Raphael A Viscarra Rossel

List of Publications by Year
in descending order

157 papers	13,628 citations	30047 54 h-index	22147 113 g-index
181 all docs	181 docs citations	181 times ranked	7890 citing authors

#	Article	IF	Citations
1	Visible, near infrared, mid infrared or combined diffuse reflectance spectroscopy for simultaneous assessment of various soil properties. Geoderma, 2006, 131, 59-75.	2.3	1,613
2	Visible and Near Infrared Spectroscopy in Soil Science. Advances in Agronomy, 2010, 107, 163-215.	2.4	953
3	Using data mining to model and interpret soil diffuse reflectance spectra. Geoderma, 2010, 158, 46-54.	2.3	912
4	The Performance of Visible, Near-, and Mid-Infrared Reflectance Spectroscopy for Prediction of Soil Physical, Chemical, and Biological Properties. Applied Spectroscopy Reviews, 2014, 49, 139-186.	3.4	559
5	A global spectral library to characterize the world's soil. Earth-Science Reviews, 2016, 155, 198-230.	4.0	546
6	Soil organic carbon prediction by hyperspectral remote sensing and field vis-NIR spectroscopy: An Australian case study. Geoderma, 2008, 146, 403-411.	2.3	458
7	Determining the composition of mineral-organic mixes using UVâ€“visâ€“NIR diffuse reflectance spectroscopy. Geoderma, 2006, 137, 70-82.	2.3	415
8	In situ measurements of soil colour, mineral composition and clay content by visâ€“NIR spectroscopy. Geoderma, 2009, 150, 253-266.	2.3	366
9	Colour space models for soil science. Geoderma, 2006, 133, 320-337.	2.3	309
10	ParLeS: Software for chemometric analysis of spectroscopic data. Chemometrics and Intelligent Laboratory Systems, 2008, 90, 72-83.	1.8	244
11	Predicting soil properties from the Australian soil visibleâ€“near infrared spectroscopic database. European Journal of Soil Science, 2012, 63, 848-860.	1.8	237
12	Baseline map of organic carbon in Australian soil to support national carbon accounting and monitoring under climate change. Global Change Biology, 2014, 20, 2953-2970.	4.2	222
13	The Australian three-dimensional soil grid: Australiaâ€™s contribution to the GlobalSoilMap project. Soil Research, 2015, 53, 845.	0.6	201
14	Current and future assessments of soil erosion by water on the Tibetan Plateau based on RUSLE and CMIP5 climate models. Science of the Total Environment, 2018, 635, 673-686.	3.9	184
15	Soil and Landscape Grid of Australia. Soil Research, 2015, 53, 835.	0.6	167
16	Proximal Soil Sensing: An Effective Approach for Soil Measurements in Space and Time. Advances in Agronomy, 2011, 113, 243-291.	2.4	165
17	Spectral soil analysis and inference systems: A powerful combination for solving the soil data crisis. Geoderma, 2006, 136, 272-278.	2.3	164
18	Laboratory evaluation of a proximal sensing technique for simultaneous measurement of soil clay and water content. Geoderma, 1998, 85, 19-39.	2.3	155

