

## Publications

### Refereed Journals

96. Zhou, Qiang, Liu, Shuguang and Hill, Michael J. (2017). Separating NDVI signals from woody and herbaceous cover in a southern African savanna using time series decomposition with the Fast Fourier Transform. *Photogrammetry and Remote Sensing* (accepted).
95. Fore, S. R. and Hill, M. J. (2017). Modeling the potential spatial distribution of native plant communities in Minnesota, USA. *Ecological Informatics* 41, 116-132
94. Woodgate, W., Armston, J. D., Disney, M., Suarez, L., Jones, S. D., Hill, M. J., Wilkes, P. and Soto-Berelov, M. (2017). Validating canopy clumping retrieval methods using a detailed reconstructed 3D virtual forest and simulated hemispherical photography. *Agricultural and Forest Meteorology* (in press).
93. Lui, Yan, Michael J. Hill, Xiaoyang Zhang, Zhuosen Wang, Andrew D Richardson, Koen Hufkens, Gianluca Filippa, Dennis D Baldocchi, Siyan Ma, Joseph Verfaillie, Crystal B. and Schaaf (2017). Phenology monitoring of California oak/grass savanna and open grassland cross spatial scales using Phenocam, Landsat, MODIS and VIIRS. *Agricultural and Forest Meteorology* 237, 311-325.
92. Keersmaecker, W de, Lhermitte, S., Hill, Michael J., Tits, L., Coppin, C. And Somers, B. (2017). Spatial and temporal variation of vegetation response to climate anomalies in Australia based on GIMMS NDVI time series between 1983 and 2006. *Remote Sensing* 9(1), 34; doi:[10.3390/rs9010034](https://doi.org/10.3390/rs9010034).
91. Hill, M. J., Zhou, Q., Sun, Q., Schaaf, C. B., and Palace, M., (2017). Relationships between vegetation indices, fractional cover retrievals and the structure and composition of Brazilian cerrado natural vegetation. *International Journal of Remote Sensing* 38, 874-905..
90. Yang, X., Smith, A. M. and Hill, M. J. (2017). Updating the Grassland Vegetation Inventory for Alberta using satellite imagery: Conversion of native grassland to cultivated agriculture. *Canadian Journal of Remote Sensing* 43, 62-78.
- 89 Jiao, Z., Schaaf, C. B., Dong, Y., Roman, M., Hill, M. J., Chen, J. M., Wang, Z., Zhang, H., Saenz, E., Poudyal, R., Gatebe, C., Breon, F-C., Li, X., and Strahler, A.

(2016). A method for improving hotspot directional signatures in BRDF models used for MODIS. *Remote Sensing of Environment* 186, 135-151.

88. Woodgate, W., Armston, J.D., Disney, M., Jones, S.D., Suarez, L., Hill, M.J., Wilkes, P., & Soto-Berelov, M. (2016). Quantifying the impact of woody material on leaf area index estimation from hemispherical photography using 3D canopy simulations. *Agricultural and Forest Meteorology* 226, 1-12..

87. Hill, M. J. and Southworth, J. (2016). Special Issue Editorial. Anthropogenic change in savannas and associated forest biomes. *Journal of Land Use Science* 11, 1-6. DOI:10.1080/1747423X.2016.1145949.

86. Hill, M. J., Zhou, Q., Sun, Q., Schaaf, C. B., Southworth, J., Mishra, N., Gibbes, C., Bunting, E., Brandt, T., & Crews, K. A. (2016). Dynamics of the NDVI-SWIR32 vegetation index response in Southern Africa: Implications for retrieval of fractional cover from MODIS data. *International Journal of Remote Sensing* 37, 1476-1503.

85. Zhou, Q., Hill, M. J., Sun, Q. and Schaaf, C. B. (2016). Retrieving understory temporal dynamics in tropical savannas from time series decomposition and linear unmixing of MODIS data. *International Journal of Remote Sensing* 37, 1445-1475.

