Appendix

Appendix: Data structure and programs used

A. Data structure

The data was collected in the file *boon.num* file and consists of 12 columns including Coast, Provinces, Year, Month, Cases, Deaths, rainfall, rain days, Max temp, Min temp, humidity, and Population in four provinces include Krabi, Trang, Nakhon Si Thammarat and Songkhla, as follows

0 6582 82	1	6	1	0	0	324	235	68	239048
0 6582 82	2	2	0	0	0	333	238	76	239048
0 6582 82	3	8	1	25	2	341	246	70	239048
0 6582 82	4	6	0	915	15	334	254	76	239048
0 6582 82	5	20	0	2358	23	320	252	82	239048
0 6582 82	6	20	0	827	16	313	262	81	239048
0 6582 82	7	6	0	5786	19	303	248	83	239048
0 6582 82	8	12	1	2546	17	310	251	81	239048
0 6582 82	9	0	0	2148	12	305	256	82	239048
0 6582 82	10	2	0	1856	19	308	240	84	239048
0 6582 82	11	2	0	846	13	314	244	81	239048
0 6582 82	12	0	0	363	5	310	235	77	239048
---									
0 6878 78	1	0	0	775	7	329	218	75	409519
0 6878 78	2	0	0	0	0	341	220	68	409519
0 6878 78	3	0	0	1167	4	363	228	70	409519
0 6878 78	4	0	0	691	13	344	233	79	409519
0 6878 78	5	0	0	2242	23	328	243	85	409519
0 6878 78	6	0	0	4129	23	311	238	86	409519
0 6878 78	7	1	0	3832	22	305	233	86	409519
0 6878 78	8	0	0	1756	19	313	240	83	409519
0 6878 78	9	0	0	2361	22	308	233	86	409519
0 6878 78	10	0	0	1225	25	314	231	87	409519
0 6878 78	11	0	0	700	14	315	224	83	409519
0 6878 78	12	0	0	776	11	313	225	78	409519
---									
1 6778 78	1	2	0	1454	12	300	225	85	1211181
1 6778 78	2	3	0	13	4	310	222	79	1211181
1 6778 78	3	1	0	31	4	334	231	77	1211181
1 6778 78	4	1	0	1962	12	339	233	80	1211181
1 6778 78	5	5	1	1310	16	327	245	82	1211181
1 6778 78	6	16	0	280	8	338	237	77	1211181
1 6778 78	7	19	0	572	11	331	235	77	1211181
1 6778 78	8	17	0	560	11	340	245	72	1211181

1 6778 78	9	27	1	865	19	330	233	79	1211181
1 6778 78	10	36	1	1789	16	320	232	83	1211181
1 6778 78	11	60	1	4008	13	300	227	85	1211181
1 6778 78	12	11	1	3908	18	295	226	85	1211181
---									
1 6978 78	1	2	0	795	6	298	246	76	822137
1 6978 78	2	1	0	63	3	306	248	73	822137
1 6978 78	3	0	0	89	7	314	248	74	822137
1 6978 78	4	0	0	512	5	324	244	73	822137
1 6978 78	5	2	0	1121	17	324	253	74	822137
1 6978 78	6	2	0	592	12	325	246	72	822137
1 6978 78	7	2	0	511	13	316	241	73	822137
1 6978 78	8	5	0	151	7	334	250	67	822137
1 6978 78	9	1	0	1804	14	321	240	73	822137
1 6978 78	10	5	0	1914	21	310	242	77	822137
1 6978 78	11	7	0	3730	19	291	238	81	822137
1 6978 78	12	4	0	2081	15	292	244	77	822137

B. Programming using preliminary result and statistical analysis and modelling

To obtain Figure 3.1 and Figure 3.2, showing histograms and statistics of data for all variables before and after transformation using logarithms and cube root respectively, using matlab together with functions (getfile, getnum, putnum, getfn, putfn, describe) in the ASP (McNeil et al 1998) package, the following programs are used.

