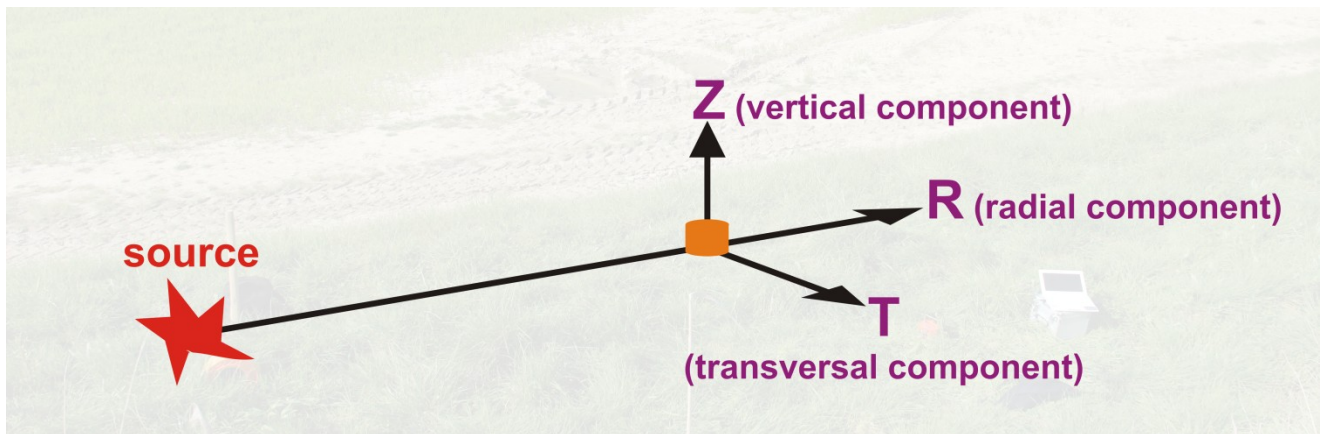


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Applied Geophysics
(active and passive seismics)

Education

Research Doctorate (PhD) (1993-'96) in Geophysics, *Dipartimento di Scienze della Terra (DST)* – University of Trieste (Italy): *Crustal Deformations in the Friuli (NE Italy) Area: Observations and Modeling* (Tutor: Prof. M. Zadro).

M.Sc. degree in “Geological Sciences”: University of Trieste (Italy) (20.11.1992), 110/110 *Cum Laude*. Thesis: *Seismic Data Processing for Seismostratigraphic Studies: Theory and Experimentation* (Advisor: Prof. I. Finetti).

Main Appointments

- Since September 2014: *Department of Seismotectonics*, Institute of Rock Structure and Mechanics, Academy of Sciences of the Czech Republic (Prague, CZ)
- April-June 2016: *University of Camerino* (Italy) - lecturer in *Seismology* (in English)
- March 2015 - March 2016: *Visiting Professor Program* at the *King Saud University* (Riyadh, Saudi Arabia)
- July 2010 – to date: geophysicist (Research & Development, acquisition and analysis of seismic data), software developer, project and intellectual property management (www.winmasw.com). Activity partially developed within the *Science and Technology Park L. Danieli* (Udine, Italy).
- July 2010, Italy: Associate Professor (*Applied Geophysics*) (“abilitazione”)
- March - June 2010: Assistant Professor (*Physics and Geophysics*) at the *German University of Technology* (GUTech - Affiliated to RWTH Aachen, Germany) – Muscat (Sultanate of Oman)
- Oct. 2007- Nov. 2009: *Dept. of Geological Environmental and Marine Sciences* (University of Trieste, Italy): **seismic data for site characterization**
- Feb. - Sept. 2007 (+ February 2008): *Eötvös Lorand Geophysical Institute* (Budapest). **Marie Curie Fellowship** for a Transfer of Knowledge (ToK) project in partnership with *Schlumberger Cambridge Research Centre* and *WesternGeco*
- June - Dec. 05: temporary placement at the *Institute of Hydrogeology, Engineering Geology and Applied Geophysics* (Faculty of Science, Charles University, Prague - CZ) (NATO-CNR advanced fellowship): **Joint Inversion of Seismic Data**
- Sept 04 - Feb. 05: temporary placement at the *Remote Sensing Laboratory* (Faculty of Civil Engineering, Czech Technical University, Prague - CZ) (NATO-CNR advanced fellowship): **Monitoring of the North-Bohemia Brown Coal Basin Reclamation Area by Remote Sensing**
- Oct 02 – Nov. 2009 (with three middle-term stays abroad – see above): *Dept. of Geological Environmental and Marine Sciences* (University of Trieste, Italy): **Geophysical Methods for Site Characterization (EU project). Teaching: Seismic Data Inversion Lab**
- Mar - Apr 04: Stay at the *Department of Geophysics* of the Charles University, Prague (CZ)
- Jan 00 - Oct 01: *Istituto Nazionale di Oceanografia e Geofisica Sperimentale* (OGS) (Trieste, IT): **Seismic-Data Tomography**
- Dec 99: visiting researcher at the *Geophysical Institute* (GFU) of Prague (Academy of Sciences of the Czech Republic - AVČR)
- Dec 96 - Oct 99: DST (University of Trieste, IT): **Tectonic Deformations in Seismic Areas - Tilt/Strain Data Analysis and Modeling**
- May - Sept 97: *Progera S.r.l.* (Italian private company): **Geophysical Prospecting (GPR)**

