

Refereed publications – Martyn Unsworth

Updated Aug 31 2009

- (1) Sinha, M.C., Patel, P.D., Unsworth, M.J., Owen, T.R.E., and MacCormack, M.D., An Active Source Electromagnetic Sounding System for Marine use, *Marine Geophys. Res.*, **12**, 59-68, 1990.
- (2) Unsworth, M.J., Electromagnetic Exploration of the Oceanic Crust with Controlled sources, Ph.D. Thesis, University of Cambridge, 1991.
- (3) Evans, R.L., Constable, S.C., Sinha, M.C., Cox, C.S. and Unsworth, M.J., Upper Crustal Resistivity Structure of the East Pacific Rise near 13° N, *Geophys. Res. Lett.*, **18**, 1917-1920, 1991.
- (4) Unsworth, M.J., B.J. Travis and A.D. Chave, Electromagnetic induction by a finite electric dipole source over a 2-D earth, *Geophysics*, **58**, 198-214, 1993.
- (5) Unsworth, M.J., Exploration of mid-ocean ridges with a frequency domain electromagnetic system, *Geophys. J. Int.* **116**, 447-467, 1994.
- (6) Evans, R.L., Sinha, M.C., Constable, S.C., Unsworth, M.J., On the electrical nature of the axial melt zone at 13° N on the East Pacific Rise, *J. Geophys. Res.*, **99**, 577-588, 1994.
- (7) Unsworth, M.J. and D.W. Oldenburg, Subspace inversion of electromagnetic data: application to mid-ocean ridge exploration, *Geophys. J. Int.*, **123**, 161-168, 1995.
- (8) Wannamaker, P.E., Chave, A.D., Booker, J.R., Jones, A.G., Filloux, J.H., Ogawa, Y., Unsworth, M., Tarits, P. and Evans, R., Magnetotelluric Experiment Probes Deep Physical State of South-eastern United States, *Eos, Trans. AGU*, **77**, 329, 1996.
- (9) Ogawa, Y., A.G. Jones, M.J. Unsworth, J.R. Booker, X. Lu, J. Craven, B. Roberts, J. Parmelee, C. Farquharson, Deep electrical conductivity structures of the Appalachian Orogen in the south-eastern United States, *Geophys. Res. Lett.*, **23**, 1597-1600, 1996.
- (10) Chen, L. Booker, J.R., Jones, A.G., Wu, N., Unsworth, M.J., Wenbo, W. and Tan, H., Electrically Conductive Crust in Southern Tibet from INDEPTH magnetotelluric surveying, *Science*, **274**, 1694-1696, 1996.
- (11) Nelson, K.D., Zhao, W., Brown, L.D., Kuo, J., Che, J., Liu, X., Klemperer, S.L., Makovsky, Y., Meissner, R., Mechie, J., Kind, R., Wenzel, F., Ni, J., Nablek, J., Leshou, C., Tan, H., Wei, W., Jones, A.G., Booker, J.R., Unsworth, M., Kidd, W.S.F., Hauck, M., Alsdorf, D., Ross, A., Cogan, M., Wu, C. Sandvol, E., Edwards, M., Partially molten Middle Crust Beneath Southern Tibet : Synthesis of Project INDEPTH results, *Science*, **274**, 1684-1686, 1996.
- (12) Unsworth, M. J., P.E. Malin, G.D. Egbert and J. R. Booker, Internal Structure of the San Andreas Fault Zone at Parkfield, California, *Geology*, **25**, 359-362, 1997.
- (13) Booker, J.R., C.M. Aprea, M.J. Unsworth and N. Wu, Electrical Conductivity Structure in Major Tectonic Zones, *Geowissenschaften*, **15**, 111-115, 1997.

