Subject: zonal means
Posted by Martin Schultz on Mon, 16 Mar 1998 08:00:00 GMT
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Hi everyone,

this is part question, part answer - I just want to make sure there is nothing wrong with this:

Q: How do you compute zonal means from a 3D data cube ?
(example: A(72,46,14) is a data array with longitude, latitude, altitude as dimensions, and I want to compute the averages over longitude for each latitude and altitude)

A: well, you can do it in a loop (buuuuuhh!!)

```
  for j=0,13 do begin
     for i=0,45 do begin
        b(i,j) = total(a(*,i,j)) / 72.
     endfor
  endfor
```

Q: but I hate loops !!

A: hmmm, we could try REBIN or CONGRID. How about that:

```
  c = reform(rebin(a,1,46,14),46,14)
  d = reform(congrid(a,1,46,14),46,14)
```

Q: That looks much more like IDL! But does it work ?

A: (after running a test with random data) Seems like REBIN is just what you are looking for. CONGRID somehow screws it up. BTW: I am sure you want to know the timing of these routines:

```
loop:       1.3769450 seconds
rebin:      0.15734899 seconds
congrid:    0.085584044 seconds
```

These results are obtained by repeating each method 100 times.

Q: But can I be ascertained that REBIN does the job correctly ? And does anyone have an idea why CONGRID screws up ?

Thanks,
Martin.

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