ACADEMIC SOFTWARE

- ✓ SWIGA (*Matlab Tool for Surface Wave Inversion via Genetic Algorithms*) - see *Rayleigh Wave Dispersion Curve Inversion via Genetic Algorithms and Posterior Probability Density Evaluation* (Dal Moro G., Pipan M. & Gabrielli P., 2007), *J. Appl. Geophysics*, 61, 39-55)
- ✓ SEISMOPARETO (*Joint Inversion of Surface Wave and reflection/refraction travel times via Multi-Objective Evolutionary Algorithms*) – see *V_S and V_P Vertical Profiling via Joint Inversion of Rayleigh Waves and Refraction Travel Times by means of Bi-Objective Evolutionary Algorithm* (Dal Moro G., 2008); *Joint Inversion of Surface Wave Dispersion Curves and Reflection Travel Times via Multi-Objective Evolutionary Algorithms* (Dal Moro G. & Pipan M., 2007)
- ✓ SHARE Tool (*Scene-based HAZe REmoval Tool*), *Matlab Tool for Scene-based HAZe REmoval from satellite imageries*) - see *Haze Removal and Data Calibration for High-Resolution Satellite Data* (Dal Moro G. & Halounova L., 2007), *International Journal of Remote Sensing*

SPIN-OFF ACTIVITIES

- ✓ *winMASW*: Joint Analysis of Surface Waves (Rayleigh & Love) via active and passive techniques: MASW (Rayleigh and Love waves), synthetic seismograms (*modal summation*) and *Full Velocity Spectrum* (FVS) analysis/inversion, ReMi (Refraction Microtremors), MFA (Multiple Filter Analysis), ESAC (Extended Spatial Auto-Correlation), attenuation of Rayleigh Waves; *Horizontal-to-Vertical Spectral Ratio* analyses; 1D refraction travel time etc. – www.winmasw.com

Registered trademarks: *winMASW*[®], *HoliSurface*[®] (associated to a software application and to a patented methodology/procedure for seismic surface-wave analysis)

Patented methodology for the joint acquisition/analysis of surface waves recorded by a single 3-component geophone (software/methodology *HoliSurface*[®]).

Wide experience in geophysical-data acquisition and analysis (seismics in particular).

Miscellanea

Computer literacy

Scientific: Matlab (advanced – GUI, parallel programming and MEX files), ERDAS Imagine (Remote Sensing), Fortran, seismic processing (SeismicUnix, ProMAX), basic UNIX

Languages: Italian (mother tongue), English (quite good), French (fair), Czech (basic).

