Resume

Personal details

Name	:	Brendan Philip Malone
Title	:	Research Fellow
Address	:	Rm. 115. 1 Central Ave, Eveleigh, NSW 2015, Australia
Telephone (Work)	:	+61 2 8627 1124
Mobile	:	+61 4 2344 9911
E-mail	:	brendan.malone@sydney.edu.au
Website	:	http://smartdigiag.com/

Academic qualifications

2005-2008 Bachelor of Science in Agriculture (1st Class Hons.)
Faculty of Agriculture and Environment, the University of Sydney

2009-2012 Doctor of Philosophy (Soil Science).
Faculty of Agriculture and Environment, the University of Sydney.

Research

My research focus is in using quantitative methods to precisely understand how soils function and change— spatially, and through time. I research methods for comprehensive digital soil mapping aiming to characterize soil both in the lateral and vertical dimensions. Additionally I contribute methodology for quantifying (and validating) measures of uncertainty for these comprehensive soil information systems. Outputs of this sort of work are intended for feeding into environmental modeling and monitoring programs, where precise land management decision making is required at all manner of spatial scales. Furthermore, I investigate innovative systems for soil measurement, which includes that associated with remote and proximal and soil sensing. I have particular interest in infrared and x-ray spectroscopy. The importance of all these research interests have been recognized by successful funding grants from both the Australian Research Council and Australian Government Department of Agriculture.

Academic & Research Experience

Position held	Organisation	Period
Research Fellow	The University of Sydney	2012-
Visiting Scholar	Texas A&M University	2013 (3 months)

Honors & Awards

- The Australian Society of Soil Science CJ Stephens Award in 2013 for the best soil science PhD Thesis in the calendar year.
- Deans Award for Outstanding Post-Graduate Research in 2011: Faculty of Agriculture and Environment, University of Sydney

Research Grants

- *Optimised field delineation of contaminated soils*; McBratney A, Minasny B, Malone B, Bishop T, Horta A, Mulvey P; Australian Research Council (ARC)/Linkage Projects (LP). (2015-2018) ($500000)
- *Securing soils for posterity. An international research and training collaboration to investigate efficient approaches to assessing and improving global soil carbon sequestration;* Malone B, Stockmann U, Chen Z; DVC International/IPDF Grant. (2015) ($15000)
- *A general soil spatial scaling theory*; McBratney A, Minasny B, Malone B; Australian Research Council (ARC)/Discovery Projects (DP). (2013-2016) ($300000)
- *Farm scale assessment of SOC from disaggregated national/regional scale models*; McBratney A, Minasny B, Malone B; Department of Agriculture and Water Resources (Federal)/Carbon Farming Futures - Filling the Research Gap Program. (2013-2016) ($300000)

Professional Service

Office bearer of Professional Society

- Advisory board member of the Pedometrics Commission of the International Union of Soil Sciences 2013-.
- Sydney representative of the NSW Branch of Soil Science Australia (professional soil science society of Australia. 2015-).

Editorial board member of international scholarly journals

- Member of the Editorial board of *Geoderma*, (2013-)
- Editor of ASA, CSSA, SSSA Books (2016-)

Conference & meetings

- Member of the organizing committee for the 5th Global Workshop on Digital Soil Mapping Sydney, 10-13 April 2012.

Dissemination of research, scholarly work from the last 5 years

Books

Malone, B.P., Minasny, B., McBratney, A.B., 2017. Using R for Digital Soil Mapping. Springer, The Netherlands.

Edited Books

Minasny, B., Malone, B., McBratney, A. (Eds.), 2012. Digital Soil Assessments and Beyond. Digital Soil Assessments and Beyond. CRC Press, Leiden, The Netherlands.

Book Chapter

Adhikari, K., Bou Kheir, R., Greve, M., Bocher, P.K., Greve, M.H., Malone, B., Minasny, B., McBratney, A., 2012. Progress towards GlobalSoilMap.net soil database of Denmark. In: B. Minasny, B.P. Malone, A.B. McBratney (Eds.), Digital Soil Assessments and Beyond. CRC Press, Leiden, The Netherlands, pp. 445-451.