- (14) Unsworth, M.J., X. Lu and M.D. Watts, Site characterization for radioactive waste disposal using CSAMT, *Expanded abstracts 67th Ann. Internat. Mtg.*, 358-361, Society of Exploration Geophysicists, 1997.
- (15) Lu, X., M.J. Unsworth and J.R. Booker, Two Dimensional Inversion of Tensor CSAMT data, *Expanded abstracts 67th Ann. Internat. Mtg.*, 362-365, Society of Exploration Geophysicists, 1997.
- (16) Aprea, C.M., M.J. Unsworth and J.R. Booker, Resistivity structure of the Olympic Mountains and Puget Lowlands, *Geophys. Res. Letters*, **25**, 109-112, 1998.
- (17) Tyler, R. H., T.B. Sanford and M.J. Unsworth, Propagation of electromagnetic fields in the coastal ocean with application to underwater navigation and communication, *Radio Science*, **33**, 967-987, 1998.
- (18) Unsworth, M.J., G.D. Egbert and J.R. Booker, High Resolution electromagnetic imaging of the San Andreas Fault in Central California, *J. Geophys. Res.*, **104**, 1131-1150, 1999.
- (19) Lu, X., M.J. Unsworth and J.R. Booker, Rapid relaxation inversion of CSAMT data, *Geophys. J. Int.*, **138**, 381-392, 1999.
- (20) Unsworth, M.J., Magnetotellurics, in *McGraw-Hill 2000 Yearbook of Science and Technology*, McGraw-Hill, New York, 240-242, 1999.
- (21) Evans, R.L., P. Tarits A. D. Chave, A. White, G. Heinson, J.H. Filloux H. Toh, N. Seama, H. Utada, J.R. Booker and M.J. Unsworth, Asymmetric electrical structure in the mantle Beneath the East Pacific Rise at 17°S, *Science*, **286**, 752-756, 1999.
- (22) Unsworth, M.J., X. Lu and M.D. Watts, CSAMT exploration at Sellafield: characterization of a potential radioactive waste disposal site, **65**, 1070-1079, *Geophysics*, 2000.
- (23) Unsworth, M.J., P.A. Bedrosian, M. Eisel, G.D. Egbert, W. Siripunavaporn, Along-strike variations in the electrical structure of the San Andreas Fault at Parkfield, California, *Geophys. Res. Lett.*, **27**, 3021-3024, 2000.
- (24) Wei, W., M.J. Unsworth, A.G. Jones, J.R. Booker, H. Tan, K. D. Nelson, L. Chen, S. Li, K. Solon, P.A. Bedrosian, S. Jin, M. Deng, J. Ledo, D. Kay, B. Roberts, Detection of widespread fluids in the Tibetan crust by magnetotelluric studies, *Science*, **292**, 716-718, 2001.
- (25) Bedrosian, P.A., M.J. Unsworth and F. Wang, Structure of the Altyn Tagh Fault and Daxue Shan from magnetotelluric surveys: implications for faulting associated with the rise of the Tibetan Plateau, *Tectonics*, **20**, 474-486, 2001.
- (26) Bedrosian, P.A., M.J. Unsworth and G.D. Egbert, Magnetotelluric imaging of the creeping segment of the San Andreas Fault near Hollister, *Geophysical Research Letters*, **29**, 1506, doi:10.1029/2001GL012119, 2002.
- (27) Unsworth, M.J., O.C. Campos-Enriquez, S. Belmonte, P.A. Bedrosian and J. Arzate, Crustal structure of the Chicxulub Impact Crater imaged with magnetotelluric exploration, *Geophys. Res. Lett.*, 2002GL014998, 2002.
- (28) Unsworth, M.J., The role of crustal fluids in strike-slip tectonics: new insights from magnetotelluric studies, *Turkish J. Earth Sci.*, **11**, 193-203, 2002.

