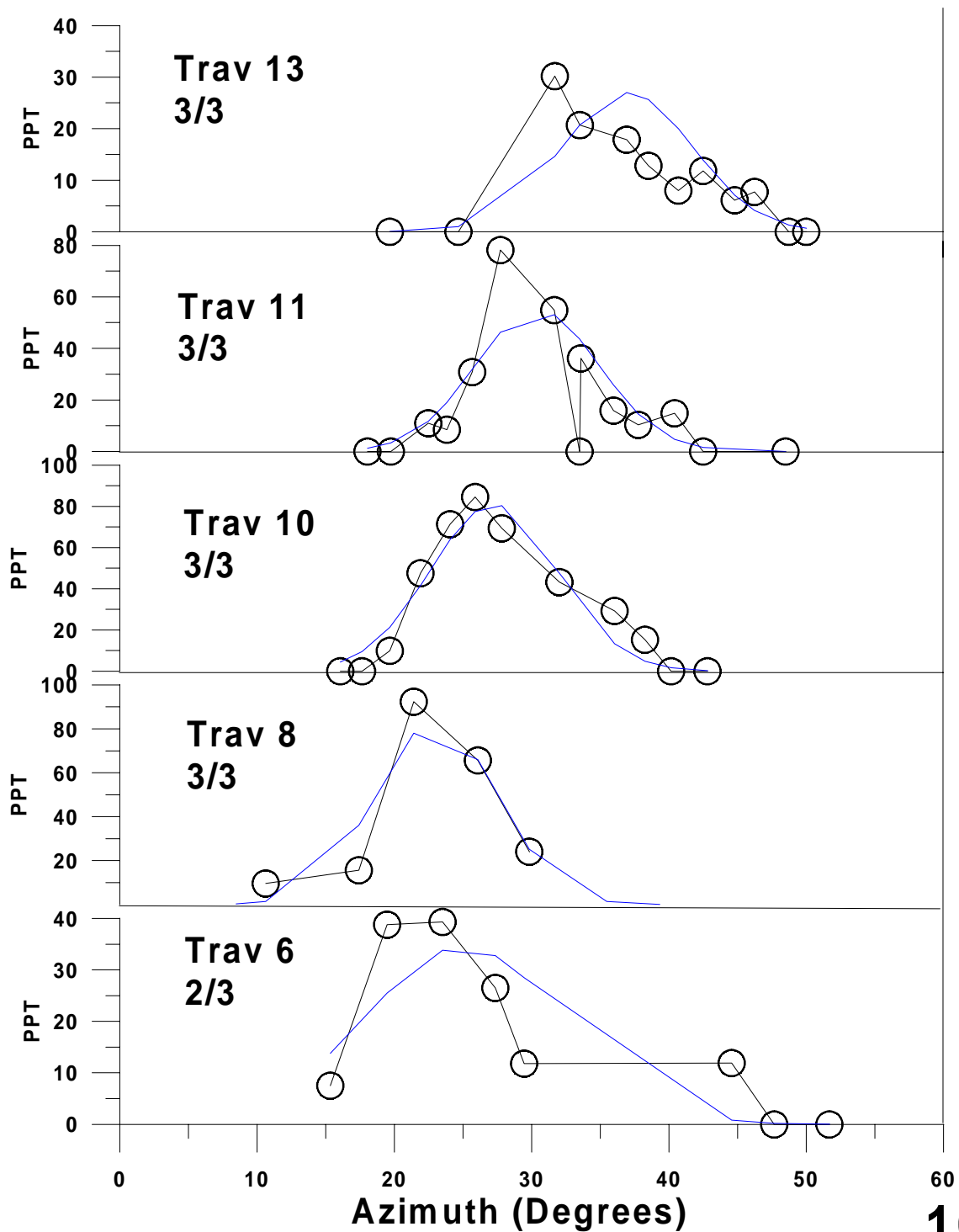


# Exp 135

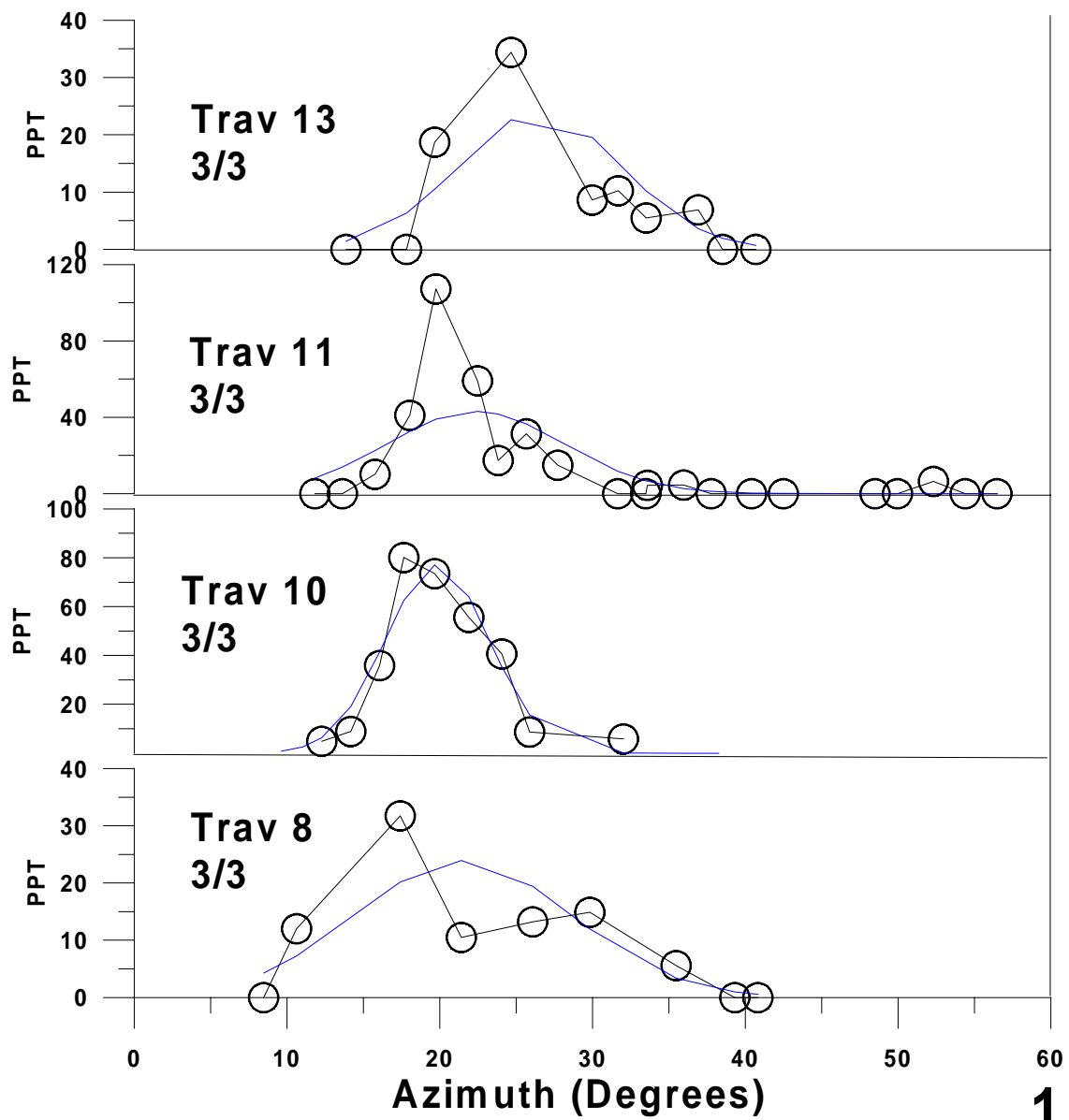
# Kincaid



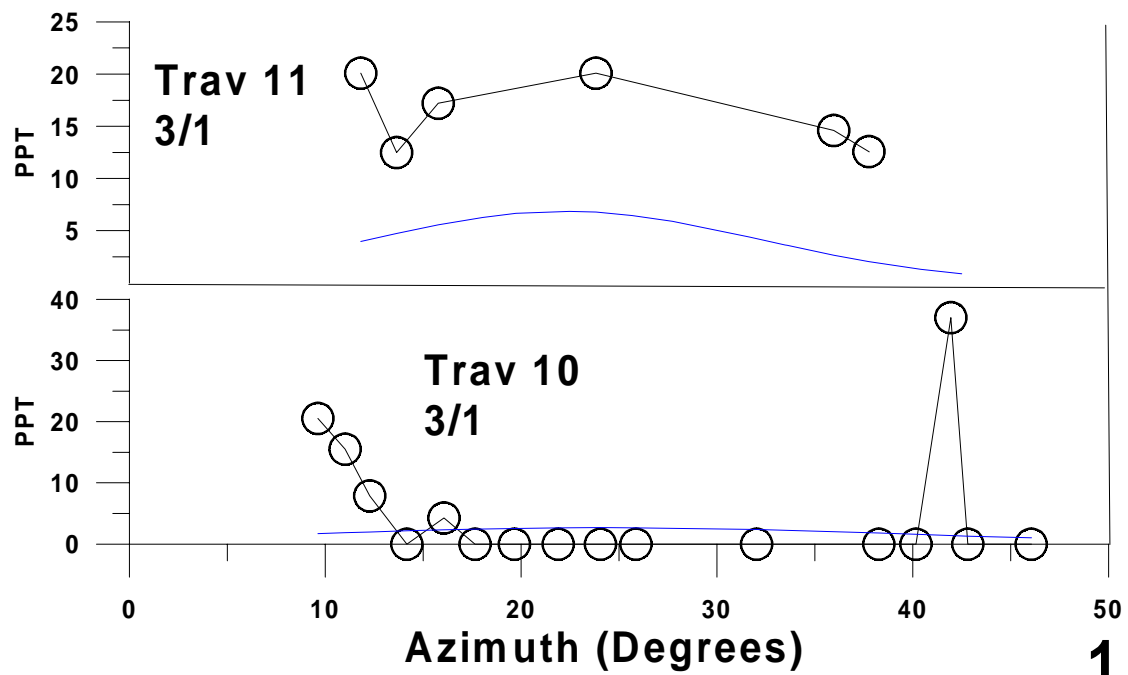
# Exp 136 Kincaid



# Exp 137 Kincaid

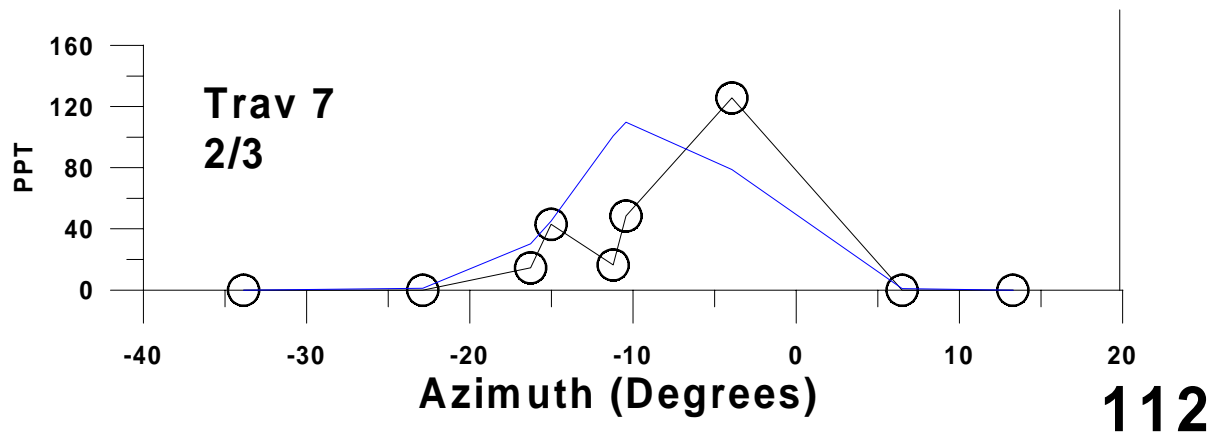


# Exp 138 Kincaid



# Exp 139

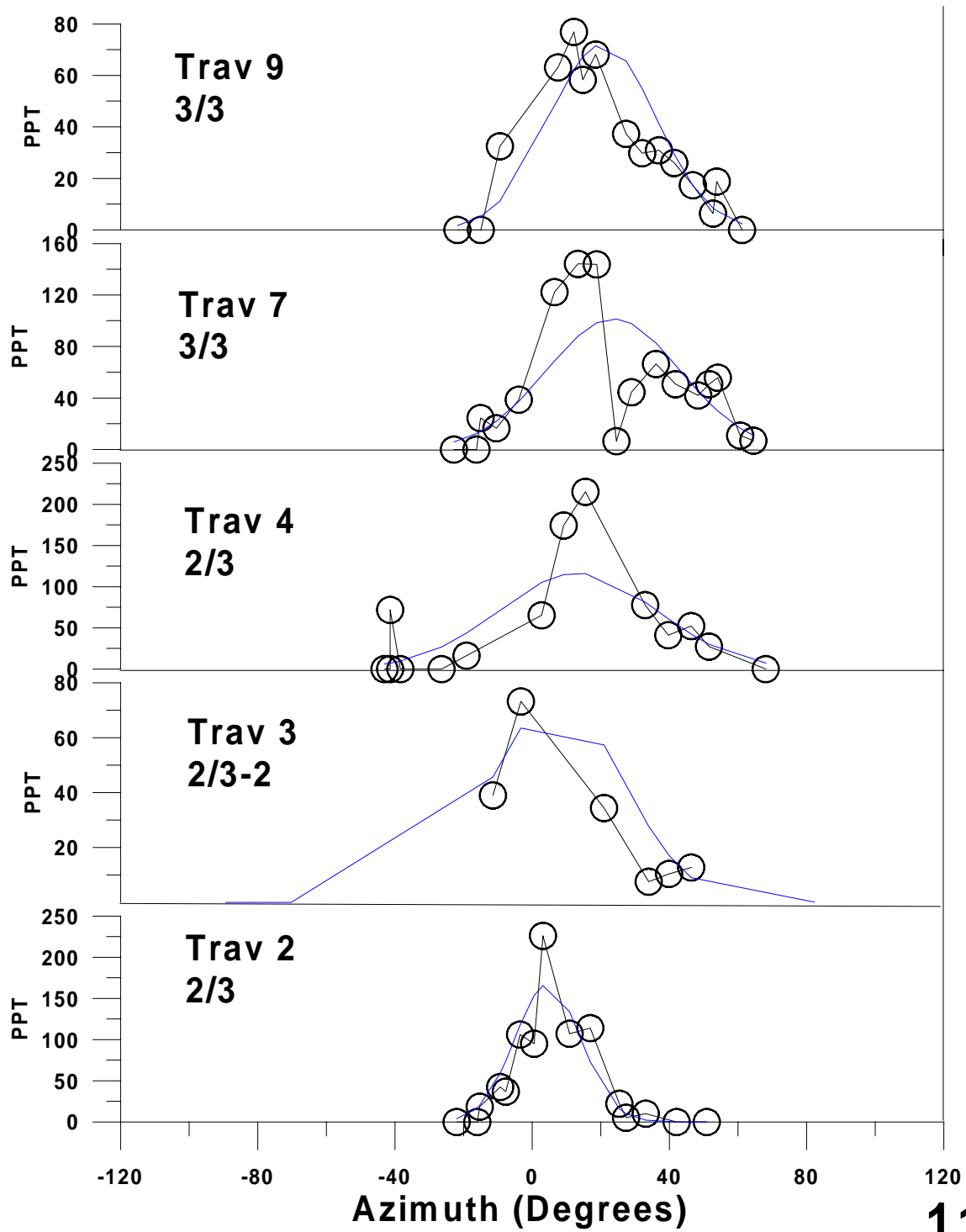
