Subject: Re: arithmetic operation on array
Posted by Phillip Bitzer on Mon, 12 Aug 2013 22:22:14 GMT
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OK, I'll bite. There are three ways I can think to do this off the top of my head:
1) Do a loop, like Phillip said (what a fantastic name :-) )
2) Rebin, like David said
3) Use the mysterious "add an extra dimension" method (
https://groups.google.com/d/msg/comp.lang.idl-pvwave/Vu9rzqc kBNQ/HvkK_QnJrsgJ and more recently https://groups.google.com/d/msg/comp.lang.idl-pvwave/dM8XXas Eio0/d3__pvX7svMJ)

Here are the sample code I used:

```
data = RANDOMU(1L, 360, 180, 456)
avg = MEAN(data, DIM=3)
mData1 = FLTARR(360, 180, 456)

tic & for i=0, 455 do mData1[*,*,i] = data[*,*,i] - avg & toc

mData2 = FLTARR(360, 180, 456)

tic & mData2 = data - Rebin(avg, 360, 180, 456) & toc
tic & data = TEMPORARY(data) - Rebin(avg, 360, 180, 456) & toc ;just for completeness

data = RANDOMU(1L, 360, 180, 456) ;redefine data - we changed it above
mData3 = FLTARR(360, 180, 456)

tic & mData3 = data - avg[*, *, 0] & toc
```

I used mData (modified data) arrays so I can check I get the same answer, regardless of the method.

The four times I get are, in order relative to the above:
% Time elapsed: 0.12749481 seconds.
% Time elapsed: 0.33231401 seconds.
% Time elapsed: 0.33304191 seconds.
% Time elapsed: 0.019619942 seconds.

So, it seems the mysterious extra dimension method is the fastest, by an order of magnitude. Whoa.

For prosperity,
IDL> print, !VERSION
{ x86_64 darwin unix Mac OS X 8.2.2 Jan 23 2013 64 64}