- (29) Li, S., M.J. Unsworth, J.R. Booker, W. Wei, H. Tan and A.G. Jones, Partial melt or aqueous fluids in the Tibetan crust: constraints from INDETH magnetotelluric data, *Geophys. J. Int.*, **153**, 289-304, 2003.
- (30) Unsworth, M.J., Studying continental dynamics with magnetotelluric exploration, *Earth Science Frontiers*, **10**, 25-38, 2003.
- (31) Unsworth, M.J., W. Wei, A.G. Jones, S. Li, P.A. Bedrosian, J.R. Booker, S. Jin, and M. Deng, Crustal and upper mantle structure of Northern Tibet imaged with magnetotelluric data, *J. Geophys. Res.*, **109**, doi:10.1029/2002JB002305, 2004.
- (32) Campos-Enriquez, O., F.J. Chavez-Garcia, F.J. Cruz, J.G. Acosta-Chang, T. Matsui, J. Arzate, M.J. Unsworth, and J. Ramos-Lopez, Shallow crustal structure of Chicxulub Impact Crater imaged with seismic, gravity and magnetotelluric data: inferences about the central uplift, *Geophysical Journal International*, **157**, 515-525, 2004.
- (33) Unsworth, M.J., and P.A. Bedrosian, Electrical resistivity at the SAFOD site from magnetotelluric exploration, *Geophys. Res. Lett.*, **31**, L12S05, doi:10.1029/2003GL019405, 2004.
- (34) Bedrosian, P.A., M.J. Unsworth, G.D. Egbert and C.H. Thurber, Geophysical images of the creeping segment of the San Andreas fault: implications for the role of crustal fluids in the earthquake process, *Tectonophysics*, **385**, doi:10.1016/j.tecto.2004.02.010, 2004.
- (35) Unsworth, M.J., and P.A. Bedrosian, The geoelectric structure of major strike-slip faults and shear zones, *Earth Planets and Space*, **56**, 1177-1184, 2004.
- (36) Di, Q., M.J. Unsworth and Wang, M., 2.5 D CSAMT modelling with finite element method. *Progress in Geophysics*, **19**(2): 317-324, 2004.
- (37) Di, Q., M.J. Unsworth and Wang, M., 2.5 D CSAMT modelling with the finite element method over complex earth media. *Chinese Journal of Geophysics*, **47**(4): 723-730, 2004.
- (38) Tan, H., Wei, W., M.J. Unsworth, Deng M., Jin, S. J.R. Booker, A.G. Jones, Crustal Electrical Conductivity Structure of Yarlung Zangbo Jiang Suture in Southern Tibetan Plateau, *Chinese J. Geophysics*, (in English), **47**(4), 780-786, 2004.
- (39) Eaton, D.W., J. Adams, I. Asudeh, G.M. Atkinson, M. G. Bostock, J. F. Cassidy, I. J. Ferguson, C. Samson, D. B. Snyder, K. F. Tiampo and M. J. Unsworth, Investigating Canada's Lithosphere and Earthquake Hazards with Portable Arrays, *Eos*, **86**, 17, 169-173, 2005.
- (40) Unsworth, M.J., New developments in conventional hydrocarbon exploration with electromagnetic methods, *Canadian Society of Exploration Geophysicists Recorder*, pp 34-38, April 2005.
- (41) Spratt, J.E., A.G. Jones, K.D. Nelson, M.J. Unsworth and the INDEPTH MT team, Crustal structure of the India-Asia collision zone, southern Tibet, from INDEPTH MT investigations, *Physics of the Earth and Planetary Interiors*, **150**, 227-237, 2005.
- (42) Solon, K., A.G. Jones, K.D. Nelson, M.J. Unsworth, W. Wei, H. Tan, H., S. Jin, M. Deng, J.R. Booker, S. Li, P. Bedrosian, 2005. Structure of the crust in the vicinity of the Banggong-Nujiang suture central Tibet from INDEPTH magnetotelluric data, *Journal of Geophysical Research*, **110**, B10102, doi: 10.1029/2003JB002405, 2005.