# Kincaid



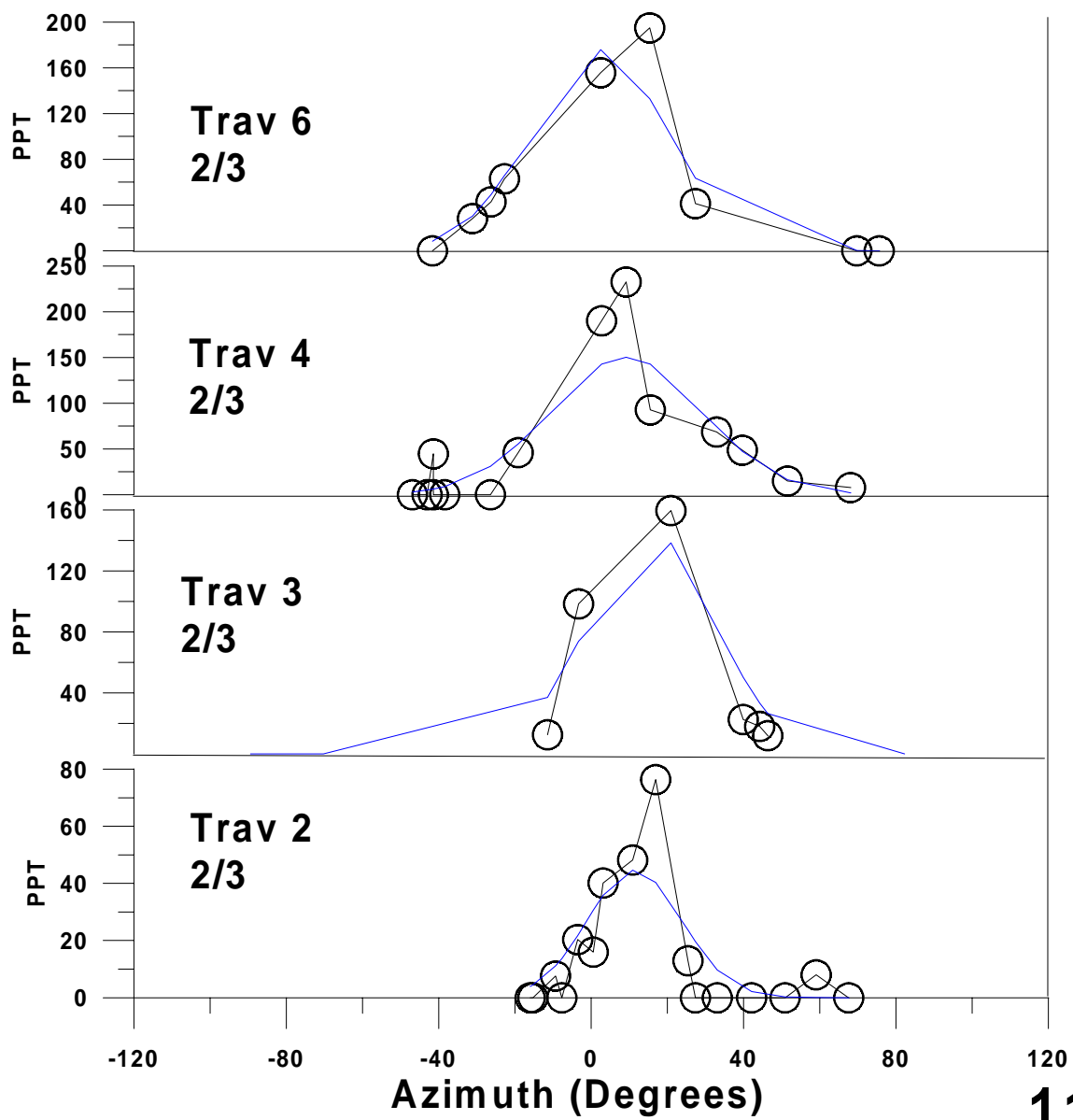


# Exp 140

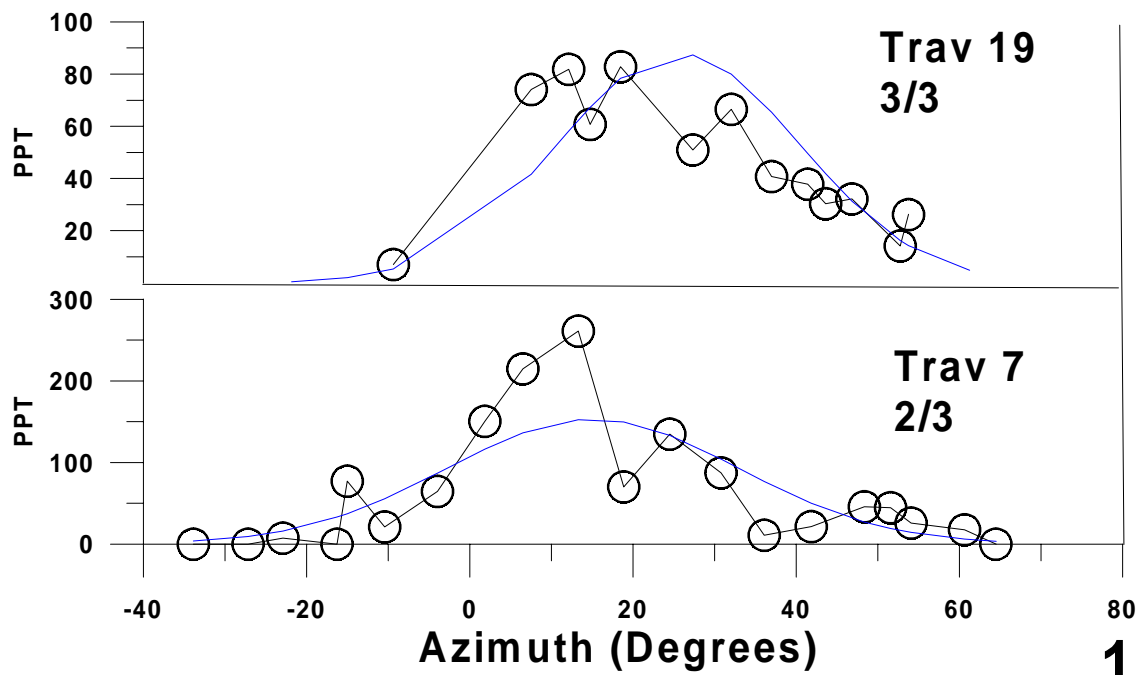
# Kincaid



# Exp 141(a) Kincaid

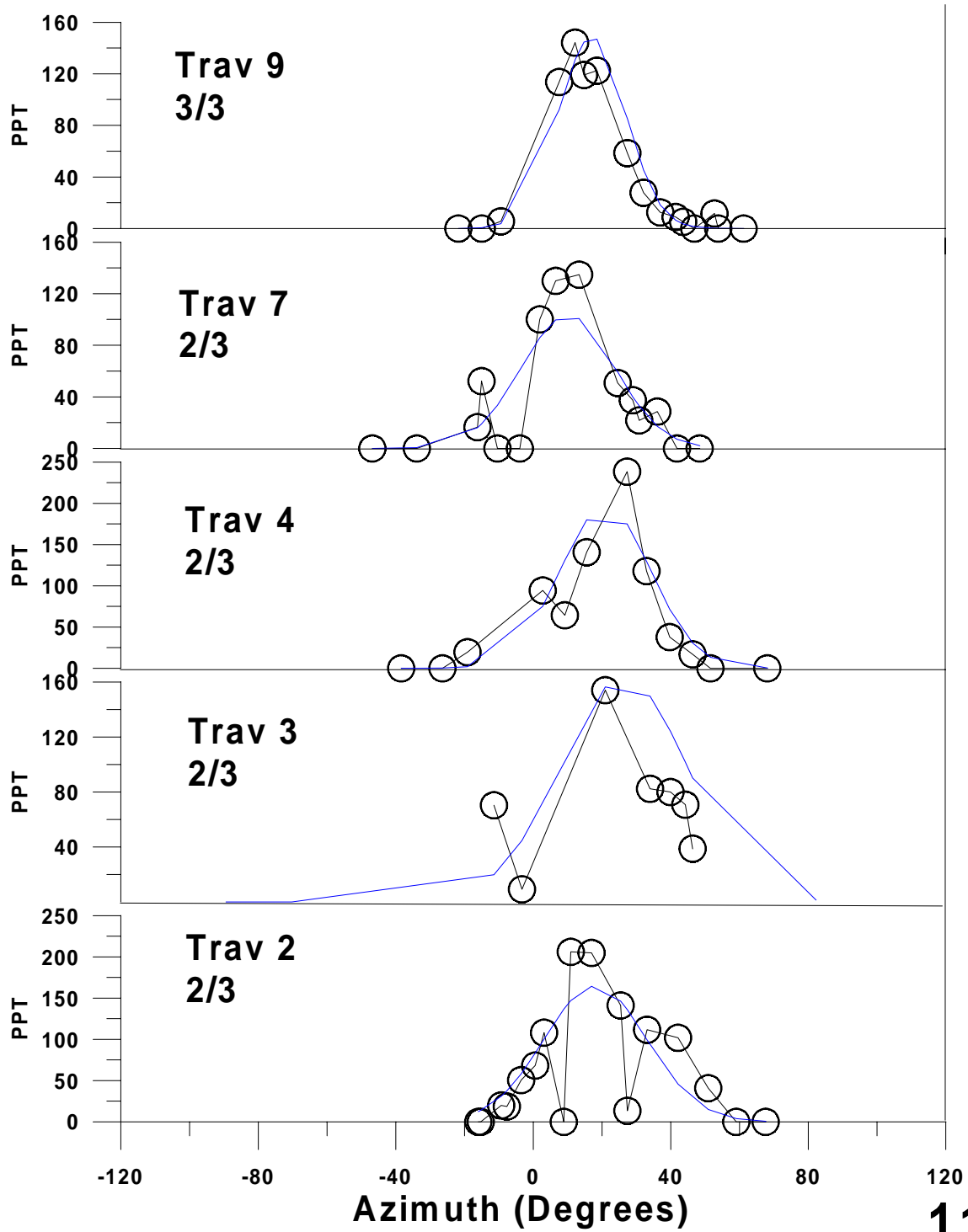


# Exp 141(b) Kincaid

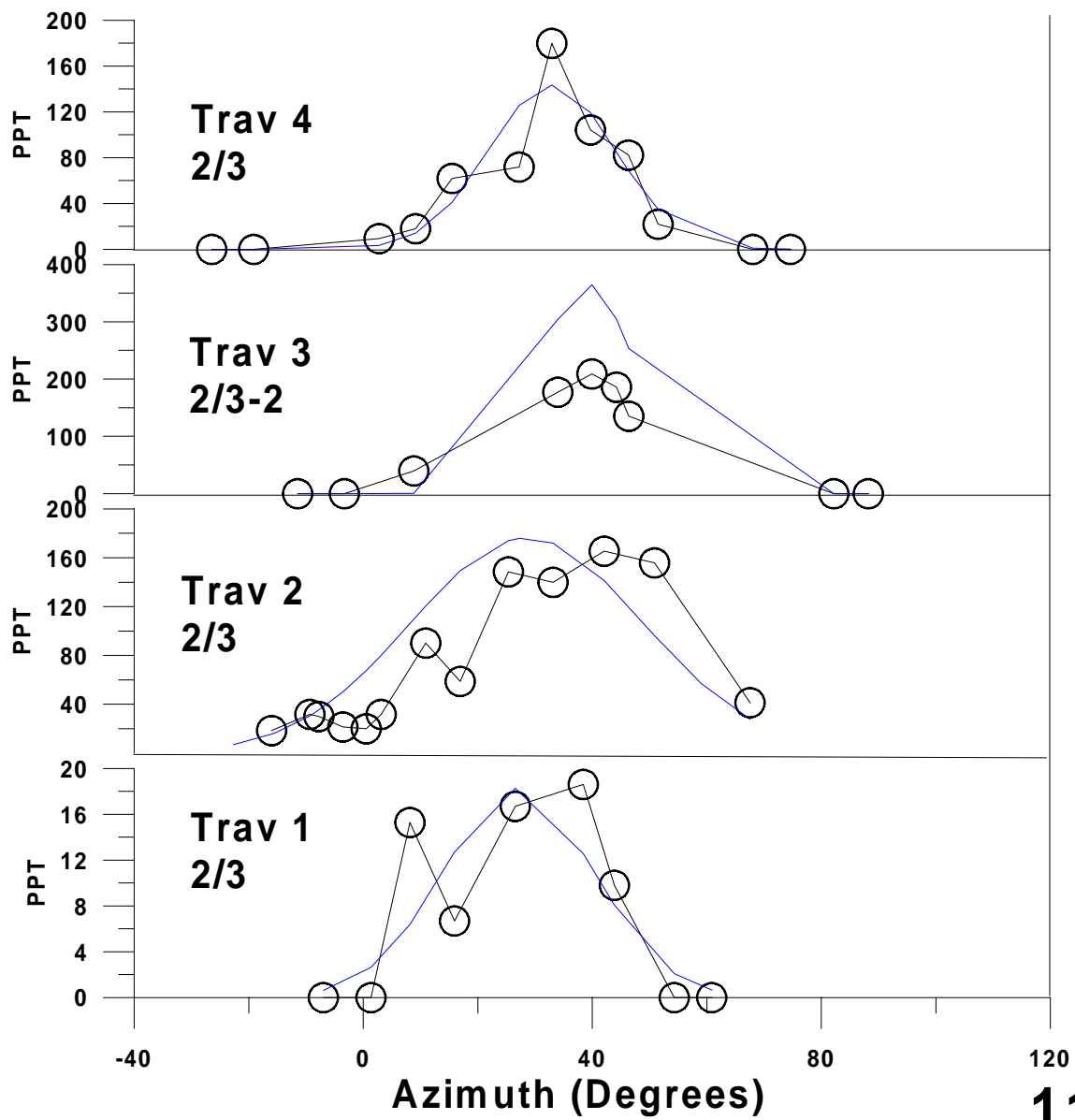


# Exp 142

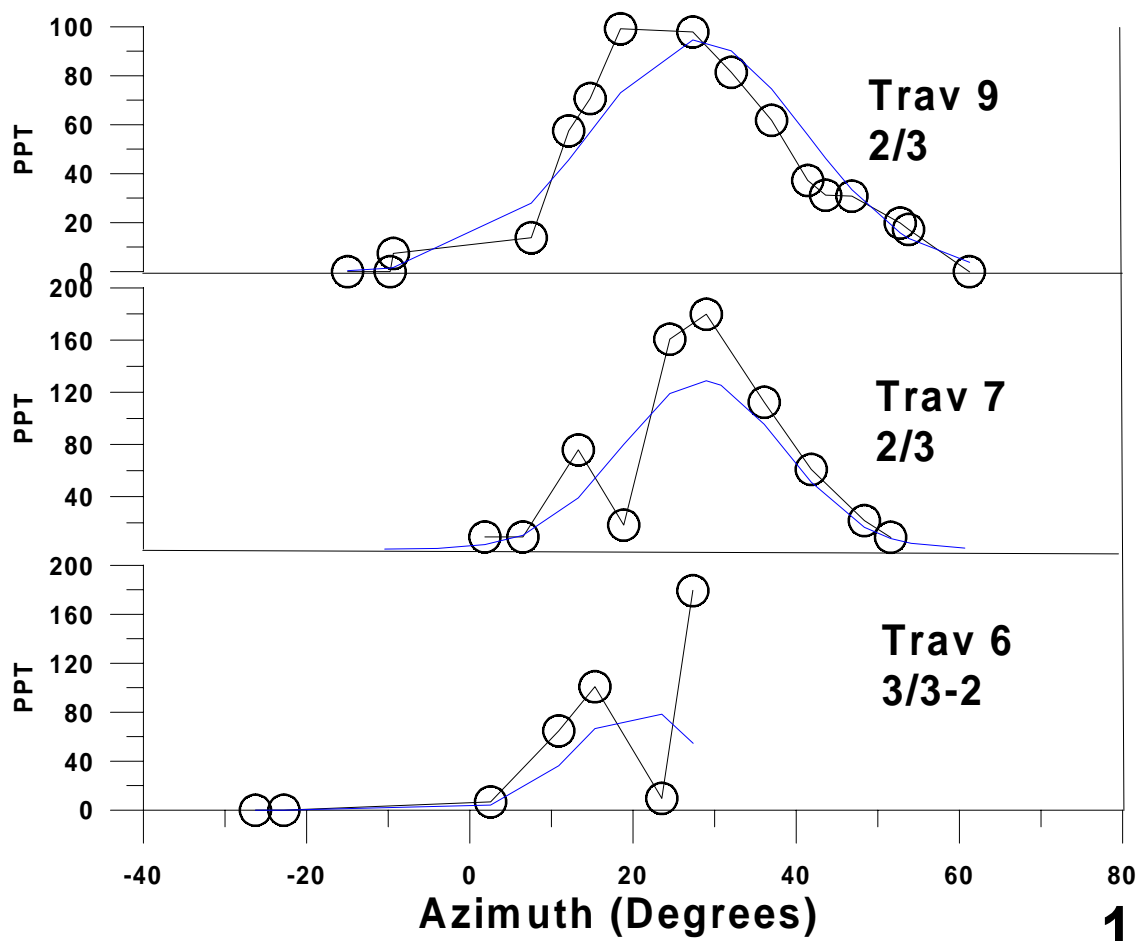
# Kincaid



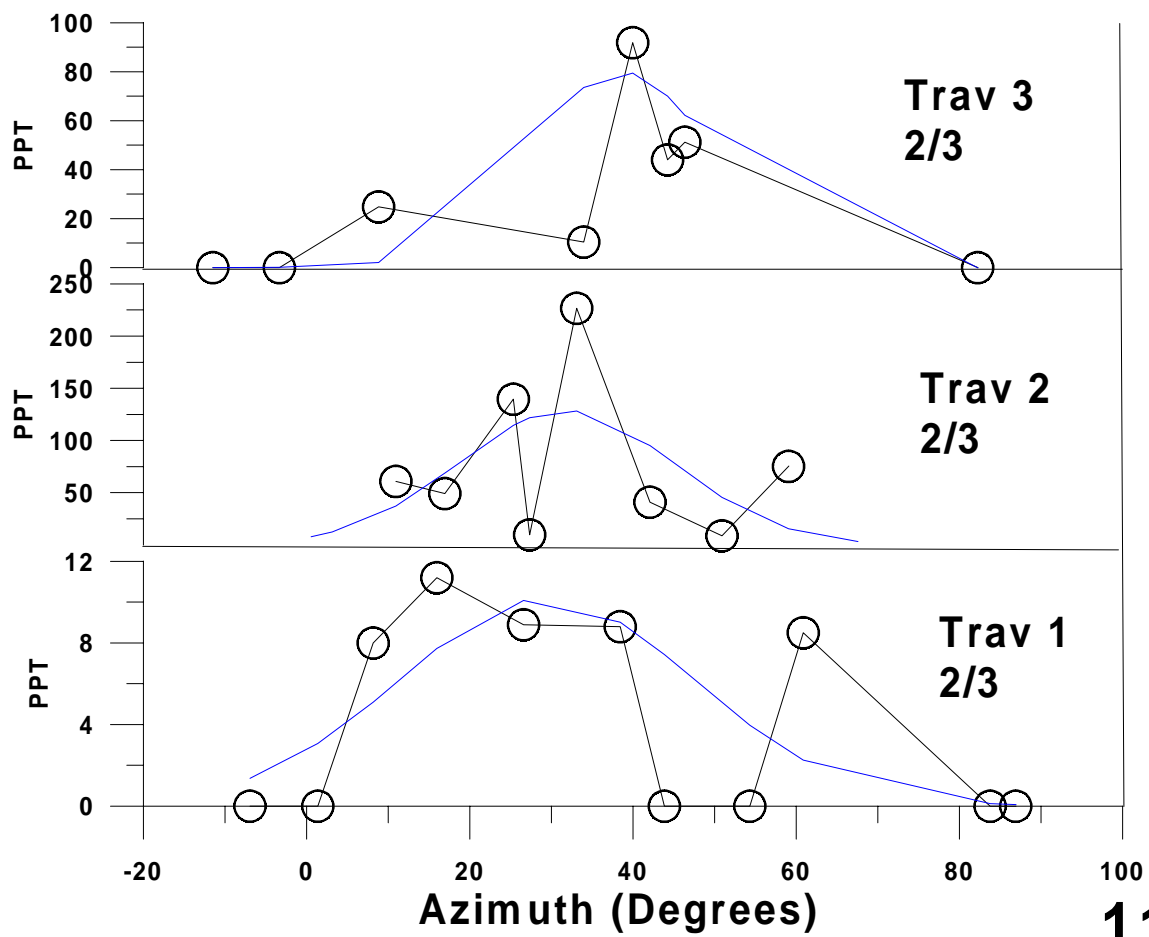
