CURRICULUM VITAE

**Niall P. HANAN**

Plant and Environmental Sciences (PES)

Skeen Hall, New Mexico State University

Las Cruces, NM 88003

**Impact Statistics (Google Scholar Jan 2017)**

**h-index = 33; 2016 citations = >600**

##### a) Education

BSc 1985. Liverpool Polytechnic-John Moore’s University, Applied Biology, 1st Class Honors

PhD 1990. Queen Mary College, University of London, Biology

**b) Academic Positions**

January 2017 – present: **Professor,** Plant and Environmental Sciences, New Mexico State University, Las Cruces, New Mexico

January 2011-December 2016: **Senior Scientist & Professor,** Geospatial Sciences Center of Excellence (GSCE), South Dakota State University, Brookings, South Dakota.

January 2017 – present: **Adjunct Faculty**, Natural Resource Management, South Dakota State University, Brookings, South Dakota

January 2011 – present: **Adjunct Faculty**, Department of Ecosystem Science and Sustainability & Graduate Degree Program in Ecology, Colorado State University, Fort Collins, Colorado

September 2007-July 2008: **Fulbright Research and Teaching Scholar,** Université de Bamako, Mali and Institut Polytechnique Rural de Katibougou, Koulikoro, Mali

July 2007 – December 2010: **Senior Research Scientist/Research Professor**, Natural Resource Ecology Laboratory, CSU

January 2002 – December 2009: **Faculty Member**, NSF-IGERT Program for Interdisciplinary Mathematics, Ecology, and Statistics (PRIMES), CSU

September 2001 – December 2010: **Faculty Member**, Graduate Degree Program in Ecology, CSU

June 2001 – December 2010: **Academic Joint Appointment,** Department of Forest, Rangeland and Watershed Stewardship, CSU

February 2001 – June 2007: **Research Scholar III/Research Associate Professor**, Natural Resource Ecology Laboratory, CSU

July 1998 – January 2001: **Research Scholar II/Research Assistant Professor**, Natural Resource Ecology Laboratory, CSU

**c) Other Positions**

January 1998 – June 1998: **Research Scientist**, Bren School of Environmental Science & Management, University of California, Santa Barbara **&** Carnegie Institution of Washington, Department of Plant Biology, Stanford.

May 1995 – August 1997: **Research Scientist**, Winand Staring Centre (now Wageningen University Research), Wageningen, The Netherlands.

August 1993 – February 1995: **Assistant Research Scientist**, Geography Dept., Univ. of Maryland.

September 1990 – July 1993: **Research Associate**, Geography Department, Univ. of Maryland.

August 1988-March 1989: **Ecologist**, Ecological Monitoring Center/United Nations Development Program, Senegal.

July 1986-September 1986: **Assistant Scientist**, Tropical Development & Research Institute, Zimbabwe

July 1985-December 1985: **Assistant Scientist**, Pest & Vector Management Dept, Tropical Development & Research Institute, London U.K.

**d) Peer Reviewed Journal Articles** (papers led by \* graduate student, + post-doc; Impact Factors (IF) based on ISI Journal Citation Reports)

**65.** \*Axelsson, C. R., and **Hanan, N. P.**, 2017, Patterns in woody vegetation structure across African savannas, *Biogeosciences Discussions*,(DOI:10.5194/bg-2017-7).

**64.** \*Dohn, J. Augustine, D. J., **Hanan, N. P.**, Ratnam, J. and Sankaran, M., 2017, Spatial vegetation patterns and neighborhood competition among woody plants in an East African savanna, *Ecology*, **98,** yyy-yyy (DOI: 10.1002/ecy.1661).

**63.** \*Yan, D., Zhang, X., Yu, Y., Guo, W., and **Hanan, N. P**., 2016,Characterizing land surface phenology and response to rainfall in the Sahara desert, *J.Geophysical Research- Biogeosciences*, **121,** 2243-2260 (DOI: 10.1002/2016JG003441).

