

## GPS Strain Analysis Datasheet

Name: \_\_\_\_\_

**Resources:**

The Nevada Geodetic Lab GNSS catalog: [http://geodesy.unr.edu/NGLStationPages/gpsnetmap/GPSNetMap\\_MAG.html](http://geodesy.unr.edu/NGLStationPages/gpsnetmap/GPSNetMap_MAG.html)

You can find the PBO GPS stations that you are interested in, using the interactive map available via <https://www.unavco.org/instrumentation/networks/status/pbo>

To get the data for each station, type “<http://www.unavco.org/instrumentation/networks/status/pbo/overview/>” then insert 4-letter station ID; for example, to access the data for PBO site P395, go to the following page:

<https://www.unavco.org/instrumentation/networks/status/pbo/overview/P395>

**About the input data...**

Which reference frame is used (e.g., NAM14 for velocities relative to the stable cratonic interior of the North American plate or IGS14 for velocities relative to a "no net rotation" reference frame in which all of the lithospheric plates are moving)? \_\_\_\_\_

Date & time the data were accessed: \_\_\_\_\_ Where did the data come from (e.g., UNAVCO, NGL) \_\_\_\_\_

### Input

Site Abbrev.	Decimal Latitude (degrees; south is negative)	Decimal Longitude (degrees; west is negative)	Elevation* (m)
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

Site Abbrev.	North Velocity ± Uncert (mm/yr; south is negative)	East Velocity ± Uncert (mm/yr; west is negative)	Up Velocity ± Uncert* (mm/yr; down is negative)
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

\*not used in GPS strain analysis

Name: \_\_\_\_\_

## Output

### Translation vector

E component: \_\_\_\_\_ m/yr  $\pm$  \_\_\_\_\_ m/yr  
N component: \_\_\_\_\_ m/yr  $\pm$  \_\_\_\_\_ m/yr  
Translation speed: \_\_\_\_\_ m/yr  $\pm$  \_\_\_\_\_ m/yr

### Rotation

angle: \_\_\_\_\_ degrees/yr  $\pm$  \_\_\_\_\_ degrees/yr  
          \_\_\_\_\_ nano-radians/yr  $\pm$  \_\_\_\_\_ nano-radians/yr  
direction/sense of rotation: \_\_\_\_\_ (anticlockwise is +ve, clockwise is -ve using the right-hand convention)

### Maximum horizontal extension ( $e_{1H}$ )

magnitude: \_\_\_\_\_ nano-strain  
azimuth of  $S_{1H}$ : \_\_\_\_\_ degrees or \_\_\_\_\_ degrees

### Minimum horizontal extension ( $e_{2H}$ )

magnitude: \_\_\_\_\_ nano-strain  
azimuth of  $S_{2H}$ : \_\_\_\_\_ degrees or \_\_\_\_\_ degrees

**Maximum shear strain** \_\_\_\_\_ nano-strain

**Area strain** \_\_\_\_\_ nano-strain

### Lagrangian strain-rate tensor

$\epsilon_{xx}$ : \_\_\_\_\_ nano-strain  $\pm$  \_\_\_\_\_ nano-strain  
 $\epsilon_{xy}$ : \_\_\_\_\_ nano-strain  $\pm$  \_\_\_\_\_ nano-strain  
 $\epsilon_{yy}$ : \_\_\_\_\_ nano-strain  $\pm$  \_\_\_\_\_ nano-strain

### Invariants of strain-rate tensor

first invariant: \_\_\_\_\_ nano-strain  
second invariant: \_\_\_\_\_ nano-strain  
third invariant: \_\_\_\_\_ nano-strain