84. Woodgate, W., Disney, M., Armston, J. D., Jones, S. D., Suarez, L., Hill, M. J., Wilkes, P., Soto-Berelov, M., Haywood, A. and Mellor, A. (2015). Quantifying the impact of woody material and within-crown clumping on estimation of forest canopy gap fraction and leaf area index. *Forest Ecology and Management* 358, 303-320.

83. Southworth, J., Zhu, L., Bunting, E., Ryan, S. J., Herrer, H., Waylen, P. R. and Hill, M. J. (2016). Changes in vegetation persistence across global savanna landscapes, 1982-2010. *Journal of Land Use Science* 11, 7-32. DOI: 10.1080/1747423X.2015.1071439.

82. Knudson, . M., VanLooy, J. and Hill, M. J. (2015). Mapping habitat suitability for the western prairie fringed orchid (*Platanthera praeclara*) on the Sheyenne national Grassland, North Dakota. *Ecological Indicators* 57, 536-545.

81. Smith, A. M., Hill, M. J. and Zhang, Y. (2015). Estimating ground cover in the mixed prairie grassland of Alberta using Landsat TM imagery. *Canadian Journal of Remote Sensing* 41, 51-66.

80. Woodgate, W., Jones, S., Suarez, L., Hill, M. J., Armston, J., Wilkes, P., Soto-Berelev, M., Haywood, A. and Mellor, A. (2015). Comparing *in situ* instrument performance for leaf area attribution over five diverse forest systems. *Agricultural and Forest Meteorology* 205, 83-95.
79. Fore, S., Overmoe, K. and Hill, M. J. (2015). Grassland conservation in North Dakota and Saskatchewan: status, practices and policies. *Journal of Land Use Science* 10, 298-322.
78. Thulin, S., Hill, M. J., Held, A. A., Jones, S., and Woodgate, P. (2014). Predicting levels of crude protein, digestibility, lignin and cellulose for temperate pastures using hyperspectral image data. *American Journal of Plant Sciences* 5, 997-1019, DOI: 10.4236/ajps.2014.57113.
77. Jiao, Z, Hill, M. J., Schaaf, C. B., et al. (2014). An anisotropic flat index (AFX) to derive archetypal BRDF shapes from MODIS. *Remote Sensing of Environment* 141, 168-187.
76. Hill, M. J. (2013). Vegetation index suites as indicators of vegetation state in grassland and savanna: an analysis with simulated SENTINEL 2 data for a North American transects. *Remote Sensing of Environment* 137, 94 –111.
75. Hill, M. J., Renzullo, L., Guerschman, J-P., Marks, A. and Barrett, D. J. (2013). Use of vegetation index fingerprints from Hyperion data to characterize vegetation states within land cover/land use types in an Australian tropical savanna. *IEEE Journal of Selected Topics in Applied Earth Observation and Remote Sensing* 6, 309-319.
74. Hill, M. J. and Olson, R. (2012). Possible future trade-offs between agriculture, energy production and biodiversity conservation in North Dakota. *Regional Environmental Change*, 13, 311-328.
73. Thulin, S., Hill, M. J., Held, A. A., Jones, S., and Woodgate, P. (2012). Hyperspectral determination of feed quality constituents in temperate pastures: effect of processing methods on predictive relationships from partial least squares regression. *International Journal of Applied Earth Observation and Geoinformation* 19, 322–334.