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19	Soil chemical analytical accuracy and costs: implications from precision agriculture. Australian Journal of Experimental Agriculture, 1998, 38, 765.	1.0	155
20	Spectral libraries for quantitative analyses of tropical Brazilian soils: Comparing visâ€“NIR and mid-IR reflectance data. Geoderma, 2015, 255-256, 81-93.	2.3	155
21	Development of a national VNIR soil-spectral library for soil classification and prediction of organic matter concentrations. Science China Earth Sciences, 2014, 57, 1671-1680.	2.3	143
22	Multivariate calibration of hyperspectral ?-ray energy spectra for proximal soil sensing. European Journal of Soil Science, 2007, 58, 343-353.	1.8	142
23	Using a legacy soil sample to develop a mid-IR spectral library. Soil Research, 2008, 46, 1.	0.6	140
24	Prediction of soil organic matter using a spatially constrained local partial least squares regression and the <scp>C</scp>hinese visâ€“<scp>NIR</scp> spectral library. European Journal of Soil Science, 2015, 66, 679-687.	1.8	138
25	Using a digital camera to measure soil organic carbon and iron contents. Biosystems Engineering, 2008, 100, 149-159.	1.9	133
26	Accounting for the effects of water and the environment on proximally sensed visâ€“<scp>NIR</scp> soil spectra and their calibrations. European Journal of Soil Science, 2015, 66, 555-565.	1.8	133
27	Soil sensing: A new paradigm for agriculture. Agricultural Systems, 2016, 148, 71-74.	3.2	128
28	Assimilating satellite imagery and visibleâ€“near infrared spectroscopy to model and map soil loss by water erosion in Australia. Environmental Modelling and Software, 2016, 77, 156-167.	1.9	106
29	Digitally mapping the information content of visibleâ€“near infrared spectra of surficial Australian soils. Remote Sensing of Environment, 2011, 115, 1443-1455.	4.6	102
30	Soil legacy data rescue via GlobalSoilMap and other international and national initiatives. GeoResJ, 2017, 14, 1-19.	1.4	102
31	Multiple observation types reduce uncertainty in Australia's terrestrial carbon and water cycles. Biogeosciences, 2013, 10, 2011-2040.	1.3	100
32	Soil organic carbon and its fractions estimated by visibleâ€“near infrared transfer functions. European Journal of Soil Science, 2015, 66, 438-450.	1.8	99
33	Robust Modelling of Soil Diffuse Reflectance Spectra by â€œBagging-Partial Least Squares Regressionâ€. Journal of Near Infrared Spectroscopy, 2007, 15, 39-47.	0.8	98
34	Improved analysis and modelling of soil diffuse reflectance spectra using wavelets. European Journal of Soil Science, 2009, 60, 453-464.	1.8	95
35	Continental-scale soil carbon composition and vulnerability modulated by regional environmental controls. Nature Geoscience, 2019, 12, 547-552.	5.4	92
36	Soil classification using visible/near-infrared diffuse reflectance spectra from multiple depths. Geoderma, 2014, 223-225, 73-78.	2.3	91

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37	Spatial modelling with Euclidean distance fields and machine learning. European Journal of Soil Science, 2018, 69, 757-770.	1.8	91
38	Do we really need large spectral libraries for local scale SOC assessment with NIR spectroscopy?. Soil and Tillage Research, 2016, 155, 501-509.	2.6	88
39	Discrimination of Australian soil horizons and classes from their visible-near infrared spectra. European Journal of Soil Science, 2011, 62, 637-647.	1.8	85
40	Assessment of soil organic carbon at local scale with spiked <scp>NIR</scp> calibrations: effects of selection and extraâ€weighting on the spiking subset. European Journal of Soil Science, 2014, 65, 248-263.	1.8	85
41	Multi-scale digital soil mapping with deep learning. Scientific Reports, 2018, 8, 15244.	1.6	85
42	National digital soil map of organic matter in topsoil and its associated uncertainty in 1980's China. Geoderma, 2019, 335, 47-56.	2.3	80
43	Mapping iron oxides and the color of Australian soil using visibleâ€“nearâ€infrared reflectance spectra. Journal of Geophysical Research, 2010, 115, .	3.3	79
44	Fine-resolution multiscale mapping of clay minerals in Australian soils measured with near infrared spectra. Journal of Geophysical Research, 2011, 116, .	3.3	78
45	Novel Proximal Sensing for Monitoring Soil Organic C Stocks and Condition. Environmental Science & Technology, 2017, 51, 5630-5641.	4.6	74
46	Prediction of soil attributes using the Chinese soil spectral library and standardized spectra recorded at field conditions. Soil and Tillage Research, 2016, 155, 492-500.	2.6	71
47	Evaluation of two methods to eliminate the effect of water from soilÂvisâ€“NIR spectra for predictions of organic carbon. Geoderma, 2017, 296, 98-107.	2.3	65
48	On the soil information content of visibleâ€“near infrared reflectance spectra. European Journal of Soil Science, 2011, 62, 442-453.	1.8	64
49	Distance and similarity-search metrics for use with soil visâ€“NIR spectra. Geoderma, 2013, 199, 43-53.	2.3	63
50	How does grinding affect the mid-infrared spectra of soil and their multivariate calibrations to texture and organic carbon?. Soil Research, 2015, 53, 913.	0.6	62
51	Baseline estimates of soil organic carbon by proximal sensing: Comparing design-based, model-assisted and model-based inference. Geoderma, 2016, 265, 152-163.	2.3	62
52	<scp>rsâ€local</scp> dataâ€mines information from spectral libraries to improve local calibrations. European Journal of Soil Science, 2017, 68, 840-852.	1.8	58
53	Proximal spectral sensing in pedological assessments: visâ€“NIR spectra for soil classification based on weathering and pedogenesis. Geoderma, 2018, 318, 123-136.	2.3	57
54	X-ray fluorescence and visible near infrared sensor fusion for predicting soil chromium content. Geoderma, 2019, 352, 61-69.	2.3	57

