

Supplementary Materials: Pre-Collapse Space Geodetic Observations of Critical Infrastructure: The Morandi Bridge, Genoa, Italy. *Remote Sensing* 2019, 6, Article No. remotesensing-506958

Pietro Milillo ^{1,*}, Giorgia Giardina ², Daniele Perissin ³, Giovanni Milillo ⁴, Alessandro Coletta ⁴ and Carlo Terranova ⁵

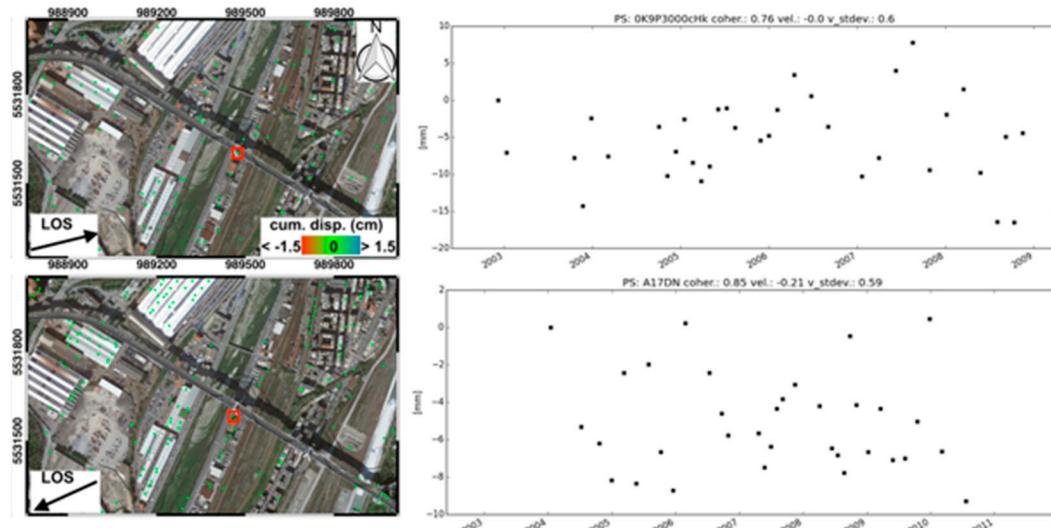


Figure S1. Envisat multi-temporal line of sight (LOS) analysis: This analysis indicates that points located near system 9 are not characterized by any detectable deformation during the period 2003–2011.

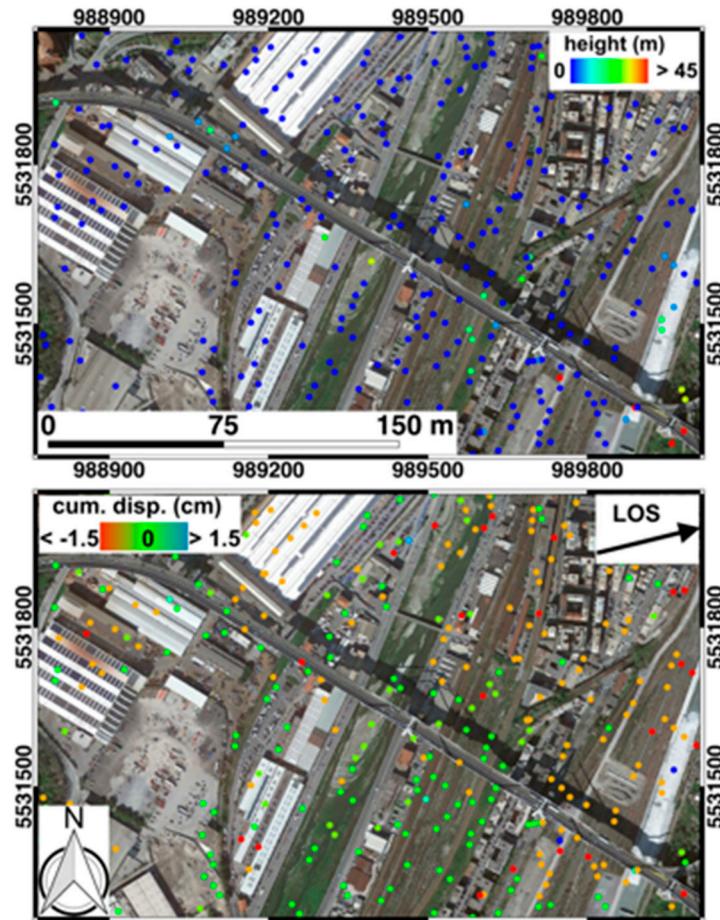


Figure S2. Sentinel-1A/B (SNT) ascending multi-temporal Interferometric SAR analysis of the Morandi Bridge: This analysis highlights no measurement points available located on the bridge structure at the deck level.

Table S1. Acquisition baselines of each dataset used in this study.

