

## CHAPTER 3

### GRAPHICAL PRESENTATIONS

Following the methods described in Chapter 2, the heights and times of occurrence for each of the four tides over a period of time may be graphed as a ribbon plot. The thickness of the ribbon represents the tide height and its location represents the time of occurrence during the lunar day.

Using this new graphical method the following data are shown in Figure 3.1 - Figure 3.10. In each case, the origin for the first lunar day is taken to be the midnight on December 31, 1993. For each location, the first ribbon graph shows the tide for the first two months of the year, while the second graph shows the tidal movements for the whole year. To facilitate visual comparison, Figure 3.5 is shown again on the same page. Figure 3.10 is also repeated.

Figure 3.1 shows the continuous data from January to February at Laem Ta Chi in 1994. The y axis represents the time of occurrence, or the position of the tide on the Earth compared with the Moon in a lunar day. The Earth and the Moon system is rotating approximately every 24 hour and 50 minutes. The x axis represents the time unit as the lunar day of the year with each lunar month separated with a line. The thickness of the ribbon represents the height of water in decimeters.

Figure 3.2 shows the same information for the semidiurnal tide for the whole year at Laem Ta Chi in 1994. The first ribbon at the bottom is the first low tide (low-1) which occurs at approximately 6.00 am., and the second low tide (low-2) occurs at approximately 12 hours and 25 minutes later. Similarly the first high tide occurs at the mid-lunar day, so in 12 hours and 25 minutes later approximately the second high tide will occur again.

