Subject: Re: Strange behavior of /cumulative keyword in total()
Posted by jameskuyper on Tue, 04 Nov 2008 16:23:33 GMT
View Forum Message <> Reply to Message

Chris wrote:
> Can anybody explain this?
>
> arr = fltarr(500000) + .1
> cumul = total(array, /cumulative)
>
> print, (cumul - shift(cumul, 1)) [1 : 10]
> print, (cumul - shift(cumul,1)) [499990:499999]
>
>> 0.100000 0.100000 0.100000 0.100000 0.100000 0.100000
> 0.100000 0.100000 0.100000 0.100000
>
>
>> 0.101562 0.101562 0.101562 0.101562 0.101562 0.101562
> 0.101562 0.101562 0.101562 0.101562
>
> Plotting cumul - shift(cumul,1) is even weirder. I can understand the
> net error of cumul growing over time, as floating point precision
> errors accumulate. However, shouldn't the error between any two
> entries in a cumulative sum not accumulate over the array?

The difference between any two entries in the array should be 0.1,
plus a roundoff error that should be proportional to the value of
cumul. Try this:

```
diff = cumul[1:*]-cumul[0:499998]-0.1
nonzero = where(diff ne 0.0)
plot, cumul[nonzero], abs(diff[nonzero]), psym=3, /xlog, /ylog
```

I was also going to say that the roundoff error should be random, but
that doesn't look very random to me.