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55	Soil organic carbon dust emission: an omitted global source of atmospheric <scp><scp>CO₂</scp></scp>. Global Change Biology, 2013, 19, 3238-3244.	4.2	56
56	Microbial dynamics and soil physicochemical properties explain largeâ€scale variations in soil organic carbon. Global Change Biology, 2020, 26, 2668-2685.	4.2	56
57	Environmental sensor networks for vegetation, animal and soil sciences. International Journal of Applied Earth Observation and Geoinformation, 2010, 12, 303-316.	1.4	55
58	Visible-Near Infrared Spectra as a Proxy for Topsoil Texture and Glacial Boundaries. Soil Science Society of America Journal, 2013, 77, 568-579.	1.2	55
59	Assessment of soil properties in situ using a prototype portable MIR spectrometer in two agricultural fields. Biosystems Engineering, 2016, 152, 14-27.	1.9	54
60	A new detailed map of total phosphorus stocks in Australian soil. Science of the Total Environment, 2016, 542, 1040-1049.	3.9	53
61	Proximal sensing of Cu in soil and lettuce using portable X-ray fluorescence spectrometry. Geoderma, 2016, 265, 6-11.	2.3	50
62	Improved estimates of organic carbon using proximally sensed visâ€“<scp>NIR</scp> spectra corrected by piecewise direct standardization. European Journal of Soil Science, 2015, 66, 670-678.	1.8	49
63	Distinct controls over the temporal dynamics of soil carbon fractions after land use change. Global Change Biology, 2020, 26, 4614-4625.	4.2	48
64	Updating a national soil classification with spectroscopic predictions and digital soil mapping. Catena, 2018, 164, 125-134.	2.2	47
65	Multiscale contextual spatial modelling with the Gaussian scale space. Geoderma, 2018, 310, 128-137.	2.3	46
66	Spectroscopic measurements and imaging of soil colour for field scale estimation of soil organic carbon. Geoderma, 2020, 357, 113972.	2.3	46
67	Regional predictions of soil organic carbon content from spectral reflectance measurements. Biosystems Engineering, 2009, 104, 442-446.	1.9	45
68	Using targeted sampling to process multivariate soil sensing data. Geoderma, 2011, 163, 63-73.	2.3	43
69	Separating scale-specific soil spatial variability: A comparison of multi-resolution analysis and empirical mode decomposition. Geoderma, 2013, 209-210, 57-64.	2.3	43
70	A geostatistical sensor data fusion approach for delineating homogeneous management zones in Precision Agriculture. Catena, 2018, 167, 293-304.	2.2	41
71	Diagnostic screening of urban soil contaminants using diffuse reflectance spectroscopy. Soil Research, 2009, 47, 433.	0.6	40
72	Spectral fusion by Outer Product Analysis (OPA) to improve predictions of soil organic C. Geoderma, 2019, 335, 35-46.	2.3	40

