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Subject: Re: Overplot non-gridded vector data on map using MSVELOVECT.pro  
Posted by [Spon](#) on Wed, 07 Nov 2007 18:17:53 GMT

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On Nov 6, 12:55 am, Tyler <hayes.ty...@gmail.com> wrote:

> Hello All:

>

> I am attempting to plot some GPS station velocity vectors over some  
> existing data on a map. I found the MSVELOVECT procedure which seems  
> to do what I want. However, I am struggling to understand how to use  
> it. In particular, how to set up the velocity vectors, U & V.

>

> The data I have is:

>

> 1) GPS station LON/LAT values  
> 2) East magnitude of velocity  
> 3) North magnitude of velocity

>

> The program requires the velocity data be in 2-D, but I am unsure what  
> the first dimension value is or the second dimension. Does anyone know  
> how to use this?

>

> I have provided below a snippet of how I tried to set up the data by  
> fooling it with a data vector for U & V, but it was smarter than me.

>

> Or am I using the wrong program altogether?

>

> Any help is greatly appreciated.

>

> Cheers,

>

> t.

>

```
> IF (zc EQ 0) THEN BEGIN
>   U = FLTARR(long(NV), 1, /NO)
>   V = FLTARR(long(NV), 1, /NO)
>   X = FLTARR(long(NV), /NO)
>   Y = FLTARR(long(NV), /NO)
```

>

```
>   ;; Northern Section
>   ;; East Velocity
>   U(0,0) = -2.44
>   U(1,0) = -1.82
```

>

```
>   ;; North velocity
>   V(0,0) = 2.66
>   V(1,0) = 2.11
```

>

```

> ;; GPS Station Lon
> X(0) = -123.8352
> X(1) = -123.0747
>
> ;; GPS Station Lat
> Y(0) = 39.7769
> Y(1) = 38.9952
> ;; Overplot the GPS data
> MSVELOVECT, U, V, X, Y, COLOR = !P.COLOR, /OVERPLOT
> ENDIF

```

Firstly, IDL will always 'hide' trailing dimensions of size 1, so

```

> U = FLTARR(long(NV), 1, /NO)

```

won't work, you'll have to come up with something slyer to fool it.

Have a look at J. D. Smith's dimension juggling tutorial on David Fanning's website:  
[http://www.dfanning.com/tips/rebin\\_magic.html](http://www.dfanning.com/tips/rebin_magic.html)

Next, I don't think you'll get away without true two-dimensional U & V arrays anyway.

The way this programme seems to work is this:

```

***

```

```

MapXSize = 200
MapYSize = 100

```

```

; Four imaginary station locations and their
; respective velocity recordings:
; Location 1: (2, 10), Velocity: ( 3i + 4j)
; Location 2: (180, 6), Velocity: (-12i + 5j)
; Location 3: (10, 88), Velocity: ( 8i - 6j)
; Location 4: (190, 90), Velocity: (-10i - 24j)

```

```

x_locations = [2, 180, 10, 190]
y_locations = [10, 6, 88, 90]

```

```

East_Vectors = [3, -12, 8, -10]
North_Vectors = [4, 5, -6, -24]

```

```

; Locations of East_Vectors in grid:
U = FLTARR (MapXSize, MapYSize)
U [x_locations, y_locations] = East_Vectors

```

```

; Location of North_Vectors in grid:
V = FLTARR (MapXSize, MapYSize)
V [x_locations, y_locations] = North_Vectors

```

```
; Set length to long enough to make arrows visible in plot window
VELOVECT, U, V, TITLE = 'VELOVECT', LENGTH = 30
WINDOW, /FREE
MSVELOVECT, U, V, TITLE = 'MSVELOVECT', LENGTH = 30
```

\*\*\*

Note that I'm using the version of MSVELOVECT from here:  
<http://cow.physics.wisc.edu/~craigm/idl/archive/msg01196.htm> I  
and it crashes with an out-of-subscript error in one of its FOR loops.  
If you have a more recent version, it might work better; VELOVECT  
seems to work just fine for me though.

> Or am I using the wrong program altogether?  
You'll have to decide that one for yourself ;-)

One problem you'll have is that if you have 7 significant digits in  
your LAT & LON, you'll need HUGE, sparse arrays, unless you can fudge  
it a bit. Also, even by setting MISSING = Something and DOTS = 0, I  
haven't spotted a way to prevent your map being overlayed with a mess  
of speckles. I'm sure it can be done though.

Hope this gets you under way at least,  
Chris

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