**62.** Milne, E., Aynekulu, E., Bationo, A., Batjes, N. H, Boone, R., Conant, R. Davies, J., **Hanan, N. P.**, Hoag, D., Herrick, J. E., Knausenberger, W., Neely, C., Njoka, J., Ngugi M., Parton, W., Paustian, K., Reid, R., Said, M., Shepherd, K., Swift, D., Thornton, P., Williams, S., 2016, Grazing lands in Sub-Saharan Africa and their potential role in climate change mitigation: What we do and don't know, *Environmental Development*, **19,** 70-74 (DOI: 10.1016/j.envdev.2016. 06.001)

**61.** Petrie, M. D., Brunsell, N. A., Vargas, R., Collins, S. L., Flanagan, L. B., **Hanan, N. P.**, Litvak, M. E., Suyker, A. E., 2016, The sensitivity of carbon exchanges in Great Plains grasslands to precipitation variability, *J. Geophysical Research- Biogeosciences*, **121,** 280-294 (DOI: 10.1002/2015JG003205). (IF = 3.4).

**60.** +Kaptué, A. T., Prihodko, L. and **Hanan, N. P.**, 2015, On re-greening and degradation in Sahelian watersheds, *Proceedings of the National Academy of Science,* **112** (39): 12133-12138(DOI: 10.1073/pnas.1509645112). (IF = 9.6)

**59.**\*A. T. Tredennick, M. Karembé, F. Dembélé and **N. P. Hanan**, 2015, No effects of fire, large herbivores and their interaction on regrowth of harvested trees in two West African savannas, *African Journal of Ecology*, **53,** 487-495 (DOI: 10.1111/aje.12238)*.* (IF = 0.8)

**58. Hanan, N. P.**, Tredennick, A. T., Prihodko, L., Bucini, G., and Dohn, J., 2015, Analysis of stable states in global savannas – a response to Staver and Hansen, *Global Ecology and Biogeography,* **24**: 988-989 (DOI: 10.1111/geb.12321).(IF = 7.2)

**57.** +A. T. Kaptué, **N. P. Hanan**, L. Prihodko and J. A. Ramirez, 2015, Spatial and temporal characteristics of rainfall in Africa: summary statistics for temporal down-scaling, *Water Resources Research*, **51**: 2668-2679. (DOI: 10.1002/2014WR015918) (IF = 3.7)

**56.** \*Tredennick, A. T. and **Hanan, N. P.**, 2015, Effects of tree harvest on the stable-state dynamics of savanna and forest, *American Naturalist,* **185** (5), E153-E165 (DOI: 10.1086/680475). (IF = 4.5)

**55.** Palmer, A. R., Weideman, C., Finca, A., Everson, C. S., **Hanan, N. P.,** and Ellery, W., 2015, Modelling annual evapotranspiration in a semi-arid, African savanna: functional convergence theory, MODIS LAI and the Penman-Monteith equation. *African Journal of Range and Forage Science,* **32** (1):33-39 (DOI: 10.2989/10220119.2014.931305). (IF = 0.4)

**54.** Fan, Z., Neff, J. C., and **Hanan, N. P.**, 2015, Modeling pulsed soil respiration in an African savanna ecosystem, *Agricultural and Forest Meteorology,* **200:** 282-292. (DOI: 10.1016/j.agrformet.2014.10.009). (IF = 3.9)

**53.** Lehman, C. E. R., T. M. Anderson, M. Sankaran, S. I. Higgins, S. Archibald, W. A. Hoffmann, **N. P. Hanan**, R. J. Williams, R. Fensham, J. Felfili, L. B. Hutley, J. Ratnam, J. J. San José, R. A. Montes, D. C. Franklin, J. Russell-Smith, C. Ryan, R. Haidar and W. J. Bond, 2014, Savanna vegetation-fire-climate relationships differ among continents. *Science* **343:** 548-552 (DOI: 10.1126/science.1247355). (IF = 31.5)