### Ribbon graphs for Laem Ta Chi

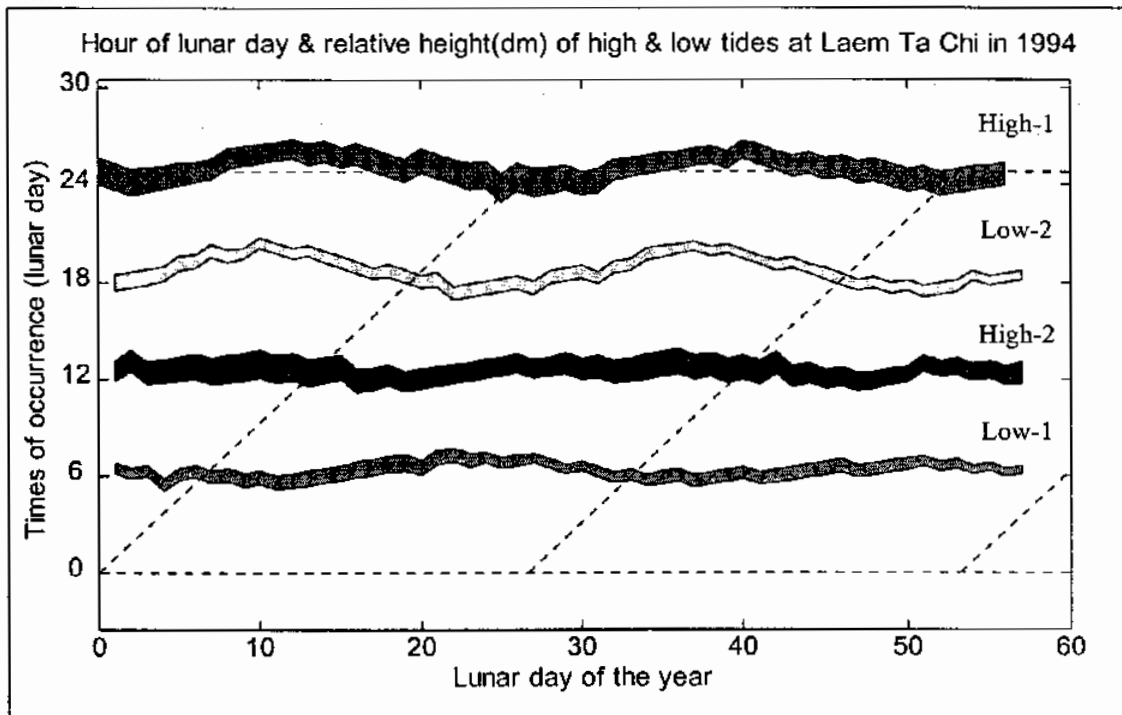


Figure 3.1 Ribbon graph for Laem Ta Chi for January and February, 1994

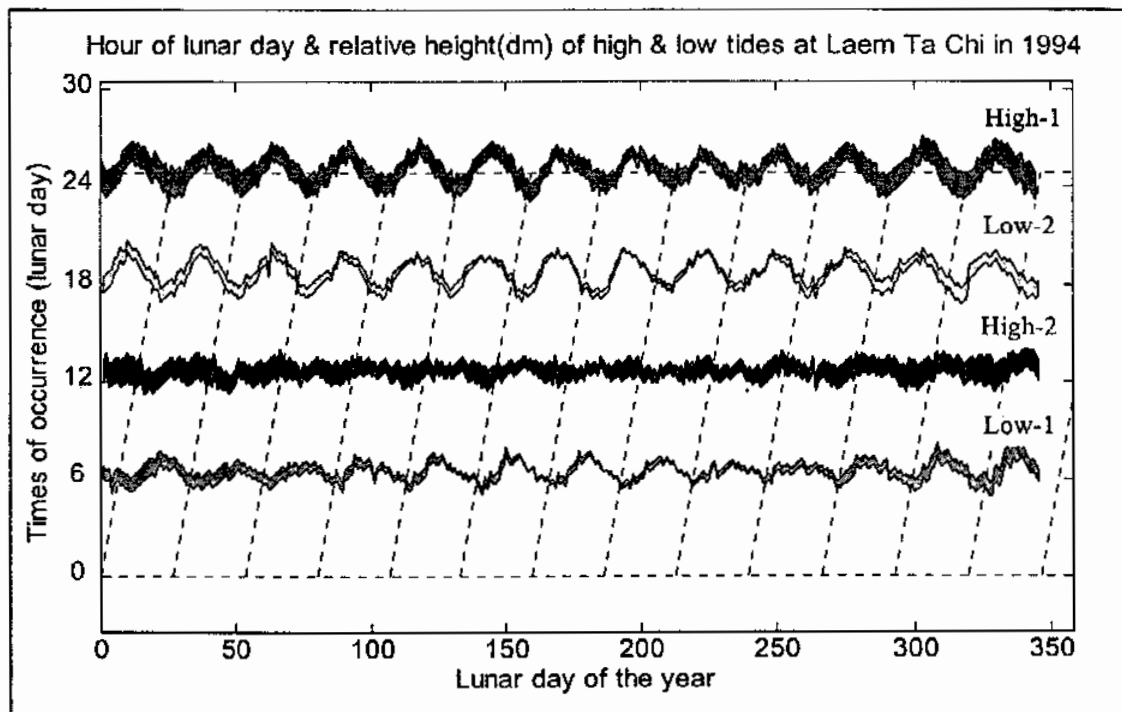


Figure 3.2 Ribbon graph for Laem Ta Chi for the year 1994

Ribbon graphs for Ko Nu

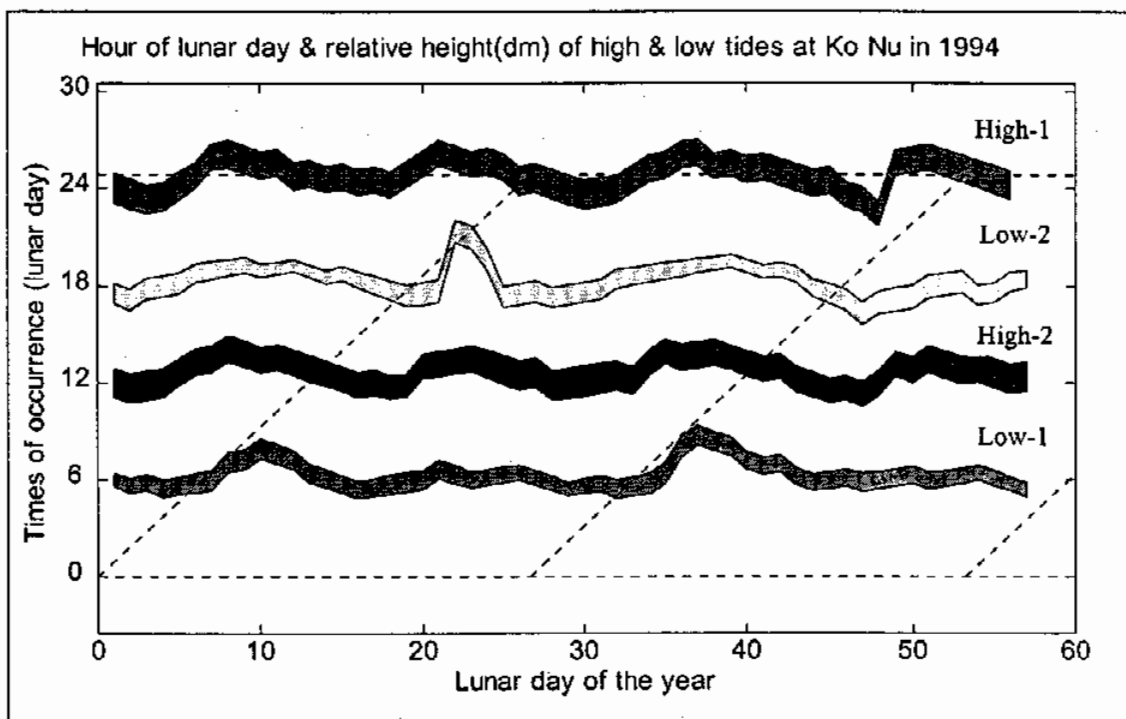


