

## QUANTIFYING SEISMOGENIC STRAIN

### Approach

The five micropolar parameters; three Euler angles that define the orientations of the principal strain rates (i.e.,  $d_1 \geq d_2 \geq d_3$ ; lengthening is reckoned positive); a deformation-rate parameter  $D \equiv (d_2 - d_3) / (d_1 - d_3)$ , which defines the relative magnitudes of the principal strain rates; and a relative vorticity parameter  $W \equiv (\omega_{13} - \omega_{31}) / 0.5(d_1 - d_3)$ , are optimized using a down-hill simplex search algorithm that minimizes the average misfit between model slip directions and the slip directions inferred from the focal mechanism data. Implicit in this approach is the assumption that slip on a fault occurs in the direction of the maximum resolved rate-of-shear as defined by the micropolar continuum model (see review in Twiss and Unruh, 1998). Given the geologically instantaneous nature of seismogenic deformation, it can be equivalently assumed that slip occurs in the direction of maximum resolved incremental shear strain. For each area examined we also performed a statistical evaluation that included a minimum of 1000 bootstrap analyses of the data set thereby enabling us to estimate the variance in our model parameters.

### Event Selection

The focal mechanisms (Table 1) used in our analyses come from the USGS/University of Washington catalog and cover the period from August 1970 through December 1995 (Tom Yelin, pers. com., 1997). The events were initially separated into geographic subsets based on their map distribution. Where significant linear, planar and/or volumetric clustering was observed, the data were further subdivided to remove the events that did not contribute to the clustering. In the central Puget Sound area, referred to as CPUG (abbreviations as in Fig. 2), we observed a significant break in the vertical distribution of events and in this paper

we only report results for the events shallower than 13 km. Similarly, in the eastern part of the Yakima fold and thrust belt of south-central Washington (EYKS), we found depth-dependent clustering with a gap in seismicity from about 5 to 11 km. Likewise, here we report only on the events from the shallower cluster. In the area of Bellingham, Washington and the San Juan Islands (BLSJ), and at Scott's Mills, Oregon (SCOT) and Mt. St. Helens, Washington (SHEL) we observed northwest or north-northwest-trending alignments of events that we used as separate clusters for our analyses.

### **QUANTIFYING STRAIN FROM GPS DATA**

We use the program GPSTRN (version 7.6) by Robert J. Twiss, based on a program by Andrea Donnellan, to invert geodetically-determined station velocities (Table 2) for best-fit two-dimensional strain-rates within blocks defined by three or four stations (Table 3). The latitudes and longitudes of stations are converted to relative distances using a USGS subroutine supplied by Jeff Freymueller.

**TABLE 1. FLTSLP INPUT DATA DERIVED FROM EARTHQUAKE FOCAL MECHANISMS BY AREA**

<u>P axis orientation</u>		<u>T axis orientation</u>		<u>Coda</u>	<u>Location</u>				
Plunge (°)	Trend (° azimuth)	Plunge (°)	Trend (° azimuth)	mag	Latitude (° N)	Longitude (° W)	Depth (km)		
<b><u>BLSJ</u></b>									
2	298	60	32	2.8	48	24.27	122	22.69998	6.55
5	95	85	275	2.4	48	17.88	122	4.75998	10.17
3	229	74	330	2	48	29.749998	122	36.57	11.11
26	319	63	123	2.7	48	16.519998	122	11.41998	14.24
9	158	77	19	1.7	48	31.030002	122	25.8	14.56
11	334	46	232	2.3	48	28.420002	122	33.78	14.88
24	177	64	21	3.5	48	20.590002	122	18.91002	15.03
34	64	53	220	1.9	48	37.960002	122	59.50998	15.6
16	236	40	340	3.3	48	38.590002	123	6.34998	15.63
36	330	44	105	1.9	48	23.52	122	16.81002	15.86
26	351	63	187	3.1	48	31.549998	122	32.20998	15.88
11	118	52	222	2.3	48	39.160002	123	6.58998	16.88
26	336	63	172	2.4	48	21.490002	122	15.67002	18.16
5	313	82	83	2.3	48	38.530002	123	0.37002	18.78
9	321	69	208	3	48	38.58	123	0.34002	19.37
10	317	55	62	2.3	48	28.399998	122	30.01002	19.68
7	310	7	40	2.3	48	29.119998	122	39.19998	23.81
14	349	49	242	2.9	48	28.459998	122	51.43002	27.66
47	24	29	259	3.3	48	34.960002	123	0.49998	6.41
52	262	33	47	2.3	48	24.010002	122	23.14998	6.67
19	175	35	279	3.1	48	18	122	4.44	11.07
26	326	63	162	3.1	48	19.090002	122	5.86998	12.37
50	307	18	60	2.3	48	36.760002	123	6.01998	12.56
21	20	7	113	1.8	48	17.49	122	4.78002	13.78
51	4	24	127	3.1	48	36.72	122	58.75002	13.85
10	33	78	183	1.3	48	47.329998	123	22.29	14.88
2	163	58	69	3.1	48	16.309998	122	9.52002	15.47
23	344	57	114	2.7	48	24.040002	122	16.72998	15.95
3	38	41	305	1.9	48	39.409998	123	1.63998	16.44
5	128	35	222	2.3	48	39.139998	123	6.55002	16.74
2	48	60	142	2.5	48	21.430002	122	11.65002	17.46
10	171	62	281	3.3	48	21.54	122	15.79998	18.16
20	165	70	345	3	48	21.6	122	15.61998	18.21
32	50	57	246	2.1	48	21.679998	122	17.08002	18.82
5	322	35	228	2.6	48	41.43	123	13.57002	21.57
1	158	38	249	2.4	48	29.43	122	39.61998	24.32
29	113	59	271	2.2	48	25.609998	122	29.43	25.2
<b><u>WYAK</u></b>									
7	346	76	103	3.6	46	52.6	120	58.3	12.38
7	337	62	234	2.3	46	50.66	120	37.39	9.01
3	184	74	285	1.5	46	37.07	120	32.3	12.8
44	15	44	175	4.2	47	11.84	120	53.55	3.37
55	347	19	227	2.8	47	11.93	120	53.45	0.03
44	8	23	254	2.9	47	11.92	120	53.19	0.02
22	1	51	241	2.3	46	58.05	120	26.22	8.74
6	107	45	10	2.4	46	53.39	120	46.69	5
8	189	72	304	3.8	46	39.32	120	35.99	7.87
13	191	68	66	3	46	46.65	120	41.64	17.23
5	142	35	48	2.3	46	57.76	120	26.28	16.78
9	183	77	44	4.3	46	40.75	120	40.39	17.8

