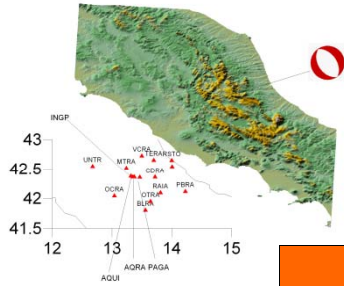


CGPS vs. DInSAR in the Abruzzo earthquake

A. Caporali

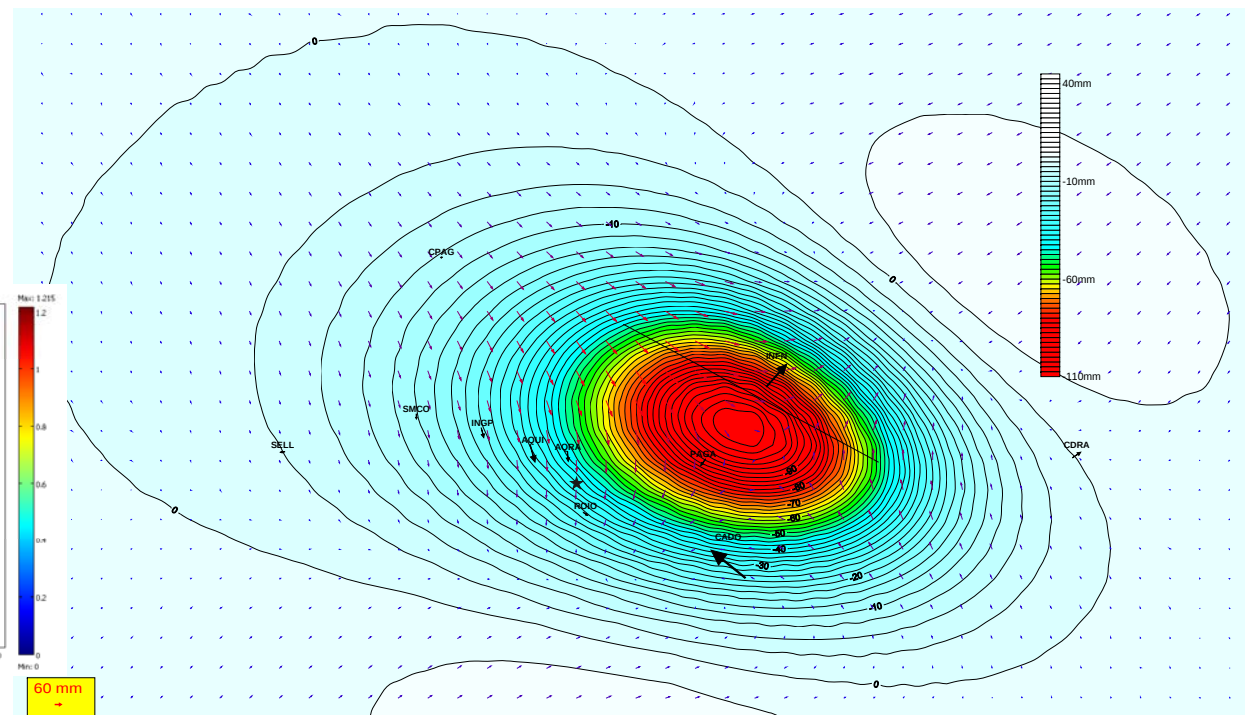
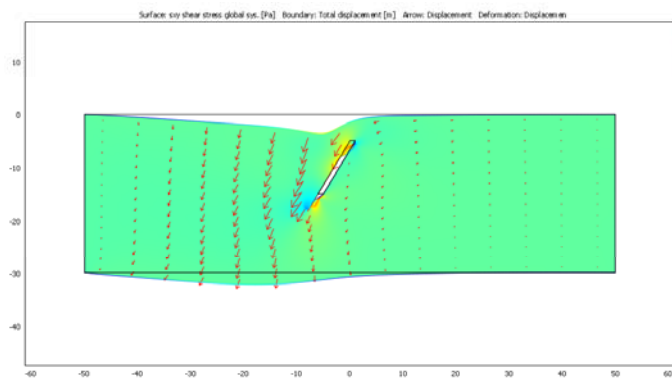