**52. Hanan, N. P.,** Tredennick, A. T., Prihodko, L., Bucini, G. and Dohn, J.**,** 2014, Analysis of stable states in global savannas: is the CART pulling the horse? *Global Ecology and Biogeography* **23** (3): 259-263 (DOI: 10.1111/geb.12122). (IF = 7.2)

**51.** +Kaptue, A. T., **Hanan, N. P.** and Prihodko, L., 2013, Characterization of the spatial and temporal variability of surface water in the Soudan-Sahel region of Africa. *Journal of Geophysical Research – Biogeosciences*, **118:** 1472-1483 (DOI: 10.1002/jgrg.20121) (IF = 3.4)

**50. \***Tredennick, A.T., Bentley, L. P. and **Hanan, N. P.** 2013,Allometric convergence in savanna trees and implications for metabolic scaling theory in non-ideal systems, PLoS ONE 8, (3), e58241 (DOI: 10.1371/journal.pone.0058241). (IF= 4.4)

**49.** Sjöström, M., Zhao, M., Archibald, S., Arneth, A., Cappelaere, B., Falk, U., Grandcourt, A., **Hanan, N. P.,** Kergoat, L., Kutsch, W., Merbold, L., Mougin, E., Nickless, A., Nouvellon, Y., Scholes, R. J., Veenendaal, E. M., and Ardö, J., 2013, Evaluation of MODIS gross primary productivity for Africa using eddy covariance data, *Remote Sensing of Environment*, **131:** 275-286. (IF = 3.01)

**48.** Gilmanov, T. G., B. K. Wylie, L. L. Tieszen, T. P. Meyers, V. S. Baron, C. J. Bernacchi, D. P. Billesbach, G. G. Burba, M. L. Fischer, A. J. Glenn, **N. P. Hanan**, J. L. Hatfield, M. W. Heuer, S. E. Hollinger, D. M. Howard, R. Matamala, J. H. Prueger, M. Tenuta and D. G. Young, 2013. CO2 uptake and ecophysiological parameters of the grain crops of midcontinent North America: Estimates from flux tower measurements. *Agriculture, Ecosystems and Environment* **164**: 162-175. (IF = 4.0)

**47. \***Dohn, J., Dembélé, F., Karembé, M., Moustakas, A., Amévor, K. A., and **Hanan, N. P.,** 2013, Tree effects on grass growth in savannas: competition, facilitation and the stress-gradient hypothesis, *Journal of Ecology,* **101:** 202-209(doi: 10.1111/1365-2745.12010). (IF = 5.0)

**46.** Niu., S., Luo, Y., Fei, S., et al. (49 authors, including **Hanan, N. P.**), 2012, Thermal optimality of net ecosystem exchange of carbon dioxide and underlying mechanisms, *New Phytologist,* **194:**775-783 (DOI: 10.1111/j.1469-8137.2012.04095.x). (IF = 6.6)

**45.** \*Dieye, A. M., Roy, D. P., **Hanan, N. P.**, Liu, S., Hansen, M. and Touré, A.,2012, Sensitivity analysis of the GEMS soil organic carbon model to land cover land use classification uncertainties under different climate scenarios in Senegal, *Biogeosciences,* **9,** 631-648.(DOI: 10.5194/bg-9-631-2012)(IF=3.9)

**44.** \*Sea, W. B. and **Hanan, N. P.**, 2012, Self-thinning and tree competition in savannas. *Biotropica,* **44** (2), 189-196. *(DOI:* 0.1111/j.1744-7429.2011.00789.x*).* (IF=2.2)

**43.** Goerner, A., Reichstein, M., Tomelleri, E., **Hanan, N. P.**, Rambal, S., Papale, D., Dragoni, D. and Schmullius,C.**,** 2011, Remote sensing of ecosystem light use efficiency with MODIS-based PRI, *Biogeosciences,* **8,** 189-202.(IF=3.9)