# Exp 143(a) Kincaid



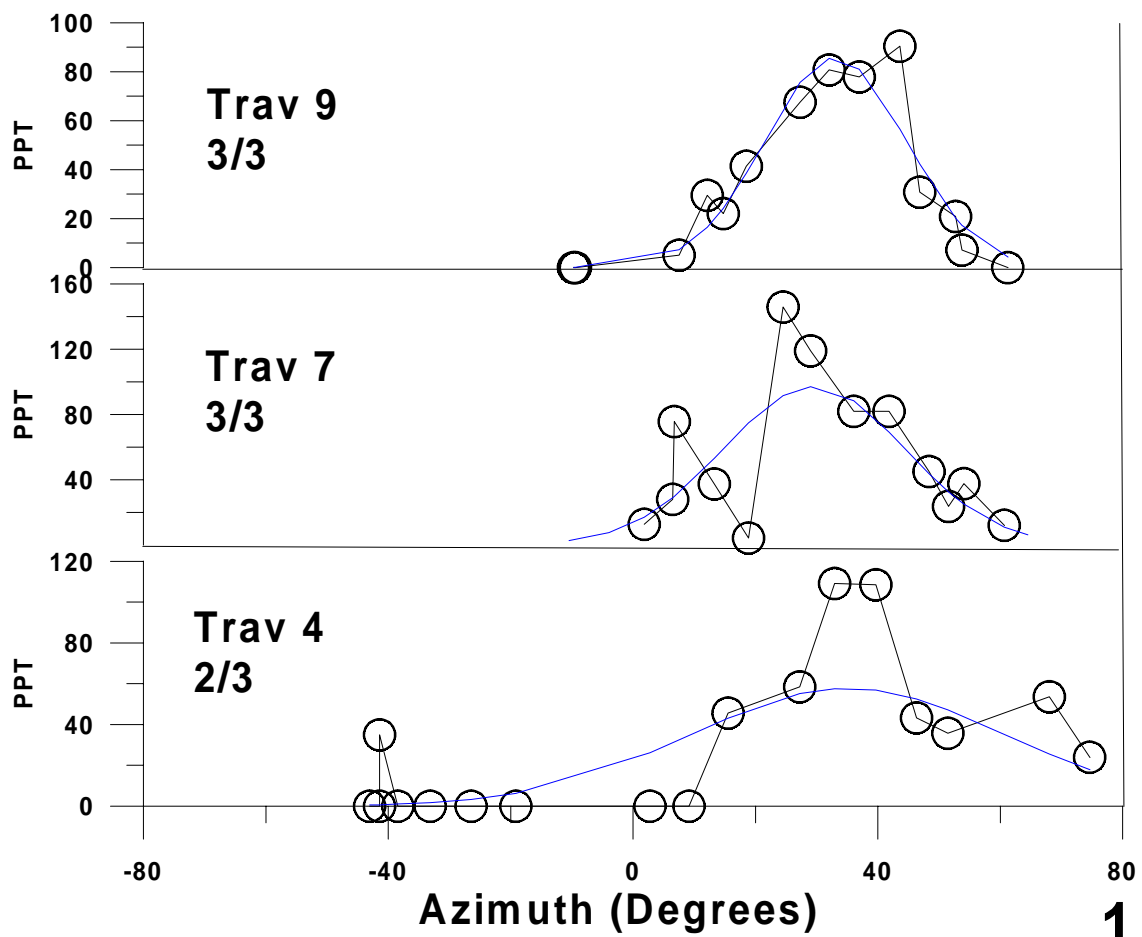
# Exp 143(b) Kincaid



# Exp 144(a) Kincaid



# Exp 144(b) Kincaid

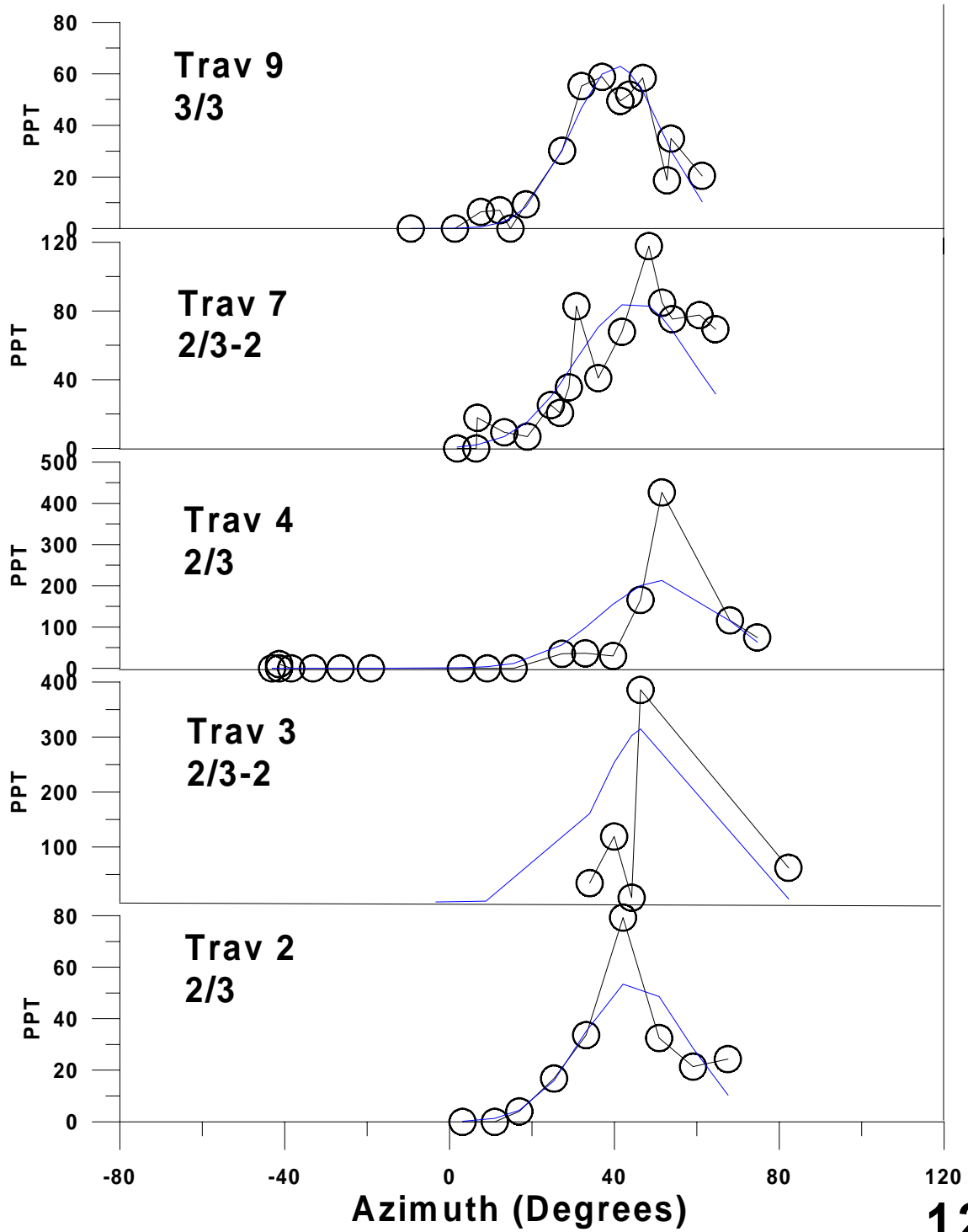


119A



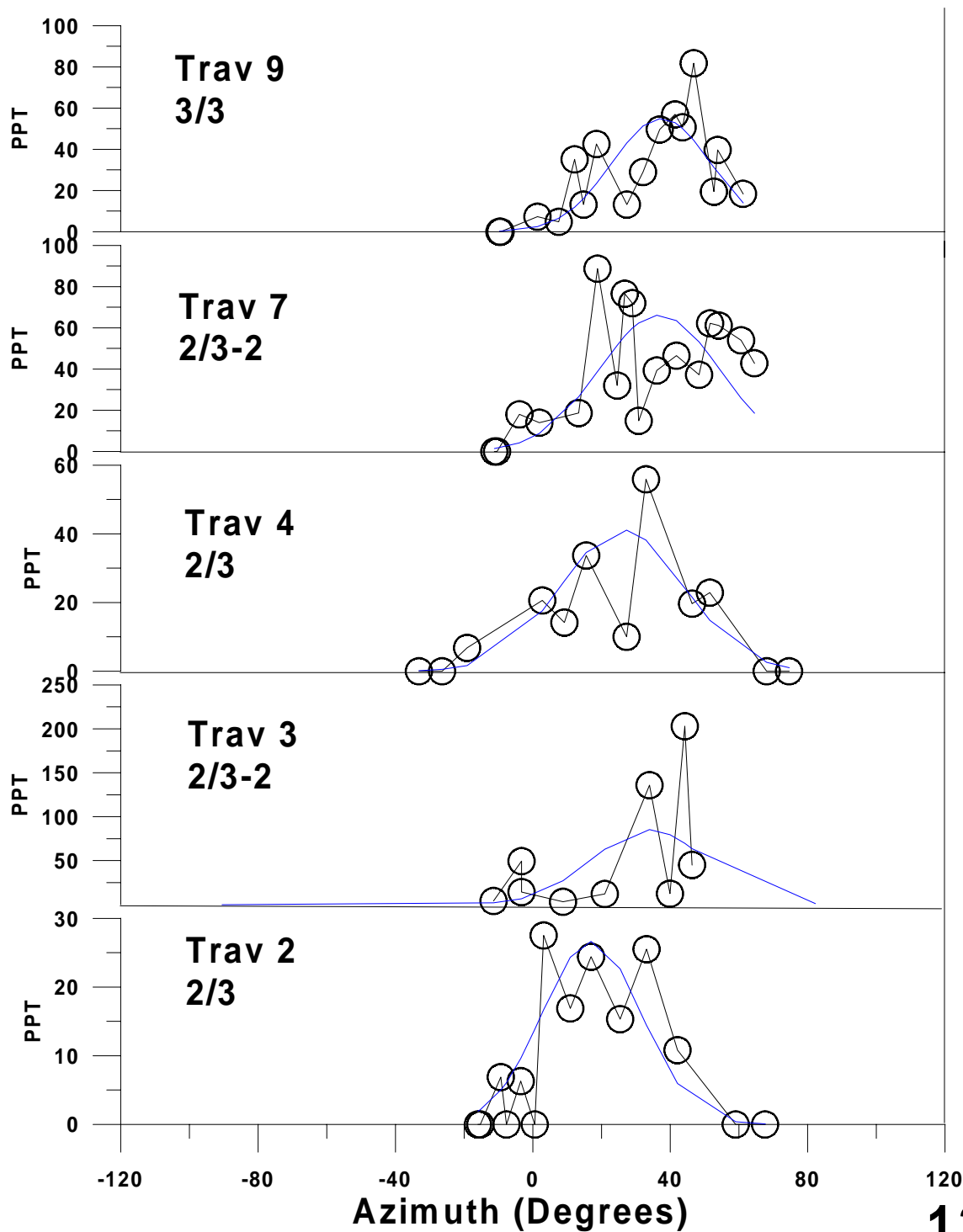
# Exp 145

# Kincaid

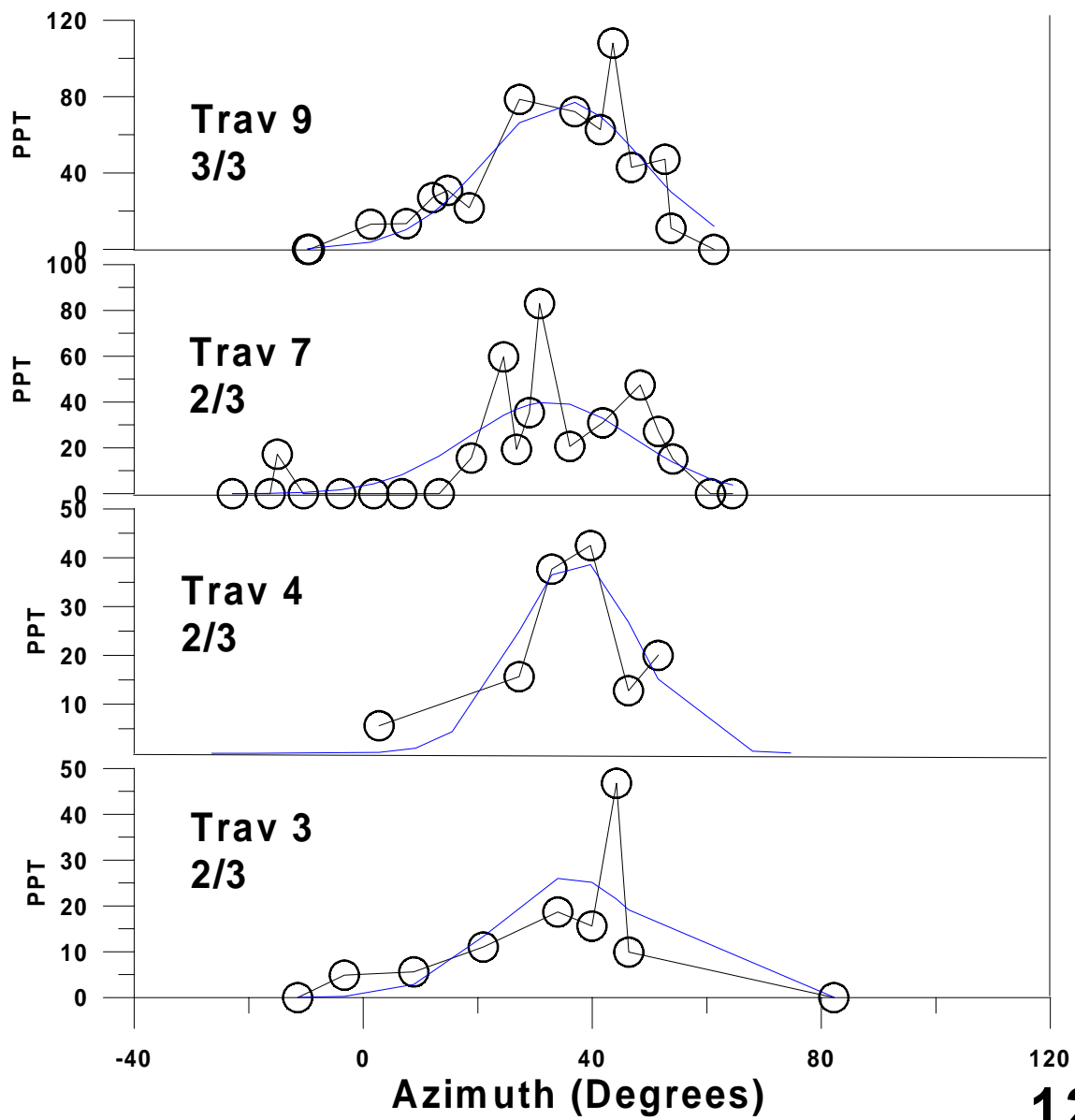


