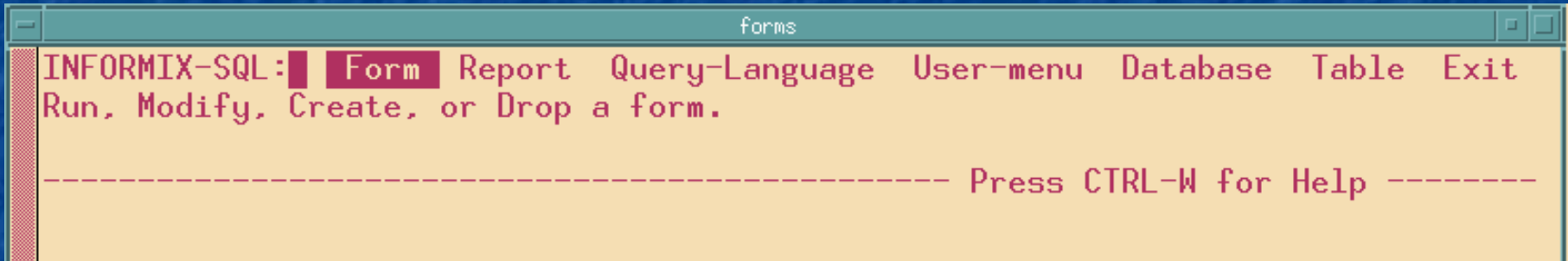# ISQL
Definition & Capabilities

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Introduction

- INFORMIX ISQL provides easy ways to view and manipulate data

- ISQL features have been utilized at CBRFC for many years
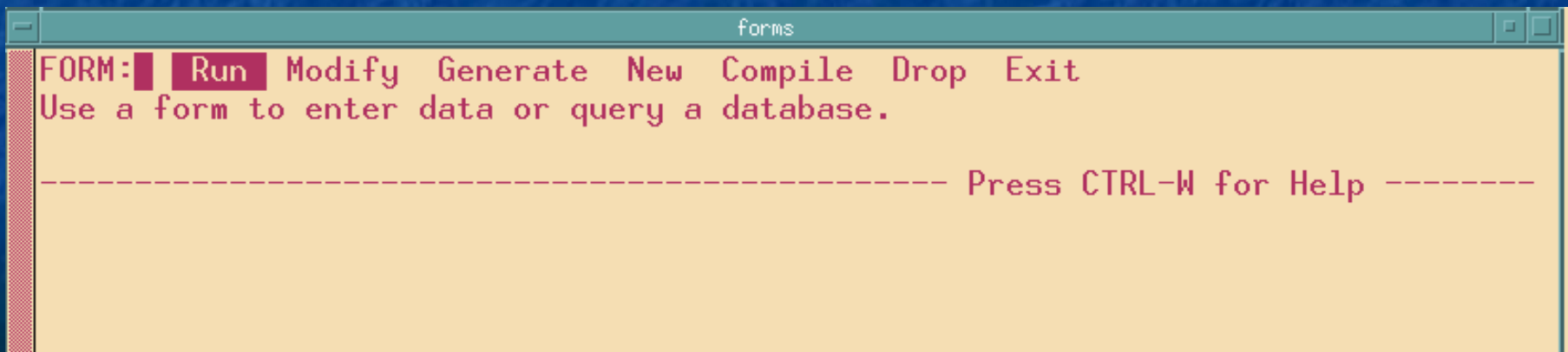
ISQL Topics

- Forms
  - Computer generated
  - Annotated
- Reports
  - Useful but largely superceded by tcl-isql
- tcl-isql
  - Simple, robust and flexible data access

ISQL – ring menu

```
                              forms
INFORMIX-SQL: █  Form   Report   Query-Language   User-menu   Database   Table   Exit
Run, Modify, Create, or Drop a form.


----------------------------------------------- Press CTRL-W for Help --------
```

Navigate with cursor keys – or type first letter of menu item

```
                              forms
FORM: █  Run   Modify   Generate   New   Compile   Drop   Exit
Use a form to enter data or query a database.


----------------------------------------------- Press CTRL-W for Help --------
```

Forms – auto_generated

- Two ways
  - Through ISQL
  - Tcl script formgen.tcl
- This will produce useful forms

