# NIGEL P. CROOK, PHD

## EDUCATION

**DOCTOR of PHYLOSOPHY in ENVIRONMENTAL and GEOGRAPHICAL SCIENCES**
*Manchester Metropolitan University, United Kingdom*

**MASTERS OF SCIENCE IN ARCHAEOLOGY**
*Liverpool University, United Kingdom*

**BACHELORS OF SCIENCE IN GEOLOGY AND GEOPHYSICS**
*Durham University, United Kingdom*

## EXPERIENCE

**Senior Geophysicist** 2011 – Present
*hydroGEOPHYSICS, Inc., Tucson, AZ*

- Project management and research of geophysical based projects related to hydrology, mineral exploration, oil and gas, precious and base metal production, environmental risk management, renewable energy, and geotechnical problems. Experience managing projects and contracts ranging from federal government (US) and multi-national corporations to small-scale engineering firms.
- Projects include: imaging and modeling underground waste plumes on the Hanford Nuclear Site (eastern WA) using electrical resistivity, 3D seismic reflection survey to characterize faults at the Diablo Canyon Nuclear Power plant (southern CA), electrical resistivity monitoring of low grade ore heaps during secondary recovery injections, shear- and surface-wave seismic surveys for bedrock competency for tailings impoundment and infrastructure projects (multiple locations).
- Employee development and mentoring through in-house training seminars and on the job training for staff level geophysicists.
- Presentation of results through professional conferences and publications.

**Shared Field Measurement Facility Manager** 2008 – 2011
*Stanford University, Stanford, CA*

Creation and development of the Shared Field Measurement Facility in the School of Earth Sciences, specializing in near-surface geophysical applications. Provided geophysical support to research projects within the Stanford community, including: survey design, data acquisition and processing, interpretation and integration of resulting data. Service and maintenance of instruments housed in the facility. Developed and instructor for GP190 (Introduction to Geophysical Field Methods) and Arch115/315 (Geophysical Prospection for Archaeology Applications) courses. Creation of workshops and field classes concerning the use of instruments housed in the facility.

**Postdoctoral Research Associate** 2006 – 208
*Stanford University, Geophysics Department, Stanford, CA*

Development of the Hydrological Measurement Facility (HMF) - Geophysics module (part of the CUAHSI effort), included; creation of infrastructure to assist with forming partnerships between the geophysical and hydrological communities. Completed a series of feasibility studies demonstrating the value of geophysical techniques to the WATERS test-bed sites in: Baltimore, MD; Flathead

River, MT; Sierra Nevada, CA; Clear Creek, IA. Created a nationwide geophysics network to promote the sharing of geophysical equipment and expertise within the hydrological community.

**Postdoctoral Research Associate** 2002 – 2008
*Lancaster University, Department of Environmental Science, Lancaster, United Kingdom*

Hydrogeophysical characterization of surface-ground water interactions, part of the NERC funded Lowland Catchment Research (LOCAR) program. Demonstrated the value of hydrogeophysical surveys for improved hydrostratigraphic mapping within the riparian zone and measurement of changes in pore fluid chemistry in near surface sediments. Developed a new technique which uses temperature time series from river bed piezometers to compute estimates of groundwater contaminant influxes.

**Freelance Geophysicist** 1998 – 2006
*Geo-Services International, Limited, Oxfordshire, United Kingdom*

Management and execution of near surface geophysical projects for geotechnical and environmental applications. Projects included; Unexploded ordinance detection at Brownfield sites throughout the UK; Void detection along the proposed channel tunnel rail link route using microgravity and 3D GPR, London, UK.

**Geophysicist** 1997 – 1998
*Readwell Services, Aberdeen, United Kingdom*

Processing / interpretation of Vertical Seismic Profiles from the North Sea.

## PROFESSIONAL CERTIFICATIONS

OSHA certified (29CFR 1910.120) 40 Hour Hazardous Materials Awareness
MSHA certified (30CFR 48) 24 Hour New Miner Training

## PROFESSIONAL AFFILIATIONS

American Geophysical Union (AGU)
Environmental and Engineering Geophysical Society (EEGS)
European Association of Geoscientists and Engineers (EAGE)
British Hydrological Society (BHS)

## SELECTED PUBLICATIONS

Rucker, D.F., N. Crook, J. Winterton, M. McNeill, C.A. Baldyga, G. Noonan, and J.B. Fink, 2012. Real-Time Electrical Monitoring of Reagent Delivery during a Subsurface Amendment Experiment, Near Surface Geophysics (in review).

Crook, N., C. Welty, & R. Knight, Geophysical Characterization of an Urban Watershed, Journal of Environmental and Engineering Geophysics (submitted).

Rucker, D. F., N. Crook, D. Glaser, & M. H. Loke, 2012, Pilot-Scale Field Validation of the Long Electrode Resistivity Tomography Method, Geophysical Prospecting, doi: 10.1111/j.1365-2478.2011.01039.x

Ide, T. S., N. Crook, & F. M. Orr Jr, 2011, Magnetometer measurements to characterize a subsurface coal fire, International Journal of Coal Geology, 87, 190-196.

Robinson, D., I. Lebron, B. Kocar, K. Phan, M. Sampson, N. Crook, & S. Fendorf, 2009, Time-lapse geophysical imaging of soil moisture dynamics in tropical deltaic soils: An aid to interpreting hydrological and geochemical processes, Water Resources Research, 45, W00D32, doi:10.1029/2008WR006984.

Crook, N., A. Binley, R. Knight, D Robinson, J. Zarnetske & R. Haggerty, 2008, Electrical resistivity imaging of the architecture of sub-stream sediments, Water Resources Research, 44, W00D13, doi:10.1029/2008WR006968.

Robinson, D., A. Binley, N. Crook, F. Day-Lewis, P. Ferré, V. Grauch, R. Knight, M. Knoll, V. Lakshmi, R. Miller, J. Nyquist, L. Pellerin, K. Singha, & L. Slater, 2007, Advancing process-based watershed hydrological research using near-surface geophysics: A vision for, and review of, electrical and magnetic geophysical methods, Hydrological Processes, 22, 3604-3635.