Chartered Geologist (December 2003 - mark: 148/150)

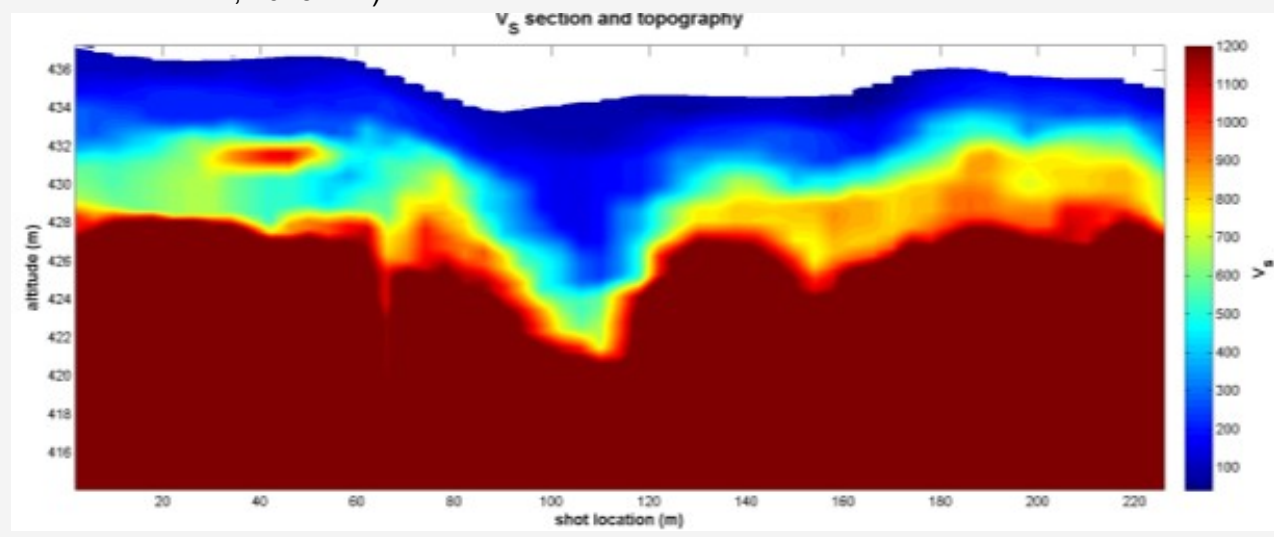
Consultant for several geophysical/geological companies

Reviewer for several Journals in the field of Geophysics: *Near Surface Geophysics*, *Geophysics*, *Journal of Applied Geophysics*, *Mechanics of Advanced Materials and Structures*, *Geophysical Prospecting*, *Computer & Geosciences*, *Journal of Geophysics and Engineering*, *Annals of Geophysics*, *Geophysics*, *Mathematical Geosciences*, *Pure and Applied Geophysics*, *Sensors*, *Exploration Geophysics*

Chairman at the EAGE Near Surface 2009 (Dublin, September 2009), “*Surface and S-wave Seismics*” session; **Invited speaker** at the Mini-Symposium “*Surface and Interface Acoustic Waves in Solids*”, held as part of the 8th European Solid Mechanics Conference ESMC 2012 (Graz, Austria, July 9-13, 2012); **Chairman** at the EAGE Near Surface 2013 (Bochum, September 2013), “*Geophysics in Engineering Geology*” oral session and “*New developments and Technologies*” poster session.