Example – Auto-Generated Form

```
                                                      ds1
PERFORM:█  Query  Next  Previous  View  Add  Update  Remove  Table  Screen  Current  ...
Searches the active database table.                 ** 1: table table**

          location

          lid [                              ]
       county [                              ]
          coe [                              ]
          cpm [                              ]
       detail [                              ]
         elev [                              ]
       hdatum [                              ]
          hsa [                              ]
           hu [                              ]
          lat [                               ]
          lon [                               ]
      lremark [                               ]
      lrevise [                               ]
         name [                               ]
      network [                               ]
           rb [                               ]
          rfc [                               ]
```

```
database hd5_22str
screen size 24 by 80
{

          location

        lid [f1                    ]
     county [f2                    ]
        coe [f3                    ]
        cpm [f4                    ]
     detail [f5                    ]
       elev [f6                    ]
     hdatum [f7                    ]
        hsa [f8                    ]
         hu [f9                    ]
        lat [f10                    ]
        lon [f11                    ]
    lremark [f12                    ]
    lrevise [f13                    ]
       name [f14                    ]
    network [f15                    ]
         rb [f16                    ]
        rfc [f17                    ]
        sbd [f18                    ]
         sn [f19                    ]
      state [f20                    ]
       waro [f21                    ]
        wfo [f22                    ]
       wsfo [f23                    ]
       type [f24                    ]
        des [f25                    ]
        det [f26                    ]
       post [f27                    ]
    stntype [f28                    ]
      tzone [f29                    ]
}
end
tables
table=location
attributes
f1 = table.lid;
f2 = table.county;
```

Example – Annotated Form


```
                                          ds1
QUERY:   ESCAPE queries.   INTERRUPT discards query.   ARROW keys move cursor.
Searches the active database table.                 ** 1: rivercrit table**
lid            [            ] pe1 [ ]  pe2 [ ]  vdtime [           ]

              STAGE                          FLOW              QUALITY CODE

lowscreen   [█            ] lowscreenf [            ] lowscreenq [ ]
sigrate     [            ] sigratef  [            ] sigrateq    [ ]
screenrate  [            ] screenratef [           ] screenrateq [ ]

            sigratet    [    ]  screenratet [     ]

fis         [            ] fisf       [            ] fisq         [ ]
action      [            ] actionf    [            ] actionq      [ ]
alert       [            ] alertf     [            ] alertq       [ ]
bank        [            ] bankf      [            ] bankq        [ ]
flood       [            ] floodf     [            ] floodq       [ ]
modflood    [            ] modfloodf  [            ] modfloodq    [ ]
majflood    [            ] majfloodf  [            ] majfloodq    [ ]
record      [            ] recordf    [            ] recordq      [ ]
highscreen  [            ] highscreenf [           ] highscreenq [ ]
damscreen   [            ] damscreenf [            ] damscreenq  [ ]
values below this level are rejected
```

```
database fastetc
screen size 24 by 80
{
lid          [f000     ]  pe1 [a]  pe2 [b]   vdtime [f001        ]

                STAGE                      FLOW              QUALITY CODE

lowscreen    [f002        ] lowscreenf  [f015        ] lowscreenq  [c]
sigrate      [f003        ] sigratef    [f016        ] sigrateq    [d]
screenrate   [f004        ] screenratef [f017        ] screenrateq [e]

          sigratet    [f028]  screenratet [f029]

fis          [f005        ] fisf        [f018        ] fisq        [f]
action       [f006        ] actionf     [f019        ] actionq     [g]
alert        [f007        ] alertf      [f020        ] alertq      [h]
bank         [f008        ] bankf       [f021        ] bankq       [i]
flood        [f009        ] floodf      [f022        ] floodq      [j]
modflood     [f010        ] modfloodf   [f023        ] modfloodq   [k]
majflood     [f011        ] majfloodf   [f024        ] majfloodq   [l]
record       [f012        ] recordf     [f025        ] recordq     [m]
highscreen   [f013        ] highscreenf [f026        ] highscreenq [n]
damscreen    [f014        ] damscreenf  [f027        ] damscreenq  [o]
}
end
tables
rivercrit
attributes
f000 = rivercrit.lid, UPSHIFT;
a = rivercrit.pe1, UPSHIFT;
b = rivercrit.pe2, UPSHIFT;
f001 = rivercrit.vdtime, COMMENTS="date form CCYYMMDD";
f002 = rivercrit.lowscreen, COMMENTS="values below this level are rejected";
f003 = rivercrit.sigrate, COMMENTS="# ft/sigratet; rates between this and screen
rate are valid sig. rise";
f004 = rivercrit.screenrate, COMMENTS="# ft/screenratet; rates above this are re
jected";
```

Forms - implementation

- Use DBPATH environment variable in script to start ISQL
- DBPATH=/local/fastetc/forms://db1://db2://ONLINE://ONLINE_REP
- Insert/update
- Query with relational operators (e.g. >0.5)
- Output rows
  - screen or unload style
  - Current row or all rows returned by query

Forms – implementation, cont.