Adhikari, K., Bou Kheir, R., Greve, M.B., Greve, M.H., Malone, B., Minasny, B., McBratney, A., 2014. Mapping soil pH and bulk density at multiple soil depths in Denmark. In: D. Arrouays, N. McKenzie, J. Hempel, A. Richer de Forges, A.B. McBratney (Eds.), GlobalSoilMap: Basis of the global spatial soil information system. CRC Press, London, pp. 155-160.

Hughes, P., McBratney, A., Malone, B., Minasny, B., 2012. Development of terrons for the Lower Hunter Valley wine-growing region. In: B. Minasny, B.P. Malone, A.B. McBratney (Eds.), Digital Soil Assessments and Beyond. CRC Press, Leiden, The Netherlands, pp. 31-36.

Kidd, D.B., Webb, M.A., Grose, C.J., Moreton, R.M., Malone, B., McBratney, A., Minasny, B., 2014. Operational digital soil assessment for enterprise suitability in Tasmania, Australia. In: D. Arrouays, N. McKenzie, J. Hempel, A. Richer de Forges, A.B. McBratney (Eds.), GlobalSoilMap: Basis of the global spatial soil information system. CRC Press, London, pp. 113-119.

Kidd, D.B., Webb, M.A., Grose, C.J., Moreton, R.M., Malone, B., McBratney, A., Minasny, B., Viscarra Rossel, R., Cotching, W.E., Sparrow, L.A., et al., 2012. Digital soil assessment: Guiding irrigation expansion in Tasmania, Australia. In: B. Minasny, B.P. Malone, A.B. McBratney (Eds.), Digital Soil Assessments and Beyond. CRC Press, Leiden, The Netherlands, pp. 3-8.

Malone, B., McBratney, A., Minasny, B., 2012. Some methods regarding manipulations of scale for digital soil mapping. In: B. Minasny, B.P. Malone, A.B. McBratney (Eds.), Digital Soil Assessments and Beyond. CRC Press, Leiden, The Netherlands, pp. 135-138.

McBratney, A., Minasny, B., Wheeler, I., Malone, B., van der Linden, D., 2012. Frameworks for digital soil assessment. In: B. Minasny, B.P. Malone, A.B. McBratney (Eds.), Digital Soil Assessments and Beyond. CRC Press, Leiden, The Netherlands, pp. 9-14.

Minasny, B., Malone, B., Stockmann, U., Odgers, N., McBratney, A., 2014. Pedometrics. In: S.A. Elias (Ed.), Reference Module in Earth Systems and Environmental Sciences. Elsevier, Netherlands, pp. 1-10.

Minasny, B., McBratney, A., Malone, B., Lacoste, M., Walter, C., 2014. Quantitatively Predicting Soil Carbon Across Landscapes. In: A.E. Hartemink, K. McSweeney (Eds.), Soil Carbon. Springer, New York, pp. 45-57.

Waring, C., Stockmann, U., Malone, B., Whelan, B., McBratney, A., 2014. Is Percent 'Projected Natural Vegetation Soil Carbon' a Useful Indicator of

Soil Condition? In: A.E. Hartemink, K. McSweeney (Eds.), Soil Carbon. Springer, New York, pp. 219-227.

Webb, M.A., Kidd, D.B., Grose, C.J., Moreton, R.M., Malone, B., McBratney, A., Minasny, B., 2014. Integrating climate into the Digital Soil Assessment framework to assess land suitability. In: D. Arrouays, N. McKenzie, J. Hempel, A. Richer de Forges, A.B. McBratney (Eds.), GlobalSoilMap: Basis of the global spatial soil information system. CRC Press, London, pp. 393-399.