64	316	18	185	2.2	46	52.8	120	49.7	1.06
3	241	11	150	2.8	46	52.1	120	49.98	1.26
21	37	7	130	2.2	46	37.74	120	42.33	9.33
11	212	42	112	3.4	46	48.8	120	33.47	6.55
11	148	52	252	3.2	46	52.25	120	39.11	13.26
36	215	48	359	2.7	46	55.85	120	20.11	5.21
47	214	29	89	2.9	46	56.29	120	20.46	4.36
44	217	23	331	2.6	46	56.04	120	20.37	4.27
18	220	64	351	3.4	46	56.2	120	20.31	4.08
29	234	58	25	2.5	46	56.58	120	21.15	3.68
15	45	75	225	2.2	46	50.55	120	42.45	11.65
9	198	77	59	2.6	46	35.73	120	29.61	8.52
45	340	45	160	3	47	11.44	120	57.31	1.61
20	179	45	290	2.2	46	43.24	120	50.47	6.6
5	228	81	108	2.4	46	43.7	120	33.2	7.12
6	211	65	313	2.7	46	50.23	120	43.32	2.37
3	184	74	285	1.5	46	37.07	120	32.3	12.8
11	180	3	89	4	46	15.77	120	59.34	1.98
7	17	44	113	3.1	46	29.99	120	37.93	16.63
21	37	7	130	2.2	46	37.74	120	42.33	9.33
9	198	77	59	2.6	46	35.73	120	29.61	8.52
24	10	60	227	3.2	46	34.76	120	42.66	13.17

**WRAN**

16	1	40	105	2.8	46	50.37	121	55.09	8.68
9	168	77	29	3.5	46	51.64	121	53.06	8.85
7	20	21	287	3	46	35.3	121	51.07	6.59
2	207	48	115	1.9	46	49.2	121	56.76	9.54
7	190	7	280	2	46	45.02	121	56.53	5.6
0	7	83	274	2.7	46	50.44	121	57.2	11.61
4	31	18	122	3.1	46	52.57	121	57.39	11.31
10	165	80	345	2.7	46	51.63	121	56.83	12.8
19	127	68	280	2.3	46	51.4	121	55.72	7.61
6	7	53	105	3	46	55.95	121	55.43	11.32
0	145	90	55	2.8	46	49.93	121	56.29	12.31
7	2	44	98	2.3	46	33.09	121	45.87	9.65
5	23	82	153	1.9	46	49.58	121	55.3	11.7
7	19	76	262	1.8	46	32.37	121	48.28	5.86
5	177	81	297	1.5	46	51.06	121	53.97	9.59
9	21	69	268	2	46	50.98	121	54.25	9.69
13	344	69	110	3.8	46	51.04	121	55.07	10.8
8	156	72	41	1.9	46	51.12	121	54.14	9.96
5	180	85	0	1.9	46	51.33	121	54.25	9.99
25	240	65	60	2.1	46	50.42	121	55.94	7.34
16	337	63	100	3	46	50.66	121	55.23	10.89
3	164	74	265	2.4	46	51.57	121	56.03	10.69
9	193	32	289	1.6	46	38.17	121	56.92	8.62
8	208	34	304	1.5	46	50.63	121	54.6	10.39
9	56	69	303	2.1	46	33.39	121	42.85	9.28
5	357	82	227	2.9	46	51.03	121	57.49	9.4
15	214	38	316	3	46	32.82	121	48.7	3.77
6	203	45	300	2.7	46	33.16	121	48.64	3.55
8	174	72	289	2.5	46	51.49	121	54.35	12.09
1	216	67	308	2.7	46	53.23	121	58.91	8.55
2	23	51	290	2.9	46	32.72	121	48.58	3.46
1	32	28	301	2	46	55.73	121	57.77	12.66
41	348	46	140	2.1	46	53.53	121	56.95	4.16
10	17	78	227	2.3	46	51.85	121	54.83	12.31
14	347	14	253	1.6	46	41.57	121	54.26	8.16
14	39	56	286	3	46	51.03	121	54.8	10.74
15	193	49	302	2.4	46	35.61	121	48.73	8.43
33	0	42	126	1.1	46	38.98	121	55.97	7.38
17	195	24	293	2.3	46	54.76	122	3.25	7.67

5	345	85	165	3	46	45.76	121	53.75	11.34
17	207	17	303	1.8	46	46.89	121	54.63	6.45
19	167	68	320	2.3	46	46.87	121	54.92	6.18
3	17	41	110	2	46	47.02	121	54.63	7.21
10	17	55	122	2.1	46	48.67	121	55.52	11.51
3	201	74	100	1.6	46	32.67	121	48.75	0.89
7	190	7	280	1.8	46	38.59	121	51.11	4.49
28	199	13	296	1.5	46	46.87	121	54.7	6.22
12	28	37	289	2.3	46	54.62	121	56.4	8.16
18	180	64	49	2.1	46	53.42	121	53.45	9.85
13	26	69	260	1.7	46	50.92	121	56.56	12.7
8	198	34	294	1.5	46	50.86	121	56.61	12.98
1	213	38	304	1.4	46	55.64	121	57.51	12.61
14	208	14	302	2	46	52.04	121	56.95	4.86
10	223	18	129	1.8	46	38.71	121	56.48	6.69
2	193	48	285	1.8	46	54.82	121	56.3	13.69
20	15	70	195	2	46	51.31	121	55.76	7.39
47	160	43	331	1.5	46	50.45	121	56.76	10.8
46	163	26	42	1	46	44.65	121	54.62	4.68
0	27	83	294	4.1	46	52.86	121	56.44	13.42
13	194	68	319	1.1	46	53.02	121	56.06	12.84
13	214	28	311	0.8	46	53.15	121	56.08	13.63
21	186	21	284	0.7	46	40.75	121	53.46	7.08
3	181	74	80	1.1	46	51.83	121	53.54	9.3
5	178	81	58	3.7	46	49.13	121	52.58	8.48
15	195	75	15	0.8	46	49.14	121	52.63	8.15
0	353	83	86	1.8	46	49.3	121	52.49	9.25
13	186	68	61	0.7	46	49.07	121	52.53	8.52
14	46	27	308	1.2	46	53.13	121	59.7	12.61
42	343	11	243	0.9	46	48.96	121	55.62	6.21
5	348	82	118	1.3	46	53.09	121	56.5	12.46
24	177	17	275	0.7	46	38.42	121	51.21	6.17
24	13	17	275	2	46	49.96	121	52.31	7.63
0	200	90	110	1.7	46	33.63	121	45.34	10.6
24	187	64	31	1.9	46	33.7	121	50.17	3.76

