**GPS Strain Analysis Datasheet**

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

**Resources:**

The Nevada Geodetic Lab GNSS catalog: <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 Decimal Latitude Decimal Longitude Elevation\***

**Abbrev.** (degrees; south is negative) (degrees; west is negative) (m)

\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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**Site North Velocity ± Uncert East Velocity ± Uncert Up Velocity ± Uncert\***

**Abbrev.** (mm/yr; south is negative) (mm/yr; west is negative) (mm/yr; down is negative)

\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_

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\*not used in GPS strain analysis

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

**Output**

**Translation vector**

E component: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ m/yr ± \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ m/yr

N component: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ m/yr ± \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ m/yr

Translation speed: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ m/yr ± \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ m/yr

**Rotation**

angle: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ degrees/yr ± \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ degrees/yr

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ nano-radians/yr ± \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 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 S1H: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ degrees or \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ degrees

**Minimum horizontal extension** (**e**2H)

magnitude: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ nano-strain

azimuth of S2H: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ degrees or \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ degrees

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

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

Lagrangian strain-rate tensor

xx: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ nano-strain ± \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ nano-strain

xy: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ nano-strain ± \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ nano-strain

yy: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ nano-strain ± \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ nano-strain

Invariants of strain-rate tensor

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

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

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