Journal Articles

Adhikari, K., Bou Kheir, R., Greve, M., Bocher, P., Malone, B., Minasny, B., McBratney, A., Greve, M.H., 2013. High-Resolution 3-D Mapping of Soil texture In Denmark. Soil Science Society of America Journal 77, 860-876.

De Gruijter, J., McBratney, A., Minasny, B., Wheeler, I., Malone, B., Stockmann, U., 2016. Farm-scale soil carbon auditing. Geoderma 265, 120-130.

Horta, A., Malone, B., Stockmann, U., Minasny, B., Bishop, T., McBratney, A., Pallasser, R., Pozza, L., 2015. Potential of integrated field spectroscopy and spatial analysis for enhanced assessment of soil contamination: A prospective review. Geoderma 241-242, 180-209.

Horta, A., Malone, B., Stockmann, U., Minasny, B., Bishop, T.F.A., McBratney, A.B., Pallasser, R., Pozza, L., 2016. Reply to “Comment on “Potential of integrated field spectroscopy and spatial analysis for enhanced assessment of soil contamination: A prospective review” by Horta et al”. Geoderma 271, 256-257.

Kidd, D., Malone, B., McBratney, A., Minasny, B., Webb, M., 2015. Operational sampling challenges to digital soil mapping in Tasmania, Australia. Geoderma Regional 4, 1-10.

Kidd, D., Malone, B., McBratney, A., Minasny, B., Webb, M.A., 2014. Digital mapping of a soil drainage index for irrigated enterprise suitability in Tasmania, Australia. Soil Research 52, 107-119.

Kidd, D., Webb, M., Malone, B., Minasny, B., McBratney, A., 2015. Digital soil assessment of agricultural suitability, versatility and capital in Tasmania, Australia. Geoderma Regional 6, 7-21.

Kidd, D., Webb, M., Malone, B., Minasny, B., McBratney, A., 2015. Eighty-metre resolution 3D soil-attribute maps for Tasmania, Australia. Soil Research 53, 932-955.

Malone, B., de Gruijter, J., McBratney, A., Minasny, B., Brus, D., 2011. Using Additional Criteria for Measuring the Quality of Predictions and Their Uncertainties in a Digital Soil Mapping Framework. Soil Science Society of America Journal 75, 1032-1043.

Malone, B., Hughes, P., McBratney, A., Minasny, B., 2014. A model for the identification of terrons in the Lower Hunter Valley, Australia. Geoderma Regional 1, 31-47.

Malone, B., Jha, S.K., Minasny, B., McBratney, A., 2016. Comparing regression-based digital soil mapping and multiple-point geostatistics for the spatial extrapolation of soil data. Geoderma 262, 243-253.

Malone, B., Kidd, D., Minasny, B., McBratney, A., 2015. Taking account of uncertainties in digital land suitability assessment. PeerJ 3, 1-21.

Malone, B., McBratney, A., Collins, J., 2014. Soil-landscape endemism: The Glasserton Rigs of the Machars Peninsula, Scotland. Geoderma Regional 2-3, 72-81.

Malone, B., McBratney, A., Minasny, B., 2011. Empirical estimates of uncertainty for mapping continuous depth functions of soil attributes. Geoderma 160, 614-626.

Malone, B., McBratney, A., Minasny, B., 2013. Spatial scaling for digital soil mapping. Soil Science Society of America Journal 77, 890-902.

Malone, B., McBratney, A., Minasny, B., Wheeler, I., 2012. A general method for downscaling earth resource information. Computers and Geosciences 41, 119-125.

Malone, B., Minasny, B., Odgers, N., McBratney, A., 2014. Using model averaging to combine soil property rasters from legacy soil maps and from point data. Geoderma 232-234, 34-44.

Minasny, B., McBratney, A., Malone, B., Wheeler, I., 2013. Digital Mapping of Soil Carbon. Advances in Agronomy 118, 1-47.

Somarathna, P.D.S.N., Malone, B.P., Minasny, B., 2016. Mapping soil organic carbon content over New South Wales, Australia using local regression kriging. Geoderma Regional 7(1), 38-48.