72. FitzSimons, J., Pearson, C. J., Lawson, C. and Hill, M. J. (2012). Development of land use planning scenarios based on intrinsic characteristics and stakeholder values. *Landscape and Urban Planning* 106, 23– 34.
71. Romsdahl, R. J. and Hill, M. J. (2012). Applying the learning community model to graduate education: linking research and teaching between core courses. *Teaching in Higher Education* DOI:10.1080/13562517.2012.678325.
70. Hill, M. J., Roman, M. O., and Schaaf, C. B. (2012). Dynamics of vegetation indices in tropical and subtropical savanas defined by ecoregions and MODIS land cover. *GeoCarto International* 27, 153-191.
69. Hill, M. J., Roman, M. O., Schaaf, C. B., Hutley, L., Brannstrom, C., Etter, A Hanan, N. P., (2011). Characterizing vegetation cover in global savannas with an annual foliage clumping index derived from the MODIS BRDF Product. *Remote Sensing of Environment* 115, 2008-2024.
68. Atkinson, L. M., Romsdahl, R. J. and Hill, M. J. (2011). Future participation in the Conservation Reserve Program of North Dakota. *Great Plains Research* 21, 203-214.
67. Edirisinghe, A., Hill, M. J., Donald, G. E., Henry, D. and Hyder, M. (2011) Quantitative mapping of pasture biomass using satellite imagery. *International Journal of Remote Sensing* 32, 2699-2724.
66. Harper, R. J., Gilkes, R. J., Hill, M. J. and Carter, D. J. (2010). Wind erosion and soil carbon dynamics in south-western Australia. *Aeolian Research* 1, 129-141.
65. Hill, M. J., FitzSimons, J., and Pearson, C. J.(2009). Creating land use scenarios for city greenbelts using a spatial multi-criteria analysis shell: Two case studies. *Physical Geography* 30, 353-382.
64. Guerschman, Juan Pablo, Hill Michael J., Barrett, Damian J., Renzullo, Luigi, Marks, Alan and Botha, Elizabeth. (2009). Estimating fractional cover of photosynthetic vegetation, non-photosynthetic vegetation and soil in mixed tree-grass vegetation using the EO-1 and MODIS sensors. *Remote Sensing of Environment* 113, 928-945

63. Hill, M. J., Averill, C., Z. Jiao, C. B. Schaaf and Armston, J. (2008). Relationship of MISR RPV parameters and MODIS directional reflectance indices to vegetation patterns in an Australian tropical savanna. *Canadian Journal of Remote Sensing* 34, (Supplement 2), S247-S267.
62. Schellburg, J., Hill, M. J., Gerhards, R., Rothmund, M. and Braun, M. (2008). Precision agriculture on grassland: applications, perspectives and constraints – a review. *European Journal of Agronomy* 29, 59-71.
61. Woldendorp, G., Hill, M. J., Ball, M. and Doran, R. (2008). Frost in a future climate: modelling interactive effects of warmer temperatures and rising atmospheric [CO<sub>2</sub>] on the incidence and severity of frost damage in a temperate evergreen (*Eucalyptus pauciflora*). *Global Change Biology* 14, 1-15.
60. Renzullo, L. J., Barrett, D. J., Marks, A. S., Hill, M. J., Guerschman, J-P., Mu, Q. and Running, S. W. (2008). Application of multiple constraints model-data assimilation techniques to coupling satellite passive microwave and thermal imagery for estimation of land surface soil moisture and energy fluxes in Australian tropical savanna. *Remote Sensing of Environment* 112, 1306-1319.
59. Nightingale, Joanne M., Hill, Michael J., Phinn, Stuart R., Held, Alex A. (2007). Comparison of Australian Tropical rainforest productivity derived from the 3-PG Forest Growth Model and MODIS Productivity Products. *Canadian Journal of Remote Sensing* 33, 278-288.
58. Nightingale, Joanne M., Hill, Michael J., Phinn, Stuart R., Davies Ian, D., Held, Alex A. and Erskine, Peter (2007). Use of 3-PG and 3-PGS to simulate forest growth and above ground carbon accumulation dynamics of Australian tropical rainforests. II. An integrated system for modelling forest growth and scenario assessment within the Wet Tropics Bioregion. *Forest Ecology and Management* 254, 122-133.
57. Nightingale, Joanne M., Hill, Michael J., Phinn, Stuart R., Davies Ian, D., Held, Alex A. and Erskine, Peter (2007). Use of 3-PG and 3-PGS to simulate forest growth and above ground carbon accumulation dynamics of Australian tropical rainforests. I. Parameterisation and calibration for old-growth, regenerating and plantation forests. *Forest Ecology and Management* 254, 107-121.

