Subject: Where vs Histogram vs ??
Posted by Andrew Cool on Wed, 16 Oct 2002 23:05:06 GMT
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Hello All,

I have a structure defined as :-

```
data_st = {YEAR      : 0         ,$
           DAY       : 0         ,$ ; 136 days over 12 years
           HALF_HR   : 0         ,$ ; 0..47
           RANGE_IDX : 0         ,$ ; 0..267
           WRF       : 0B        ,$ ; 3 possible values
           FREQ      : 0B        ,$ ; 4 possible values
           BEAM      : 0B        ,$ ; 4 possible values
           PAD       : 0B        ,$ ; Padding to align byte
boundaries
           Parameter : FLTARR(5)}
```

Replicate that a few times :-

```
database = Replicate(data_st,15425228)
```

Data is plugged into this variable by reading from a file, and then converting
database to a system variable, !database, so that it survives intact just about
anything bar a .reset_session. Saves a lot of time recreating & reloading the database.

Roughly speaking, a third of the data is for any given WRF (waveform repetition frequency),
a quarter is at any given frequency, and a quarter is in each of the 4 possible beams.
Or, for any given day, the data is split over 4 beams, and cycled over 4 frequencies and
3 WRF's.

I need to be able to search this entire database and pull out a nominated parameter
value based on year,day, half_hr, range_idx, WRF, freq and beam and parameter.

At the moment I'm doing something like this :-

```
start_year = 2000
end_year   = 2002
```

```
   start_day  = 120
   end_day    = 133
   start_half_hr = 0
   end_half_hr   = 47
   WRF           = 1
   FREQ          = 2
   start_beam    = 0
   end_beam      = 3
   nominated_parameter = 2

   index = Where(!database.year GE start_year   AND $
               !database.year LE end_year     AND $
               !database.day  GE start_day    AND $
               !database.day  LE end_day      AND $
               !database.beam GE start_beam   AND $
               !database.beam LE end_beam     AND $
               !database.half_hr GE start_half_hr    AND $
               !database.half_hr LE end_half_hr    AND $
               !database.WRF EQ WRF    AND $
               !database.FREQ EQ FREQ  AND $
               !database.parameter(nominated_parameter) NE
bad_data_value)


   This takes about 10-12 minutes on sizeable Alpha box running OpenVMS
(IDL v5.4)
   if working through the entire database for all 4 beams.

   To then plot each beam, there's a further loop of Where's to
subindex each
   particular beam out of index. The beam plots are either by UT or
range.


   Is there a quicker way than the above monsterous Where statement?

   I've browsed the Histogram tut on David Fanning's site, and rapidly
found
   my eyes glazing over. Can Histogram help here? Perhaps multiple
nested
   Histograms? David's SetUnion or SetIntersection, maybe?


   Any ideas appreciated,

   Andrew
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