**SHEL**

24	48	17	310	3.3	46	19.549998	122	12.34002	1.97
24	55	11	320	2.8	46	20.34	122	13.11	2.78
11	51	11	319	3.3	46	20.299998	122	12.9	3.77
4	230	4	140	4.1	46	19.969998	122	12.78	2.45
14	41	0	311	4.1	46	20.179998	122	12.76998	1.87
40	86	50	264	4	46	20.119998	122	12.34002	3.99
10	46	62	156	2.3	46	20.350002	122	12.70002	3.2
9	227	32	131	2.5	46	21	122	12.76998	3.39
14	217	73	5	1.1	46	17.470002	122	13.60002	11.84
56	270	27	131	2.3	46	20.149998	122	12.84	3.95
4	35	4	305	2.7	46	17.19	122	12.49998	1.19
26	78	46	317	2.5	46	21.379998	122	12.22002	2.09

4	9	18	278	2.7	46	18.280002	122	13.12002	3.44
14	227	14	133	5.2	46	20.959998	122	14.16	7.28
24	208	17	110	3.8	46	19.969998	122	13.87002	9.27
2	37	51	130	2.5	46	21.33	122	14.50002	9.82
42	6	19	115	2.4	46	21.400002	122	14.31	7.74
59	319	29	117	2.1	46	19.729998	122	13.90998	8.86
52	163	29	300	1.1	46	20.569998	122	13.69002	7.55
4	39	18	308	1.2	46	21.610002	122	14.41998	8.5
52	52	29	275	3.4	46	19.939998	122	13.78998	12.49
0	226	14	316	1.7	46	20.650002	122	14.31	9.68
40	205	16	101	2.9	46	20.119998	122	13.81002	11.52
7	250	7	340	1	46	20.119998	122	14.31	12.15
23	41	44	287	1.5	46	21.559998	122	14.4	9.53
11	45	3	314	1.8	46	21.499998	122	14.47998	9.71
0	221	14	311	3.8	46	21.199998	122	14.68998	11.5
1	227	38	136	1.7	46	21.529998	122	14.62998	11.19
14	41	0	311	1.9	46	21.24	122	14.32002	7.65
0	46	14	136	2.8	46	21.640002	122	14.34	9.51
3	223	25	132	1.6	46	21.3	122	14.71998	11.59
19	225	35	121	1.7	46	20.650002	122	13.81998	8.39
40	30	16	286	3	46	20.080002	122	13.78002	8.31
14	41	0	311	2	46	21.72	122	14.56998	8.89
24	220	11	125	3	46	20.67	122	14.50002	10.78
4	46	18	137	2.3	46	21.100002	122	14.23998	8.04
14	211	0	121	2.2	46	20.059998	122	13.63002	8.85
28	214	1	123	3.8	46	20.46	122	13.89	8.09
13	211	28	114	1.9	46	19.759998	122	13.53	9.65
4	39	18	308	1.8	46	21.679998	122	14.65998	8.91
1	43	28	134	1.5	46	21.280002	122	14.68002	11.35
7	45	7	315	1.7	46	21.739998	122	14.74998	8.17
4	29	18	298	1.8	46	21.78	122	14.68998	9.27
4	39	18	308	1.9	46	20.28	122	14.34	10.88
14	29	0	119	1.7	46	22.180002	122	14.68998	9.65
21	58	33	314	1.5	46	20.43	122	14.07	7.15
14	207	14	113	1.8	46	21.319998	122	14.46	9.72
35	203	5	297	1.5	46	21.42	122	14.50002	8.33
53	220	6	318	2.4	46	21.760002	122	14.44002	8.48
3	214	11	305	2.9	46	19.750002	122	13.81002	10.66
25	212	3	303	2.3	46	19.71	122	13.63998	11.09
37	194	12	293	3.1	46	19.750002	122	13.42002	6.8
18	23	67	162	1.4	46	20.13	122	13.78002	8.87
7	50	7	320	2.2	46	21.970002	122	14.65002	9.31
24	220	11	125	2.4	46	21.109998	122	14.01	8.37
28	44	13	141	2.2	46	22.180002	122	14.58	8.04
47	191	29	316	1.6	46	20.97	122	13.47	6.11
11	35	3	126	1.8	46	21.400002	122	14.50002	9.68
7	235	7	325	1.9	46	20.07	122	14.01	10.67
14	217	14	123	2.2	46	20.269998	122	14.1	8.66
11	40	3	309	1.2	46	20.989998	122	13.81998	7.67
0	60	0	330	2.2	46	20.920002	122	14.22	8.4
17	218	17	122	2.1	46	21.400002	122	14.47998	9.16
10	228	18	134	2.4	46	20.290002	122	13.96002	8.39
3	237	41	330	2.5	46	20.629998	122	14.4	9.04
21	40	7	307	1.9	46	20.530002	122	14.46	10.87
11	205	3	114	2.1	46	20.209998	122	14.08998	10.6
7	30	7	300	1.7	46	21.48	122	15.06	10.7
38	258	38	132	1	46	20.620002	122	13.35	3.41
7	45	7	315	1.1	46	21.670002	122	14.44998	8.52
7	35	21	302	1.7	46	21.289998	122	14.37	8.92
13	214	28	311	2.5	46	20.839998	122	14.14002	7.25
4	39	18	308	1.8	46	20.67	122	14.19	8.32
0	60	0	330	2.1	46	20.860002	122	14.31	7.14

