Subject: Re: Direction of Wind Vectors: A bug?
Posted by David Fanning on Mon, 23 Feb 2015 15:28:03 GMT
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David Fanning writes:

> Someone was harassing my retirement reveries this morning by claiming
> that cgDrawVectors was drawing vectors incorrectly, in the wrong
> directions. He cited as evidence the output of the lovely NASA program,
> PartVelVec.

Having decided Wayne was doing the right thing, and still a bit dissatisfied with how my cgDrawVectors algorithm was working, I spent the weekend (the reason I retired!) completely gutting and rebuilding cgDrawVectors. It now takes into account the scale of the plot in the X and Y directions. What took me a while to work out is that the scale of the plot on a map projection should always be 180x360, no matter what portion of the map you are showing in the plot.

Making these changes, I can duplicate the PartVelVec results on every test I've made, including tests with map projections using Map_Set and the Map_Proj_Init methods (as implemented in cgMap_Set and cgMap). I've tried various map projections, and all seems to be working correctly, although additional testing on ALL map projections is probably warranted.

While I was tearing things up, I decided to fix the code in cgArrow (which was drawing the vectors) to make it more flexible and faster by moving the code closer to the machine. You can now pass a vector of colors to cgArrow, as well as a vector of arrows to draw, and you should see significant speed-up of its vector drawing capability. Both programs should be downloaded, as cgDrawVectors depends on cgArrow.

You can find the two new programs here:

http://www.idlcoyote.com/programs/cgarrow.pro
http://www.idlcoyote.com/programs/cgdrawvectors.pro

Cheers,

David
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David Fanning, Ph.D.
Fanning Software Consulting, Inc.
Coyote's Guide to IDL Programming: http://www.idlcoyote.com/
Sepore ma de ni thue. ("Perhaps thou speakest truth.")