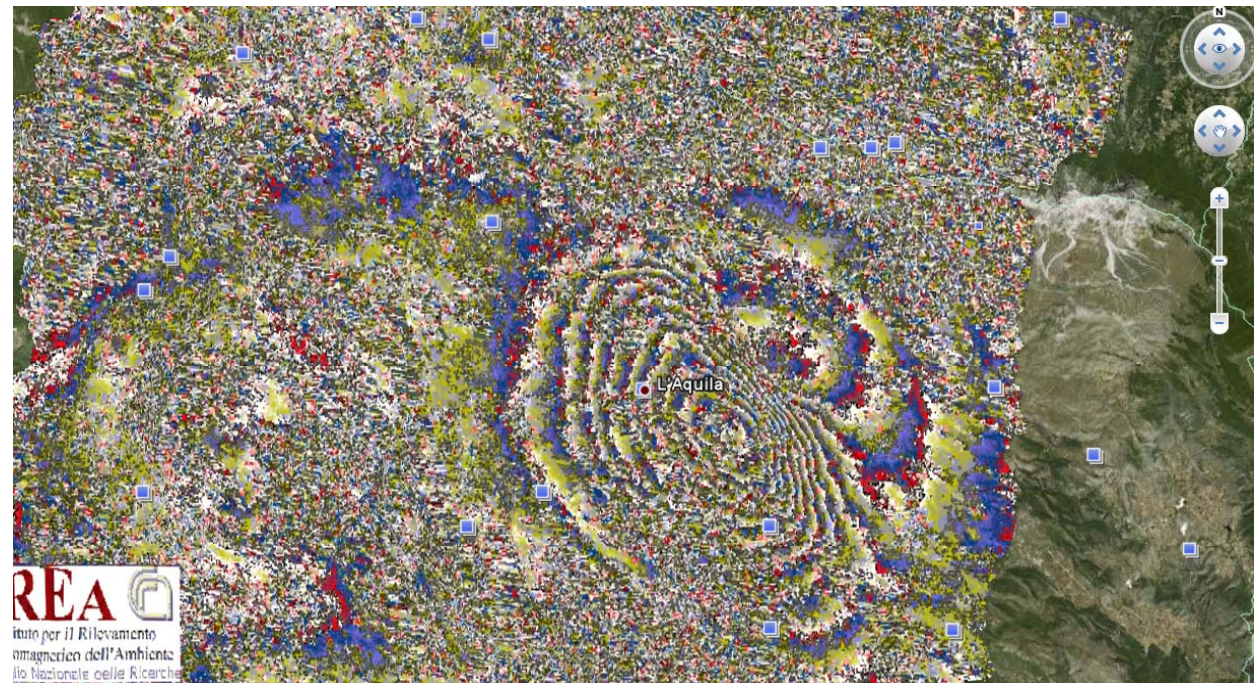
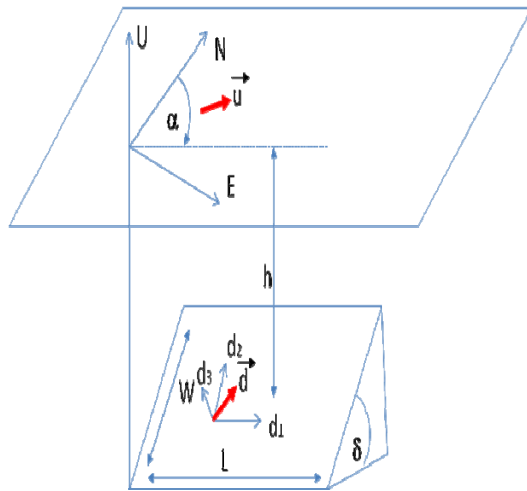
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Coseismic displacements