18	221	10	127	1.8	46	21.349998	122	14.77998	12.24
7	25	7	295	1.7	46	21.970002	122	14.68998	9.42
44	202	7	298	1.5	46	20.64	122	14.89002	8.82
11	40	3	131	1.2	46	21.670002	122	14.55	8.96
0	211	14	301	1.9	46	21.81	122	14.79	9.38
24	25	11	120	2.1	46	21.700002	122	14.86998	9.76
28	221	13	124	2	46	21.169998	122	14.77002	11.51
52	52	29	275	2.1	46	21.589998	122	15.42	12.49
37	46	12	307	1.8	46	20.059998	122	14.20002	8.86
21	45	67	201	1.8	46	20.149998	122	14.82	12.92
0	34	14	304	1.4	46	21.469998	122	14.64	9.27
38	31	1	122	2.4	46	20.710002	122	14.59998	9.31
3	41	11	310	1.7	46	16.89	122	12.75	3.91
45	55	6	152	2.1	46	21.019998	122	14.83998	12.15
51	343	32	123	2	46	21.850002	122	15.16002	10.84
60	68	24	285	2.6	46	21.919998	122	15.34998	11.79
3	44	11	135	2	46	20.779998	122	14.53002	9.3
4	50	4	140	2	46	21.06	122	14.74002	9.81
21	213	7	120	1.8	46	20.230002	122	14.28	9.04
10	52	18	146	1.3	46	20.110002	122	14.44998	11.92
15	204	59	88	1.4	46	22.540002	122	14.16	7.34
11	25	24	120	1.9	46	20.269998	122	15.21	12.58
69	24	4	284	2.7	46	20.260002	122	14.53998	11.02
14	26	49	133	4.5	46	21.769998	122	14.89002	10.85
36	30	48	246	3	46	21.829998	122	15	10.6
24	47	17	145	1.5	46	21.409998	122	14.67	9.16
4	225	4	315	1.6	46	22.150002	122	14.86002	10.84
77	19	9	158	1	46	21.349998	122	14.79	11.94
35	26	19	130	2.3	46	20.569998	122	14.41998	9.51
3	39	11	130	1.6	46	22.420002	122	14.73	9.59
18	212	4	121	2.5	46	20.22	122	14.05998	8.89
3	214	11	305	1.5	46	22.159998	122	15.12	10.86
5	22	31	289	2.6	46	21.550002	122	14.79	10.42
76	212	2	309	1.1	46	16.699998	122	12.46002	9.03
18	32	4	301	1.2	46	20.059998	122	14.23002	8.87
74	195	3	94	1.4	46	24.48	122	17.29998	10.92
11	215	3	306	3.1	46	22.360002	122	14.67	9.71
4	215	4	125	2.5	46	21.070002	122	14.11002	0
7	40	7	130	1.7	46	21.72	122	14.98998	11.11
33	22	55	182	2.2	46	21.769998	122	15.31002	10.81
24	15	60	158	1.7	46	21.829998	122	15.10998	10.86
27	18	56	157	1.3	46	21.010002	122	14.23002	8.1
21	31	21	129	1.5	46	21.529998	122	14.77998	8.66
33	57	33	303	3.4	46	21.559998	122	14.49	8.27
11	30	3	121	1.9	46	20.31	122	13.30998	4.25
23	41	31	146	1.7	46	20.260002	122	13.21002	4.51
25	343	3	252	1.8	46	20.689998	122	14.59002	8.91
11	212	42	112	1	46	21.78	122	14.95002	10.86
7	45	7	315	1.7	46	22.62	122	14.86998	9.23
21	210	7	117	2.7	46	21.169998	122	14.56998	6.02
7	40	21	307	2.9	46	19.750002	122	14.43	9.45
4	35	4	125	1.7	46	21.57	122	14.89002	10.61
21	220	7	127	4.4	46	20.749998	122	14.83002	11.5
3	37	41	130	1.8	46	20.830002	122	14.67	11.33
0	46	14	136	1	46	20.67	122	14.68002	11.48
17	45	24	143	2	46	20.560002	122	14.68998	11.4
6	198	45	295	1.8	46	20.73	122	14.61	11.61
37	185	29	299	1.4	46	22.240002	122	14.62998	8.3
11	30	24	125	1.5	46	20.52	122	14.65002	11.13
10	52	78	262	1.9	46	20.830002	122	14.56002	11.48
23	31	31	136	2.6	46	20.419998	122	14.46	11.24
0	39	14	309	2.4	46	20.599998	122	14.98002	11.6

33	38	33	152	1.9	46	20.67	122	14.73	11.61
11	232	42	132	2.2	46	21.289998	122	15.04002	11.94
24	202	17	300	2.7	46	21.769998	122	15.07998	9.69
0	29	14	299	1.8	46	20.719998	122	14.77998	11.94
37	35	29	149	3	46	20.599998	122	14.86998	12.04
24	35	41	148	1.8	46	20.64	122	14.41998	11.76
27	201	56	340	1.9	46	21.430002	122	14.83998	5.9
36	221	24	330	1.4	46	21.340002	122	15	5.45
35	208	5	302	1.2	46	21.049998	122	14.68998	9.26
11	224	11	316	1.1	46	17.16	122	14.65998	11.45
28	44	1	313	2.3	46	21.529998	122	15	9.68
14	43	14	137	1.9	46	21.6	122	14.19	7.49
31	56	5	323	1.8	46	20.61	122	14.59998	10.97
22	9	51	129	2.6	46	20.050002	122	14.44002	11.93
27	217	27	323	1.1	46	20.7	122	14.61	11.36
53	215	6	313	1.6	46	20.410002	122	13.42002	4.94
5	208	35	302	2	46	22.23	122	14.79	8.61
24	215	11	120	2.3	46	21.6	122	14.95002	9.27
18	44	10	138	1.5	46	21.370002	122	14.68002	8.98
11	31	11	299	2.2	46	22.960002	122	14.98998	9.2
7	237	21	330	1.8	46	19.53	122	14.29002	9.42
16	15	71	163	2.4	46	21.81	122	14.83002	9.21
21	357	7	90	1.2	46	23.500002	122	16.47	10.58
7	35	7	305	2.6	46	21.439998	122	14.7	10.76
3	38	25	307	2.1	46	19.510002	122	13.90002	9.1
14	6	49	113	2.5	46	19.17	122	13.99998	7.16
24	229	24	331	2.9	46	21.850002	122	14.95002	11.06
18	343	4	74	1.7	46	22.8	122	15.10002	9.13
7	215	7	125	2.1	46	19.68	122	14.17002	11.43
4	215	4	125	2.1	46	20.869998	122	14.65998	9.03
3	208	25	117	1.8	46	20.509998	122	13.89	8.43
2	198	58	104	1.7	46	22.729998	122	16.17	11.99
28	44	13	141	1	46	21.87	122	15.42	11.8
30	64	18	323	2.8	46	21.190002	122	15.07002	12.46
56	59	14	306	1.6	46	21.169998	122	15.21	13.05
14	33	14	127	1.9	46	22.14	122	15.13998	10.73
21	27	33	131	2.6	46	21.850002	122	14.35002	8.59
4	29	18	298	1.1	46	20.97	122	14.44998	8.32
29	15	47	143	1.6	46	22.32	122	15.04998	10.64
31	11	41	131	1.9	46	21.33	122	14.80998	11.64
17	27	17	123	1.5	46	22.279998	122	15.37002	11.64
14	208	14	302	2.2	46	19.540002	122	13.99998	9.87
7	40	7	310	1.8	46	21.469998	122	13.93998	9.83
24	32	17	130	2.2	46	22.41	122	15.25002	11.99
7	40	7	130	1.5	46	19.549998	122	16.48002	13.64
21	38	7	305	1.8	46	20.67	122	14.53002	12.14
21	195	7	102	1.9	46	20.959998	122	14.7	8.62
14	4	0	94	1.8	46	24.859998	122	15.48	11.15



