Lambert, A., Mazzotti, S., van der Kooij, M., and Mainville, A., 2008: Subsidence and relative sea level rise in the Fraser River Delta, Greater Vancouver, British Columbia, from combined geodetic data, Geological Survey of Canada, Open File 5698, 1 CD-ROM.

TABLES

Table 1. Typical, Simplified, InSAR, Coherent-Target-Monitoring Procedure

Interferogram Generation	**1)** Generate differential interferograms from 1 master image, 35 slave images, and a DEM for correction of height variation effects
Target Detection	**2)** Remove average phase (using both 400 m and 2000 m cells) from individual pixels
	3) Calculate temporal coherence for individual pixel combining results from 400 m and 2000 m averages
	4) Redo 2) and 3) using only pixels above coherence level of 0.6; Repeat until no further increase in coherent pixel number
Height Correction	**5)** Generate a height error map by adjusting pixel heights to maximize temporal coherence in 3); Correct interferograms in 1) using height error map
	6) Redo 2), 3) and 4) (without the iteration) to produce height-corrected interferograms
	7) Generate full-resolution interferograms from scenes adjacent in time using all pixels
200m Spatial Filtering	**8)** Enhance "consecutive" interferograms in 7) by choosing only pixels with coherence above 0.6 and by averaging them over 200 m cells; reject cells with fewer than 3 coherent pixels
	9) Spatial unwrapping of the low-spatial-resolution (200 m), temporally-adjacent, interferograms
	10) Using the unwrapped phases, calculate low-resolution, temporal phase profiles
	11) Adjust low-resolution phase profiles relative to a 'calibration' area by subtracting the average phase of the calibration area from the phase of each 200 m cell
	12) Reconstitute phases of the full-resolution, coherent pixels by adding back the differential phases with respect to the new 200 m averages
	13) Identify and filter out atmospheric effects **14)** Convert individual coherent target phases to height assuming that all deformation is vertical
Time Series Analysis	**15)** Fit linear trend by least-square adjustment; Calculate velocity, standard deviation, and non-linear flag
	16) Reject pixels with non-linear time series
Final Rates	**17a)** Run 100 m-radius circular moving average window to produce map to vertical velocity
	17b) Calculate 200 m-radius average velocity around specific targets (levelling benchmarks, GPS sites) for velocity comparisons

Table 2. Equipment Used and Corrections Applied in Greater Vancouver Levelling Surveys

Survey	Rods	Rod Calibration	Level Instrument	Magnetic Correction	Refraction Correction
1958/59	2-pairs, matched invar rods, Model “Gurlay”	No	2 spirit levels, Model “Cooke, Troughton & Simms”	N/A	No
1977	2-pairs, matched invar rods, Model “Kern”	Yes	5 Ni1 Automatic levels, Model “Zeiss-Oberkochen”	Yes	Yes

Table 3. Levelling and InSAR uplift rates at levelling benchmarks

(Levelling uplift rates from 1958 and 1977 surveys. InSAR rates from 200 m radius average around benchmark location.)

Benchmark				Levelling			CTM-InSAR		
ID	latitude (° N)	longitude (° E)	elevation (m)	uplift (mm)	rate (mm/yr)	sigma (mm/yr)	N	rate (mm/yr)	sigma (mm/yr)
14C13J	49.200	-122.910	4.0	-12	-0.6	0.1	256	-0.3	0.6
14C15J	49.121	-122.923	8.2	10	0.5	0.2	100	0.1	0.6
14C16J	49.045	-122.881	3.2	16	0.8	0.2	38	-0.2	0.7
14C17J	49.021	-122.808	3.2	-34	-1.8	0.2	29	-0.2	0.7
14C18J	49.020	-122.801	2.3	18	0.9	0.2	65	-0.1	0.7
14C1J	49.286	-123.111	13.3	3	0.2	0.1	605	0.1	0.6
14C4J	49.281	-123.096	15.0	0	0.0	0.1	570	0	0.5
19C159J	49.091	-123.085	1.7	-14	-0.7	0.2	287	-0.7	0.6
19C183J	49.281	-123.118	30.9	0	0.0	0.1	851	0.2	0.6
19C184J	49.273	-123.130	10.3	4	0.2	0.1	497	-0.2	0.5
19C186J	49.251	-123.150	52.5	8	0.4	0.2	307	0.2	0.5
19C191J	49.163	-123.160	1.0	-32	-1.7	0.2	441	-0.9	0.5
19C192J	49.128	-123.168	1.4	15	0.8	0.2	322	-0.5	0.6
19C210J	49.313	-123.076	16.1	-3	-0.2	0.2	488	0	0.5
19C213J	49.341	-123.251	55.1	-4	-0.2	0.3	76	-0.4	0.6
19C214J	49.273	-123.146	5.4	2	0.1	0.1	498	0	0.5
19C220J	49.226	-123.165	43.4	9	0.5	0.1	206	-1	0.5
19C225J	49.273	-123.038	43.4	-10	-0.5	0.2	474	-0.1	0.5
50C9500	49.338	-123.254	3.5	-6	-0.3	0.3	72	-0.6	0.6
50C9501	49.337	-123.253	4.3	-7	-0.4	0.3	68	-0.7	0.6
58C067	49.341	-123.214	32.0	-9	-0.5	0.2	135	-0.6	0.6
58C068	49.329	-123.169	4.2	-47	-2.5	0.2	305	-0.2	0.6
58C069	49.320	-123.133	2.8	-14	-0.7	0.2	233	-0.2	0.5
58C071	49.312	-123.077	18.0	-5	-0.3	0.2	498	0	0.5
58C073	49.298	-123.020	4.5	-33	-1.7	0.1	116	-0.7	0.6
58C075	49.281	-123.055	42.5	7	0.4	0.1	465	-0.1	0.5
58C076	49.275	-123.133	24.9	5	0.3	0.1	550	-0.1	0.5
58C077	49.273	-123.140	16.2	4	0.2	0.1	416	-0.1	0.5
58C078	49.268	-123.190	14.4	7	0.4	0.2	365	0.1	0.5