- (43) Unsworth, M.J. A.G. Jones, W. Wei, G Marquis, S. Gokarn, J. Spratt, Crustal rheology of the Himalaya and Southern Tibet inferred from magnetotelluric data, *Nature*, **438**, 78-81, doi:10.1038/nature04154, 2005.
- (44) Soyer, W., and M.J. Unsworth, Deep electrical structure of the northern Cascadia subduction zone (British Columbia, Canada): implications for the role of fluids, *Geology*, **34**, 1, 53-56, doi: 10.1130/G21951.1, 2006.
- (45) Xiao, W., and M.J. Unsworth, Structural imaging in the Rocky Mountain Foothills (Alberta) using magnetotelluric exploration, *AAPG Bulletin*, **90**, 321-333, 2006.
- (46) Tuncer, V., M.J. Unsworth, W. Siripunvaraporn and J. Craven, Exploration for unconformity type uranium deposits with audio-magnetotelluric data: A case study from the McArthur River Mine, Saskatchewan (Canada), *Geophysics*, **71** (6), B201-B209, 2006.
- (47) Unsworth, M.J., Geophysics on the roof of the world, *Canadian Society of Exploration Geophysicists Recorder*, **31**(10), 26-32, 2006.
- (48) Wei, W., S. Jin, G. Ye, M. Deng, H. Tan, M.J. Unsworth, A.G. Jones, J. Booker, S. Li, Conductivity structure of crust and upper mantle beneath the northern Tibet: Results of super-wide band magnetotelluric sounding, *Chinese J. Geophysics*, (in English), 49(4), 1215-1225, 2006.
- (49) Di, Q., M.J. Unsworth and Wang, M., 2.5-D finite element CSAMT numerical inversion. *Oil geophysical prospecting*, 41(1): 100-106, 2006.
- (50) Jin, S., Ye, G., Wei, W., Deng M., Unsworth, M.J, The electrical structure and faults of the crust of south-eastern Tibetan plateau – result of magnetotelluric prospecting on profile from Xiachayu-Changdu, *Earth Science Frontiers*, 13(5), 408-415, 2006.
- (51) Bedrosian, P.A., M.J. Unsworth, and M. Johnston, Hydrothermal circulation at Mount St. Helens determined by self-potential measurements, *Journal of Volcanology and Geothermal Research*, **160**, 137-146, 2007.
- (52) Arora, B., M.J. Unsworth, G. Rawat, Deep resistivity structure of the Northwest Indian Himalaya and its tectonic implications, *Geophysical Research Letters*, **34**, L04307, doi:10.1029/2006GL029165, 2007.
- (53) Chen, C.S., C. C. Chen, C. W. Chiang, H. L. Shu, W. H. Chiu and M.J. Unsworth, E. Bertrand, Crustal Resistivity Anomalies beneath Central Taiwan Imaged by a Broadband Magnetotelluric Transect, *Terrestrial Atmospheric and Ocean Sciences*, **18**, (1), 19-30, 2007.
- (54) Unsworth, M.J., W. Soyer, V. Tuncer, A. Wagner, D. Barnes, Hydrogeologic assessment of the Amchitka Island nuclear test site (Alaska) with magnetotellurics, *Geophysics*, **72** (3), B47-B57, 2007.
- (55) Ye, G., Jin S., Wei W., Unsworth M.J., Research of the conductive structure of crust and upper mantle beneath the South-Central Tibetan Plateau, *J. of China University of Geosciences*, 18(4), 334-343, 2007.
- (56) Unsworth, M.J., Magnetotellurics, in *Encyclopaedia of Geomagnetism and Paleomagnetism*, edited by D. Gubbins and E. Herrero-Bervera, Springer, 670-673, 2007a.
- (57) Unsworth, M.J., Transfer functions, in *Encyclopaedia of Geomagnetism and Paleomagnetism*, edited by D. Gubbins and E. Herrero-Bervera, Springer, 953-954, 2007b.