# Exp 146

# Kincaid

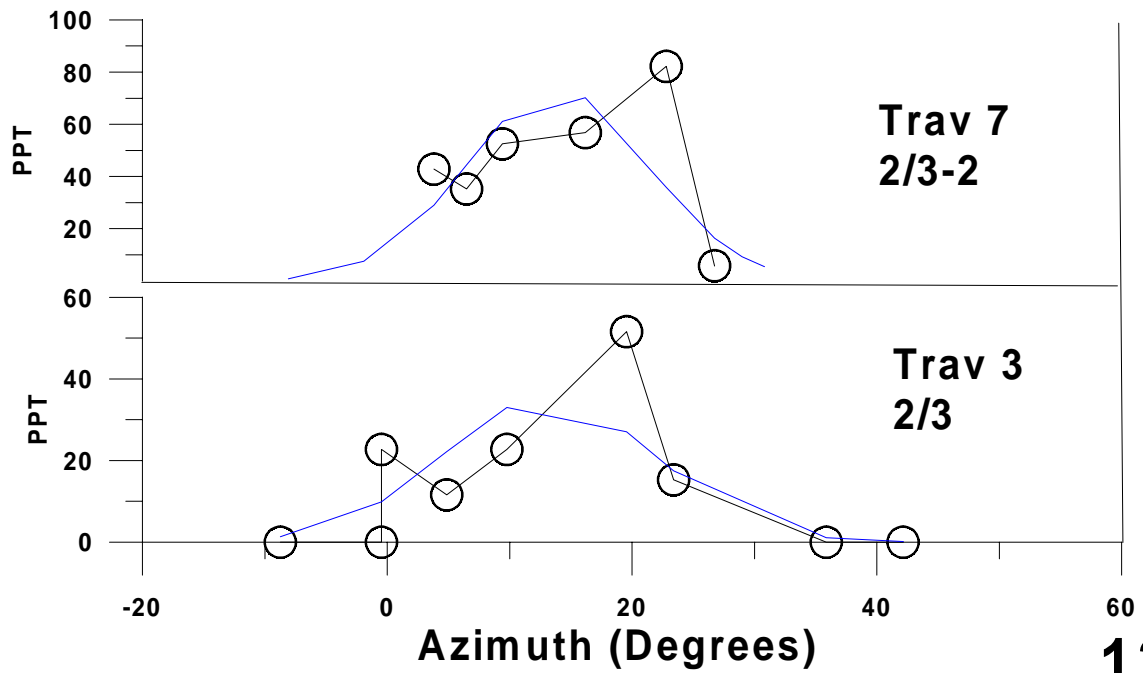


# Exp 147 Kincaid



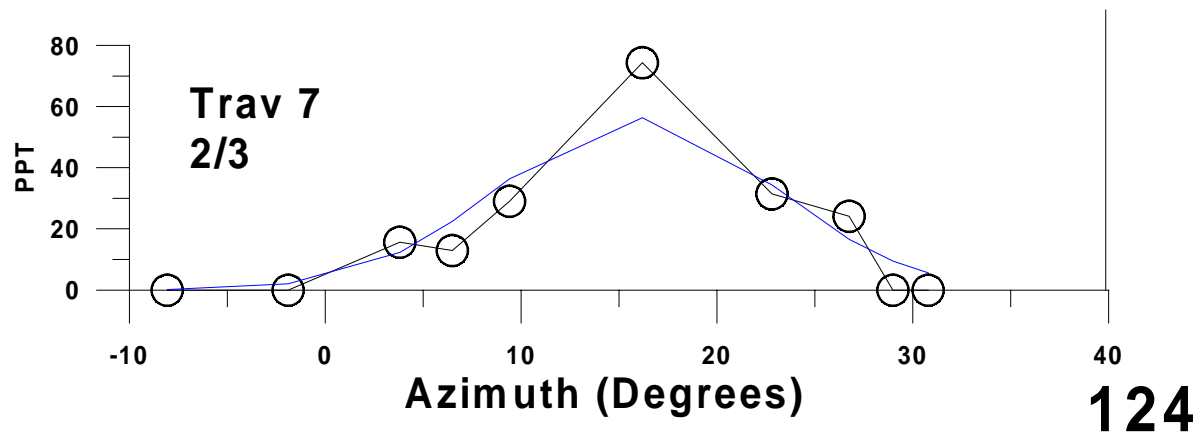
# Exp 149

# Kincaid



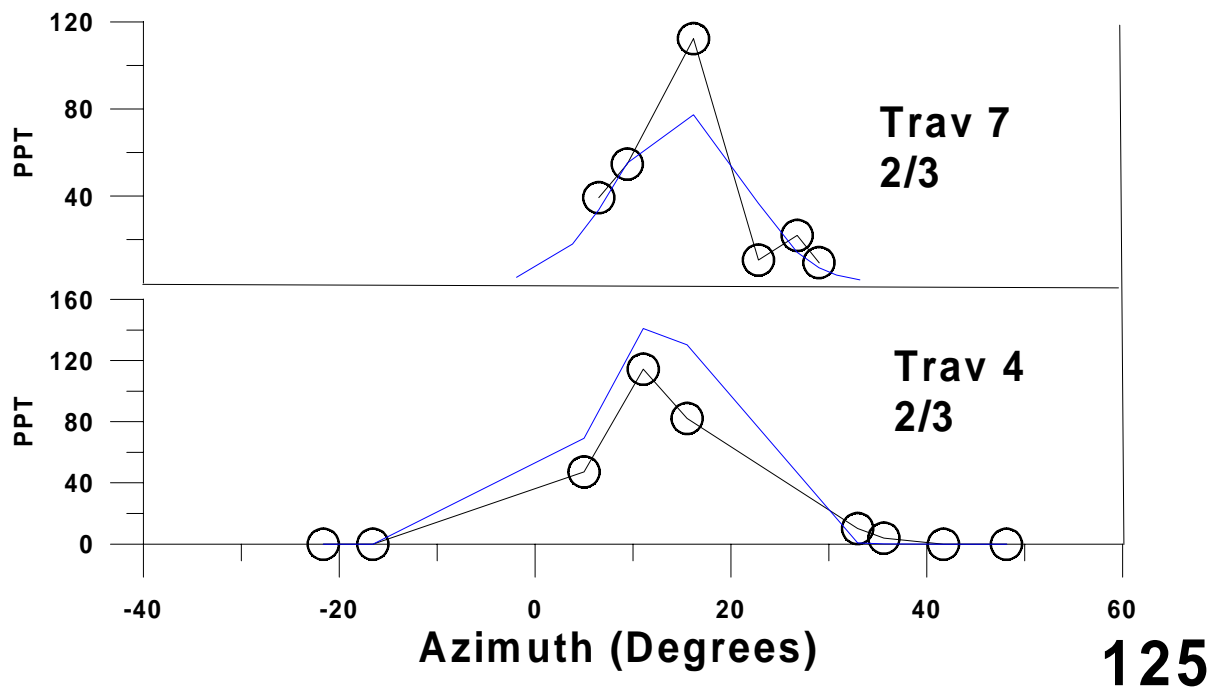
**Exp 152**

**Kincaid**



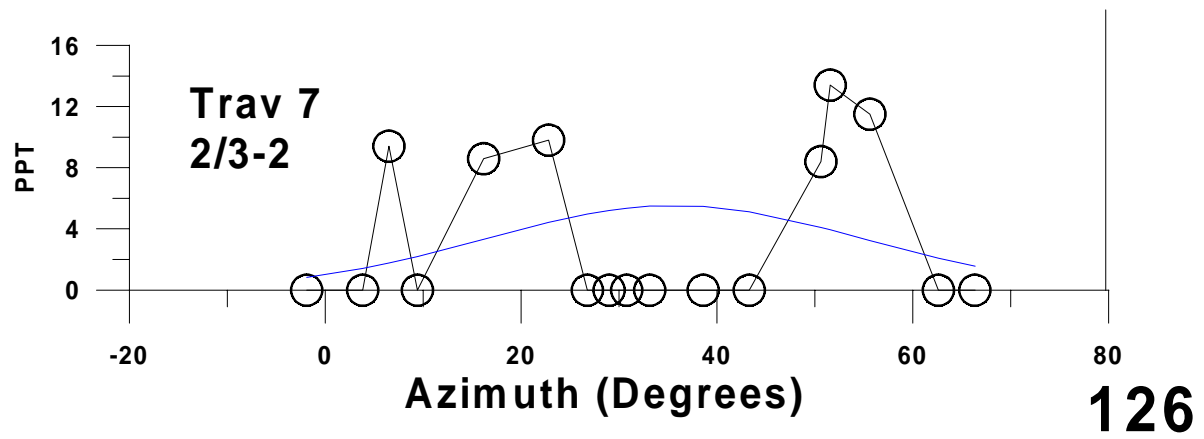
# Exp 153

# Kincaid

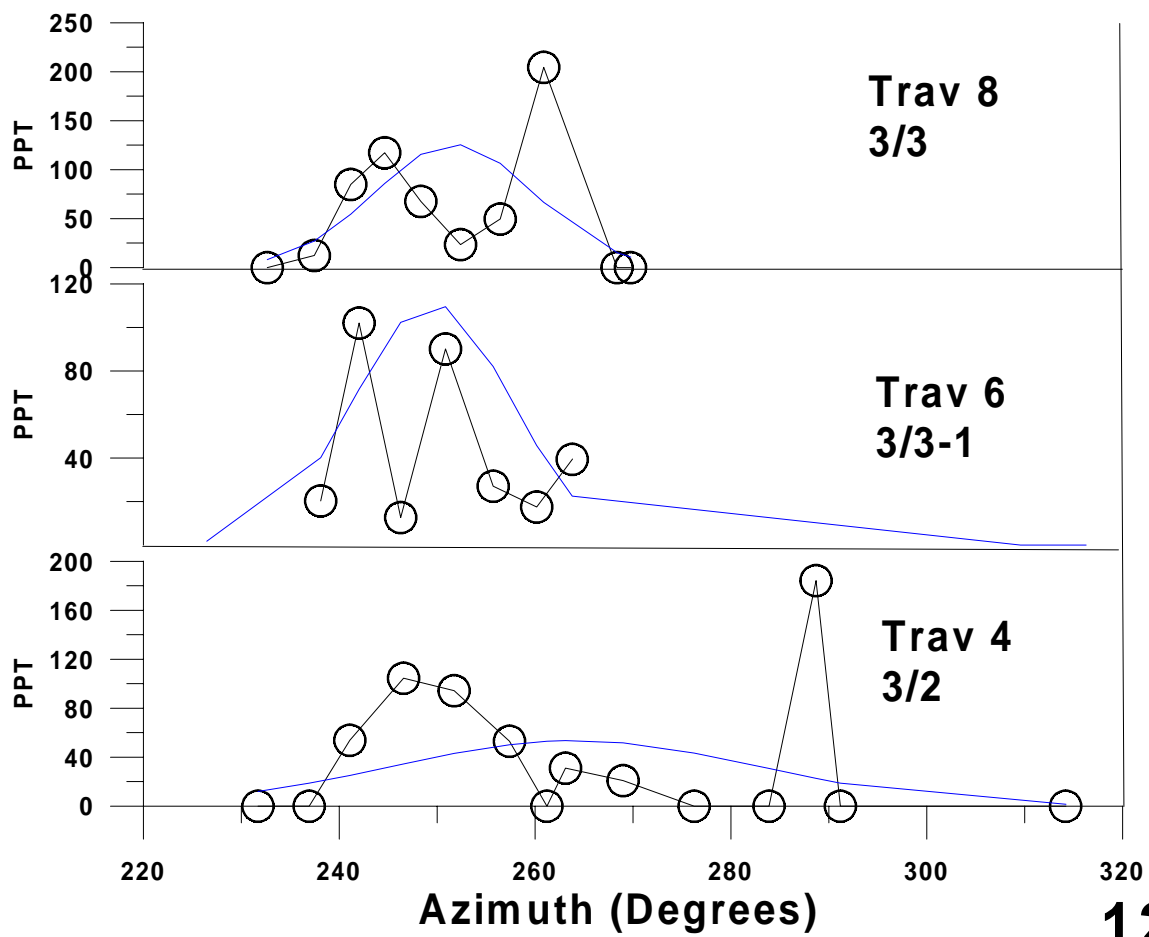