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73	Mapping gamma radiation and its uncertainty from weathering products in a Tasmanian landscape with a proximal sensor and random forest kriging. Earth Surface Processes and Landforms, 2014, 39, 735-748.	1.2	39
74	Sensing of soil bulk density for more accurate carbon accounting. European Journal of Soil Science, 2016, 67, 504-513.	1.8	39
75	Spatial Modeling of a Soil Fertility Index using Visibleâ€“Nearâ€Infrared Spectra and Terrain Attributes. Soil Science Society of America Journal, 2010, 74, 1293-1300.	1.2	38
76	Spatioâ€Temporal Simulation of the Fieldâ€Scale Evolution of Organic Carbon over the Landscape. Soil Science Society of America Journal, 2003, 67, 1477-1486.	1.2	37
77	The Soil Spectroscopy Group and the Development of a Global Soil Spectral Library. NIR News, 2009, 20, 14-15.	1.6	37
78	Improved global-scale predictions of soil carbon stocks with Millennial Version 2. Soil Biology and Biochemistry, 2022, 164, 108466.	4.2	36
79	Rapid, quantitative and spatial field measurements of soil pH using an Ion Sensitive Field Effect Transistor. Geoderma, 2004, 119, 9-20.	2.3	35
80	Baseline map of soil organic carbon in Tibet and its uncertainty in the 1980s. Geoderma, 2019, 334, 124-133.	2.3	35
81	Modelling potentially toxic elements in forest soils with visâ€“NIR spectra and learning algorithms. Environmental Pollution, 2020, 267, 115574.	3.7	33
82	Proximal soil sensing of soil texture and organic matter with a prototype portable midâ€infrared spectrometer. European Journal of Soil Science, 2015, 66, 661-669.	1.8	32
83	Diffuse Reflectance Spectroscopy for High-Resolution Soil Sensing. , 2010, , 29-47.		31
84	The likelihood of observing dust-stimulated phytoplankton growth in waters proximal to the Australian continent. Journal of Marine Systems, 2013, 117-118, 43-52.	0.9	30
85	Diffuse reflectance spectroscopy for estimating soil properties: A technology for the 21st century. European Journal of Soil Science, 2022, 73, .	1.8	30
86	Quantitative Soil Spectroscopy. Applied and Environmental Soil Science, 2013, 2013, 1-3.	0.8	29
87	Proximal sensing for soil carbon accounting. Soil, 2018, 4, 101-122.	2.2	29
88	The costâ€effectiveness of reflectance spectroscopy for estimating soil organic carbon. European Journal of Soil Science, 2022, 73, .	1.8	29
89	Soil Analysis Using Visible and Near Infrared Spectroscopy. Methods in Molecular Biology, 2013, 953, 95-107.	0.4	27
90	Australian net (1950sâ€“1990) soil organic carbon erosion: implications for CO₂ emission and landâ€“atmosphere modelling. Biogeosciences, 2014, 11, 5235-5244.	1.3	26

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91	Deep transfer learning of global spectra for local soil carbon monitoring. ISPRS Journal of Photogrammetry and Remote Sensing, 2022, 188, 190-200.	4.9	26
92	Integrating multi-source data to improve water erosion mapping in Tibet, China. Catena, 2018, 169, 31-45.	2.2	25
93	Development of On-the-Go Proximal Soil Sensor Systems. , 2010, , 15-28.		25
94	Comparing Spectral Soil Inference Systems and Midâ€Infrared Spectroscopic Predictions of Soil Moisture Retention. Soil Science Society of America Journal, 2008, 72, 1394-1400.	1.2	24
95	Soil bacterial abundance and diversity better explained and predicted with spectro-transfer functions. Soil Biology and Biochemistry, 2019, 129, 29-38.	4.2	23
96	Similar importance of edaphic and climatic factors for controlling soil organic carbon stocks of the world. Biogeosciences, 2021, 18, 2063-2073.	1.3	23
97	Spatial uncertainty of¹³⁷Cs-derived net (1950sâ€"1990) soil redistribution for Australia. Journal of Geophysical Research, 2011, 116, .	3.3	22
98	Automated spectroscopic modelling with optimised convolutional neural networks. Scientific Reports, 2021, 11, 208.	1.6	22
99	Assessment of the production and economic risks of site-specific liming using geostatistical uncertainty modelling. Environmetrics, 2001, 12, 699-711.	0.6	21
100	The potential of NIR spectroscopy to predict stability parameters in sewage sludge and derived compost. Geoderma, 2010, 158, 93-100.	2.3	21
101	Interactive effects of elevation and land use on soil bacterial communities in the Tibetan Plateau. Pedosphere, 2020, 30, 817-831.	2.1	21
102	National-scale spectroscopic assessment of soil organic carbon in forests of the Czech Republic. Geoderma, 2021, 385, 114832.	2.3	21
103	A response-surface calibration model for rapid and versatile site-specific lime-requirement predictions in south-eastern Australia. Soil Research, 2001, 39, 185.	0.6	20
104	Integrating geospatial and multiâ€depth laboratory spectral data for mapping soil classes in a geologically complex area in southeastern <scp>B</scp>razil. European Journal of Soil Science, 2015, 66, 767-779.	1.8	20
105	Examining assumptions of soil microbial ecology in the monitoring of ecological restoration. Ecological Solutions and Evidence, 2020, 1, e12031.	0.8	20
106	Developing the Australian mid-infrared spectroscopic database using data from the Australian Soil Resource Information System. Soil Research, 2015, 53, 922.	0.6	19
107	The costâ€efficiency and reliability of two methods for soil organic C accounting. Land Degradation and Development, 2018, 29, 506-520.	1.8	18
108	Fluctuations in methodâ€ofâ€moments variograms caused by clustered sampling and their elimination by declustering and residual maximum likelihood estimation. European Journal of Soil Science, 2013, 64, 401-409.	1.8	17