Stockmann, U., Malone, B., McBratney, A., Minasny, B., 2015. Landscape-scale exploratory radiometric mapping using proximal soil sensing. Geoderma 239, 115-129.

Taghizadeh-Mehrjardi, R., Ayoubi, S., Namazi, Z., Malone, B.P., Zolfaghari, A.A., Sadrabadi, F.R., 2016. Prediction of soil surface salinity in arid region of central Iran using auxiliary variables and genetic programming. Arid Land Research and Management 30(1), 49-64.

Taghizadeh-Mehrjardi, R., Minasny, B., Sarmadian, F., Malone, B., 2014. Digital mapping of soil salinity in ardakan region, central Iran. Geoderma 213, 15-28.

Zolfaghari, A.A., Taghizadeh-Mehrjardi, R., Moshki, A.R., Malone, B., Weldeyohannes, A.O., Sarmadian, F., Yazdani, M.R., 2016. Using the nonparametric k-nearest neighbor approach for predicting cation exchange capacity. Geoderma 265, 111-119.

Teaching and Extension

I have co-developed training materials and conducted training workshops that cover topics related to digital soil mapping and soil spectral inference.

- 30 August – 3 September 2010, Ispra, Italy: The first DSM workshop at European Union Joint Research Centre in Ispra, Italy attended by 15 staff. We designed the curriculum which used our latest research findings, and

the course was designed as an active learning using authentic problems. Funded by JRC-EU.

- 21-23 February 2011, Sydney. Digital Soil Mapping Training for ACLEP, 19 agency representatives from states and territories and Geosciences Australia and the CSIRO.

- 2 April 2012, Sydney. Digital soil mapping training, 1-day workshop prior to the 5th Global Workshop on Digital Soil Mapping.

- 7–15 March 2013, Sydney. Digital soil mapping training for soil scientists from the Indonesian Agency for Agricultural Research and Development (9 participants). Funded by the Ministry of Agriculture, Indonesia.

- 4–5 April 2013, Sydney. Soil Spectral Inference workshop, 26 participants including researchers and scientists from government agencies and PhD students from Australia and overseas.

- 18–20 June 2013, Sydney: Digital soil mapping training for soil scientists from Australian State and Federal soil agencies, Australian Collaborative Land Evaluation Program (ACLEP).

- 22-24 April 2014, Sydney. Digital Soil Mapping Training Workshop. 20 participants, researchers and scientists from government agencies and PhD students.

- 26-28 May, 2014, Soil Spectral Inference workshop, 5 participants including technical officers from Tasmanian Govt and researchers from University of Tasmania. Funded by ARC Linkage project.

- 15-19 June, 2015, Intensive Digital Soil Mapping Training Workshop for researchers and post-graduate students of National Taiwan University (NTU). 25 participants (additionally included 5 Taiwan Govt researchers). Funded by International Program Development Fund (IPDF USYD).

- 23-26 November, 2015, Palmerston North, New Zealand. Digital Soil Mapping for Soil Carbon Auditing Short Course at Landcare Research. 16 Participants from NZ government institutions. Part of the DAFF-NZ research program.

- 27 November - 2 December 2015, Moscow. Digital soil mapping for Russian postgraduate students and young scientists. 25 participants. Requested and funded by the Dokuchaev Institute.

- 30 March–1 April 2016, Sydney. Soil Spectral Inference workshop, 22 participants including researchers and scientists from government agencies and PhD students from Australia and overseas, and private consultants.

- 24-28 August 2016, Moscow. Digital soil mapping for Russian postgraduate students and young scientists. 25 participants. Requested and funded by the Dokuchaev Institute.

I have provided guest lecturing and technical assistance in the following units of study offered at the University of Sydney:

- SOIL2004 (The Soil Resource)
- SOIL3009 (Contemporary Field and Lab Soil Science)
- ENVX3001 (Environmental GIS)