Program chap31.m to create Figure 3.1

```
getfile boon
y = getnum;
y(:,2) = floor(y(:,2)/100);
y(:,7) = y(:,7)/100;
y(:,12) = round(y(:,12)/1000);
y = [y y(:,5)./y(:,12)];
fn = getfn;
fn{7} = 'rainfall(cm)';
fn{12} = 'pop(1000s)';
fn{13} = 'inc/1000';
putfn(fn)
putnum(y)
describe hist=1 font=8 type=2 fnwid=15
```

Program chap32.m to create Figure 3.2

```
getfile boon
y = getnum;
y(:,2) = floor(y(:,2)/100);
```

```
y(:,12) = round(y(:,12)/1000);
y = [y y(:,5)./y(:,12)];
fn = getfn;
fn{12} = 'pop(1000s)';
fn{13} = 'inc/1000';
putfn(fn)
putnum(y)
y1=y(:,7).^(1/3);
y(:,7) = y(:,7)/100;
a=y(:,1:7);
b=y(:,8:13);
y2= log10(0.005+y(:,13));
new=[a y1 b y2];
putnum(new);
fn=getfn;
fn{7} = 'rainfall(cm)';
fn{8} = 'cubrt(rf)';
fn{9} = 'rain days';
fn{10} = 'max temp';
fn{11} = 'min temp';
fn{12} = 'humidity';
fn{13} = 'pop';
fn{14} = 'inc/1000';
fn{15} = 'log(inc)';
putfn(fn)
describe hist=1 font=10 type=2 fnwid=18 col=[7 8 14 15]
```

Figure 3.3 and Figure 3.4, the relationship between the incidence of DHF and year by latitude and coast, by using matlab together with functions (getfile, getfn, putnum, putfn, getlab, putlab, setvar, stratify, track) in the ASP (McNeil et al 1998) package, the following programs are used.

Program chap33.m to create Figure 3.3

```
getfile boon
y = getnum;
north = y(:,2)<6800;
y(:,2) = floor(y(:,2)/100);
y(:,12) = y(:,12)/1000;
y = [y y(:,5)./y(:,12)];
fn = getfn;
fn{13} = 'incidence/1000';
y(:,7) = y(:,7).^(1/3);
y(:,13) = log10(0.005+y(:,13));
fn{7} = 'curt(rainfall)';
fn{13} = 'log(inc)';
y = [y(:,[1 3 7 13]) north];
```

```
putnum(y)
fn{2} = fn{3};
fn{3} = fn{7};
fn{4} = fn{13};
fn{5} = 'latitute';
putfn(fn)
lab = getlab;
lab{2} = lab{3};
lab{3} = lab{7};
lab{4} = lab{13};
lab{5} = {'0 South' '1 North'};
putlab(lab)
setvar y=4 x=[1 2 5]
stratify
sctvar res=1 y=4 x=[2 3 1];
track res=1 font=10 size=8
```

Program chap34.m to create Figure 3.4

```
getfile boon
y = getnum;
north = y(:,2)<6800;
y(:,2) = floor(y(:,2)/100);
y(:,12) = y(:,12)/1000;
y = [y y(:,5)./y(:,12)];
fn = getfn;
fn{13} = 'incidence/1000';
y(:,7) = y(:,7).^(1/3);
y(:,13) = log10(0.005+y(:,13));
fn{7} = 'curt(rainfall)';
fn{13} = 'log(inc)';
y = [y(:,[1 3 7 13]) north];
putnum(y);
fn{2} = fn{3};
fn{3} = fn{7};
fn{4} = fn{13};
fn{5} = 'latitude';
putfn(fn)
lab = getlab;
lab{2} = lab{3};
lab{3} = lab{7};
lab{4} = lab{13};
lab{5} = {'0 south' '1 north'};
putlab(lab)
setvar y=4 x=[1 2 5]
stratify
setvar res=1 y=4 x=[2 1 3];
track res=1 font=9 size=8
```

Figure 3.5 and Figure 3.6, the relationship between the incidence of DHF month by latitude and coast, by using matlab together with functions (getfile, getfn, putnum, putfn, getlab, putlab, setvar, stratify, track) in the ASP (McNeil et al 1998) package, the following programs are used.

Program chap35.m to create Figure 3.5

```
getfile boon
y = getnum;
north = y(:,2)<6800;
y(:,2) = floor(y(:,2)/100);
y(:,12) = y(:,12)/1000;
y = [y y(:,5)./y(:,12)];
fn = getfn;
fn{13} = 'incidence/1000';
y(:,7) = y(:,7).^(1/3);
y(:,13) = log10(0.005+y(:,13));
fn{7} = 'curt(rainfall)';
fn{13} = 'log(inc)';
y = [y(:,[1 4 7 13]) north];
putnum(y)
fn{2} = fn{4};
fn{3} = fn{7};
fn{4} = fn{13};
fn{5} = 'latitude';
putfn (fn)
lab = getlab;
lab{2} = lab{4};
lab{3} = lab{7};
lab{4} = lab{13};
lab{5} = {'0 South' '1 North'};
putlab(lab)
setvar y=4 x=[1 2 5];
stratify
setvar res=1 y=4 x=[2 3 1];
track res=1 font=9 size=8
```

