# Inner–Outer interaction

To clarify the interactions between the inner and outer routine, we have constructed a data set which looks like:

```
#  test data set
=======================
station,    lat,    lon
.......................
3,  38.28, -73.53
=======================
press,   temp
-----------------------
5.000, 18.334
25.000, 12.848
49.000, 11.070
=======================
station,    lat,    lon
.......................
4,  38.19, -73.52
=======================
press,   temp
-----------------------
5.000, 17.516
25.000, 12.315
****** End of object ***
```

and recorded the sequence of calls

```
ioopen_  s[0]="d0"  *nparams=1 returns:  1  *ntotal=5
     [has levels 0 and 1 with 5 variables]

ioname_  *vn=0 returns:    str="station"
ioname_  *vn=1 returns:    str="lat"
ioname_  *vn=2 returns:    str="lon"
ioname_  *vn=3 returns:    str="press"
ioname_  *vn=4 returns:    str="temp"

iovarlevel_  *vn=0 returns:  0
   [note - iovarlevel_ may be called multiple
    times and out of sequence]
iovarlevel_  *vn=1 returns:  0
iovarlevel_  *vn=2 returns:  0
iovarlevel_  *vn=3 returns:  1
iovarlevel_  *vn=4 returns:  1

iocommout_ returns:  1 str=" test data set"
```

```
iocommout_ returns:  0

ioattrout_  *vn=0 returns:  0
    [no attributes]
ioattrout_  *vn=1 returns:  0
ioattrout_  *vn=2 returns:  0
ioattrout_  *vn=3 returns:  0
ioattrout_  *vn=4 returns:  0

ioreadrec_  *level=0 returns:  1
    [at the return, the method usually has gathered at least
     the first set of top level data]
ioreadrec_  *level=1 returns:  1
    [at the return, it has gathered the first set of next
     level data]

iovalstr_  *vn=0 returns:    str="3"
iovalstr_  *vn=1 returns:    str="38.28"
iovalstr_  *vn=2 returns:    str="-73.53"
iovalstr_  *vn=3 returns:    str="5.000"
iovalstr_  *vn=4 returns:    str="18.334"

ioreadrec_  *level=1 returns:  1

iovalstr_  *vn=3 returns:    str="25.000"
iovalstr_  *vn=4 returns:    str="12.848"

ioreadrec_  *level=1 returns:  1

iovalstr_  *vn=3 returns:    str="49.000"
iovalstr_  *vn=4 returns:    str="11.070"

ioreadrec_  *level=1 returns:  0
    [no more data at innermost level]
ioreadrec_  *level=0 returns:  1
ioreadrec_  *level=1 returns:  1

iovalstr_  *vn=0 returns:    str="4"
iovalstr_  *vn=1 returns:    str="38.19"
iovalstr_  *vn=2 returns:    str="-73.52"
iovalstr_  *vn=3 returns:    str="5.000"
iovalstr_  *vn=4 returns:    str="17.516"

ioreadrec_  *level=1 returns:  1
    [no more data at innermost level]

iovalstr_  *vn=3 returns:    str="25.000"
iovalstr_  *vn=4 returns:    str="12.315"

ioreadrec_  *level=1 returns:  0
    [no more data at innermost level]
```

```
ioreadrec_  *level=0 returns:  0
    [no more data at outermost level either]
ioclose_
```