56. Hill, M. J., Asner, G. P. and Held, A. A. (2006). Hyperspectral Remote Sensing of Vegetation in Coupled Human-Environment Systems – Societal Benefits and Global Context. *Journal of Spatial Sciences*, 32, 49-66.
55. Harper, R. J., Beck, A. C., Ritson, P., Hill, M. J., Mitchell, C. D., Barrett, D. J., Tomlinson, R. J., and Smettem, K. R. J., (2006). The potential of greenhouse sinks to underwrite improved land management. *Ecological Engineering*, doi:10.1016/j.ecoleng.2006.09.025
54. Hill, M. J., Held, A. A., Leuning, R. Coops, N. C., Huges, D., Cleugh, H. (2006). MODIS spectral signals at a flux tower site: relationships with high resolution data, and flux and light use efficiency measurements. *Remote Sensing of Environment* 103, 351-368.
53. Hill, M. J., Senarath, U., Lee, A., Zeppel, M., Nightingale, J. M., Williams, R. T. and McVicar, T. (2006). Assessment of the MODIS LAI product in Australian ecosystems. *Remote Sensing of Environment* 101, 495-518.
52. Hill, Michael J., Lesslie Robert J., Donohue, Randall, Houlder, Paul, Holloway, Jane, Smyth, Jodie, (2006). Multi-criteria assessment of tensions in resource use at continental scale: A proof of concept with Australian rangelands. *Environmental Management* 37, 712-731.
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49. Barrett, D. J. , Hill, M. J., Hutley, Lindsay, Beringer, Jason, Xu, Johnny Cook, Garry, Carter, John, Williams, R, (2005). Prospects for improving savanna carbon models using multiple constraints model-data assimilation methods. *Australian Journal of Botany* 55, 689-714.
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Australia: a scenario approach using 100 years of simulated annual fire and grassland dynamics. *Australian Journal of Botany* 53, 715 - 739.

47. Hill, M. J., Ticehurst, C., Lee, J. S., Grunes, M. R., Donald, G. E. and Henry, D. (2005). Integration of optical and radar classifications for mapping pasture type in Western Australia. *IEEE Transactions on Geoscience and Remote Sensing* 43, 1665-1681..

46. Hill, Michael J., Braaten, Robert., Lees, Brian and Veitch, Simon M. (2005). Multi-criteria decision analysis in spatial decision support: the ASSESS analytic hierarchy process and the role of quantitative methods and spatially explicit analysis. *Environmental Modelling and Software* 20, 955-976.

45. Hill, M. J., Donald, G. E., Hyder, M. W. and Smith, R. C. G. (2004). Estimation of pasture growth rates in South Western Australia from NOAA AVHRR NDVI and climate data. *Remote Sensing of Environment* 93, 528-545.

44. Boschma, S. M., Hill, M. J., Scott, J. M. and Rapp, G. G., (2003) Response to moisture and defoliation stresses and traits for resilience of perennial grasses on the Northern Tablelands of New South Wales, Australia. *Australian Journal of Agricultural Research* 54, 903-916.

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42. Hill, M. J., (2003). Generating generic response signals for scenario calculation of management effects on carbon sequestration in agriculture: approximation of main effects using CENTURY. *Environmental Modelling and Software*, 18, 899-913.

41. Hill, M. J., Braaten, R. and McKeon, G. (2003) A spatial tool for evaluating the effect of grazing land management on carbon sequestration in Australian rangelands *Environmental Modelling and Software*, 18, 627-644.