42	76	42	294	2.3	46	20.590002	122	14.68002	12.21
16	16	40	120	1.1	46	22.750002	122	16.00002	13.02
21	35	7	128	1.9	46	20.76	122	14.62998	9.79
4	25	4	115	1.1	46	16.339998	122	12.16998	5.9
7	25	7	295	1	46	17.500002	122	13.11	6.15
33	23	33	137	1	46	16.429998	122	12.85998	6.24
7	30	7	300	0.8	46	21.400002	122	14.95002	10.62
3	214	11	305	2.5	46	18.139998	122	14.11002	11.85
21	206	21	304	1.8	46	18.33	122	14.17002	11.48
7	20	7	110	1.5	46	18.39	122	13.92	11.47
28	44	1	313	1.1	46	17.22	122	13.24002	6.84
31	49	23	154	1.5	46	20.329998	122	13.5	5.74
11	175	3	266	1.7	46	20.28	122	15.01002	11.83

**SCOT**

5	7	82	237	2.6	45	6.049998	122	38.13	29.14
8	13	34	109	2.5	45	6.829998	122	41.1	31.25
8	27	34	291	3	45	1.62	122	36.15	19.87
7	16	76	133	2.2	45	1.180002	122	36	5.84
4	355	4	265	2.8	45	1.83	122	36.46002	17.22
17	215	24	313	2.8	45	2.059998	122	36.94998	16.67
14	331	0	241	3.1	45	2.860002	122	37.98	21.37
29	168	59	326	2.8	45	2.329998	122	36.54	11.81
3	17	25	108	2.5	45	1.750002	122	35.53998	17.14
3	209	11	300	2.2	45	2.029998	122	35.53998	14.34
0	332	83	239	2.8	45	2.530002	122	37.57002	21.95
57	39	23	269	2.2	45	1.44	122	36.40002	15.69
0	185	90	275	3.6	45	7.74	122	42.19998	31.73
51	123	32	263	2.4	44	59.959998	122	38.88	24.26
14	344	0	74	2.4	45	1.879998	122	36.15	17.92

**PORT**

13	36	68	271	2.5	45-	36.03	122-	28.14	6.67
31	49	55	261	2.6	45-	50.95	122-	15.34	7.7
60	299	22	75	2.6	45-	57.82	122-	58.91	20.23
11	200	3	291	2.5	45-	28.66	122-	47.69	25.58
2	183	58	89	2.8	45-	41.06	122-	47	19.65
3	209	11	300	2.2	45-	59.74	122-	46.38	18.58
16	357	63	120	2.5	45-	53.97	122-	39.49	17.08
14	223	14	317	3.1	45-	56.49	122-	24.68	14.84
7	205	7	115	1.6	45-	53.69	122-	41.88	16.76
7	205	7	115	2.3	45-	44	122-	35.17	21.11
27	213	27	107	2.6	45-	44.06	122-	34.86	18.93
3	13	41	280	3.7	45-	36.54	122-	27.42	14.36
2	212	48	120	2.6	45-	51.31	122-	34.77	13.78
46	274	37	133	2.1	45-	38.02	122-	51.59	17.47
11	30	24	125	2	45-	38.17	122-	51.84	17.5
16	26	40	130	2.4	45-	38.3	122-	52.28	17.85
22	19	51	139	3.5	45-	38.27	122-	52.16	19.77
4	31	18	122	2.2	45-	38.22	122-	52.01	17.1
27	13	27	267	2.2	45-	38.13	122-	52.45	17.23
6	2	53	100	1.7	45-	38.11	122-	51.77	17.11
16	5	71	153	2.3	45-	38.4	122-	51.88	17.22
47	191	29	316	1.7	45-	38.13	122-	51.72	16.83
11	26	46	128	2.8	45-	38.03	122-	51.91	20.05
25	195	65	15	2.2	45-	38.14	122-	51.89	17.43
22	9	51	129	3	45-	37.87	122-	53.23	20.38
11	11	46	113	1.8	45-	38.09	122-	52.03	19.57
0	42	83	309	2.5	45-	37.29	122-	32.86	15.82
15	270	75	90	1.9	45-	37.36	122-	33.32	14.11
28	49	13	146	2.1	45-	52.36	122-	17.12	9.16
3	206	74	105	2.2	45-	43.92	122-	35.49	19.17
0	13	83	106	2.2	45-	34.91	122-	45.74	15.48

2	203	58	109	2.5	45-	38.02	122-	52.97	21.11
11	19	46	277	2.3	45-	38.06	122-	52.34	17.75
57	336	23	106	1.5	45-	52.82	122-	27.71	16.2
45	305	45	125	2.1	45-	28.54	122-	53.44	22.9
37	200	29	86	2.1	45-	55.97	122-	53.65	20.75
0	36	14	126	1.8	45-	57.44	122-	46.02	17.03
39	236	49	76	2.7	45-	55.28	122-	58.51	25.76
3	211	11	120	1.5	45-	55.08	122-	58.59	22.91
33	210	42	84	1.5	45-	54.57	122-	27.47	16.3
3	174	74	275	2.1	45-	58.45	122-	34.62	14.56
14	39	27	137	1.5	45-	59.72	122-	36.6	17.82
13	219	68	344	3	45-	55.13	122-	58.99	24.71
17	235	24	333	1.9	45-	32.96	122-	37.79	14.59
10	223	18	129	1.9	45-	58.65	122-	37.35	17.61
17	225	24	127	1.9	45-	58.69	122-	37.59	17.32

**KLAM**

63	145	11	32	3.9	42	19.17	122	1.2	8.26
74	270	11	44	5.9	42	18.97	122	1.6	10.33
28	29	13	126	2.6	42	21.6	122	3.29	2.99
70	55	20	235	3.8	42	15.96	122	0.65	10.42
72	351	8	106	2.9	42	16.2	122	1.16	7.05
55	292	19	172	6	42	21.45	122	3.5	10.3
70	25	20	205	2.9	42	22	122	3.45	9.63
62	66	7	323	3.4	42	24.23	122	5.07	8.9
24	320	36	211	2.6	42	15.7	122	0.44	6.14
77	349	9	128	2.4	42	16.68	121	59.68	9.18
52	343	11	87	3.3	42	17.15	121	56.24	8.57
37	98	46	239	3.5	42	19.98	122	0.28	3.77
30	20	30	130	2.5	42	19.54	122	4.02	4.72
74	250	11	24	2.7	42	16.3	122	1.13	6.8
42	101	42	319	4.1	42	18.22	122	3.02	7.18
27	183	27	77	2.6	42	22.4	121	57.2	2.22
76	3	2	266	2.8	42	19.68	121	56.73	2.25
73	340	14	128	3.5	42	21.53	122	4.7	7.86
9	197	32	101	2.3	42	22.56	121	58.04	0.48
83	354	0	87	3.4	42	17.6	122	2.1	8.92
60	186	22	50	3.1	42	21.33	121	58	2.56
81	197	5	77	3.1	42	14.99	121	59.32	6.79
85	80	5	260	2.6	42	18.47	122	2.04	3.67
72	341	8	96	3.2	42	15.69	121	59.39	7.69
90	320	0	230	2.7	42	22.53	121	57.65	2.91
85	270	5	90	3.3	42	16.91	122	0.65	3.58
72	351	8	106	3.1	42	16.9	122	0.57	4.65
74	290	11	64	2.5	42	14.96	121	58.11	7.93
11	30	3	121	1.7	42	20.15	122	3.78	5.77
21	7	33	111	1.4	42	19.71	122	19.76	8.08
69	250	20	82	1.2	42	23.51	122	3.11	6.11
63	148	26	344	3.2	42	19.02	122	2.29	4.68
81	3	5	123	3.3	42	20.62	122	3.83	6.34
72	1	8	116	2.7	42	22.69	122	4.56	7.86
56	34	14	281	1.2	42	17.89	122	0.95	5.7
74	15	3	274	2.5	42	23.39	122	2.13	7.13
61	222	27	18	3.4	42	21.71	122	3.04	7.89
74	190	11	56	3.5	42	16.75	121	59.42	6.8
65	137	6	239	5.1	42	17.49	122	0.52	6.53
76	78	7	321	2.5	42	14.78	121	57.55	8.44
4	24	18	293	3.4	42	15.04	121	59.25	0.66
14	56	27	318	3.2	42	15	121	59.2	1.72
63	340	16	103	3.7	42	14.19	121	58.36	8.58
65	328	6	226	3	42	18.2	122	2.02	3.22
76	347	7	104	2.6	42	15.96	121	59.46	4.27
31	6	41	126	2.7	42	16.49	121	57.13	3.64

