README

GriddedInversions/

Folder containing results of inversions of crustal focal mechanisms on Lon/Lat grids

The study area is broken into 0.2x0.44-degree Lat/Lon grid (~22x22 km).

Grid cells with 0 focal mechanisms are discarded; those with at least 1 are retained.

At each retained cell,

select all focal mechanisms within the cell; if fewer than 25, select nearest 25.

Assign weights: epicenters outside of cell, weights are inversely proportional to distance from cell

center; focal mechanisms inside of cell all weighted as for distance = 11 km.

Invert 101 times: jackknife-downsample, addnoise to retained mechanisms, use random friction

Uncertainties are defined from the distribution of 101 inversion results

AKGridded\_n25\_distweighted

Ascii file containing inversion results

Format (compatible with gmt psxy): Longitude, Latitude (cell center) Aɸ σHmax Length

Aɸ, σHmax: median of 101 inversions

Length: 0.3, set for plotting in GMT

gridmisfits

Average misfit for the focal mechanisms in each zone with respect to the zone’s inverted stress tensor.

Misfit == Mean{absolute value[angle(predicted slip <> slip vector from focal mechanism)]}

The predicted slip vectors are the shear traction directions on each event’s preferred focal plane under the stress field determined by the inversion.

Formatted for plotting in GMT: Longitude Latitude L1\_misfit/200 L1\_misfit

The third column L1\_misfit/200 makes for a convenient marker size in GMT (e.g., Ruppert, 2008 Figure 4 – larger circles denote larger misfits, which can either represent poorly constrained inversions or stress boundaries)

rotatedSHgrid\_contraction, \_extension, \_strikeslip

Gridded results, showing proxies for slip trajectories.

Format (compatible with gmt psxy): [Longitude,Latitude (cell center) Aɸ Trajectory Length=0.6]

Aɸ>=2.5 (reverse faulting) = σHmax

Trajectory { Aɸ<=0.5 (normal faulting) = σHmax+90

0.5<Aɸ<2.5 = σHmax + 90 - ( 45 x (Aɸ-0.5))

\* Trajectory rotates from σHmax+90 at Aɸ=0.5 to σHmax at Aɸ=2.5

Aɸ=1.0, Trajectory = σHmax+67.5

Aɸ=1.5, Trajectory = σHmax+45

Aɸ=2.0, Trajectory = σHmax+22.5

The only reason they are written as separate files is to make color-coding easier in GMT.

\_contraction: Grid cells with Aɸ>=2.0

\_strikeslip: Grid cells with 1.0<=Aɸ<=2.0

\_extension: Grid cells with Aɸ<=1.0