- Not another database name change!
  - upd_dbname.tcl queries apps_defaults for database name replaces dbname in all form specifications and recompiles to make new forms with correct dbname

Reports

- Makes a nice printed report
  - Headers/trailers
  - Page breaks
- Relevant?

- PROMONLY REPORT

- WATER YEAR 1997

- QUALITY CODE EXPLANATION:

- V - verified -- has passed our better quality control algorithms
- S - screened -- has passed our first qc algorithm or has been manually set good
- Q - questionable -- has failed our qc algorithms but the human reviewer chose
- not to set it bad
- D - estimated -- the data was missing or was set bad and has been estimated
- using a ratio of point averages for some selected neighbor stations
- (we suggest that quality D is better E)
- E - estimated -- the data was missing or was set bad and has been estimated
- using a spatial algorithm incorporating PRISM data

- ALPINE
- .E ALPA3 961031 Z DH00/PPM4ZZZ/DIE1/
- .E1   : oct :   4.29V /:   2.38   181%
- .E1   : nov :   .78V /:   1.44   54%
- .E1   : dec :   .00V /:   1.35   %
- .E1   : jan :   2.77V /:   1.35   205%
- .E1   : feb :   1.71V /:   1.29   132%
- .E1   : mar :   .23Q /:   1.30   18%
- .E1   : apr :   .23V /:   .63   36%
- .E1   : may :   .61V /:   .75   81%
- .E1   : jun :   1.54Q /:   .86   179%
- .E1   : jul :   2.93Q /:   3.43   85%
- .E1   : aug :   3.30V /:   4.51   73%
- .E1   : sep :   4.09V /:   2.41   170%
-       total   -------   ------ -----
-           22.48   21.69   104%

```
database
   fastetc
end

define
   variable totobs float
   variable totavg float
   variable stype char(1)
   variable rstat char(2)
end

input
 prompt for rstat
 using "                   ENTER the 2 character state code (caps please): "

 prompt for stype
 using "ENTER the level of the data to be used for the report (2,3 or 4): "
end

output
 report to "wymonly.out"
 page length 66  { ibm print command likes 60,  hp print command likes 66 }
 top margin 0
 bottom margin 0
end


select

lp.oct, lp.nov, lp.dec, p.jan, p.feb, p.mar, p.apr, p.may, p.jun,
p.jul, p.aug, p.sep,
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