5	13	31	106	2.4	42	16.11	121	54.82	2.21
75	150	15	330	2.8	42	16.12	122	0.67	5.3
22	334	51	94	2.5	42	16.11	121	55.76	1.9
52	242	33	27	2.8	42	23.66	122	2.52	7.5
53	15	34	219	4	42	16.91	121	56.87	0.05
5	337	31	244	4.1	42	17.16	121	56.09	0.03
21	5	7	272	4	42	16.26	121	55.2	1.65
74	140	11	274	3.8	42	15.23	121	54.72	2.77
62	354	7	97	2.4	42	15.85	121	55.16	2.95
28	359	13	96	2.8	42	15.52	121	54.32	3.55
52	196	26	67	2.3	42	15.53	121	54.3	3.81
76	347	7	104	2.4	42	14.49	121	57.81	8
27	182	27	288	2.4	42	17.66	121	56.32	2.72
31	39	41	279	2.9	42	15.65	121	54.87	3.13
9	62	32	326	2.1	42	17.52	121	55.42	0.03
2	287	60	193	2.1	42	16.82	121	55.35	1.31
53	20	6	282	2.4	42	17.92	121	56.77	3.36
62	41	7	298	1.8	42	17.12	121	55.42	3.43
36	60	48	204	1.6	42	16.61	121	58.56	7.38
38	332	38	98	2.1	42	15.81	121	54.13	3.38
45	25	20	136	2.4	42	14.84	121	57.68	8.28
67	33	1	301	1.7	42	15.19	121	58.21	9.82
62	296	20	69	3.5	42	14.73	121	57.88	7.7
69	29	4	289	2.7	42	22.93	122	2.77	8.15
81	212	5	92	3.9	42	23.66	122	2.33	0.05

**EPUG**

3	2	41	95	2.1	47	40.48	121	49.02	14.96
2	138	58	44	2.4	47	25.97	121	49.7	19.85
7	198	21	105	2.3	47	42.51	121	55.26	23.71
59	32	31	224	3	47	20.54	122	1.5	19.22
32	107	51	247	3.3	47	57.24	121	53.05	17.84
16	2	63	125	2.2	47	22.97	121	52.67	18.88
26	49	63	213	2.6	47	27.92	122	0.61	12.04
14	318	14	52	2.5	47	51.25	122	1.15	24.7
75	280	15	100	2.4	47	24.72	121	54.8	13.1
22	145	60	9	1.8	47	54.75	121	54.2	5.98
4	165	4	255	4.2	47	35.7	121	50.63	18.39
42	21	42	239	1.5	47	42.36	121	57.11	18.97
36	15	48	231	3.5	47	31.84	121	54.45	7.38
5	335	85	155	2.3	47	54.18	122	8.24	23.32
2	348	60	82	1.8	47	54.46	122	8.54	22.95
4	226	18	317	2.1	47	31.54	121	59.88	4.07
27	37	27	143	3.5	47	54.51	121	49.46	3.15
44	340	44	180	2.4	47	25.5	122	4.84	17.47
36	9	51	215	1.9	47	26.01	121	48.04	18.94
49	327	14	74	2.7	47	36.74	121	45.52	12.7

14	221	27	123	3.1	47	40.44	122	9.71	23.17
17	215	24	313	3	47	19.22	122	0.26	12.91
3	322	41	55	2.9	47	36.52	121	57.84	9.77
34	289	53	85	2.2	47	52.49	122	2.02	17.37
6	7	53	105	2.2	47	24.74	121	51.02	16.63
10	3	78	153	2.7	47	25.63	121	48.32	17.55
2	328	60	62	3.1	47	26.06	121	49.57	17.03
7	341	76	98	2.5	47	35.12	121	59.79	6.64
7	338	44	242	2.2	47	39.86	121	51.96	17.62
2	334	76	237	1.8	47	32.17	122	2.36	17.05
2	61	76	158	2	47	51.67	121	52.12	18.54
0	155	90	65	2.3	47	26.87	121	48.35	21.78
0	327	83	234	1.9	47	33.92	122	7.72	18.89
6	332	53	70	2.9	47	24.85	121	48.94	19.69
11	281	74	55	2.3	47	50.35	121	59.55	24.06
1	152	38	61	2	47	50.65	122	4.37	22.7
16	323	63	200	2.2	47	46.48	121	50.13	13.85
27	333	61	177	3.1	47	42.43	121	53.84	7.51
15	170	75	350	2.6	47	25.68	121	51.66	19
33	328	33	82	1.7	47	38.42	121	53.95	19.87
8	339	72	94	2.7	47	34.11	121	54.21	2.68
2	2	51	95	2.8	47	23.53	122	3.37	4.5
0	313	83	46	2.6	47	57.13	121	53.65	17.83
6	181	65	283	2.6	47	25.24	122	5.23	19.39
7	358	62	101	1.9	47	44.49	122	1.27	23.48
1	358	28	89	2.6	47	28.3	122	1.7	14.94
27	18	61	222	2.3	47	25.72	122	4.12	19.45
34	51	53	255	2.3	47	25.39	122	4.6	16.82
20	180	70	360	3.5	47	28.43	121	48.73	17.07
11	348	63	235	2.7	47	37.39	121	56.69	22.35
7	175	21	268	2.6	47	23.83	122	4.83	6
1	148	38	239	2.3	47	33.33	122	6.51	13.01
2	352	51	85	2	47	23.97	122	5.4	5.1
10	295	80	115	2.2	47	59.76	121	56.05	11.5
3	184	74	285	2.4	47	54.95	122	9.53	18.83
6	198	45	295	3.1	47	27.66	122	3.21	23.08
0	160	90	250	2.5	47	47.34	121	50.66	17.43
10	170	80	350	2.5	47	52.75	122	2.16	18.81
11	352	63	105	1.5	47	23.04	121	47.11	18.16
7	152	55	252	1.6	47	56.7	122	8.34	25.64
2	173	58	79	2	47	25.57	121	46.88	15.68
28	336	13	239	2.5	47	39.09	122	1.86	21.77
3	164	74	265	2	47	39.12	121	51.82	15.59