Sentinel DSC		CSK Descending		CSK Ascending	
Acquisition Date	Perp. Baseline (m)	Acquisition Date	Perp. Baseline (m)	Acquisition Date	Perp. Baseline (m)
20150911	1.4	20090101	-1078.8	20110223	-1177.5
20150923	58.6	20090117	-364.4	20110311	-718.7
20151005	55.2	20090712	-870.4	20110327	-765.4
20151017	-21.8	20090728	-473.9	20110514	-696.4
20151029	-32.6	20091101	-1357.7	20110530	-47.9
20151110	44.8	20091219	-1181.2	20110615	-583.6
20151122	4.9	20100120	-726.8	20110701	-851.9
20151204	1.1	20100205	-748.1	20110717	2.4
20151216	9.1	20100221	-200.7	20110802	-569.4
20151228	-93.7	20100309	-416.4	20110818	-250.9
20160109	-74.1	20100426	-544.5	20110903	-330
20160121	-14.2	20100613	-646.8	20111005	-595.5
20160202	25	20100816	32.1	20111021	-522.7

20160214	50.5	20101003	-841.2	20111122	-1238
20160226	-16.5	20101120	-1266.2	20111224	-81
20160309	-34.5	20110107	-1098.6	20120109	-1196
20160321	-50.1	20110224	44.8	20120125	-577.8
20160402	23.1	20110328	-598.3	20120313	-762
20160414	69.9	20110531	-485.3	20120329	337.1
20160426	6.5	20110702	-1013.7	20120414	-9.9
20160508	-32	20110718	2.4	20120430	-748.6
20160520	-10.7	20110803	-538.2	20120516	-149.6
20160613	27.2	20110819	-69.6	20120601	-306.1
20160707	-32.8	20110904	-360.2	20120617	-403.3
20160719	-6	20111022	-630	20120703	-654.2
20160731	-15.3	20111107	-712.4	20120719	-535.4
20160812	70.7	20111123	-709.4	20120820	-726.9
20160824	38.4	20120110	-1305.1	20120905	-681.5
20160905	33.3	20120126	12.2	20121108	135.7
20160917	-18.7	20120211	-1032.7	20121124	-239.4
20160929	-74.5	20120330	-501	20121226	-877.7
20161005	-15.3	20120415	-268.6	20130111	-351.1
20161011	-6.9	20120501	131.8	20130212	-441.8
20161017	-9.9	20120517	-498.7	20130316	-842.1
20161023	42.7	20120602	-482.4	20130401	-94.4
20161029	-56.5	20120618	84.2	20130417	-50.2
20161104	-41.2	20120704	-630.2	20130503	185.5
20161116	-46.7	20120720	-422	20130519	-116.4
20161122	69.5	20120805	48.6	20130604	-114.2
20161128	-70.6	20120821	162.6	20130620	-177.5
20161204	-58.2	20121109	-952.1	20130706	15.2
20161210	-1.4	20121125	-112.9	20130722	-131.7
20170115	-50.1	20121227	-975.4	20130807	-34.7
20170121	63.9	20130112	-49.3	20130823	237.4
20170127	-73.5	20130213	-976.3	20130908	134.7
20170202	34.7	20130301	302.5	20130924	611.1
20170208	-62.3	20130317	98.3	20131026	-8.3
20170214	-54.9	20130402	-524.4	20131111	-299.5
20170220	58.4	20130418	30.5	20131127	-74.2
20170226	-60.9	20130504	239.9	20131229	-397.5
20170304	118.6	20130520	-235.5	20140114	-699
20170310	-16.4	20130605	8.6	20140130	357
20170316	-4.9	20130621	197.8	20140215	-443.6
20170328	-57.3	20130707	-174.5	20140303	-401.8
20170403	61.2	20130723	53.4	20140319	171.8
20170409	-31.8	20130824	-49.5	20140404	-49