**Exp 156**

**Kincaid**

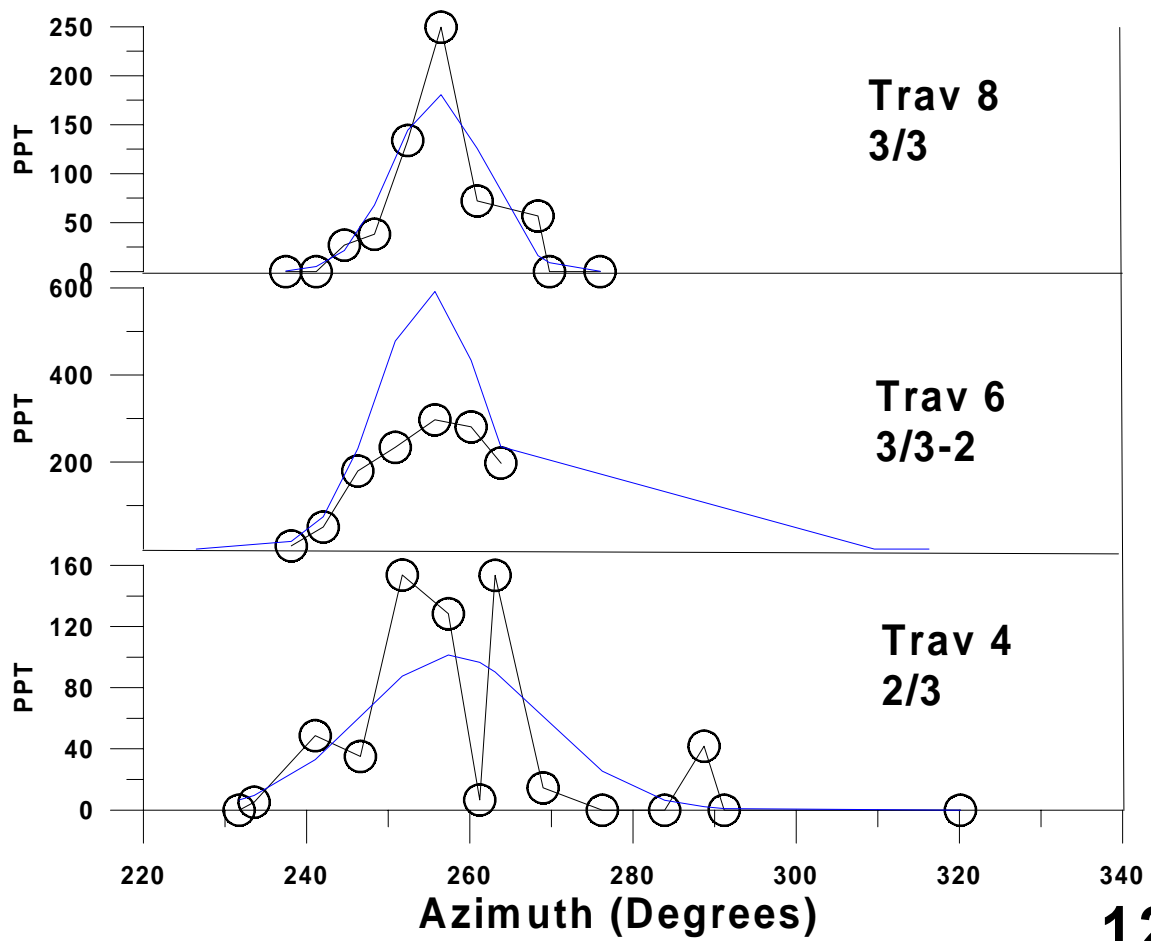


# Exp 158 Kincaid

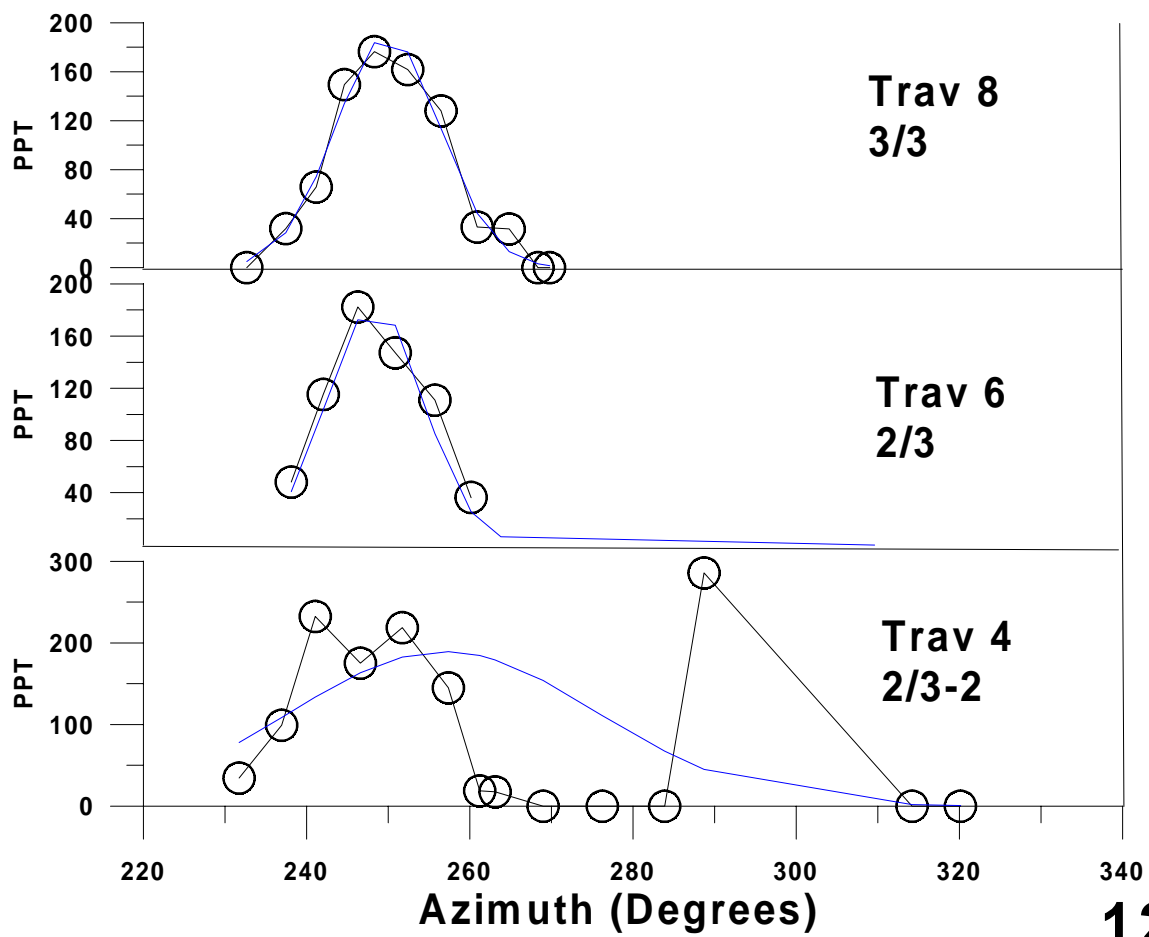




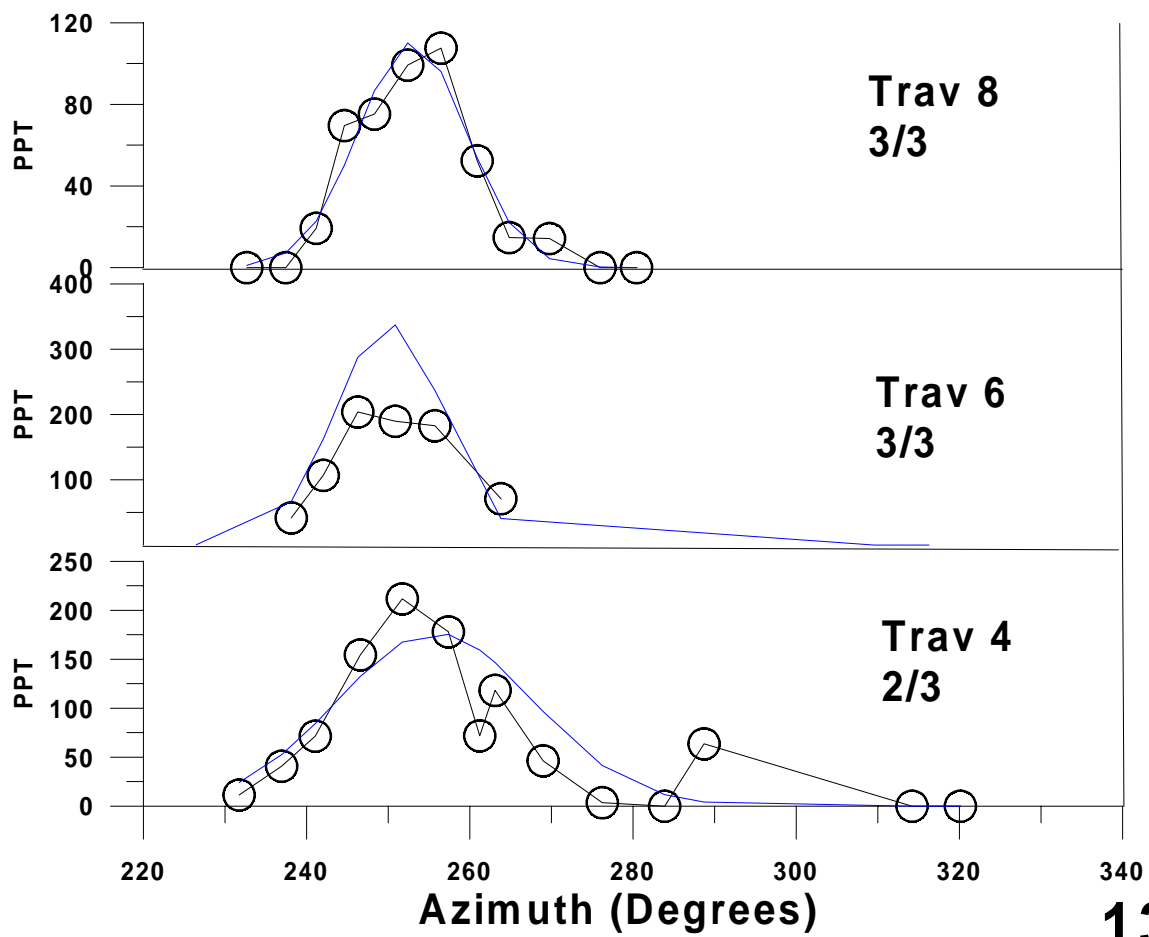
# Exp 159 Kincaid



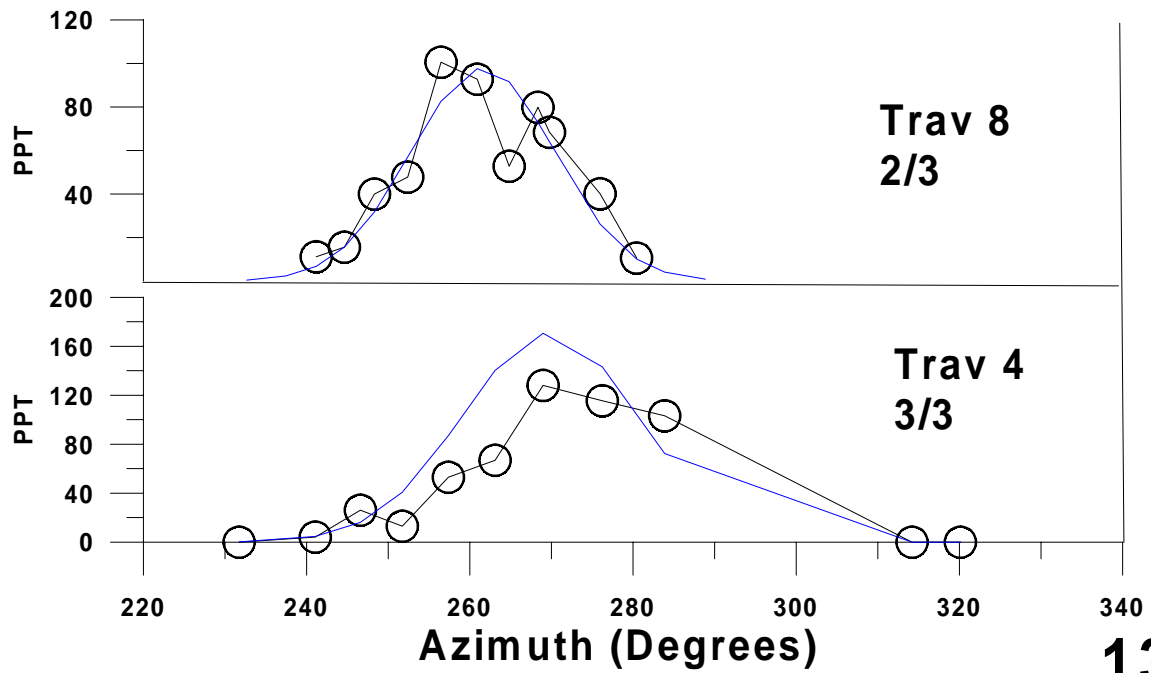
# Exp 160 Kincaid



# Exp 161 Kincaid

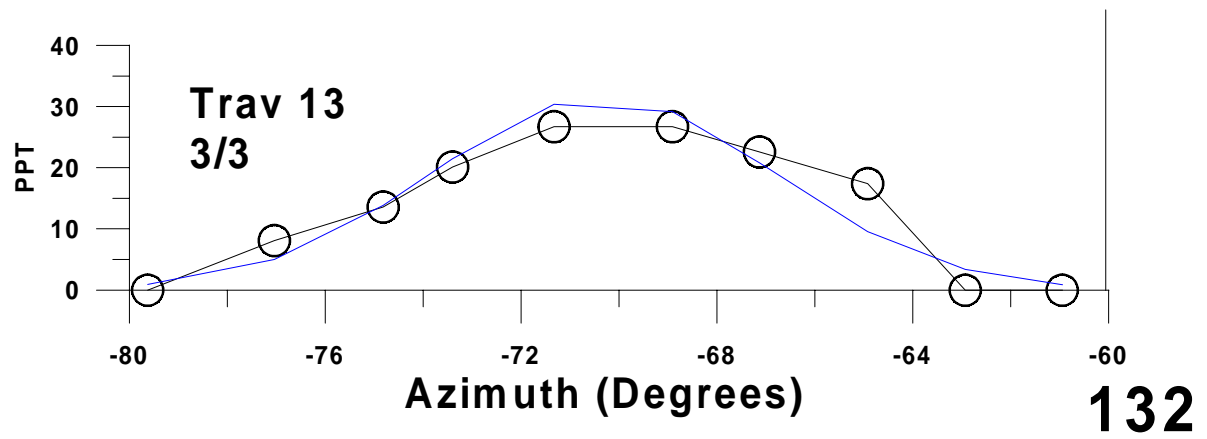


