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| **TABLE S2. STATIONS VELOCITIES THAT WERE ESTIMATED MANUALLY IN TSVIEW**  |   |   |   |
| **Continuous station** | **Justification** | **Component** | **Previous velocity** | **Sigma** | **NRMS** | **WRMS** | **New velocity** | **Sigma** | **NRMS** | **WRMS** |
|  |  |  | (mm/yr) | (mm/yr) |   | (mm) | (mm/yr) | (mm/yr) |   | (mm) |
|  |  | N | 11.87 | 0.21 | 9.69 | 2.28 | 12.45 | 0.11 | 3.61 | 1.14 |
| AVRY | Increasing unmodeled cyclic noise | E | -14.20 | 0.47 | 23.68 | 2.91 | -12.78 | 0.10 | 3.76 | 1.15 |
|   |   | N | 14.96 | 0.23 | 10.51 | 1.78 | 16.19 | 0.06 | 1.29 | 0.67 |
| CHMS | Increasing unmodeled cyclic noise | E | -13.54 | 0.29 | 14.35 | 2.04 | -14.94 | 0.19 | 4.51 | 0.76 |
|   |   | N | 16.81 | 0.29 | 9.06 | 1.92 | 15.70 | 0.07 | 1.21 | 0.99 |
| CJMG | Short period of high noise volume | E | -12.57 | 0.96 | 32.24 | 4.39 | -15.85 | 0.24 | 4.63 | 1.02 |
|   |   | N | 16.00 | 0.21 | 9.01 | 1.44 | 15.26 | 0.08 | 3.07 | 0.83 |
| COSO | Large unmodeled offset | E | -6.43 | 0.40 | 18.68 | 2.77 | -4.84 | 0.23 | 9.35 | 1.34 |
|   |   | N | 22.78 | 0.62 | 11.46 | 3.21 | 23.59 | 0.26 | 2.29 | 1.14 |
| DYHS | Short period of high noise volume | E | -28.93 | 0.43 | 8.97 | 3.29 | -29.10 | 0.26 | 2.53 | 0.91 |
|   |   | N | 22.12 | 0.17 | 11.18 | 2.36 | 22.43 | 0.15 | 8.29 | 1.08 |
| ELSC | Short period of high noise volume | E | -23.65 | 0.19 | 13.39 | 2.56 | -23.79 | 0.15 | 8.73 | 1.09 |
|   |   | N | 23.57 | 0.58 | 34.64 | 7.19 | 23.28 | 0.30 | 15.75 | 1.84 |
| LPHS | Short period of high noise volume | E | -25.45 | 0.68 | 43.30 | 8.15 | -25.03 | 0.49 | 27.85 | 2.39 |
|   |   | N | 23.81 | 1.21 | 36.23 | 4.89 | 25.18 | 0.24 | 5.03 | 1.96 |
| MHMS | Increasing unmodeled cyclic noise | E | -26.56 | 2.38 | 85.55 | 9.06 | -22.18 | 0.31 | 8.17 | 3.22 |
|   |   | N | 24.95 | 0.26 | 20.85 | 2.36 | 25.12 | 0.21 | 9.13 | 1.20 |
| NOPK | Short period of high noise volume | E | -23.32 | 0.43 | 36.77 | 4.71 | -22.77 | 0.12 | 5.55 | 1.28 |
|   |   | N | -1.52 | 1.46 | 104.91 | 7.11 | 3.38 | 0.32 | 14.89 | 1.54 |
| P506 | Large unmodeled offset | E | -7.92 | 0.96 | 71.96 | 4.68 | -5.47 | 0.73 | 36.01 | 3.14 |
|   |   | N | 4.94 | 0.13 | 10.90 | 0.91 | 4.69 | 0.07 | 4.30 | 0.70 |
| P795 | Large unmodeled offset | E | -5.75 | 0.33 | 29.97 | 1.89 | -6.51 | 0.03 | 2.28 | 0.72 |
|   |   | N | 7.61 | 4.67 | 1115.30 | 10.16 | 23.94 | 0.31 | 3.04 | 0.80 |
| RHCG | Unknown unmodeled signal | E | -7.82 | 3.84 | 96.22 | 8.43 | -22.59 | 0.36 | 3.52 | 1.12 |
|   |   | N | 17.61 | 1.41 | 22.92 | 2.27 | 22.16 | 0.48 | 3.49 | 1.01 |
| RKMG | Unknown unmodeled signal | E | -20.21 | 1.97 | 34.30 | 4.21 | -28.91 | 0.51 | 3.96 | 0.89 |
|   |   | N | 21.67 | 0.20 | 21.65 | 2.54 | 21.86 | 0.19 | 18.91 | 1.61 |
| WCHS | Short period of high noise volume | E | -23.23 | 0.24 | 27.16 | 4.38 | -23.24 | 0.22 | 24.03 | 1.90 |
|   |   | N | 18.34 | 1.33 | 10.86 | 2.62 | 11.94 | 0.26 | 1.04 | 1.17 |
| WORG | Large unmodeled offset | E | -2.98 | 1.37 | 12.44 | 2.78 | -9.55 | 0.19 | 0.82 | 1.40 |
| **Campaign station** | **Justification** | **Component** | **Previous velocity** | **Sigma** | **NRMS** | **WRMS** | **New velocity** | **Sigma** | **NRMS** | **WRMS** |
|  |  |  | (mm/yr) | (mm/yr) |   | (mm) | (mm/yr) | (mm/yr) |   | (mm) |
|   |   | N | 20.66 | 2.10 | 8.79 | 14.81 | 18.29 | 0.42 | 1.47 | 2.97 |
| BRIN | Outliers | E | -26.92 | 3.70 | 16.55 | 24.50 | -18.05 | 0.32 | 1.18 | 2.12 |
|   |   | N | 10.08 | 0.91 | 2.25 | 9.39 | 9.34 | 0.58 | 1.34 | 3.54 |
| DEAD | Outliers | E | -12.22 | 1.43 | 3.49 | 10.37 | -11.21 | 0.65 | 1.51 | 4.62 |
|   |   | N | 18.48 | 5.75 | 27.86 | 54.60 | 18.56 | 0.69 | 3.34 | 4.51 |
| DIVD | Outliers | E | -11.85 | 6.34 | 31.31 | 37.24 | -12.40 | 0.67 | 3.32 | 3.53 |
|   |   | N | 11.80 | 1.08 | 0.93 | 3.56 | 12.80 | 0.74 | 0.60 | 3.07 |
| INA5 | Outliers | E | -12.23 | 5.16 | 4.44 | 22.12 | -16.04 | 0.34 | 0.28 | 2.24 |
|   |   | N | 16.62 | 1.63 | 2.90 | 15.02 | 12.79 | 0.42 | 0.57 | 2.30 |
| MATX | Outliers | E | -3.95 | 3.20 | 5.40 | 33.06 | -12.28 | 0.36 | 0.46 | 2.51 |