40. Hill M.J. and Donald, G.E. (2003). Estimating spatio-temporal patterns of agricultural productivity in fragmented landscapes using AVHRR NDVI time series. *Remote Sensing of Environment* 84, 367-384.

39. Hill, M. J., Donald, G. E., Donnelly, J. R. and Moore, A. D. (2000). Integrating spatial data with a grazing system model: assessing variability of pasture and animal production at a regional scale. *Asian – Australiasian Journal of Animal Sciences*, **13**, 128-131.
38. Hill, M. J., Smith, A. M. and Foster, T. C. (2000) Remote sensing of grassland with Radarsat; case studies from Australia and Canada. *Canadian Journal of Remote Sensing* **26**, 285-296.
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36. Hill, M. J., Donald, G. E., Vickery, P. J., Donnelly, J. R. and Moore, A. P. (1999). Combining satellite data with a simulation model to describe spatial variability in pasture growth at a farm scale. *Australian Journal of Experimental Agriculture* **39**: 285-300.
35. Hill, M. J., Vickery, P. J, Furnival, E. P. and Donald, G. E. (1999). Using of NOAA AVHRR NDVI and classified Landsat TM data to describe pastures in the temperate high rainfall zone (HRZ) of Eastern Australia. *Remote Sensing of Environment* **67**: 32-50.
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### **Book Chapters**

Published

12. Hill, M. J.(2014). "Savanna Biome." In Oxford Bibliographies in Ecology. Ed. David Gibson, New York: Oxford University Press, (in press). Peer reviewed by 2 independent reviewers .

11. Hill, Michael J. and Hanan, Niall P. (2011). Current approaches to measurement, remote sensing and modelling in savannas: a synthesis. In, Hill, Michael J. and Hanan, Niall P. eds (2011). *Ecosystem Function in Savannas: Measurement and Modeling at Landscape to Global Scales*. (CRC Press, Boca Raton, Florida) pp 515-545.

10. Hill, Michael J., Roman, Miguel O. and Schaaf, Crystal B. (2011) *Biogeography, Ecology and Dynamics of Global Savannas: A Spatio-Temporal View*. In, Hill, Michael J. and Hanan, Niall P. eds (2011). *Ecosystem Function in Savannas: Measurement and Modeling at Landscape to Global Scales*. (CRC Press, Boca Raton, Florida) pp 3 - 37.

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6. Aspinall, R. J. and Hill, M. J. (2008). Introduction. In: Richard J. Aspinall and Michael J. Hill (Editors). Land use change: science, policy and management. CRC Press, Boca Raton, Florida. pp. xxi-xxv.

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2. Hill, M. J. (2000). Applications for spatial information in monitoring and management of grasslands. In M. J. Hill and R. J. Aspinall (eds) *Spatial Information for Land Use Management*, pp.113-128 (Gordon and Breach Overseas Publishing Associates, Reading - now Taylor and Francis).

1. Aspinall, R. J. and Hill, M. J. (2000). Introduction: Spatial Information for Land Use Management. In M. J. Hill and R. J. Aspinall (eds) *Spatial Information for Land Use Management*, pp.1-9 (Gordon and Breach Overseas Publishing Associates, Reading).

### **Books Edited**

Hill, Michael J. and Hanan, Niall P. eds (2011). Ecosystem Function in Savannas: Measurement and Modeling at Landscape to Global Scales. (CRC Press, Boca Raton, Florida) 559 pp.

Aspinall, Richard J. and Hill, Michael J. eds (2008). Land Use Change: Science, Policy and Management. (CRC Press, Boca Raton, Florida) 185 pp.