# Exp 162 Kincaid

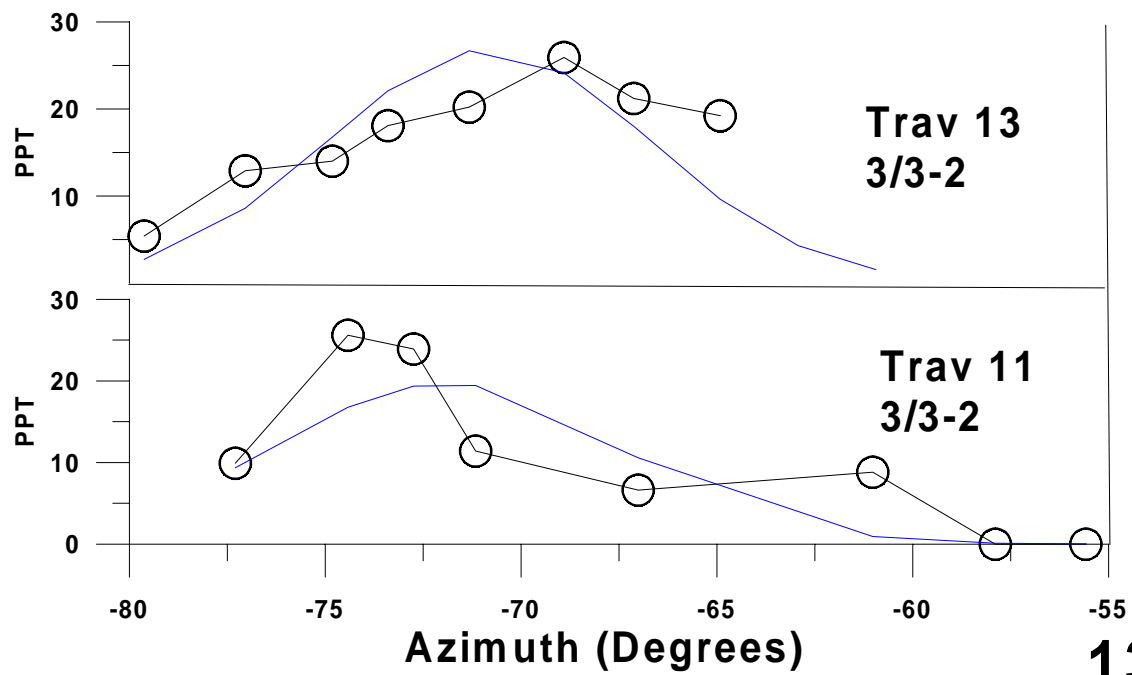


**Exp 163**

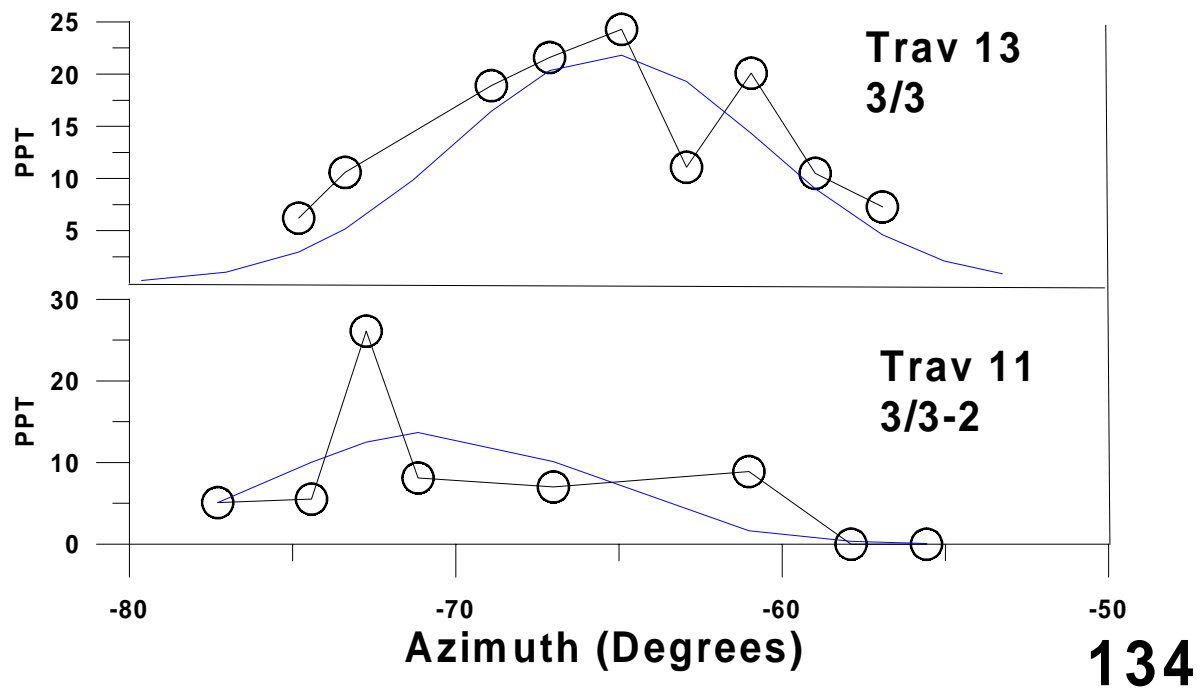
**Kincaid**



# Exp 164 Kincaid

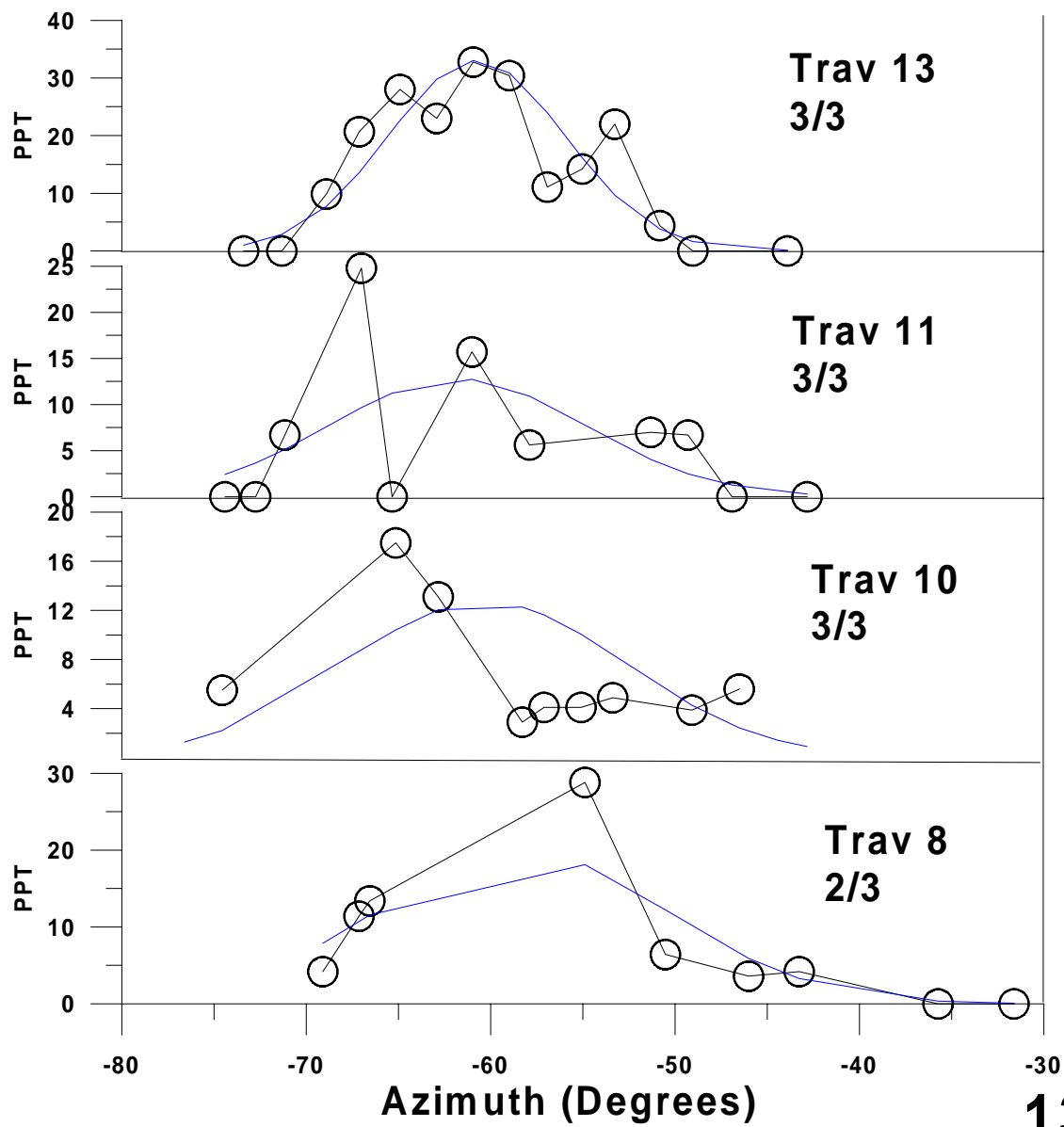


# Exp 165 Kincaid



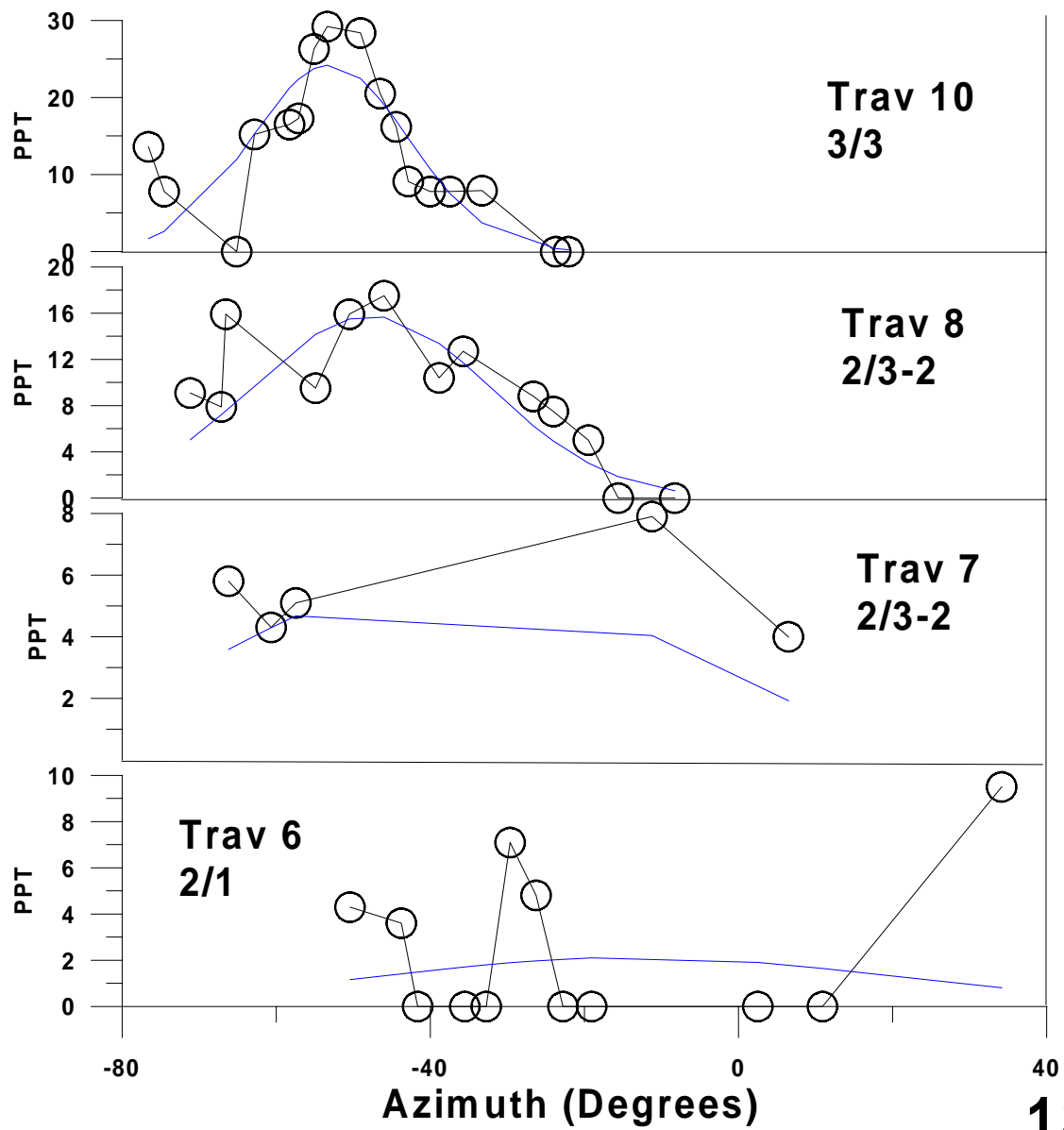
# Exp 166

# Kincaid

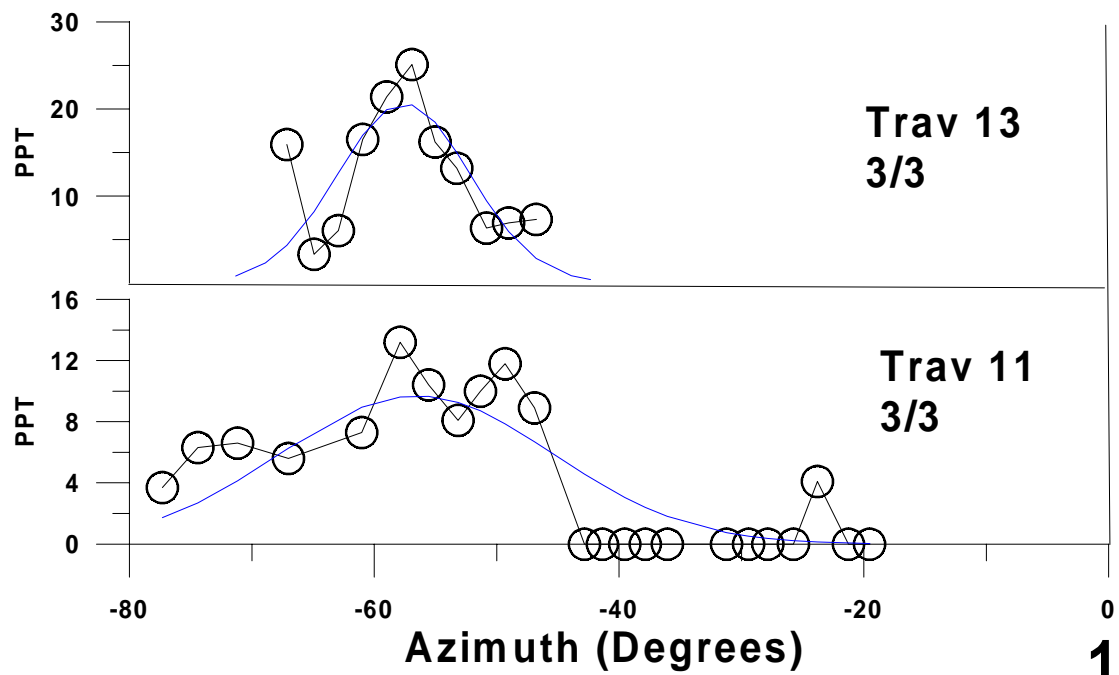