lon	lat	east (mm)	north(mm)	up (mm)	site	note
13.374	42.366	1.7	-23	-29.4	AQRA	
13.35	42.368	11.4	-40.7	-38.3	AQUI	
13.483	42.293	-80	64.7	-155.5	CADO	bad?
13.72	42.367	18.9	12.8	-12.5	CDRA	
13.288	42.501	4.1	1.2	8	CPAG	
13.516	42.421	47.1	52.2	26	INFN	Taken from Anzidei et al. (2009)
13.316	42.382	5.8	-22.6	-18.6	INGP	
13.646	41.955	-1.3	2.7	20.4	OTRA	
13.466	42.362	-11.1	-14.9	-74.6	PAGA	
14.228	42.124	0.6	2	17	PBRA	
13.386	42.327	10.1	-6.9	-113.2	ROIO	
13.18	42.369	-10.5	-1.1	4.1	SELL	
13.271	42.393	0.4	-11.6	10.3	SMCO	

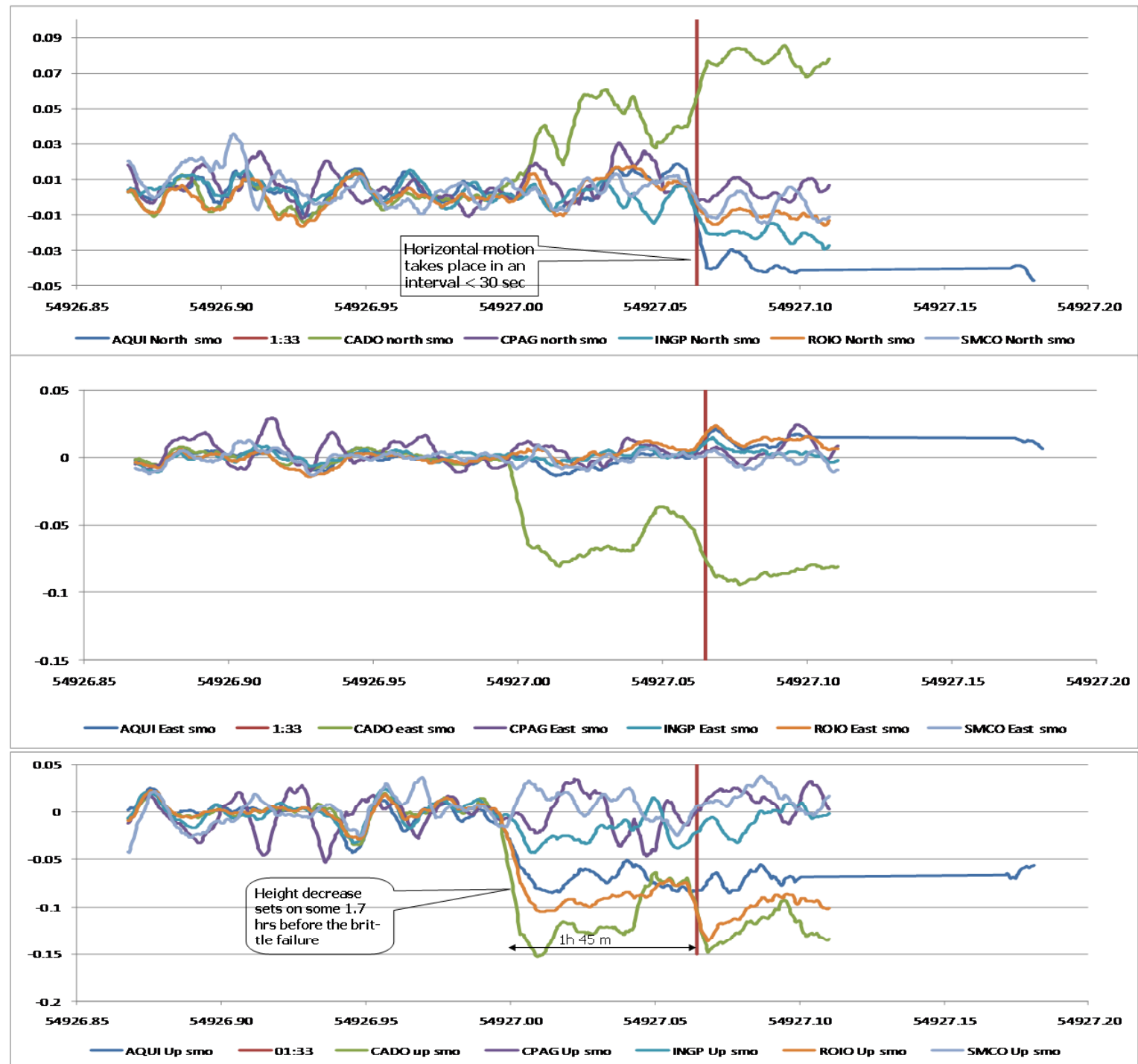
DInSAR (Envisat) vs CGPS+elastic dislocation model



Comparison of fault geometry and slip from CGPS, DInSAR and seismology

Technique	Lat North	Long East	Depth h	Strike α	Dip δ	Length L	Width W	Dislocation d	slip
	(deg)	(deg)	(km)	(deg)	(deg)	(km)	(km)	(m)	(deg)
GPS (Oct.09) excl. CADO	42.278 (0.01)	13.385 (0.01)	13 (2)	136 (1)	48 (2)	7 (2)	12 (2)	0.688 (0.01)	-116 (1)
GPS (August 2009)	42.308(0.01)	13.405 (0.01)	13 (1.5)	132 (1)	48 (2)	13 (2)	13 (2.5)	0.54 (0.01)	-115 (1)
DInSAR				133 (1)	47 (1)	12.2 (0.4)	14.1 (0.7)	0.56 (0.02)	-103 (2)
GPS (Anzidei et al.)	42.321 (0.06)	13.420 (0.04)		140 (fixed)	55 (2)	13 (0.9)	15.7 (1.3)	0.49 (0.03)	-98 (2)
InSar uniform disloc.	42.333 (0.001)	13.449 (0.001)	7 (0.1)	144 (1)	54 (1)	12 (0.2)		0.66	-105 (3)
InSar distributed slip	42.333 (0.001)	13.449 (0.001)	7 (0.1)	144 (1)	54 (1)	19		0.40	-105 (3)
Vp/Vs (www.ingv.it)	42.3476	13.38	9.46						
MedNet INGV	42.33	13.33	12	147	43				-88

Kine matic soluti on at 30 sec



Conclusion

- DInSAR and CGPS both sensitive to changes in position of points on the surface vertical resp. Horizontal
- DInSAR needs GPS calibration but gives more points, depending on coherency of ground reflectors
- CGPS offers absolute accuracy and better time resolution
- Their combined use has the potential to provide a new approach to pre co and post seismic deformation, and to monitoring motions which lead to changes in coordinates