- (58) Craven, J.A., McNeice, G., Powell, B., Koch, R., Annesley, I.R., Wood, G., Mwenifumbo, C.J., Unsworth, M.J., and Xiao, W. 2007: Audio-magnetotelluric studies at the McArthur River mining camp and Shea Creek area, northern Saskatchewan; in EXTECH IV: Geology and Uranium EXploration TECHnology of the Proterozoic Athabasca Basin, Saskatchewan and Alberta, (ed.) C.W. Jefferson and G. Delaney; Geological Survey of Canada, Bulletin 588 (also Saskatchewan Geological Society, Special Publication 18; Geological Association of Canada, Mineral Deposits Division, Special Publication 4), p. 413-424.
- (59) Wei, W., S. Jin, G. Ye, M. Deng, H. Tan, M.J. Unsworth, J. Booker, A.G. Jones, S. Li, Features of faults in the central and northern Tibetan Plateau based on results of INDEPTH (III) – MT, *Frontiers Earth Science*, China, doi 10.1007/s11707-007-0016-3, 191), 121-128, 2007.
- (60) Wannamaker, P.E., D. P. Hasterok, J. M. Johnston, J.A. Stodt, D. B. Hall, T. L. Sodergren, L. Pellerin, V. Maris, W. M. Doerner, and M. J. Unsworth, Lithospheric Dismemberment and Magmatic Processes of the Great Basin-Colorado Plateau Transition, Utah, Implied from Magnetotellurics, *Geochem. Geophys. Geosyst.*, 9, Q05019, doi:10. 1029/2007GC001886, 2008.
- (61) Turkoglu, E., M.J. Unsworth, I. Caglar, V. Tuncer, U. Avsar, Lithospheric structure of the Arabia-Eurasia collision zone in Eastern Anatolia from magnetotelluric exploration : evidence for widespread weakening by fluids, *Geology*, 36 (8), 619-622, 2008.
- (62) Chiang, C.W., M.J. Unsworth, C. S. Chen, C. C. Chen, T.S. Lin, H. L. Shu, Fault Zone resistivity structure and monitoring at the Taiwan Chelungpu Drilling Project (TCDP) *Terrestrial Atmospheric and Ocean Sciences*, 19(5), 473-479, 2008.
- (63) Turkoglu, E., M.J. Unsworth, D. Pana, Deep electrical structure of Northern Alberta (Canada): Implications for diamond exploration, *Canadian Journal of Earth Sciences*, 46, 139-154, 2009.
- (64) Bertrand, E.A., M.J. Unsworth, C. W. Chiang, C.S. Chen, C. C. Chen, F. Wu, E. Turkoglu, H.K. Hsu, G. Hill, Magnetotelluric studies of the arc-continent collision in Central Taiwan, *Geology*, 37, 711- 714, 2009.
- (65) Unsworth, M.J., A plate boundary in flux, *Nature Geoscience*, 2, 605-606, (2009)

Non-refereed papers and reports

- (1) M.J Unsworth, W. Soyer and V. Tuncer, Magnetotelluric measurements for determining the subsurface salinity and porosity structure of Amchitka Island, Alaska, *Report submitted to CRESP and United States Department of Energy*, 58 pages, April 30 2005.
- (2) C.W. Powers, J. Burger, D. Kosson, M. Gochfeld D. Barnes, L. Bliss, B. Friedlander, S. Jewett, M. Johnson, M. Stabin, M.J. Unsworth, C. Volz, V.Vyas J. Weston, Amchitka Independent Science Assesment: Biological and Geophysical Aspects of Potential Radionuclide Exposure in the Amchitka Marine Environment, *CRESP report*, http://www.instrm.org/Amchitka_Final_Report/index_FinalReport.htm, August 2005.
- (3) E. Turkoglu, M.J. Unsworth, D. Pana, Deep electrical structure of the Buffalo Head Hills, Northern Alberta: Implications for diamond exploration: Alberta Energy and Utilities Board, EUB/AGS Special Report 88, 34p., 2007.