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109	Spatial Prediction for Precision Agriculture. Assa, Cssa and Sssa, 0, , 331-342.	0.6	17
110	On the interpretability of predictors in spatial data science: the information horizon. Scientific Reports, 2020, 10, 16737.	1.6	17
111	Diffuse Reflectance Spectroscopy as a Tool for Digital Soil Mapping. , 2008, , 165-172.		16
112	Toxicity and bioaccumulation of Cu in an accumulator crop (Lactuca sativa L.) in different Australian agricultural soils. Scientia Horticulturae, 2015, 193, 346-352.	1.7	16
113	Proximal Soil and Plant Sensing. Assa, Cssa and Sssa, 2018, , 119-140.	0.6	16
114	The importance of sampling support for explaining change in soil organic carbon. Geoderma, 2013, 193-194, 323-325.	2.3	15
115	Characterizing scaleâ€•and locationâ€specific variation in nonâ€linear soil systems using the wavelet transform. European Journal of Soil Science, 2013, 64, 706-715.	1.8	15
116	Separating Scale-Specific Spatial Variability in Two Dimensions using Bi-Dimensional Empirical Mode Decomposition. Soil Science Society of America Journal, 2013, 77, 1991-1995.	1.2	15
117	Curvelet transform to study scale-dependent anisotropic soil spatial variation. Geoderma, 2014, 213, 589-599.	2.3	15
118	Evaluating the Precision and Accuracy of Proximal Soil visâ€“NIR Sensors for Estimating Soil Organic Matter and Texture. Soil Systems, 2021, 5, 48.	1.0	15
119	Reflectance spectroscopy: a tool for predicting soil properties related to the incidence of Fe chlorosis. Spanish Journal of Agricultural Research, 2012, 10, 1133.	0.3	15
120	Modelling soil water retention and waterâ€holding capacity with visibleâ€“nearâ€infrared spectra and machine learning. European Journal of Soil Science, 2022, 73, .	1.8	14
121	The relevant range of scales for multi-scale contextual spatial modelling. Scientific Reports, 2019, 9, 14800.	1.6	13
122	Developing the Swiss mid-infrared soil spectral library for local estimation and monitoring. Soil, 2021, 7, 525-546.	2.2	13
123	Multi-source data fusion of big spatial-temporal data in soil, geo-engineering and environmental studies. Science of the Total Environment, 2021, 788, 147842.	3.9	12
124	Proximal Soil Nutrient Sensing Using Electrochemical Sensors. , 2010, , 77-88.		12
125	Spatial uncertainty of the¹³⁷Cs reference inventory for Australian soil. Journal of Geophysical Research, 2011, 116, .	3.3	11
126	Soil carbon simulation confounded by different pool initialisation. Nutrient Cycling in Agroecosystems, 2020, 116, 245-255.	1.1	10

