Subject: Calculating difference between each element in array from previous
Posted by morganlsilverman on Fri, 29 Mar 2013 14:43:29 GMT
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Hello,

I'm trying to rewrite my code to eliminate for loops as much as possible. I believe I have to have one to start because I'm trying to match a list of dates in one array to a list of dates in another.

```
for k=0,n_elements(mcity)-1 do begin
indexa = where(strmatch(strmid(adatea,0,8),strmid(mdate(k),0,8)) eq 1,num)
```

It only seems to work if I go one mdate at a time. Thats fine but I'd like to eliminate the other if statements and for loops within this one to speed up calculations if possible. Once I match the date I need to find out if the array matches a selection of criteria to decide whether to use that array or not.

```
  if num gt 0 then begin ; If matches then go through profile critera
    inda = where(finite(aalta(col,row,*)), count) ; Count number of non-NaN altitudes
    if (n_elements(inda) ge 15 ) then begin
      dcount=0
      diffa = fltarr(50)
      for k=0,count-2 do begin
        diffa(k) = aalta(col,row,inda(k+1))-aalta(col,row,inda(k))
        dcount = dcount+1
      endfor
      diffa = diffa(0:dcount-1)

      ; Only interested in profiles with altitude differences less than 500 m
      if (max(abs(diffa)) lt 500.0) then begin
        if (j eq 0) or (j gt 0 and i ne iprev) then begin
          jcount = 0
          icount = icount + 1
        endif else begin
          if (j gt 0 and i eq iprev) then begin
            jcount = jcount + 1
            icount = icount
          endif
        endelse

     ; Now do calculations...

      endif
    endif
  endif
endfor
```

Is there a way to eliminate the diffa loop... and calculate the differences between each altitude

another way?

```
for k=0,count-2 do begin
  diffa(k) = aalta(col,row,inda(k+1))-aalta(col,row,inda(k))
  dcount = dcount+1
 endfor
```

I've been reading online about eliminating for loops and rebin/reform but haven't been able to figure out what would work best if anything. Thanks.

Sincerely,
Morgan

Subject: Re: Calculating difference between each element in array from previous
Posted by dg86 on Sat, 30 Mar 2013 02:03:43 GMT
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On Friday, March 29, 2013 8:07:08 PM UTC-4, Phillip Bitzer wrote:
> For a start, I think I see where you are differencing adjacent elements of an array. This can be done without looping:
>
>
>
> diff = arr - SHIFT(arr, 1)
>
>
>
> Note SHIFT will wrap around values, so if that's not important you'll want to "mask" this values somehow.

How about

diff = arr - arr[1:*]

This addresses the wrap-around issue.