**42.** Hill, M. A., Román, M. O., Schaaf, C. B., Hutley, L. B., Brannstrom, C., Etter, A. and **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. (IF=3.01)

**41.** +Williams, C. A. and **Hanan, N. P.**, 2011, ENSO and IOD teleconnections for African ecosystems: evidence of destructive interference between climate oscillations, *Biogeosciences*, **8,** 27-40. (IF=3.9)

**40.** Yi, C., D. Ricciuto, R. Li, J. Wolbeck, X. et al. (151 authors, including **Hanan, N. P.**), 2010, Climate control of terrestrial carbon exchange across biomes and continents, *Environmental Research Letters* **5**(3): 034007. DOI:10.1088/1748-9326/5/3/034007. (IF=3.34)

**39.** \*Sutton, A., Dohn, J., Loyd, K., Tredennick, A. T., Bucini, G., Solorzano, A., Prihodko, L., **Hanan, N. P.**, 2010, Does warming increase the risk of civil war in Africa? *Proceedings of the National Academy of Sciences,* 107 (25), E102. doi: 10.1073/pnas.1005278107 (IF=9.6)

**38.** Gilmanov, T. G., Aires, L., Barcza, Z., Baron, V. S., Belelli, L., Beringer, J., Billesbach, D., Bonal, D., Bradford, J., Ceschia, E., Cook, D., Corradi, C., Frank, A., Gianelle, D., Gimeno, C., Gruenwald, T., Guo, H., **Hanan, N. P.**, Haszpra, L., Heilman, J., Jacobs, A., Jones, M. B., Johnson, D. A., Kiely, G., Li, S., Magliulo, V., Moors, E., Nagy, Z., Nasyrov, M., Owensby, C., Pinter, K., Pio, C., Reichstein, M., Sanz, M. J., Scott, R., Soussana, J. F., Stoy, P. C., Svejcar, T., Tuba, Z. and Zhou, G., 2010, Productivity, Respiration, and Light-Response Parameters of World Grassland and Agroecosystems Derived From Flux-Tower Measurements, *Rangeland Ecology and Management*, **63,** 16-39. (IF=1.1)

**37.** Mougin, E., Hiernaux, P. H. Y., Kergoat, L., Grippa, M., de Rosnay, P., Timouk, F., Le Dantec, V., Demarez, V., Lavenu, F., Arjounin, M., Lebel, T., Soumaguel, N., Ceschia, E., Mougenot, B., Baup, F., Frappart, F., Frison, P-L., Gardelle, J., Gruhier, C., Jarlan, L., Mangiarotti, S., Sanou, B., Tracol, Y., Guichard, F., Trichon, V., Diarra, L., Soumaré, A., Koité, M., Dembélé, F., Lloyd, C., **Hanan, N. P.**, Damesin, C., Delon, C., Serça, D., Galy-Lacaux, C., Seghiéri, J., Becerra, S., Dia, H., Gangneron, F., Mazzega, P., 2009, The AMMA-CATCH Gourma observatory site in Mali: Relating climatic variations to changes in vegetation, surface hydrology, fluxes and natural resources, *Journal of Hydrology,* **375,** 14-33 (doi: 10.1016/j.jhydrol.2009.06.045) (IF=2.16)

**36.** Lebel, T., Cappelaere, B., Galle, S., **Hanan, N. P.**, Kergoat, L., Levis, S., Vieux, B., Descroix, L., Gosset, M., Mougin, E., Peugeot, C., Seguis, L., 2009, AMMA-CATCH studies in the Sahelian region of West-Africa: an overview. *Journal of Hydrology,* **375,** 3-13. (doi:10.1016/j.jhydrol.2009.03.020) (IF=2.16)

**35.** +Williams, C.A., **Hanan, N. P.,** Scholes, R.J. and Kutsch, W. 2009, Complexity in water and carbon dioxide fluxes following rain pulses in an African savanna. *Oecologia*, **161,** 469-480. (IF=2.97)