Program chap36.m to create Figure 3.6

```
getfile boon
y = getnum;
north = y(:,2)<6800;
y(:,2) = floor(y(:,2)/100);
y(:,12) = y(:,12)/1000;
y = [y y(:,5)./y(:,12)];
fn = getfn;
fn{13} = 'incidence/1000';
```

```
y(:,7) = y(:,7).^(1/3);
y(:,13) = log10(0.005+y(:,13));
fn{7} = 'curt(rainfall)';
fn{13} = 'log(inc)';
y = [y(:,[1 4 7 13]) north];
putnum(y);
fn{2} = fn{4};
fn{3} = fn{7};
fn{4} = fn{13};
fn{5} = 'latitude';
putfn(fn)
lab = getlab;
lab{2} = lab{4};
lab{3} = lab{7};
lab{4} = lab{13};
lab{5} = {'0 South' '1 North'};
putlab(lab)
setvar y=4 x=[1 2 5]
stratify
setvar res=1 y=4 x=[2 1 3];
track res=1 font=9 size=8
```

Figure 3.7 and Figure 3.8, the relationship between rainfall and year by latitude and coast, by using matlab together with functions (getfile, getfn, putnum, putfn, getlab, putlab, setvar, stratify, track) in the ASP (McNeil et al 1998) package, the following programs are used.

Program chap37.m to create Figure 3.7

```
getfile boon
y = getnum;
north = y(:,2)<6800;
y(:,2) = floor(y(:,2)/100);
y(:,12) = y(:,12)/1000;
y = [y y(:,5)./y(:,12)];
fn = getfn;
fn{13} = 'incidence/1000';
y(:,7) = y(:,7).^(1/3);
y(:,13) = log10(0.005+y(:,13));
fn{7} = 'curt(rainfall)';
fn{13} = 'log(inc)';
y = [y(:,[1 3 7 13]) north];
putnum(y)
fn{2} = fn{3};
fn{3} = fn{7};
fn{4} = fn{13};
fn{5} = 'latitude';
```

```
putfn(fn)
lab = getlab;
lab{2} = lab{3};
lab{3} = lab{7};
lab{4} = lab{13};
lab{5} = {'0 South' '1 North'};
putlab(lab)
setvar y=3 x=[1 2 5]
stratify
setvar res=1 y=4 x=[2 3 1];
track res=1 font=9 size=8
```

Program chap3.8.m to create Figure 3.8

```
getfile boon
y = getnum;
north = y(:,2)<6800;
y(:,2) = floor(y(:,2)/100);
y(:,12) = y(:,12)/1000;
y = [y y(:,5)./y(:,12)];
fn = getfn;
fn{13} = 'incidence/1000';
y(:,7) = y(:,7).^(1/3);
y(:,13) = log10(0.005+y(:,13));
fn{7} = 'curt(rainfall)';
fn{13} = 'log(inc)';
y = [y(:,[1 3 7 13]) north];
putnum(y);
fn{2} = fn{3};
fn{3} = fn{7};
fn{4} = fn{13};
fn{5} = 'latitude';
putfn(fn)
lab = getlab;
lab{2} = lab{3};
lab{3} = lab{7};
lab{4} = lab{13};
lab{5} = {'0 South' '1 North'};
putlab(lab)
setvar y=3 x=[1 2 5]
stratify
setvar res=1 y=4 x=[2 1 3];
track res=1 font=9 size=8
```

Figure 3.7 and Figure 3.8, the relationship between rainfall and month by latitude and coast, by using matlab together with functions (getfile, getfn, putnum, putfn, getlab,

putlab, setvar, stratify, track) in the ASP (McNeil et al 1998) package, the following programs are used.