5	245	85	65	1.8	47	54.38	122	1.2	13.83
3	351	11	260	1.7	47	33.95	121	47.5	10.33
5	230	85	50	2.9	47	22.36	121	48.22	12.18
9	4	69	117	1.9	47	45.99	121	58.59	24.44
5	345	85	165	2.1	47	25.28	121	45.84	19.03
31	356	59	188	3.2	47	37.76	122	5.28	6.04
48	13	33	238	2.9	47	26.05	121	49.53	18.87
51	335	2	68	2	47	37.07	121	59.54	17.17
29	329	58	120	2.2	47	28.89	121	46.63	17.61
51	335	36	129	1.6	47	38.62	121	56.71	11.49
11	337	63	90	2.2	47	40.24	121	52.54	13.11
29	134	47	259	1.4	47	36.39	121	49.91	15.2
10	234	62	124	2.5	47	29.93	121	47.62	18.17
20	3	69	195	1.5	47	48.37	122	5.67	23.15
7	190	7	280	2.6	47	40.24	121	52.06	15.79
34	184	54	343	1.6	47	40.06	121	51.86	15.87
37	320	29	74	2	47	40.11	121	51.42	17.27
24	10	41	257	2.2	47	35.18	121	50.65	13.26

**EYKS**

5	208	81	88	3.4	46	44.76	119	20.85	2.96
10	3	78	153	3.4	46	45.39	119	22.37	4.01
29	171	47	46	2.3	46	48.96	119	23.99	5.34
4	341	69	241	3.2	46	54.06	119	34.13	4.36
10	268	78	58	2.3	46	53.94	119	32.18	1.62
4	351	69	251	3.8	46	42.49	119	33	3.99
7	178	55	78	2.4	46	49.16	119	32.73	3.17
73	330	14	182	2.5	46	50.47	119	45.47	4.14
22	312	64	164	1.7	46	49.69	119	27.71	3.54
10	110	80	290	1.8	46	49.95	119	27.81	2.3
27	343	61	187	1.8	46	49.91	119	28.28	3.94
40	358	40	132	1.8	46	44.57	119	24.33	2.69
21	194	21	96	1.4	46	44.76	119	22.06	0.02
19	205	42	96	2.6	46	25.13	119	1.83	2.28
16	85	71	233	2.5	46	25.13	119	1.84	2.08
53	205	6	107	2.3	46	25.21	119	2.06	2.27
49	41	41	228	1.9	46	50.26	119	23.44	2.68
8	184	72	299	4.4	46	52.03	119	21.39	3.31
3	157	25	248	2	46	42.11	119	5	3.37
60	280	30	100	1.7	46	49.28	119	40.37	2.1
14	213	14	307	1.9	46	49.6	119	41.09	1.54
9	197	77	336	2.9	46	52.37	119	21.28	2.95
34	181	54	22	2.6	46	49.39	119	21.89	2.09

28	211	13	114	2.9	46	44.51	119	23.77	0.51
5	217	35	123	2.9	46	44.46	119	23.83	2.33
59	93	15	209	2.6	46	54.95	119	6.4	3.09
10	10	80	190	3.7	46	50.52	119	42.61	3.81
1	176	67	268	2.6	46	50.56	119	42.97	2.43
11	27	63	140	3.3	46	53.29	119	24.8	1.79
21	315	67	111	2	46	29.26	119	15.41	1.22
20	200	70	20	3.3	46	50.4	119	19.31	2.71
7	29	76	272	3.1	46	48.13	119	59.55	3.41
33	18	33	132	3.4	46	47.94	119	59.54	3.31
51	94	22	334	2.7	46	57.35	119	2.94	2.38
55	72	10	327	3.2	46	57.05	119	33.02	2.22
29	35	47	267	2.6	46	52.12	119	19.3	2.55
19	205	42	96	2.6	46	25.13	119	1.83	2.28
16	85	71	233	2.5	46	25.13	119	1.84	2.08
53	205	6	107	2.3	46	25.21	119	2.06	2.27
21	315	67	111	2	46	29.26	119	15.41	1.22

**CPUG**

10	154	62	44	1.9	47	36.01	122	17.49	3.78
2	344	76	247	3.4	47	19.15	122	23.63	7.88
2	344	76	247	3.4	47	19.99	122	24.39	7.87
31	336	55	124	2.2	47	23.06	122	28.86	8.2
44	260	44	100	1.8	47	21.86	122	20.67	10.88
81	247	5	127	3.3	47	32.43	122	14.86	0.02
10	27	78	237	2.3	47	19.47	122	16.18	7.87
6	161	65	263	2.9	47	20.11	122	29.28	7.24
48	205	41	6	2.3	47	34.46	122	20.32	12.64
41	334	48	135	1.9	47	39.71	122	11.53	1.76
32	355	57	191	2.8	47	34.27	122	23.9	8.09
24	343	17	245	3.3	47	39.19	122	11.43	1.53
5	273	82	43	1.9	47	15.07	122	17.51	6.98
0	195	90	285	2	47	20	122	21.82	8.99
20	349	62	216	3	47	19.39	122	18.04	6.77
17	157	17	253	2.2	47	26.76	122	50.92	0.88
44	360	44	160	2.2	47	35.57	122	41.79	2.35
43	15	43	165	2.4	47	35.71	122	41.32	1.87
13	151	68	26	2.3	47	53.3	122	19.41	8.55
8	151	72	36	2.2	47	53.26	122	19.33	8.38
29	231	37	345	2.8	47	25.84	122	48.92	2.71
34	231	54	72	1.9	47	25.72	122	48.82	0.5
19	175	35	71	1.9	47	25.76	122	48.56	0.26
46	220	44	30	2	47	25.75	122	49.05	0.05