 print column 20, "PROMONLY REPORT"
    skip 1 line
    print column 20, "WATER YEAR 1997"
    skip 2 line
   on every row
    need 16 lines
    print des
    print ".E ",id," 961031 Z DH00/",pe1,pe2,dur,t,s,e,p,"/DIE1/"
    print ".E1",column 10, ": oct : ",oct using '---####.##',octq, " /:", octp u
sing '####.##', oct / octp * 100. using '  ####',"%"
```
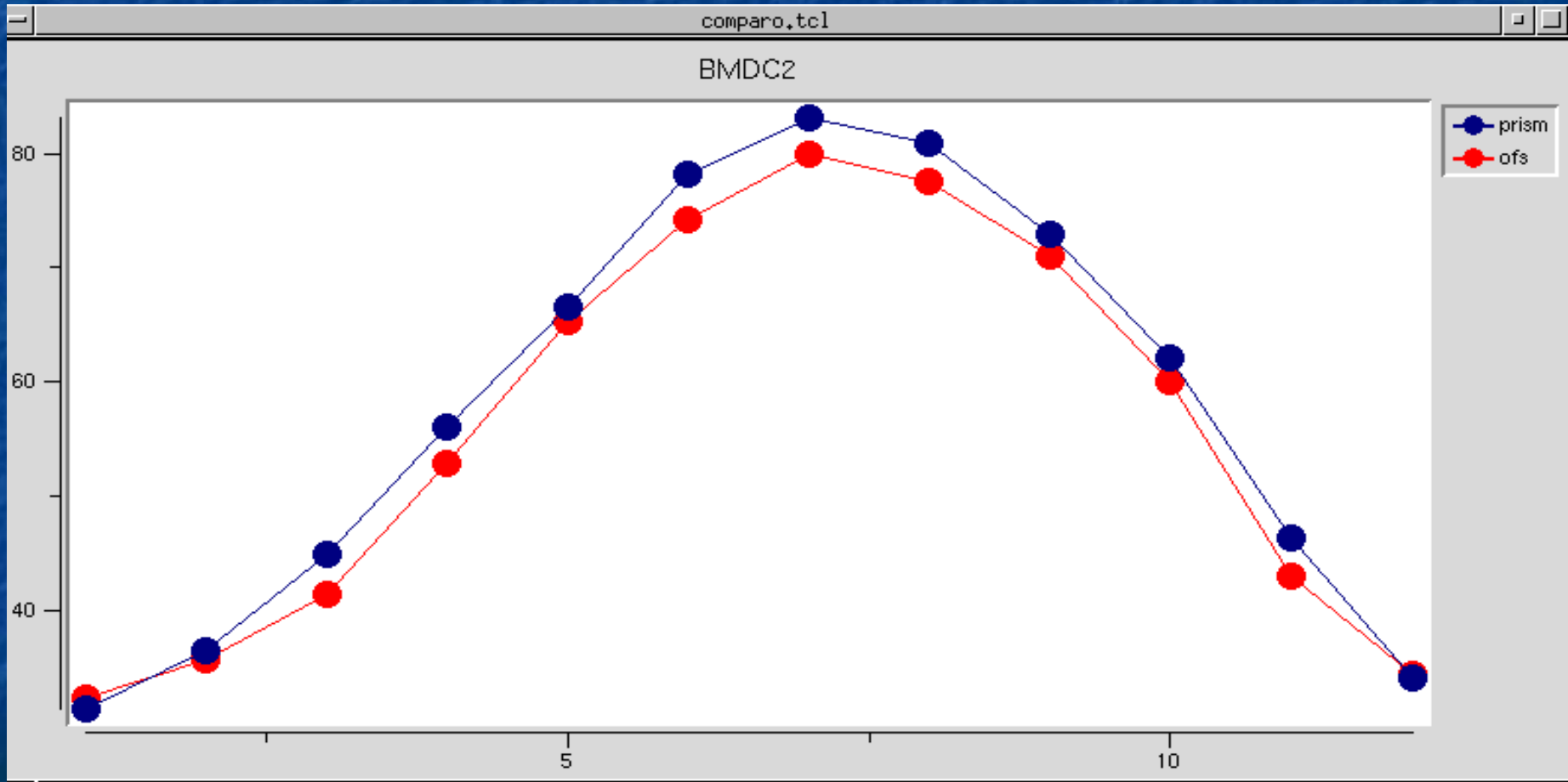
tcl-isql example

```
ex.tcl
File   Edit   Search   Preferences   Shell   Macro   Windows

/fs1/home/sbs/scr/tcl/comparo/ex.tcl line 27, col 3, 1145 bytes

#!/local/bin/sws_wish

set mons { 1 2 3 4 5 6 7 8 9 10 11 12 }
blt::vector p o

sql database fastetc
blt::graph .gr -width 800
.gr element create "e1" -label prism -xdata $mons -ydata p
.gr element create "e2" -label ofs -xdata $mons -ydata o -color red

pack .gr

set ofscurs [sql open "select id, jan, feb, mar, apr, may, jun, jul, \
    aug, sep, oct, nov, dec \
    from b_avg where pe1 = ? and pe2 = ? and dur = ? and t = ? and s = ? \
              and e = ? and p = ? order by id" T A I P G X M ]
set ofsrow [sql fetch $ofscurs]

while {$ofsrow != ""} {
    puts $ofsrow
    o set [lrange $ofsrow 1 end]
    set prismcurs [sql open "select id, jan, feb, mar, apr, may, jun, jul, \
        aug, sep, oct, nov, dec \
        from b_avg where id = ? and pe1 = ? and pe2 = ? and dur = ? and t = ? \
        and s = ? and e = ? and p = ? order by id" [lindex $ofsrow 0] T A I P B X M ]
    set prismrow [sql fetch $prismcurs]; puts $prismrow;
    p set [lrange $prismrow 1 end]
    sql close $prismcurs
    set ofsrow [sql fetch $ofscurs]
    .gr configure -title [lindex $prismrow 0]
    update idletasks
    set nextone [gets stdin]
}

sql close $ofscurs
```

Summary

- ISQL provides a quick, easy way to view and manipulate data.
  - Forms – insert, update and query. Also output to file in screen form or unl form
  - Reports – outputs formatted report with headers/trailers and page breaks
  - tcl-isql – easy programmatic manipulation of data
- We fought for it, so use it!
- This presentation url: www.cbrfc.noaa.gov -> presentations -> 2003