Program chap39.m to create Figure 3.9

```
getfile boon
y = getnum;
north = y(:,2)<6800;
y(:,2) = floor(y(:,2)/100);
y(:,12) = y(:,12)/1000;
y = [y y(:,5)./y(:,12)];
fn = getfn;
fn{13} = 'incidence/1000';
y(:,7) = y(:,7).^(1/3);
y(:,13) = log10(0.005+y(:,13));
fn{7} = 'curt(rainfall)';
fn{13} = 'log(inc)';
y = [y(:,[1 4 7 13]) north];
putnum(y)
fn{2} = fn{4};
fn{3} = fn{7};
fn{4} = fn{13};
fn{5} = 'latitude';
putfn(fn)
lab = getlab;
lab{2} = lab{4};
lab{3} = lab{7};
lab{4} = lab{13};
lab{5} = {'0 South' '1 North'};
putlab(lab)
setvar y=3 x=[1 2 5];
stratify
setvar res=1 y=4 x=[2 3 1];
track res=1 font=9 size=8
```

Program chap310.m to create Figure 3.10

```
getfile boon
y = getnum;
north = y(:,2)<6800;
y(:,2) = floor(y(:,2)/100);
y(:,12) = y(:,12)/1000;
y = [y y(:,5)./y(:,12)];
fn = getfn;
fn{13} = 'incidence/1000';
y(:,7) = y(:,7).^(1/3);
y(:,13) = log10(0.005+y(:,13));
fn{7} = 'curt(rainfall)';
```

```
fn{13} = 'log(inc)';
y = [y(:,[1 4 7 13]) north];
putnum(y);
fn{2} = fn{4};
fn{3} = fn{7};
fn{4} = fn{13};
fn{5} = 'latitude';
putfn(fn)
lab = getlab;
lab{2} = lab{4};
lab{3} = lab{7};
lab{4} = lab{13};
lab{5} = {'0 South' '1 North'};
putlab(lab)
setvar y=3 x=[1 2 5]
stratify
setvar res=1 y=4 x=[2 1 3];
track res=1 font=9 size=8
```

Figure 3.11, the association between month rainfall and DHF incidence in each province, by using matlab together with functions (getfile, getfn, putnum, putfn, getlab, putlab, rclate) in the ASP (McNeil et al 1998) package, the following programs are used.

Program chap311.m to create Figures 3.11

```
getfile boon
y = getnum;
y(:,2) = floor(y(:,2)/100);
y(:,12) = round(y(:,12)/1000);
y = [y y(:,5)./y(:,12)];
fn = getfn;
fn{12} = 'pop(1000s)';
fn{13} = 'inc/1000';
putfn(fn)
putnum(y)
y1=y(:,7).^(1/3);
y(:,7) = y(:,7)/100;
a=y(:,1:7);
b=y(:,8:13);
y2= log10(0.005+y(:,13));
new=[a y1 b y2];
putnum(new);
fn=getfn;
fn{7} = 'rainfall(cm)';
fn{8} = 'cubrt(rf)';
fn{9} = 'rain days';
```

```
fn{10} = 'max temp';
fn{11} = 'min temp';
fn{12} = 'humidity';
fn{13} = 'pop';
fn{14} = 'inc/1000';
fn{15} = 'log(inc)';
putfn(fn)
y=getnum;
krabi = y(:,2)==65;
y1 = y(krabi,:);
putnum(y1)
putdn('DHF study in Krabi: 1982-98')
relate col=[8 15] cor=1 lin=1
nst = y(:,2)==67;
y1 = y(nst,:);
putnum(y1)
putdn('DHF study in Nakorn ST: 1978-98')
relate col=[8 15] cor=1 lin=1
trang = y(:,2)==68;
y1 = y(trang,:);
putnum(y1)
putdn('DHF study in Trang: 1978-98')
relate col=[8 15] cor=1 lin=1
songkla = y(:,2)==69;
y1 = y(songkla,:);
putnum(y1)
putdn('DHF study in Songkla: 1978-98')
relate col=[8 15] cor=1 lin=1
```

Figure 3.12, bivariate time series of DHF and rainfall in each province, by using matlab together with functions (getfile, getfn, putnum, putfn, getlab, putlab, sort, setvar, tsbiplot) in the ASP (McNeil et al 1998) package, the following programs are used.