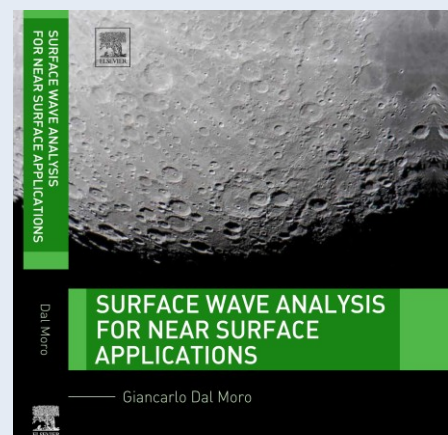
Main Professional Interests

- ✓ Geophysical methods for site characterization (academic research and wide field practice - survey planning, data acquisition and analysis): joint acquisition/analysis of Geophysical/Seismic Data (GPR, resistivity and seismics), Surface Wave Analysis (dispersion and attenuation), Refraction tomography, Site Effect Assessment, software implementation, Remote Sensing
- ✓ Consultant for several companies for the design of acquisition campaigns and seismic-data processing/analysis.
- ✓ Intellectual property management (see "Commercial Spin-Off Activities" box).
- ✓ Among the recent applied works: site characterization of some areas for the *Swiss Seismological Service* and *Nagra (Nationale Genossenschaft für die Lagerung radioaktiver Abfälle)* - in cooperation with *roXplore.ch* (see also paper "Unambiguous determination of the V_s profile via joint analysis of multi-component active and passive seismic data").
- ✓ Several seismic surveys also for the geotechnical exploration of large areas according to the **ADAM-2D (Apparent Dispersion Analysis of Multi-component data - 2D)** approach based on the *Full Velocity Spectrum* Inversion of the acquired data (see Dal Moro et al., 2014; 2016; Dal Moro and Keller, 2015 etc.).



Books

- ✓ *Onde di Superficie in Geofisica Applicata – acquisizione ed analisi secondo le tecniche MASW e HVSR* (Dal Moro G., 2012), pp. 191, ISBN 978-8857901169, Dario Flaccovio Editore (in Italian)
- ✓ *Acquisizione e analisi di dati sismici e vibrazionali per studi di caratterizzazione sismica e geotecnica* (Dal Moro G., 2018), about 300 pages, Dario Flaccovio Editore (in Italian)
- ✓ *Surface Wave Analysis for Near Surface Applications* (Dal Moro G., 2014), Elsevier, ISBN 978-0-12-800770-9, 252pp (theory, field practice and advanced joint analysis)



Selected papers and proceedings

- ✓ On the efficient holistic approach to Rayleigh-wave acquisition and analysis (Dal Moro G., Al-Arifi N., Moustafa S.R.), submitted
- ✓ Strain monitoring of active faults in the central Apennines (Italy) during the period 2002–2017 (Stemberk J., Dal Moro G., Stemberk J., Blahůt J., Coubal M., Košťák B., Zambrano M., Tondi E.. *Tectonophysics*, (in press: <https://www.sciencedirect.com/science/article/pii/S0040195118303755>)
- ✓ Surface wave analysis: improving the accuracy of the shear-wave velocity profile through the efficient joint acquisition and Full Velocity Spectrum (FVS) analysis of Rayleigh and Love waves (Dal Moro G.), *Exploration Geophysics*, accepted (in press)
- ✓ Effective Active and Passive Seismics for the Characterization of Urban and Remote Areas: Four Channels for Seven Objective Functions (Dal Moro G., 2018). *Pure and Applied Geophysics*, in press
- ✓ Influenza della modellazione degli edifici sulla determinazione della loro vulnerabilità sismica (Sancin L., Dal Moro G., Amadio C., Romanelli F., Vaccari F., 2018). Extended abstract for the GNGTS 2018 assembly (gngts.ogs.trieste.it) [**AGLC 2018 Award**]
- ✓ Gaussian-filtered Horizontal Motion (GHM) plots of non-synchronous ambient microtremors for the identification of flexural and torsional modes of a building (Dal Moro G., Weber T., Keller L., 2018), *Soil Dynamics and Earthquake Engineering*, 112, 243-255
- ✓ RPM analysis and advanced joint processing of a SED (Swiss Seismological Service) dataset (Dal Moro G., Keller L., 2017). Extended abstract for the GNGTS 2017 assembly (gngts.ogs.trieste.it)
- ✓ [Improved Holistic Analysis of Rayleigh Waves for Single- and Multi-Offset Data: Joint Inversion of Rayleigh-wave Particle Motion and Vertical- and Radial-Component Velocity Spectra](#) (Dal Moro G., Al-Arifi N., Moustafa S.R., 2017), *Pure and Applied Geophysics*, 175, 67–88
- ✓ Single- and multi-component inversion of surface waves acquired by a single 3-component geophone: an illustrative case study (Dal Moro G. and Puzzilli L.M., 2017), *Acta Geodyn. Geomater.*, Vol. 14, No. 4 (188), 431–444, [DOI: 10.13168/AGG.2017.0024](https://doi.org/10.13168/AGG.2017.0024)
- ✓ Analysis of Rayleigh-Wave Particle Motion from Active Seismics (Dal Moro G., Al-Arifi N., Moustafa S.R., 2017), *Bulletin of the Seismological Society of America*, 107, 51-62
- ✓ Four Geophones for seven objective functions: active and passive seismics for tricky areas (Dal Moro G.), *Invited* presentation and Extended Abstract for the *Urban Geophysics* workshop at the 22nd *EAGE Near Surface Geoscience* conference (Barcelona - Spain, 4-8 September 2016)
- ✓ Shear-wave velocity profiling according to three alternative approaches: a comparative case study (Dal Moro G., Keller L., Moustafa S.R., Al-Arifi N., 2016). *Journal of Applied Geophysics*, 134, 112–124
- ✓ Less is more: from van der Rohe to the 4-channel system for the efficient and holistic analysis of surface waves. A urban case study (Dal Moro G., Moustafa S.R., Al-Arifi N., 2015). Proceedings of the GNGTS (gngts.ogs.trieste.it) congress (17-19 November 2015 - Trieste, Italy).
- ✓ Assessing ground compaction via time lapse surface-wave analysis (Dal Moro G., Al-Arifi N., Moustafa S.R., 2016), *Acta Geodyn. Geomater.*, 13, 3 (183), 249–256