71	218	16	70	1.4	47	25.82	122	48.7	0.84
2	148	48	240	1.6	47	23.13	122	21.71	8.54
5	343	31	76	1.4	47	22.96	122	21.42	11.79
<b>OLYM</b>									
19	238	55	118	2.5	47	27.43	123	4.52	0.05
14	182	14	88	3	47	42.2	122	57.4	8.78
9	162	77	301	3.3	47	54.1	122	52.28	21.32
4	309	69	49	2.8	47	53.43	122	52.34	19.96
1	171	67	263	2.6	47	26.28	122	57.5	15.87
5	150	85	330	2.7	47	24.4	123	9.3	15.42
16	335	71	123	2.7	47	25.99	122	59.45	15.6
2	153	48	245	2.7	48	7.8	122	45.83	22.44
7	324	76	207	2.2	47	55.11	122	51.76	19.67
8	111	72	356	2.4	48	3.18	122	57.71	13.27
35	17	5	283	2	47	39.12	123	8.3	12.21
2	4	76	267	2.3	48	8.58	123	4.18	13.86

TABLE 2. GPS DATA FROM MILLER ET AL. (2001)\*

Station	Location		Raw velocity				Residual velocity			
	Lat	Long	East		North		East		North	
	(°N)	(°E)	(mm/yr)	Std. Dev.	(mm/yr)	Std. Dev.	(mm/yr)	Std. Dev.	(mm/yr)	Std. Dev.
ALBH	48.39	236.51	4.67	0.4	4.81	0.41	1.43	0.4	2.95	0.41
BURN	42.78	242.16	-5.97	1.4	1.54	0.93	-6.17	1.4	1.52	0.93
CABL	42.84	235.44	5.11	0.56	14.51	0.49	-5.12	0.56	7.52	0.49
CMBB	38.03	239.61	-8.46	0.91	7.61	0.73	-8.51	0.91	7.62	0.73
CME1	40.44	235.6	-10.34	1.16	31.76	1.05	-26.87	1.16	30.72	1.05
CORV	44.59	236.7	4.8	1.17	9.06	1.14	3.44	1.17	8.63	1.14
DRAO	49.32	240.38	0.73	0.4	1.58	0.41	0.29	0.4	1.36	0.41
FTS1	46.2	236.04	7.57	0.86	9.14	0.81	1.51	0.86	7.16	0.81
GOBS	45.84	239.19	1.33	0.61	3.54	0.48	0.72	0.61	3.44	0.48
GWEN	45.78	238.67	3.32	1.11	3.09	1.01	2.6	1.11	2.98	1.01

JRO1	46.28	237.78	2.94	1.03	7.15	0.96	1.68	1.03	6.97	0.96
LIND	47	239.46	1.51	1.19	2.26	1.06	0.83	1.19	2.1	1.06
NEAH	48.3	235.38	9.91	0.6	8.52	0.55	0.4	0.6	2.81	0.55
NEWP	44.59	235.94	7.35	1.09	10.27	0.99	4.16	1.09	9.05	0.99
PABH	47.21	235.8	13.7	0.52	12.81	0.45	1.45	0.52	6.35	0.45
QUIN	39.97	239.06	-8.32	0.93	6.08	0.87	-8.54	0.93	6.11	0.87
REDM	44.26	238.85	-0.75	1	1.94	0.86	-1.26	1	1.83	0.86
SATS	46.97	236.46	6.1	1.15	9.22	0.89	0.61	1.15	8.04	0.89
SEAT	47.65	237.69	5.68	0.74	4.07	0.69	3.93	0.74	3.55	0.69
SEDR	48.52	237.78	1.46	0.79	3.35	0.57	0.13	0.79	2.72	0.57
YBHB	41.73	237.29	-3.76	0.97	7.49	0.86	-4.88	0.97	7.25	0.86

\* Miller, M.M., Johnson, D.J., Rubin, C.M., Dragert, H., Wang, K., Qamar, A., and Goldfinger, C., 2001, GPS-determination of along-strike variation in Cascadia margin kinematics: Implications for relative plate motion, subduction zone coupling, and permanent deformation: *Tectonics*, v. 20, p. 161-176.

**TABLE 3. GPS-DERIVED STRAIN RATES**

Cell node stations				Strain-rates from residual velocities					Strain-rates from raw velocities				
				d <sub>1</sub>		d <sub>3</sub>		Dilation (yr <sup>-1</sup> )	St. Dev. (yr <sup>-1</sup> )	d <sub>1</sub>		d <sub>3</sub>	
Azimuth (°from N)	St. Dev. (°)	Azimuth (°from N)	St. Dev. (°)	Azimuth (°from N)	St. Dev. (°)	Azimuth (°from N)	St. Dev. (°)			Azimuth (°from N)	St. Dev. (°)		
YBHB CORV NEWP CABL	60.8	4	150.8	3.4E-08	6.1E-09	-19.5	3.6	70.5	-4.7E-08	6.1E-09			
YBHB REDM CORV	-19.6	9.3	70.4	-2.4E-08	9.1E-09	-17.8	7.7	72.2	-2.9E-08	9.1E-09			
YBHB BURN REDM	68.3	16.7	158.3	-2.3E-08	5.6E-09	68.9	22.5	158.9	-2.5E-08	5.6E-09			
JRO1 FTS1 NEWP CORV	115.7	14.4	205.7	-8.1E-09	8.6E-09	-8.8	7.6	81.2	-4.0E-08	8.6E-09			
JRO1 CORV REDM	-22.4	5.5	67.6	-1.8E-08	9.8E-09	-20.9	5.2	69.1	-2.3E-08	9.8E-09			
JRO1 REDM GOBS GWEN	-24.5	11.4	65.5	1.2E-08	8.6E-09	-19.2	9.6	70.8	6.4E-09	8.6E-09			
JRO1 GWEN GOBS LIND	-40.2	7.2	49.8	-7.6E-09	9.7E-09	-35.7	7.2	54.3	-1.3E-08	9.7E-09			
JRO1 LIND SEAT	114.4	23.8	204.4	-3.9E-08	1.1E-08	-43.3	38.4	46.7	-4.3E-08	1.1E-08			
JRO1 SEAT SATS	97.8	6.7	187.8	-1.1E-09	1.3E-08	129.9	18.6	219.9	-4.0E-08	1.3E-08			
JRO1 SATS PABH FTS1	101.5	52.8	191.5	-3.2E-09	1.1E-08	10.6	4.5	100.6	-1.2E-08	1.1E-08			
SATS ALBH NEAH PABH	78.5	5.3	168.5	-3.0E-08	7.2E-09	-23.1	2	66.9	-1.3E-07	7.2E-09			
SEAT SEDR ALBH SATS	110.8	4.3	200.8	-2.2E-09	7.1E-09	131.3	3.9	221.3	-2.5E-08	7.1E-09			
SEAT LIND DRAO SEDR	-37.4	9.1	52.6	-1.3E-08	6.3E-09	-30.7	7.1	59.3	-1.8E-08	6.3E-09			