Program chap312.m to create Figure 3.12

```
getfile boon
y = getnum;
t = y(:,3)+y(:,4)./12;          % compute time in years/12
[st I] = sort(t);               % find time order
y = y(I,:);                     % sort data by time
y(:,2) = floor(y(:,2)/100);
y(:,12) = round(y(:,12)/1000);
y = [y y(:,5)./y(:,12)];
fn = getfn;
fn{12} = 'pop(1000s)';
fn{13} = 'inc/1000';
```

```
putfn(fn)
putnum(y)
y1=y(:,7).^(1/3);
y(:,7) = y(:,7)/100;
a=y(:,1:7);
b=y(:,8:13);
y2= log10(0.005+y(:,13));
new=[a y1 b y2 st];
putnum(new);
fn=getfn;
fn{7} = 'rainfall(cm)';
fn{8} = 'cubrt(rf)';
fn{9} = 'rain days';
fn{10} = 'max temp';
fn{11} = 'min temp';
fn{12} = 'humidity';
fn{13} = 'pop';
fn{14} = 'inc/1000';
fn{15} = 'log(inc)';
fn{16} = 'year/12';
putfn(fn)
y=getnum;
krabi = y(:,2)==65;
y1 = y(krabi,:);
putnum(y1)
putdn('DHF study in Krabi: 1982-98')
setvar y=[8 15] x=16
tsbiplot coh=0 ccf=0
setvar y=15 x=8 z=16
tsplot pg=3 cf=-1 ar=1 harm=16
nst = y(:,2)==67;
y1 = y(nst,:);
putnum(y1)
putdn('DHF study in Nakorn ST: 1978-98')
setvar y=[8 15] x=16
tsbiplot coh=0 ccf=0
trang = y(:,2)==68;
y1 = y(trang,:);
putnum(y1)
putdn('DHF study in Trang: 1978-98')
setvar y=[8 15] x=16
tsbiplot coh=0 ccf=0
songkla = y(:,2)==69;
y1 = y(songkla,:);
putnum(y1)
putdn('DHF study in Songkla: 1978-98')
setvar y=[8 15] x=16
```

tsbiplot coh=0 ccf=0

Figure 4.1 – 4.7, time series analysis for DHF incidence in each province, by using matlab together with functions (getfile, getfn, putnum, putfn, getlab, putlab, sort, setvar, tsplot) in the ASP (McNeil et al 1998) package, the following programs are used.

Program chap41.m to create Figures 4.1-4.7

```
getfile boon
y = getnum;
t = y(:,3)+y(:,4)./12;          % compute time in years/12
[st I] = sort(t);               % find time order
y = y(I,:);                     % sort data by time
y(:,2) = floor(y(:,2)/100);
y(:,12) = round(y(:,12)/1000);
y = [y y(:,5)./y(:,12)];
fn = getfn;
fn{12} = 'pop(1000s)';
fn{13} = 'inc/1000';
putfn(fn)
putnum(y)
y1=y(:,7).^(1/3);
y(:,7) = y(:,7)/100;
a=y(:,1:7);
b=y(:,8:13);
y2= log10(0.005+y(:,13));
new=[a y1 b y2 st];
putnum(new);
fn=getfn;
fn{7} = 'rainfall(cm)';
fn{8} = 'cubrt(rf)';
fn{9} = 'rain days';
fn{10} = 'max temp';
fn{11} = 'min temp';
fn{12} = 'humidity';
fn{13} = 'pop';
fn{14} = 'inc/1000';
fn{15} = 'log(inc)';
fn{16} = 'year/12';
putfn(fn)
y=getnum;
krabi = y(:,2)==65;
y1 = y(krabi,:);
putnum(y1)
putdn('DHF study in Krabi: 1982-97')
setvar y=15 z=16
```

```
tsplot pg=3                                          % Figure 4.1
tsplot pg=3 cf=-1 ar=1 harm=16                       % Figure 4.2
nst = y(:,2)==67;
y1 = y(nst,:);
putnum(y1)
putdn('DHF study in Nakorn ST: 1978-97')
setvar y=15 z=16
tsplot pg=3 harm=20 ar=1 cf=-1                       % Figure 4.3
tsplot pg=3 harm=20 ar=1:2 cf=-1                     % Figure 4.4
trang = y(:,2)==68;
y1 = y(trang,:);
putnum(y1)
putdn('DHF study in Trang: 1978-97')
setvar y=15 z=16
tsplot pg=3 harm=20 ar=1:2 cf=-1                     % Figure 4.5
tsplot pg=3 harm=[20 40] ar=1:2 cf=-1 lin=1          % Figure 4.6
songkla = y(:,2)==69;
y1 = y(songkla,:);
putnum(y1)
putdn('DHF study in Songkla: 1978-97')
setvar y=15 z=16
tsplot pg=3 harm=20 ar=1:2 cf=-1                     % Figure 4.7
```

Figure 4.8 – 4.13, time series analysis for rainfall, by using matlab together with functions (getfile, getfn, putnum, putfn, getlab, putlab, sort, setvar, tsplot) in the ASP (McNeil et al 1998) package, the following programs are used.