# Exp 167(a) Kincaid

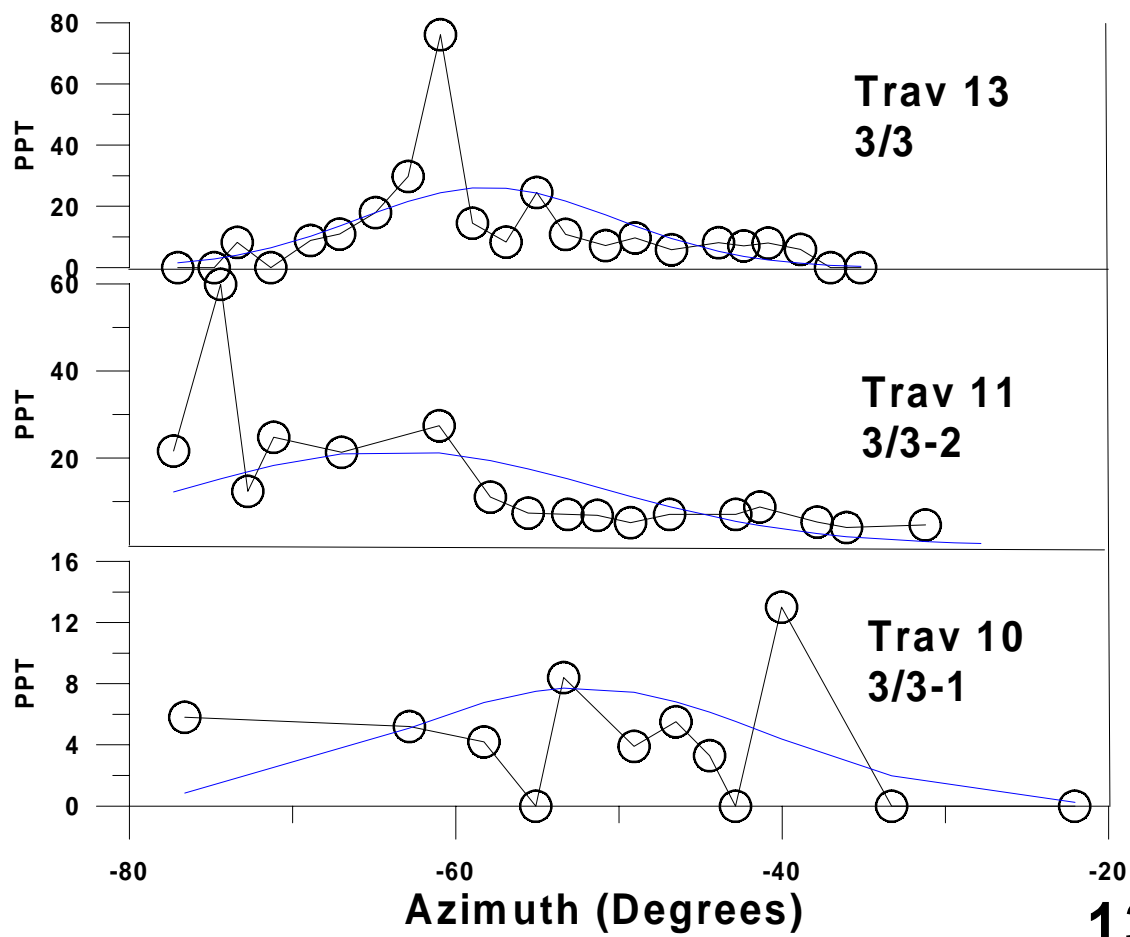


# Exp 167(b) Kincaid



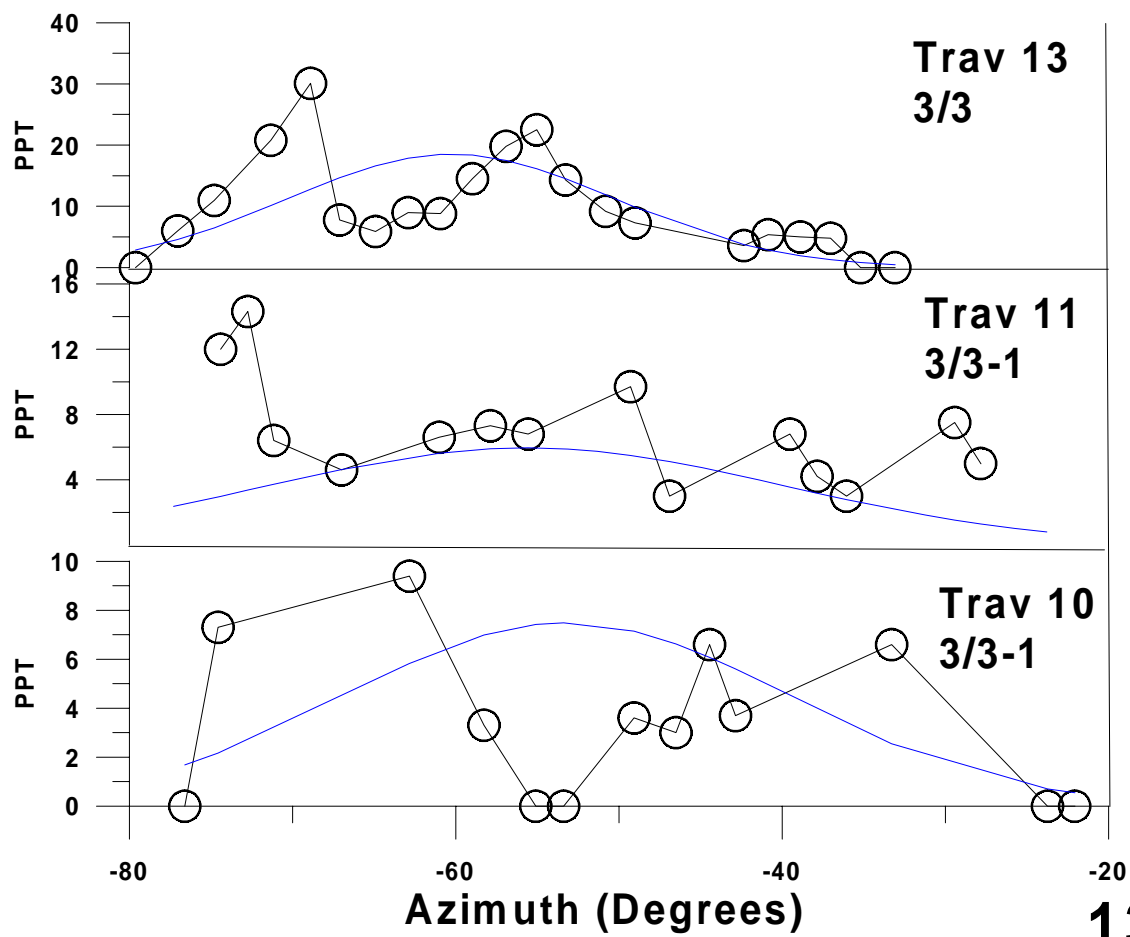
# Exp 168

# Kincaid



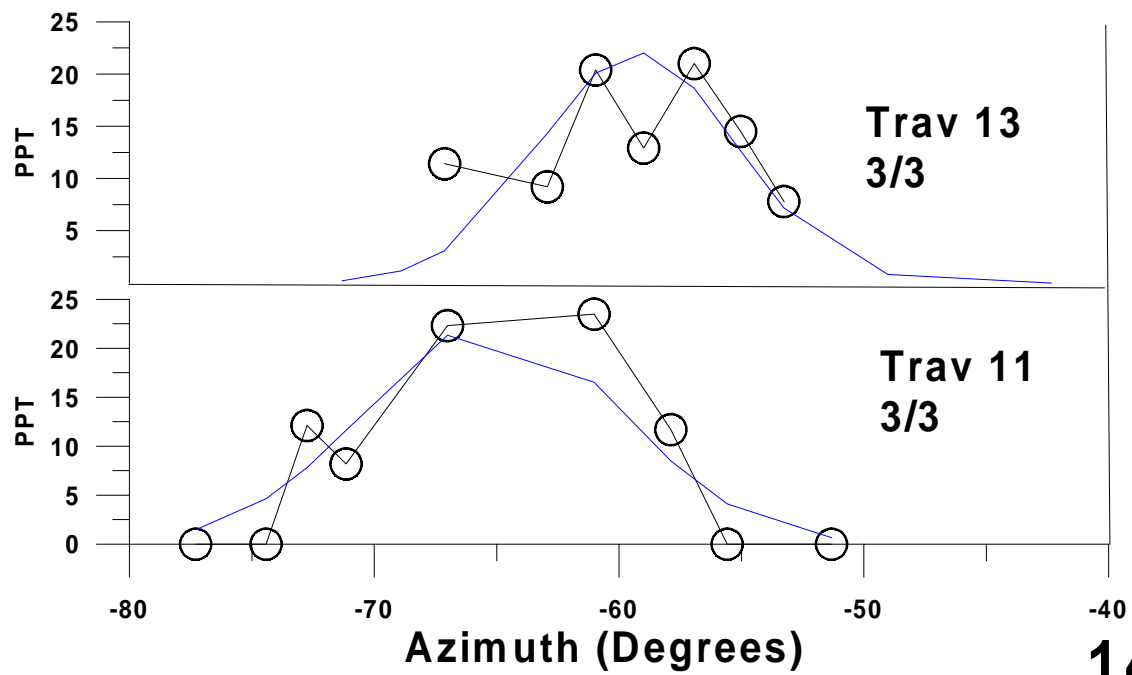
# Exp 169

# Kincaid



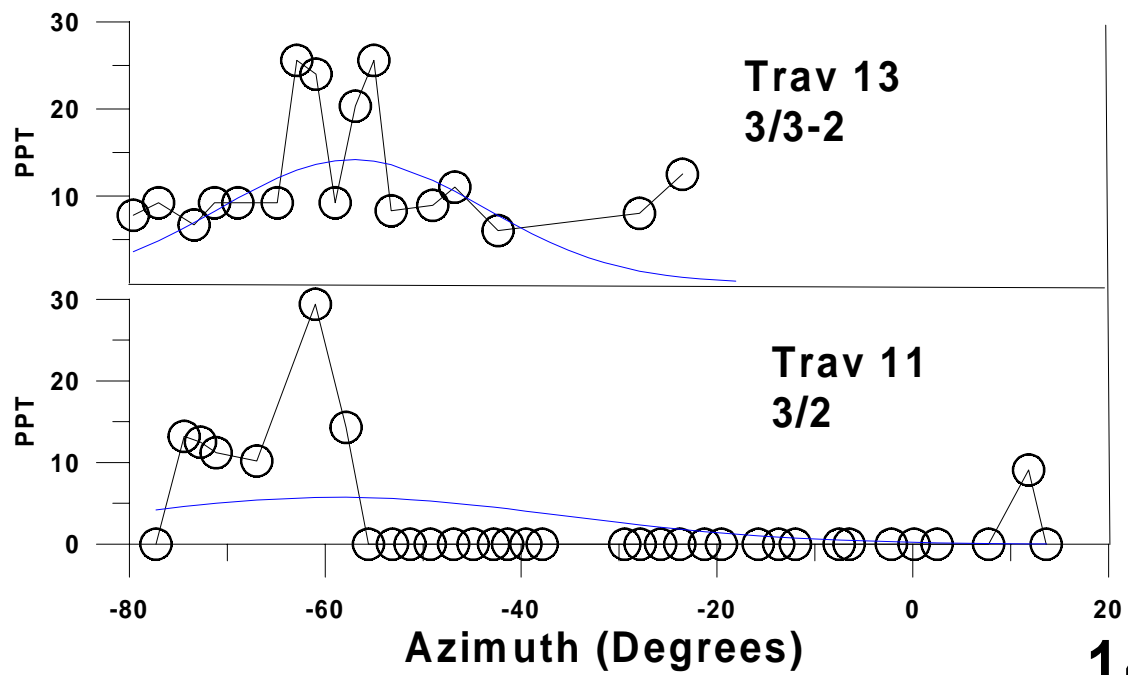
**Exp 170**

**Kincaid**

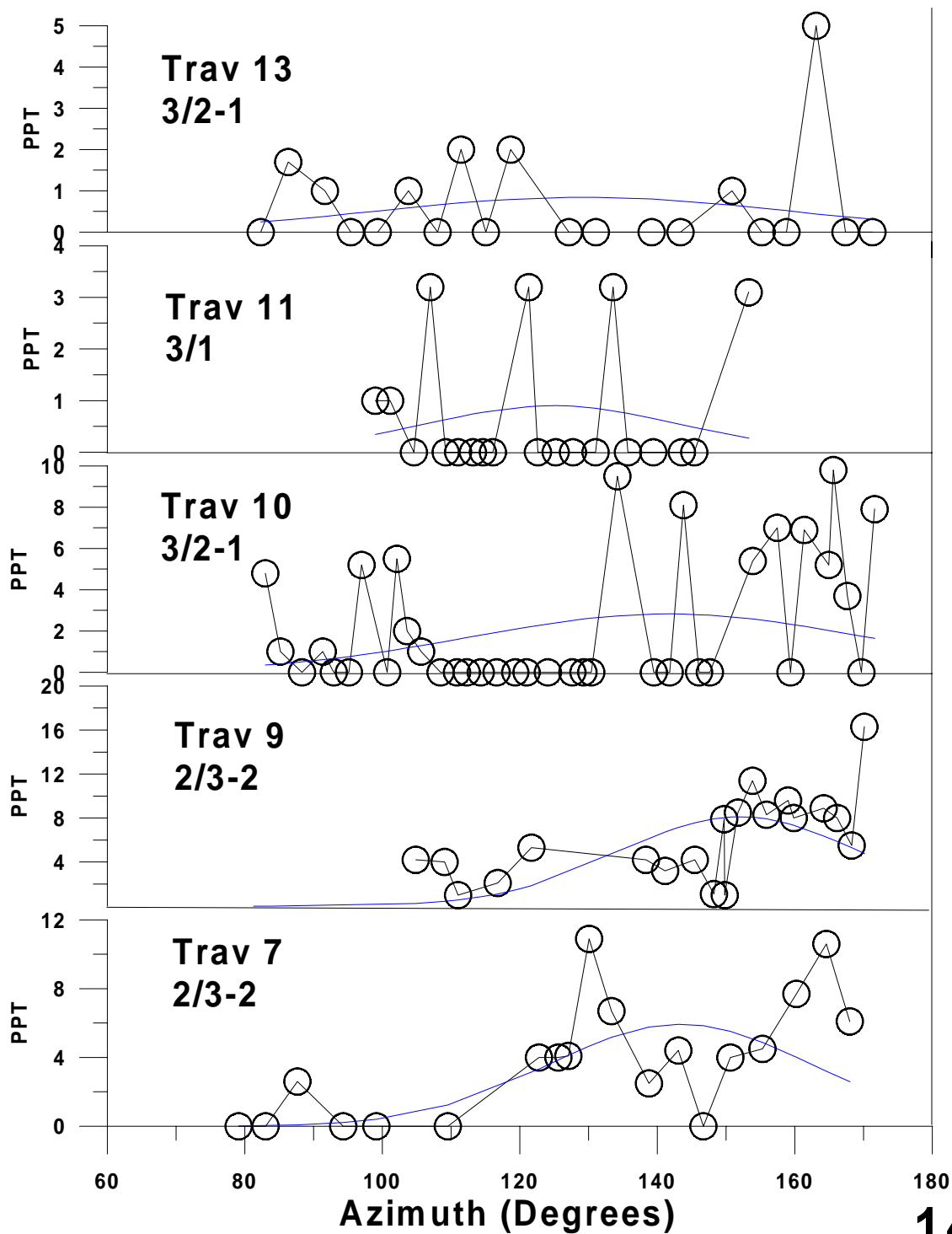