- ✓ Geophysikalische In-situ-Bestimmung der Eingangsparameter in die seismischen Standortanalysen am Beispiel des Ambassador House Opfikon (Keller L., Weber T., Dal Moro G., 2015). Proceedings of the 14th D-A-CH conference of the *Swiss Society for Earthquake Engineering and Structural Dynamics*, Zurich, August 21-21, SIA D0255, ISBN 978-3-03732-060-0
- ✓ A Comprehensive Seismic Characterization via Multi-Component Analysis of Active and Passive Data (Dal Moro G., Keller L., Poggi V., 2015), *First Break*, 33, 45-53
- ✓ Efficient acquisition and holistic analysis of Rayleigh waves (Dal Moro G., Moustafa S.R., Al-Arifi N.), Proceedings of the Near-Surface EAGE 2015 congress (Turin - Italy, 6-10 September 2015) [having received a very high score from the reviewers, the work was invited to be published in one of the EAGE journals]
- ✓ Multi-component Joint Analysis of Surface Waves (Dal Moro G., Moura R.M., Moustafa S.R., 2015), *J. Appl. Geophysics*, 119, 128-138
- ✓ Joint Inversion of Rayleigh-Wave Dispersion and HVSR of Lunar Seismic Data from the Apollo 14 and 16 sites (Dal Moro G., 2015), *ICARUS*, 254, 338-349
- ✓ Oberflächengebundene Bestimmung eines robusten V_S -Modells als Eingangsparameter zu bodendynamischen Berechnungen an einer historischen Klosterkirche [Surface-wave analysis for the determination of a robust V_S model for soil dynamics analysis at a historic monastery church] (Keller L., Dal Moro G., Lacave C., 2015). Proceedings 75th Annual Meeting of the DGG (Deutsche Geophysikalische Gesellschaft - German Geophysical Society), Hannover March 23-26, 2015
- ✓ Optimizing the exploration of vast areas via multi-component surface-wave analysis (Dal Moro G. and Keller L.), Extended Abstract EAGE June 1-4, 2015 (Madrid - Spain)
- ✓ Seismic response analysis of NAGRA-Net stations using advanced geophysical techniques (Poggi V., Edwards B., Dal Moro G., Keller L., Fäh D., 2015), Extended Abstract for EGU 2015, Vienna, 12-17 April 2015
- ✓ Unconventional Optimized Surface Wave Acquisition and Analysis: Comparative Tests in a Perilagoon Area (Dal Moro G., Ponta R., Mauro R., 2015), *J. Appl. Geophysics*, 114, 158-167
- ✓ Shear-Wave Velocity Reconstruction via Unconventional Joint Analysis of Seismic Data: a Case Study in the light of Some Theoretical Aspects (Dal Moro G., Coviello V., Del Carlo G., 2014), IAEG XII CONGRESS - Turin, September 15-19, 2014. In "Engineering Geology for Society and Territory - Volume 5" - Springer International Publishing, 1177-1182
- ✓ Unambiguous determination of the V_S profile via joint analysis of multi-component active and passive seismic data (Dal Moro G. & Keller L., 2013), EAGE Near Surface 2013, Proceedings of the 19th European Meeting of Environmental and Engineering Geophysics, Bochum, Germany, 9-11 September 2013 [having received a very high score from the reviewers, the work was invited to be published in the EAGE journals and was eventually accepted for publication in *First Break*]
- ✓ Joint Analysis of Lunar Surface Waves: the Apollo 16 dataset (Dal Moro G., 2013), EAGE Near Surface 2013, Proceedings of the 19th European Meeting of Environmental and Engineering Geophysics, Bochum, Germany, 9-11 September 2013 [having received a very high score from