Figure 3.3 Ribbon graph for Ko Nu for January and February, 1994

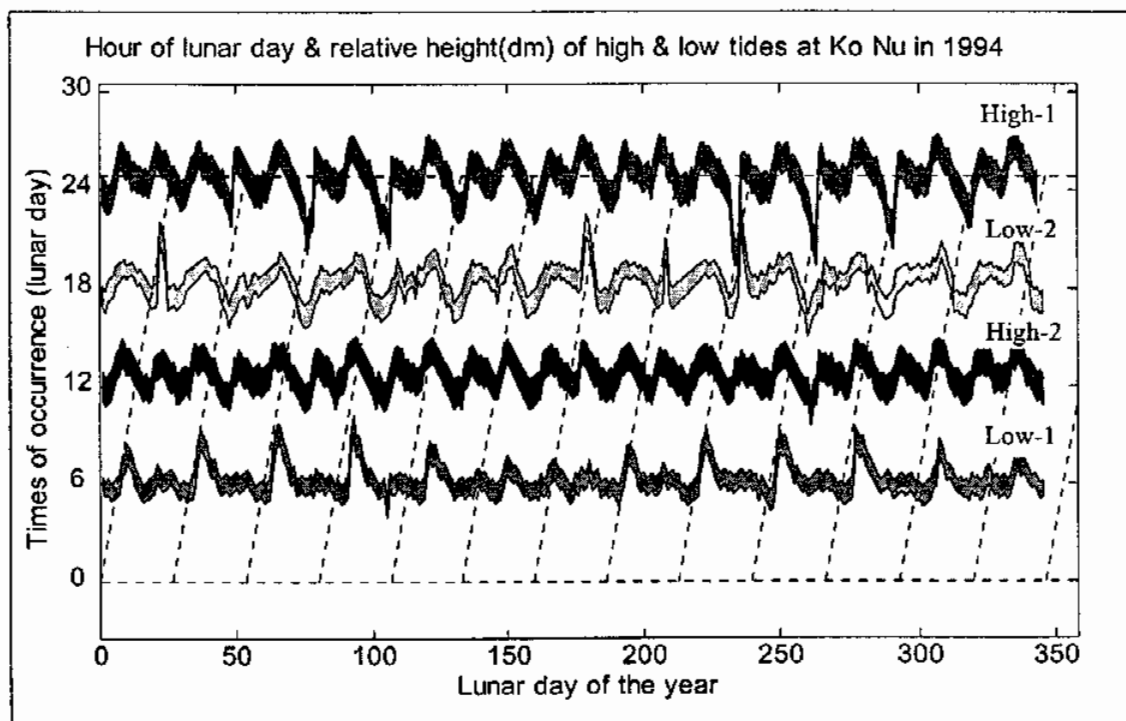


Figure 3.4 Ribbon graph for Ko Nu for the year 1994

### Comparison of ribbon graphs for Laem Ta Chi and Ko Nu

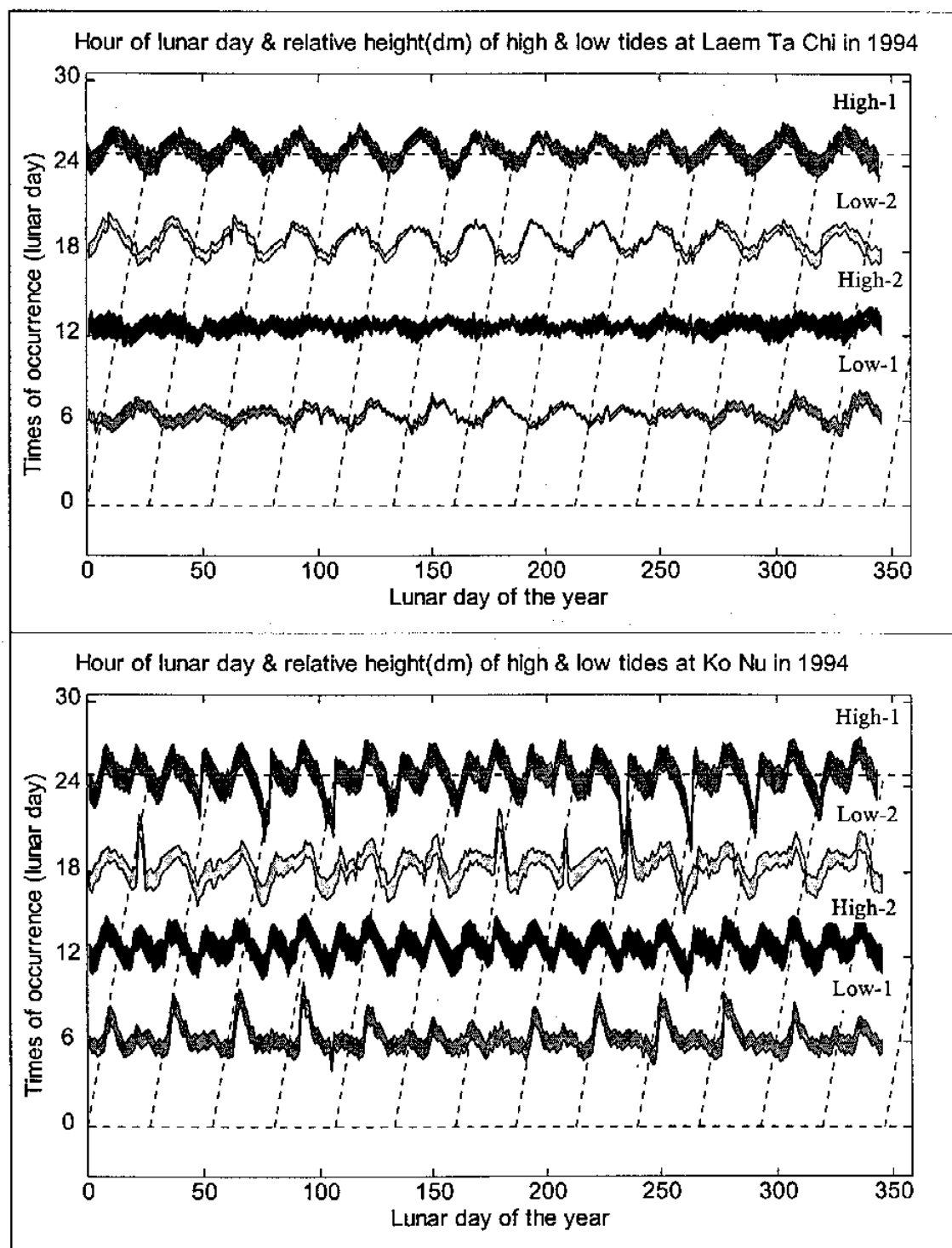


Figure 3.5 Comparison of ribbon graphs for Laem Ta Chi and Ko Nu for the year 1994

At Laem Ta Chi each lunar month shows a repetition, approximately the same for each tide type. Over the whole year the height of the water is less in the midyear. Figure 3.3 shows the continuous data from January to February at Ko Nu in 1994. Figure 3.4 shows the same information for this semidiurnal tide for the whole year at Ko Nu.