**140**

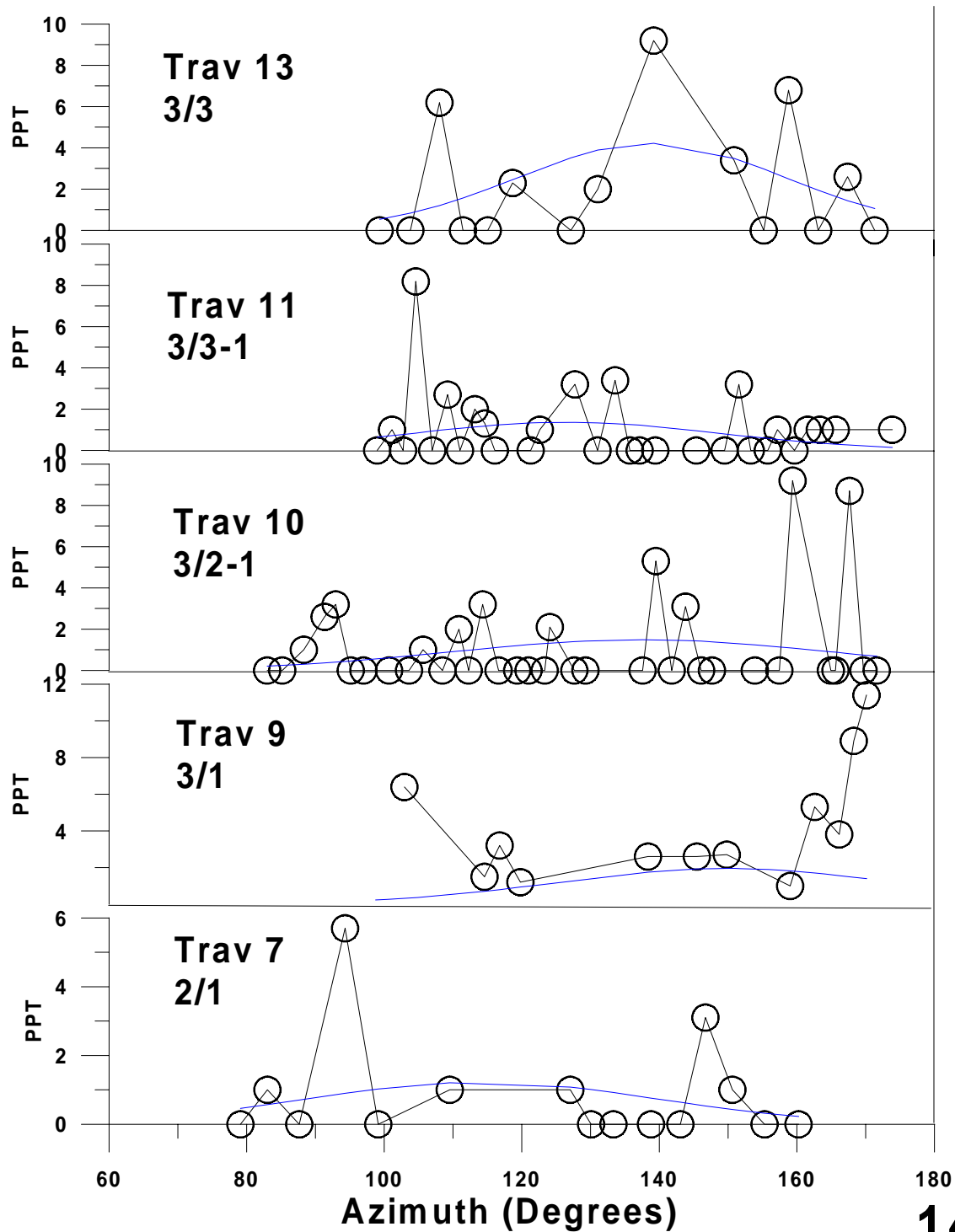
# Exp 171 Kincaid



# Exp 175 Kincaid



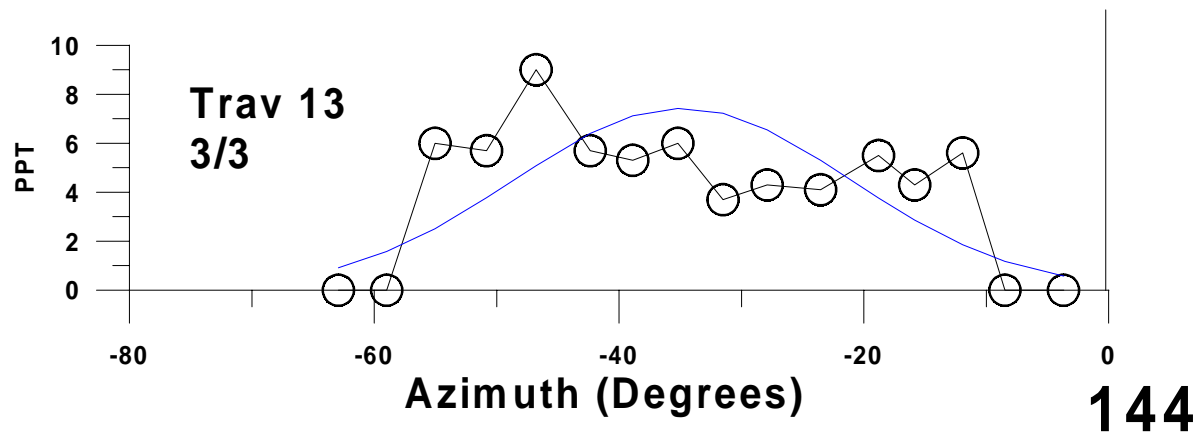
# Exp 176 Kincaid





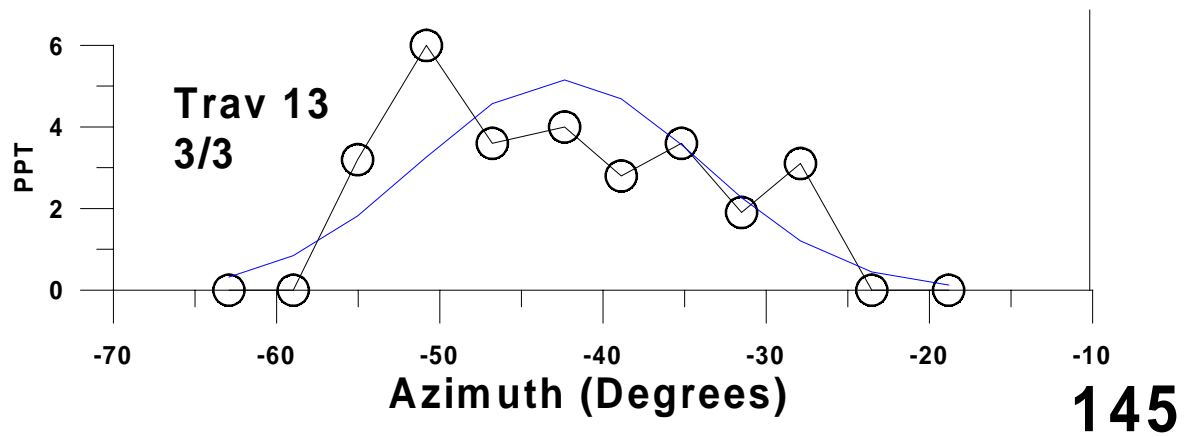
**Exp 185**

**Kincaid**

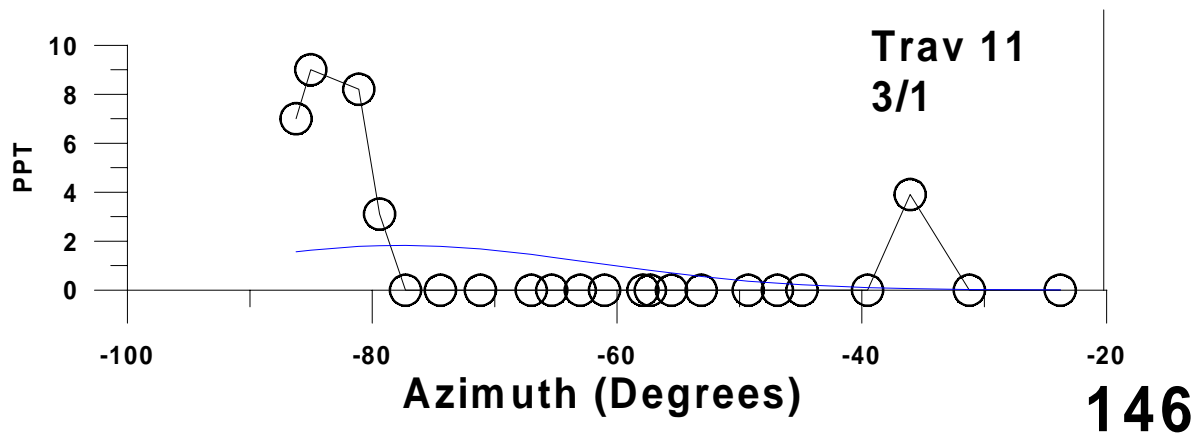


**Exp 186**

**Kincaid**



# Exp 187 Kincaid



# Exp 191 Kincaid