the reviewers, the work was invited to be published as full paper in *Geophysical Prospecting* - but was eventually submitted and published in ICARUS (the Elsevier journal of Planetary Sciences)]

- ✓ V_S measurements through dispersive wave methods in the urban environment of Porto (North Portugal) (Moura R. M., Noronha F., Almeida F. & Dal Moro G., 2012), 15th World Conference on Earthquake Engineering, 24-28 September 2012, Lisbon (Portugal)
- ✓ Joint Analysis of Surface Waves (Dal Moro G.), Graz (Austria), 9-13 July 2012, Mini-Symposium *Surface and Interface Acoustic Waves in Solids*, 8th European Solid Mechanics Conference, invited speaker
- ✓ Joint Analysis of Rayleigh and Love Wave Dispersion for Near-Surface Studies: Issues, Criteria and Improvements (Dal Moro G. & Ferigo F., 2011), *J. Appl. Geophysics*, 75, 573-589
- ✓ Some Aspects about Surface Wave and HVSR Analyses: a Short Overview and a Case Study (Dal Moro G., 2011), *invited paper*, BGTA - Bollettino Geofisica Teorica e Applicata, 52, 241-259
- ✓ Insights on Surface-Wave Dispersion Curves and HVSR: Joint Analysis via Pareto Optimality (Dal Moro G., 2010), *J. Appl. Geophysics*, 72, 29-140
- ✓ Harmonic Noise Attenuation for Vibroseis Data (Dal Moro G., Scholtz P., Iranpour K., 2007), GNGTS, Rome (Italy), 13-15 November 2007
- ✓ V_S and V_P Vertical Profiling via Joint Inversion of Rayleigh Waves and Refraction Travel Times by means of Bi-Objective Evolutionary Algorithm (Dal Moro G., 2008), *J. Appl. Geophysics*, 66, 15-24
- ✓ Joint Inversion of Surface Wave Dispersion Curves and Reflection Travel Times via Multi-Objective Evolutionary Algorithms (Dal Moro G. & Pipan M., 2007), *J. Appl. Geophysics*, 61, 56-81
- ✓ Haze Removal and Data Calibration for High-Resolution Satellite Data (Dal Moro G. & Halounova L., 2007), *International Journal of Remote Sensing*, 28, 2187-2205
- ✓ Shear-Wave Profiling via SH Reflection Analysis and Rayleigh Wave Inversion (Dal Moro G., Pipan M., Forte E., Gabrielli P., Sugan M., Forlin E. and Finetti I., 2005), Proceedings SEG 2005, 75th Annual Meeting, Huston, Texas, November 2005
- ✓ Rayleigh Wave Dispersion Curve Inversion via Genetic Algorithms and Posterior Probability Density Evaluation (Dal Moro G., Pipan M. & Gabrielli P., 2007), *J. Appl. Geophysics*, 61, 39-55
- ✓ Velocity Spectra and Seismic Signal Identification for Surface Wave Analysis (Dal Moro G., Forte E., Pipan M. & Sugan M., 2006), *Near Surface Geophysics*, 4, 243-251
- ✓ Multi-fold, multi-component and multi-azimuth GPR for subsurface imaging and material characterisation (Pipan M., Forte M., Dal Moro G., Sugan M., Finetti I., 2004), in *Ground-Penetrating Radar, 2nd Edition* (David J. Daniels Editor) ISBN: 0863413609, Peter Peregrinus Ltd UK, 310-322
- ✓ Determination of Rayleigh wave dispersion curves for near surface applications in unconsolidated sediments (Dal Moro G., Pipan M., Forte E. & Finetti I., 2003), *Proceedings SEG, 73st Annual Int. Mtg.* (Dallas, Texas, Oct 2003)
- ✓ Multifold Ground-Penetrating Radar and Resistivity to Study the Stratigraphy of Shallow Unconsolidated Sediments (Pipan, M., Forte, E., Dal Moro, G., Sugan, M. and Finetti, I., 2003), *The Leading Edge*, 22, 876-881