Both Laem Ta Chi and Ko Nu in Figure 3.5 show a semidiurnal pattern, with exactly one tide of each type occurring in each lunar day. However, the patterns differ at the two locations. In particular, the patterns for Laem Ta Chi are smoother than those for Ko Nu. The second high tide at Laem Ta Chi shows very little variation in its time of occurrence. It is also notable from these graphs that the variation between the heights of the tides is much greater at Laem Ta Chi than at Ko Nu.

Figure 3.6 shows the data from January to February at Bang Nara in 1994. Gaps are shown between each tide type. So at any point of the lunar day, not only does it have four tide types (semidiurnal tide), but also two tide types (diurnal tide).

Figure 3.7 shows the same information for the semidiurnal tide for the whole year at Bang Nara in 1994. In the low tide there is more variation than in the high tide and the repetition is not exactly the same in each lunar month.

Figures 3.8 and 3.9 show the data from January to February and whole year at Pak Phun in 1994.

### Ribbon graphs for Bang Nara

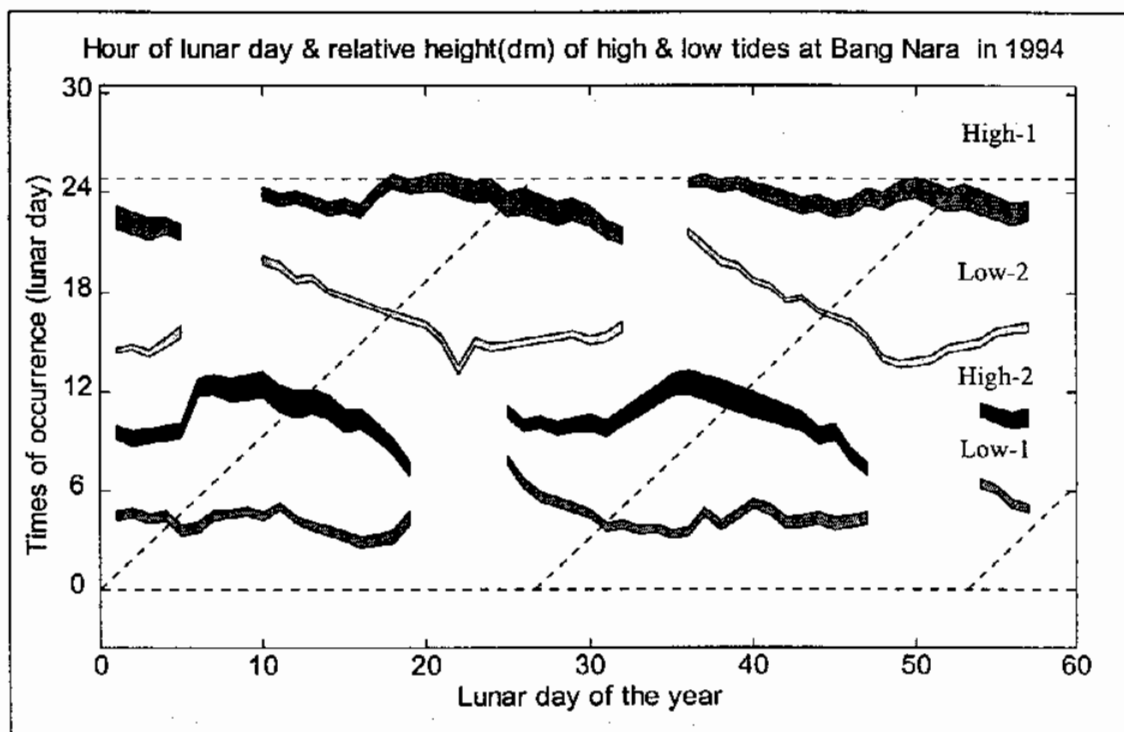