20170415	23.4	20130909	-432.4	20140420	136.2
20170421	24.5	20130925	-153	20140506	408.8
20170427	-43.3	20131011	-324.7	20140826	591.3
20170503	-3	20131027	-332.6	20140927	517.4
20170509	-55.6	20131128	-6.6	20141013	126.1
20170515	-18.8	20131214	537.4	20141029	352.6
20170521	-17	20131230	-1010.8	20141114	204
20170527	31.1	20140115	-320.5	20141130	22.2
20170602	118.3	20140304	663.6	20141216	521.1
20170608	-65.3	20140320	903.1	20150101	0
20170614	11.9	20140405	392.4	20150117	771.7
20170620	-3.9	20140421	-179.7	20150218	28.5
20170626	7	20140507	-541.2	20150322	1491.4
20170702	59.1	20140523	335.3	20150423	489.4
20170714	48	20140608	-680.9	20150509	1560.4
20170720	0	20140710	281.7	20150525	566.1
20170726	37.7	20140827	691.8	20150610	1124.9
20170801	22.6	20140912	602.6	20150626	1103.4
20170807	-60.1	20140928	1056	20150712	1067.7
20170813	59.6	20141030	549	20150728	1212.1
20170819	17.4	20141201	866.3	20150813	1310.1
20170831	29.9	20150102	-524.8	20150914	1169.8
20170906	16.8	20150118	898.2	20151016	1337.2
20170912	18.9	20150203	220.7	20151101	441.9
20170918	-57.7	20150307	829.5	20151117	782.2
20170924	16.8	20150323	706.5	20151203	193.1
20170930	6.7	20150408	1566.9	20151219	1107.3
20171006	-23.1	20150526	1345.9	20160104	436.6
20171012	43.9	20150611	0	20160120	623.8
20171018	-3.3	20150627	1024	20160205	266.4
20171024	-28.5	20150713	43.9	20160308	821.4
20171030	-2.3	20150729	715	20160409	940.5
20171105	-76.8	20150814	576.6	20160511	847.1
20171111	39.7	20150830	1037.9	20160527	227.9
20171117	-15.9	20150915	315.3	20160612	-98.3
20171123	-15.6	20151102	1384.8	20160628	-192.1
20171129	15.7	20151204	797.3	20160714	607.7
20171205	-15.9	20160121	-180	20160730	-245.8
20171211	20.1	20160206	205.7	20160831	125
20171217	-62.7	20160222	196.6	20161002	470.9
20171223	-48.8	20160309	-323.8	20161103	783.2
20171229	44.4	20160410	-358.9	20161119	884.1
20180104	-74.5	20160426	-27.7	20161205	-26.5

20180110	29.8	20160512	-586.4	20161221	-7.2
20180116	-89.8	20160528	612	20170106	571.2
20180122	-7.7	20160613	-360	20170122	275.7
20180128	27.7	20160629	-293.7	20170207	250
20180203	-61.7	20160715	785.7	20170223	670.6
20180209	36	20160731	-418.8	20170428	64.7
20180215	-83.2	20160816	-507.3	20170514	764.2
20180221	75.7	20160901	630.2	20170530	1468.1
20180227	-8.9	20160917	-337.4	20170615	780.4
20180305	24.3	20161003	-197.9	20170701	696
20180311	92.5	20161019	329.6	20170717	1416
20180317	-39.7	20161104	-622.3	20170802	1385.4
20180323	136.9	20161120	-575.6	20170818	699.9
20180329	3.9	20161206	189.5	20170903	873.8
20180404	64.7	20161222	-361.2	20170919	695.2
20180410	15	20170107	1.7	20171021	933.8
20180416	-7.2	20170123	315.4	20171122	1324.4
20180422	146.8	20170208	143.5	20171208	1474.9
20180428	-36.3	20170224	65.2	20171224	911.5
20180504	6.8	20170312	-55	20180109	513.4
20180510	36.8	20170328	864.9	20180125	1352.8
20180516	3.2	20170413	175.4	20180210	1499.3
20180522	46.2	20170429	604.1	20180226	1046.3
20180528	21.5	20170515	507.5	20180314	728.2
20180603	91.3	20170531	149.5	20180415	1753.6
20180609	56.7	20170616	627.1	20180517	1148.4
20180615	-22.8	20170702	1341.5	20180602	1843.3
20180621	99.9	20170718	825.4	20180618	1927
20180627	-42.5	20170803	1062.4	20180704	1386.2
20180703	-12.7	20170819	1677.5	20180720	529
20180709	41.5	20170904	871.2	20180805	1346.9
20180715	51.3	20170920	1456.3		
20180721	53.3	20171006	968.3		
20180727	2	20171022	1316.6		
20180802	61.3	20171107	553.7		
20180808	67.5	20171123	559.2		
20180814	20.4	20171225	930.8		
		20180110	595.1		
		20180126	1012.6		
		20180211	1105.4		
		20180227	644.3		
		20180315	968		
		20180331	1855.9		

20180502	998.7
20180518	1738.1
20180603	1234.7
20180619	895.8
20180705	1182
20180806	464.9

Table S2. LOS trends from different satellites and line of sight recorded during the period 2015–2009. West, East and Mean columns refer to the west/east closest point located at the deck level near the strands, while average refers to the average displacement of the deck. “/” indicates no PS coverage in the area. North, South and Ground indicate where the pixels is located on the northern, southern side or at the base of the bridge, respectively.

	CSK DSC (2018–2009) (mm/yr)			CSK ASC (2018–2011) (mm/yr)		
	WEST	MEAN	EAST	WEST	MEAN	EAST
System 9 North	-4.2	-1.3	0	3.5	3	0
System 10 North	-1.64	-0.7	0	-1.1	-1.2	0
System 11 North	-2.6	0.4	0	0.2	-1.5	0
System 9 South	/	/	/	0.2	0.7	1.3
System 10 South	/	/	/	-0.5	-0.1	-1.3
System 11 South	/	/	/	0.8	1.2	0
System 9 Ground level	/	-3.7	/	/	-1	/
System 10 Ground level	/	-3.2	/	/	-1	/
System 11 Ground level	/	0.1	/	/	/	/



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