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### *Special Publications*

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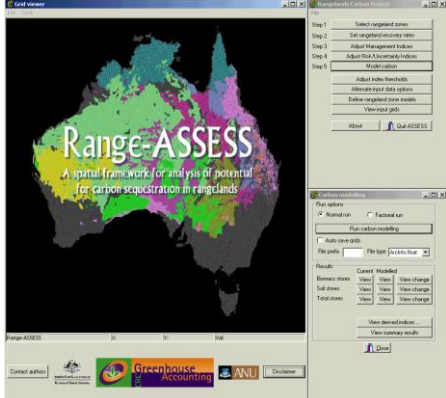
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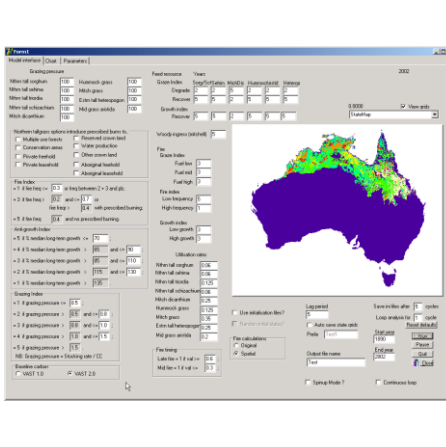


# Software

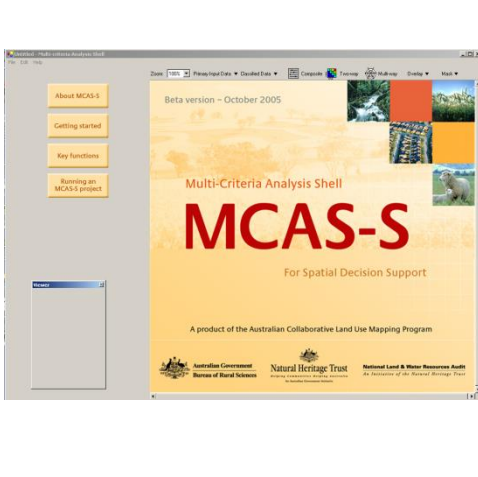
## Range-ASSESS

	<b>Description</b>	Range-ASSESS is a state-and-transition based expert system for assessing the impact of changing land management practices on soil and biomass carbon across the Australian rangelands.
	<b>Documentation</b>	Published papers Hill et al. 2003; 2005. User Guide in preparation
	<b>Developers</b>	Concept and Design – M. J. Hill and S. H. Roxburgh Programming – S. H. Roxburgh
	<b>Language</b>	Borland Delphi 7.0
	<b>Requirements</b>	Windows 95 or greater
	<b>Program size</b>	16Mb (installation package); 125Mb (installed)

## AuSavan

	<b>Description</b>	State and transition-based model for assessing carbon dynamics in the tropical savanna region of Australia. The model has an annual time step and uses 113 years of spatial data on fire incidence, annual rainfall and simulated annual grassland growth.
	<b>Documentation</b>	Paper describing the model and preliminary analysis of carbon dynamics Hill et al. (in review)
	<b>Developer</b>	Concept and Design – M. J. Hill and S. H. Roxburgh Programming – S. H. Roxburgh
	<b>Language</b>	Borland Delphi 7.0.
	<b>Requirements</b>	Windows 95 or greater
	<b>Program size</b>	1.4 MB executable; 1.20 Gb input data

## MCAS-S – Multi-Criteria Analysis Shell - Spatial

	<b>Description</b>	Multi-criteria analysis shell. The shell enables flexible classification, combination, and two-way and multi-way comparison of spatial data with reporting with full masking and reporting functions.
	<b>Documentation</b>	Paper describing the MCAS-S shell (Hill et al., 2005), paper describing continental scale analysis of tensions in Australian rangelands (Hill et al., 2005) and paper describing ASSESS and issues with MCA (Hill et al., 2004).
	<b>Developer</b>	Concept – M. J. Hill and R. J. Lesslie Programming and design – A. Barry
	<b>Language</b>	C++ and Microsoft .Net
	<b>Requirements</b>	Windows 95 or greater
	<b>Program size</b>	800 kb executable, 14Mb with DLLs