Figure 3.6 Ribbon graph for Bang Nara for January and February, 1994

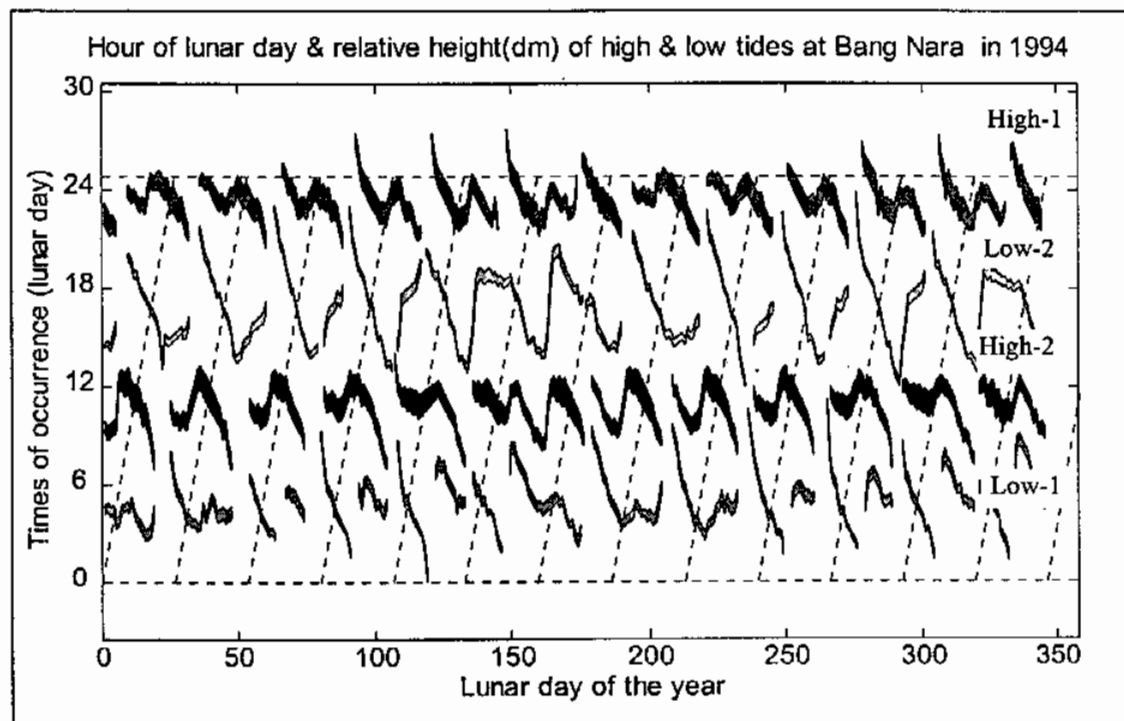


Figure 3.7 Ribbon graph for Bang Nara for the year 1994

### Ribbon graphs for Pak Phun

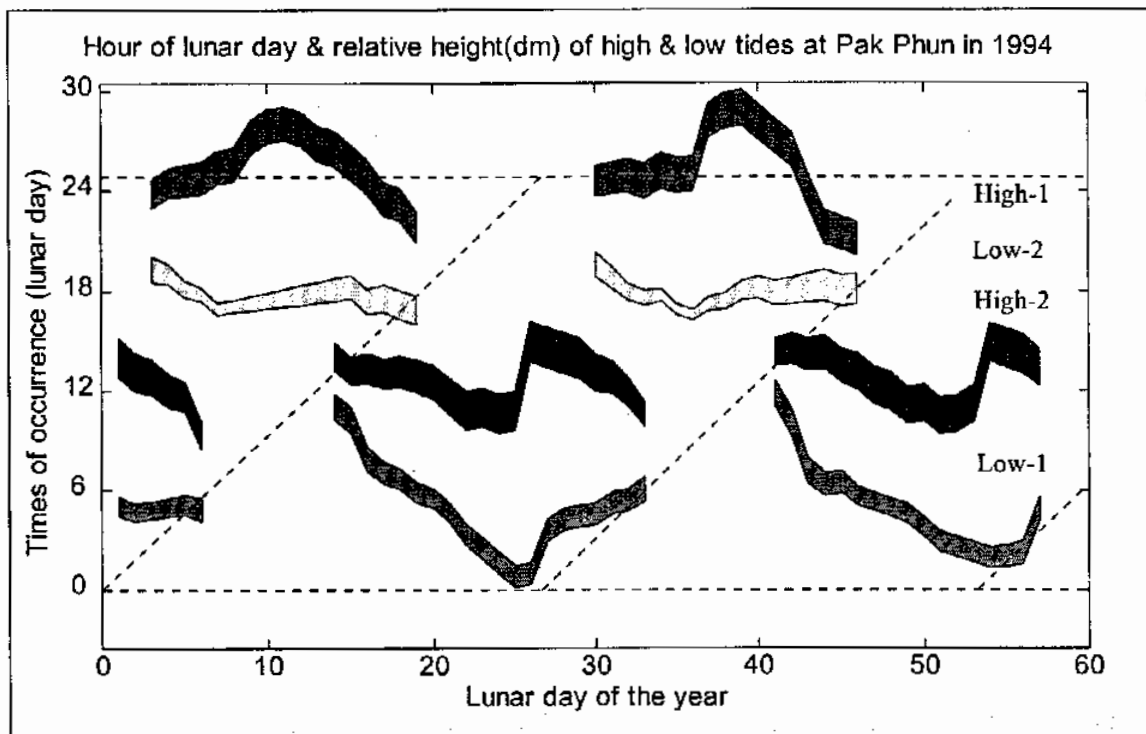


Figure 3.8 Ribbon graph for Pak Phun for January and February, 1994

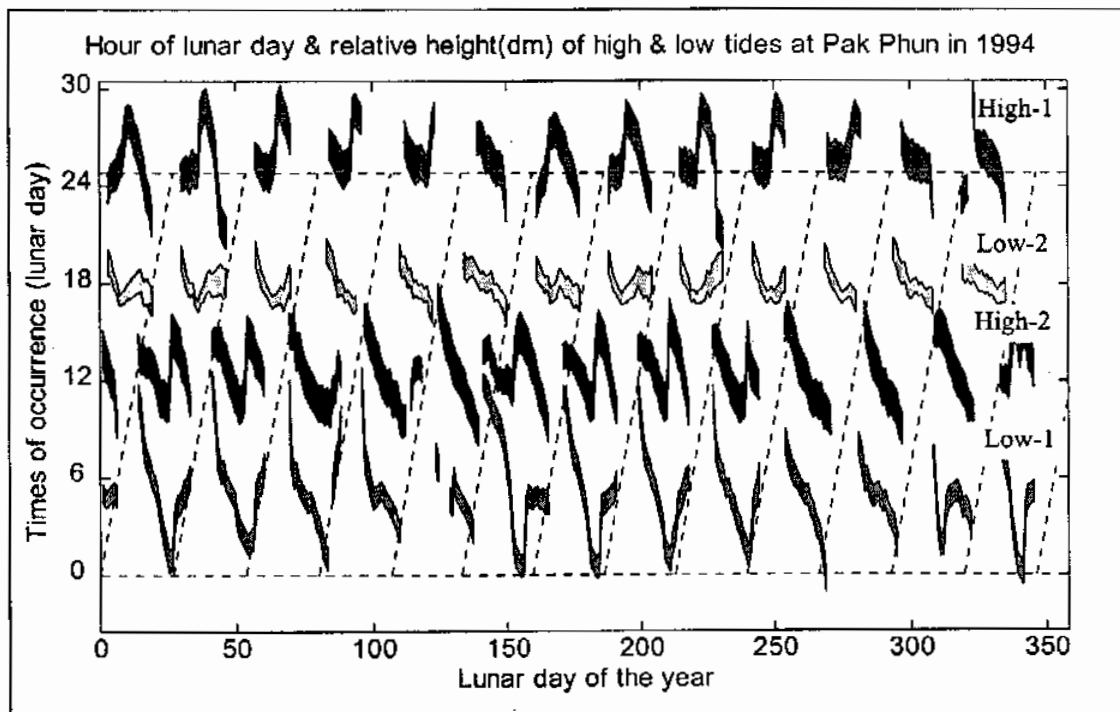


Figure 3.9 Ribbon graph for Pak Phun for the year 1994

### Comparison of ribbon graphs for Bang Nara and Pak Phun

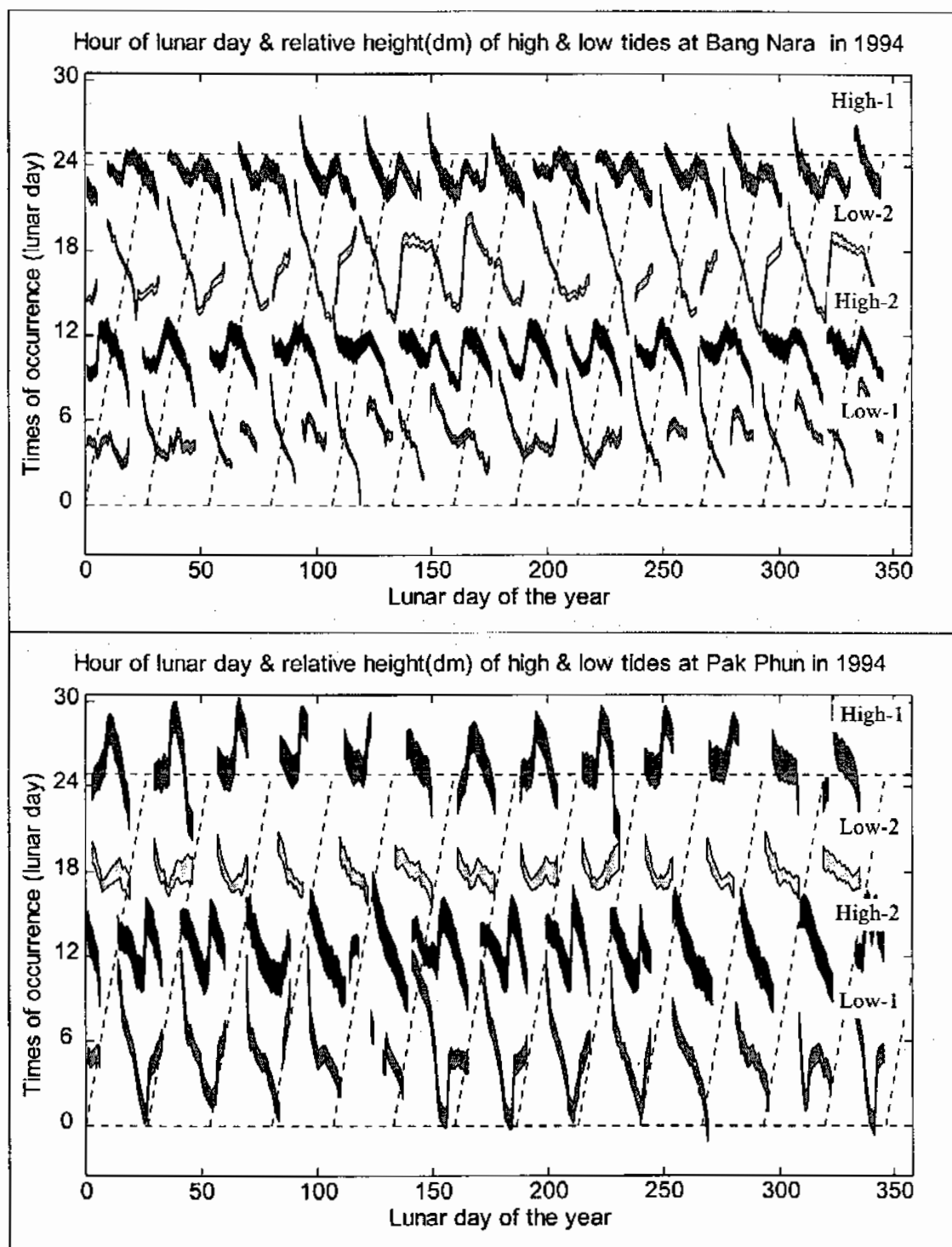


Figure 3.10 Comparison of ribbon graphs for Bang Nara and Pak Phun for the year 1994



Figure 3.10 show both Bang Nara and Pak Phun in a mixed tide pattern. These show variation in times of occurrence at the low tide. For Bang Nara the gaps occurred in the middle of a lunar month, but at Pak Phun the gaps occurred at the end of a lunar month, and the gaps which they occur in each tide type look the same in each lunar month cycle. At Bang Nara the water levels are less than Pak Phun in each tide type, and the second low tide has the least height.