58C080	49.265	-123.255	85.2	23	1.2	0.3	456	0	0.6
58C081	49.206	-122.930	57.0	5	0.3	0.1	177	0.3	0.6
58C085	49.211	-123.088	6.0	-6	-0.3	0.1	412	-0.3	0.5
58C087	49.191	-123.116	5.1	-16	-0.8	0.1	266	-1.3	0.5
58C089	49.126	-123.180	1.4	-16	-0.8	0.2	334	-0.8	0.6
58C090	49.110	-123.135	2.6	-190	-10.0	0.2	0	-	-
58C091	49.133	-123.115	1.4	-46	-2.4	0.2	157	-1	0.5
58C092	49.133	-123.066	2.5	-89	-4.7	0.2	49	-0.5	0.5
58C093	49.156	-123.066	1.7	-142	-7.5	0.2	3	-1.6	0.6
58C096	49.178	-122.966	1.2	-54	-2.8	0.2	84	-1.9	0.6
58C097	49.190	-122.935	1.5	-5	-0.3	0.1	62	0.1	0.6
58C102	49.235	-123.185	43.0	10	0.5	0.2	273	-0.2	0.5
58C103	49.263	-123.150	39.5	5	0.3	0.2	463	0	0.5
58C116	49.191	-123.136	4.6	-25	-1.3	0.1	58	-1.1	0.5
58C117	49.210	-122.896	37.4	9	0.5	0.1	46	0.2	0.7
58C118	49.206	-122.886	12.9	-11	-0.6	0.1	69	-1.6	0.6
58C119	49.178	-122.915	4.8	-5	-0.3	0.2	205	-0.2	0.6
58C120	49.158	-122.940	7.6	22	1.2	0.1	79	-0.2	0.6
58C121	49.155	-122.958	3.2	8	0.4	0.2	33	-0.3	0.6
58C122	49.150	-122.993	1.6	4	0.2	0.2	149	-0.4	0.6
58C124	49.111	-123.045	1.3	9	0.5	0.2	16	0.3	0.6
58C125	49.090	-123.046	1.6	-10	-0.5	0.2	499	-0.2	0.6
58C126	49.090	-123.081	1.7	3	0.2	0.2	308	-0.7	0.6
58C127	49.090	-123.083	1.7	-11	-0.6	0.2	291	-0.7	0.6
58C128	49.090	-123.000	0.7	-2	-0.1	0.2	0	-	-
58C129	49.091	-122.955	1.4	-2	-0.1	0.2	37	-0.4	0.6
58C130	49.258	-123.031	23.9	7	0.4	0.3	381	0.1	0.5
58C131	49.241	-123.033	109.8	17	0.9	0.3	477	0.1	0.5
58C132	49.226	-122.998	131.0	27	1.4	0.4	591	0.3	0.6
58C133	49.218	-122.966	127.1	26	1.4	0.2	206	0.5	0.5
59C007	49.003	-122.753	10.7	22	1.2	0.2	6	-0.9	0.9
59C078	49.055	-122.870	5.3	-66	-3.5	0.2	0	-	-

Table 4. GPS and InSAR uplift rates at GPS sites

Site				GPS		CTM			
Name	**Lat.** (° N)	**Lon.** (° E)	**Alt.** (m)	**V** (mm/yr)	**σa**	**V** (mm/yr)	**σr**	**σa**	**ΔV** (mm/yr)
BCVC	49.28	-123.09	11.1	-0.3	1.4	-0.2	0.5	0.7	0.1
BCSF	49.19	-122.86	83.4	1.0	1.3	0.6	0.7	0.9	-0.4
BCMR	49.22	-122.54	73.3	0.3	1.4	0.6	0.9	1.0	0.3
BCLI	49.12	-123.15	-4.9	-1.8	1.3	-1.2	0.5	0.7	0.6
BCLC	49.10	-122.66	3.6	-0.4	1.3	-0.9	0.8	0.9	-0.5

V, σr, and σa: vertical velocity, relative, and absolute standard deviations for GPS and CTM-InSAR data. ΔV: velocity difference (CTM minus GPS).

Table 5. Vertical motion and sea-level rise at the GVRD tide gauges

	Land vertical motion (mm/yr)			Sea-level rise (mm/yr)	
	GPS	Levelling	InSAR	Tide Gauge	Regional
Vancouver	0.0 ± 1.5	0.2 ± 0.1	0.0 ± 0.6	0.7 ± 0.1	0.7
Pt Atkinson	-	-0.3 ± 0.3	-0.6 ± 0.6	0.3 ± 0.1	-0.1

Table 6. Relative sea-level rise over the next 100 years for different locations of Fraser River delta

Subsidence	Regional sea-level rise		
	Low (5-10 cm)	**Mean (30-50 cm)**	High (80-90 cm)
Lulu delta front (0-10 cm)	5 – 20 cm	**30 – 60 cm**	80 – 100 cm
Fraser delta (10-20 cm)	**15 – 30 cm**	**40 – 70 cm**	**90 – 110 cm**
Coal terminal (30-40 cm)	35 – 50 cm	**60 – 90 cm**	110 – 130 cm