

Supplementary Information for:

Drought-driven transient aquifer compaction imaged using  
multi-temporal satellite radar interferometry

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This file contains methods section and two tables.

## **1. Assumptions about the LOS and vertical motion:**

Given the incidence angle of the European SAR satellites (ERS and ENVISAT, 20-23 degrees), DInSAR is highly sensitive to vertical displacements. However, if horizontal motion is present it can contribute in a range of 1% to 42% of the total displacement (depending on the given horizontal motion direction). It is very unlikely, that this fact can severely mislead our results (in particular the poroelastic parameters), because horizontal ground motion has been only reported of importance that basin borders (Bawden et al., 2001) or close to pumping sites (Watson et al., 2002; Burbey, 2006).

## References:

Bawden, G. W., W. Thatcher, R. S. Stein, and K. Hudnut, Tectonic contraction across Los Angeles after removal of groundwater pumping effects: Nature, vol. 412, p. 812–815, 2001.

Watson, K. M., Y. Bock, and D. T. Sandwell, Satellite interferometric observations of displacements associated with seasonal groundwater in the Los Angeles Basin, J. Geophys. Res., vol. 107, no. 2074, doi:10.1029/2001JB000470, 2002.

Burbey, T.J., 2006, Three-dimensional deformation and strain induced by municipal pumping, Part 2: Numerical analysis: Journal of Hydrology, vol. 330, p. 422–434, doi:10.1016/j.jhydrol.2006.03.035

**Table 1. List of SAR images used in this study (date).**

<b>ERS SAR Images dates (yyyy mm dd)</b>	<b>ERS SAR Images dates (yyyy mm dd)</b>	<b>Envisat SAR Images dates (yyyy mm dd)</b>	<b>Envisat SAR Images Dates (yyyy mm dd)</b>
19920622	19970918	20030619	20041230
19920831	19971127	20031002	20050203
19921109	19980205	20031106	20050310
19930607	19980903	20040115	20050414
19931025	19990401	20040429	20050519
19950810	19990610	20040603	20050901
19950914	19990714	20040708	20051110
19951019	19990818	20040812	20051215
19960829	19990819	20041021	20070315
19961003	19991028	20041125	
19961212	20000106		
19970116	20000316		
19970220	20000525		
19970327	20000803		
19970501	20001012		
19970710	20001221		

**Table 2. List of interferograms used in this study (master date and slave date).**

<b>Master - Slave</b>	<b>Master - Slave</b>	<b>Master - Slave</b>	<b>Master – Slave</b>
19920622-19930607	19961003-19970327	19970220-19970918	19980903-19990610
19920831-19921109	19961003-19970501	19970220-19980205	19980903-19990714
19920831-19950810	19961003-19970710	19970327-19970710	19980903-19991028
19921109-19931025	19961003-19970918	19970327-19971127	19980903-20000106
19930607-19950914	19961003-19980205	19970327-19980205	19990401-19990610
19931025-19951019	19961212-19970116	19970327-19980903	19990401-20000316
19950810-19970116	19961212-19970220	19970501-19970710	19990401-20000803
19950810-19970327	19961212-19970501	19970501-19970918	19990610-19990714
19950914-19960829	19961212-19970710	19970501-19980205	19990610-19991028
19950914-19961003	19961212-19970918	19970501-19990401	19990610-20000106
19950914-19961212	19961212-19980205	19970710-19970918	19990610-20000316
19951019-19990819	19970116-19970220	19970710-19971127	19990610-20001221
19951019-20000525	19970116-19970327	19970710-19980205	19990714-19991028
19960829-19961003	19970116-19970501	19970710-19980903	19990714-20000106
19960829-19961212	19970116-19970710	19970918-19980205	19990714-20001012
19960829-19970220	19970116-19971127	19970918-19990401	19990818-19990819
19960829-19970501	19970116-19980205	19971127-19980205	19990819-20000525
19960829-19970918	19970116-19980903	19971127-19980903	19991028-20000106
19961003-19961212	19970220-19970327	19980205-19980903	19991028-20001012
19961003-19970116	19970220-19970501	19980205-19990401	20000106-20000316
19961003-19970220	19970220-19970710	19980205-19990610	20000106-20001012

**Continue Table 2.**

<b>Master - Slave</b>	<b>Master - Slave</b>	<b>Master - Slave</b>	<b>Master - Slave</b>
20000106 20001221	20040115 20040603	20040708 20040812	20041230 20050901
20000316 20000803	20040115 20040708	20040708 20041125	20041230 20051110
20000316 20001221	20040115 20040812	20040708 20050203	20041230 20051215
20000803 20001221	20040115 20041125	20040708 20050519	20050203 20050414
20001012 20001221	20040115 20041230	20040812 20041125	20050203 20050519
20030619 20031002	20040115 20050203	20040812 20050203	20050203 20051215
20030619 20040115	20040115 20050310	20040812 20050519	20050310 20050414
20030619 20040429	20040115 20050414	20041021 20041230	20050310 20050519
20030619 20040708	20040115 20050519	20041021 20050310	20050310 20050901
20030619 20040812	20040115 20051215	20041021 20050901	20050310 20051110
20030619 20041125	20040429 20040708	20041021 20051110	20050310 20051215
20030619 20050203	20040429 20040812	20041125 20041230	20050414 20050519
20031002 20040115	20040429 20041125	20041125 20050203	20050414 20050901
20031002 20040429	20040429 20050203	20041125 20050310	20050414 20051110
20031002 20040708	20040603 20041021	20041125 20050414	20050414 20051215
20031002 20040812	20040603 20041125	20041125 20050519	20050519 20051215
20031002 20041125	20040603 20041230	20041125 20051215	20050901 20051110
20031002 20050203	20040603 20050310	20041230 20050203	20051110 20051215
20031002 20050519	20040603 20050414	20041230 20050310	20051110 20070315
20031106 20040429	20040603 20050901	20041230 20050414	20051215 20070315
20040115 20040429	20040603 20051110	20041230 20050519	