- ✓ Multi-Frequency and Multi-Azimuth Polarimetric GPR for Buried Utilities Detection (Marsiglio L., Pipan M., Forte E., Dal Moro G. & Finetti I.), *Proceedings EAGE 2003 (Stavanger, Norway)*
- ✓ Time-lapse Tomography (Vesnaver A., Accaino F., Böhm G., Madrussani G., Pajchel J., Rossi G. & Dal Moro G., 2003), *Geophysics*, 68, 815-823
- ✓ A 3D Seismic Survey for Groundwater Protection (Rossi G., Dal Moro G., Mammo T., Nieto D., Picotti S., Vesnaver A. & Vuan A., 2001), *Proceedings SEG (Society of Exploration Geophysicists), 71st Annual Int. Mtg. (Texas, Sept 2001), 1333-1336*
- ✓ 4D Tomography at the North Sea (Vesnaver A., Dal Moro G., Madrussani G., Pajchel J. & Rossi G., 2001), *Proceedings 63rd Mtg. EAGE (European Association of Geoscientists & Engineers) (Amsterdam, June 2001)*
- ✓ Remarkable Tilt-Strain Anomalies Preceding Two Seismic Events in Friuli (NE Italy): Their Interpretation as Precursors (Dal Moro G. & Zadro M., 1999), *Earth and Planetary Science Letters*, 170, 119-129
- ✓ Subsurface Deformations Induced by Rainfall and Atmospheric Pressure: Tilt/Strain Measurements in the NE-Italy Seismic Area (Dal Moro G. & Zadro M., 1998), *Earth and Planetary Science Letters*, 164, 193-203
- ✓ Geometry and Mechanical Crustal Properties in NE Italy Based on Seismic and Gravity Data (Dal Moro G., Braitenberg C. & Zadro M., 1998), *Bollettino Geofisica Teorica ed Applicata*, 39, 37-46

Articles for Science Communication and Popular Magazines

- ✓ *Dentro e Fuori la Luna (Inside & Outside the Moon)* (Dal Moro G.), Nuovo Orione, July 02
- ✓ *Storie Boeme (Bohemian Tales)* (Dal Moro G.), Re Nudo (cultural magazine), Oct 2000
- ✓ *Scienza ed Incanti delle Aurore Polari (Science and Charms of the Polar Auroras)* (Dal Moro G.), Nuovo Orione (science communication magazine – www.orione.it), Feb 2000
- ✓ *La Radiazione Cosmica di Fondo Cielo (Cosmic Background Radiation)* (Dal Moro G. & Ferluga S.), Il Cielo (science communication magazine), May & Aug 99