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127	Soil environment grouping system based on spectral, climate, and terrain data: a quantitative branch of soil series. Soil, 2020, 6, 163-177.	2.2	10
128	Modelling the kinetics of buffer reactions for rapid field predictions of lime requirements. Geoderma, 2003, 114, 49-63.	2.3	9
129	Spatial point-process statistics: concepts and application to the analysis of lead contamination in urban soil. Environmetrics, 2005, 16, 339-355.	0.6	9
130	Magnetic Domain State Diagnosis in Soils, Loess, and Marine Sediments From Multiple Firstâ€Order Reversal Curveâ€Type Diagrams. Journal of Geophysical Research: Solid Earth, 2018, 123, 998-1017.	1.4	9
131	Teleconnections in spatial modelling. Geoderma, 2019, 354, 113854.	2.3	9
132	Continental-scale magnetic properties of surficial Australian soils. Earth-Science Reviews, 2020, 203, 103028.	4.0	9
133	Wavelet geographically weighted regression for spectroscopic modelling of soil properties. Scientific Reports, 2021, 11, 17503.	1.6	9
134	Precision Agriculture: Proximal Soil Sensing. Encyclopedia of Earth Sciences Series, 2011, , 650-656.	0.1	9
135	Environmental controls of soil fungal abundance and diversity in Australia's diverse ecosystems. Soil Biology and Biochemistry, 2022, 170, 108694.	4.2	8
136	Can the sequestered carbon in agricultural soil be maintained with changes in management, temperature and rainfall? A sensitivity assessment. Geoderma, 2016, 268, 22-28.	2.3	7
137	Bioclimatic variables as important spatial predictors of soil hydraulic properties across Australia's agricultural region. Geoderma Regional, 2020, 23, e00344.	0.9	6
138	A simple approach to estimate coastal soil salinity using digital camera images. Soil Research, 2020, 58, 737.	0.6	6
139	Estimating soil fungal abundance and diversity at a macroecological scale with deep learning spectrotransfer functions. Soil, 2022, 8, 223-235.	2.2	6
140	Advances in Agronomy. Advances in Agronomy, 2011, , iii.	2.4	5
141	Continental soil drivers of ammonium and nitrate in Australia. Soil, 2018, 4, 213-224.	2.2	5
142	Evaluation of Two Portable Hyperspectral-Sensor-Based Instruments to Predict Key Soil Properties in Canadian Soils. Sensors, 2022, 22, 2556.	2.1	5
143	Miniaturised visible and near-infrared spectrometers for assessing soil health indicators in mine site rehabilitation. Soil, 2022, 8, 467-486.	2.2	5
144	Diagnostic Screening of Urban Soil Contaminants Using Diffuse Reflectance Spectroscopy. , 2010, , 191-199.		4

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145	Special issue on proximal soil sensing. Geoderma, 2013, 199, 1.	2.3	4
146	A multivariate method for matching soil classification systems, with an Australian example. Soil Research, 2020, 58, 519.	0.6	4
147	Assessing the response of soil carbon in Australia to changing inputs and climate using a consistent modelling framework. Biogeosciences, 2021, 18, 5185-5202.	1.3	4
148	Title is missing!. Precision Agriculture, 2000, 2, 163-178.	3.1	3
149	Guest Editorial: Near Infrared Spectroscopy for a Better Understanding of Soil. Journal of Near Infrared Spectroscopy, 2016, 24, v-vi.	0.8	3
150	Quantifying soil carbon in temperate peatlands using a mid-IR soil spectral library. Soil, 2021, 7, 193-215.	2.2	3
151	Diffuse reflectance spectroscopy characterises the functional chemistry of soil organic carbon in agricultural soils. European Journal of Soil Science, 2022, 73, .	1.8	3
152	Using Proximal Soil Sensors for Digital Soil Mapping. , 2010, , 79-92.		2
153	Assessment of the Effect of Soil Sample Preparation, Water Content and Excitation Time on Proximal X-ray Fluorescence Sensing. Sensors, 2022, 22, 4572.	2.1	2
154	Using Wavelets to Analyse Proximally Sensed Visâ€"NIR Soil Spectra. , 2010, , 201-210.		1
155	Applications of proximal sensing to soil science. European Journal of Soil Science, 2014, 65, 815-815.	1.8	0
156	Selected papers from the Third Global Workshop on Proximal Soil Sensing 2013. European Journal of Soil Science, 2015, 66, 629-630.	1.8	0
157	Foreword to â€˜Soil & Landscape Grid of Australiaâ€™. Soil Research, 2015, 53, i.	0.6	0