Program chap42.m to create Figures 4.8-4.13

```
getfile boon
y = getnum;
t = y(:,3)+y(:,4)./12;          % compute time in years/12
[st I] = sort(t);               % find time order
y = y(I,:);                     % sort data by time
y(:,2) = floor(y(:,2)/100);
y(:,12) = round(y(:,12)/1000);
y = [y y(:,5)./y(:,12)];
fn = getfn;
fn{12} = 'pop(1000s)';
fn{13} = 'inc/1000';
putfn(fn)
putnum(y)
y1=y(:,7).^(1/3);
y(:,7) = y(:,7)/100;
a=y(:,1:7);
b=y(:,8:13);
y2= log10(0.005+y(:,13));
```

```
new=[a y1 b y2 st];
putnum(new);
fn=getfn;
fn{7} = 'rainfall(cm)';
fn{8} = 'cubrt(rf)';
fn{9} = 'rain days';
fn{10} = 'max temp';
fn{11} = 'min temp';
fn{12} = 'humidity';
fn{13} = 'pop';
fn{14} = 'inc/1000';
fn{15} = 'log(inc)';
fn{16} = 'year/12';
putfn(fn)
y=getnum;
krabi = y(:,2)==65;
y1 = y(krabi,:);
putnum(y1)
putdn('DHF study in Krabi: 1982-97')
setvar y=8 z=16
tsplot pg=3 new=0                                   % Figure 4.8
tsplot pg=3 cf=1 ar=1 harm=[16 32]                  % Figure 4.9
nst = y(:,2)==67;
y1 = y(nst,:);
putnum(y1)
putdn('DHF study in Nakorn ST: 1978-97')
setvar y=8 z=16
tsplot pg=3 harm=[20 40] ar=1 cf=-1                 % Figure 4.10
tsplot pg=3 harm=[20 40 60] cf=-1                   % Figure 4.11
trang = y(:,2)==68;
y1 = y(trang,:);
putnum(y1)
putdn('DHF study in Trang: 1978-97')
setvar y=8 z=16
tsplot pg=3 harm=[20 40] ar=1 cf=-1                 % Figure 4.12
songkla = y(:,2)==69;
y1 = y(songkla,:);
putnum(y1)
putdn('DHF study in Songkla: 1978-97')
setvar y=8 z=16
tsplot pg=3 harm=[20 40 60] cf=-1                   % Figure 4.13
```

Figure 4.14 – 4.17, time series analysis for DHF incidence and variable, by using matlab together with functions (getfile, getfn, putnum, putfn, getlab, putlab, sort, setvar, tsplot) in the ASP (McNeil et al 1998) package, the following programs are used.

Program chap43.m to create Figures 4.14-4.17

```
getfile boon
y = getnum;
t = y(:,3)+y(:,4)./12;          % compute time in years/12
[st I] = sort(t);               % find time order
y = y(I,:);                     % sort data by time
y(:,2) = floor(y(:,2)/100);
y(:,12) = round(y(:,12)/1000);
y = [y y(:,5)./y(:,12)];
fn = getfn;
fn{12} = 'pop(1000s)';
fn{13} = 'inc/1000';
putfn(fn)
putnum(y)
y1=y(:,7).^(1/3);
y(:,7) = y(:,7)/100;
a=y(:,1:7);
b=y(:,8:13);
y2= log10(0.005+y(:,13));
new=[a y1 b y2 st];
putnum(new);
fn=getfn;
fn{7} = 'rainfall(cm)';
fn{8} = 'cubrt(rf)';
fn{9} = 'rain days';
fn{10} = 'max temp';
fn{11} = 'min temp';
fn{12} = 'humidity';
fn{13} = 'pop';
fn{14} = 'inc/1000';
fn{15} = 'log(inc)';
fn{16} = 'year/12';
putfn(fn)
y=getnum;
krabi = y(:,2)==65;
y1 = y(krabi,:);
putnum(y1)
putdn('DHF study in Krabi: 1982-97')
setvar y=15 x=10 z=16
tsplot pg=3 cf=-1 ar=1:2 harm=[16 32]          % Figure 4.14
nst = y(:,2)==67;
y1 = y(nst,:);
putnum(y1)
putdn('DHF study in Nakorn ST: 1978-97')
setvar y=15 x=9 z=16
tsplot pg=3 cf=-1 ar=1:2 harm=20 new=0         % Figure 4.15
songkla = y(:,2)==69;
```

```
y1 = y(songkla,:);
putnum(y1)
putdn('DHF study in Songkla: 1978-97')
setvar y=15 x=9 z=16
tsplot pg=3 harm=20 cf=-1 ar=1:2                    % Figure 4.16
```