**34.** Archibald, S.A., Kirton, A., van der Merwe, M., Scholes, R. J., Williams, C. A. and **Hanan, N. P.**, 2009, Drivers of inter-annual variability in net ecosystem exchange in a semi-arid savanna ecosystem, South Africa, *Biogeosciences* **6,** 251-266 (IF=3.9)

**33.** +Williams, C. A., **Hanan**, N. P., Baker, I., Collatz, G. J., Berry, J. A., and Denning, A. S.,2008, Inter-annual variability of photosynthesis across Africa and its attribution, *J. Geophysical Research - Biogeosciences,* **113,** G04015, (DOI:10.1029/2008JG000718). (IF=2.95)

**32.** +Ratnam, J., Sankaran, M., **Hanan, N.P.**, 2008, Nutrient resorption patterns of plant functional groups in a tropical savanna: variation and functional significance, *Oecologia,* **157,** 141-151. (IF=2.97)

**31.** +Kutsch, W. L., **Hanan, N. P.**, Scholes, R. J., McHugh, I., Khubeka, W., Eckhardt, H., Williams C. A., 2008, Response of carbon fluxes to water relations in a savanna ecosystem in South Africa. *Biogeosciences* **5,** 1797-1808. (IF=3.9)

**30.** **Hanan, N. P.**, Sea, W. B., Dangelmayr, G. and Govender, N., 2008, Do fires in savannas consume woody biomass? A comment on approaches to modeling savanna dynamics. *American Naturalist,* **171,** 6, 851-856. (IF=4.54)

**29.** Prihodko, L., Denning, A.S., **Hanan, N. P**., Baker, I. and Davis, K. 2008, Sensitivity, uncertainty and time dependence of parameters in a complex land surface model, *Agricultural and Forest Meteorology*, **148,** 268-287. (IF=3.67)

**28.** +Sankaran, M., Ratnam, J., and **Hanan, N.P**., 2008, Woody cover in African savannas: the role of resources, fire and herbivory, *Global Ecology and Biogeography,* **17** (2), 236-245 (DOI: 10.1111/j.1466-8238.2007.00360). (IF=4.43)

**27. \***Bucini, G., **Hanan, N. P.**, 2007, A continental-scale analysis of tree cover in African savannas. *Global Ecology and Biogeography*, **16** (4), 593-605 (DOI: 10.1111/j.1466-8238.2007.00325). (IF=4.43)

**26.** +Williams, C. A., **Hanan, N. P.**, Neff, J., Scholes, R. J., Berry, J. A., Denning, A. S., and Baker, D. F., 2007, Africa and the global carbon cycle. *Carbon Balance and Management*, **2 (March 2007),** Art. No. 3. (<http://www.cbmjournal.com/articles/browse.asp>) (IF=N/A)

**25.** +Mahesh Sankaran, **Niall P. Hanan,** Robert J. Scholes, Jayashree Ratnam, Brian S. Cade, Jonas Ardö, David J. Augustine, Feetham Banyikwa, Andries Bronn, Gabriela Bucini, Kelly Caylor, Michael B. Coughenour, Alioune Diouf, Wellington Ekaya, Christie Feral, Edmund C. February, Peter Frost, Jacques Gignoux, Pierre Hiernaux, Steve Higgins, Halszka Hrabar, Xavier LeRoux, Fulco Ludwig, Kris Metzger, Herbert H. T. Prins, Susan Ringrose, William Sea, Jörg Tews, Jeff Worden, Nick Zambatis, 2005, Determinants of Woody Cover in African Savannas. *Nature* **438,** 846-849. (IF=28.75)

**24.** **Hanan, N. P.,** Berry, J. A., Verma, S. B., Walter-Shea, E. A., Suyker, A. E., Burba, G. G. and Denning, A. S., 2005, Testing a model of biosphere-atmosphere exchanges of CO2, water and energy in Great Plains tall-grass prairie and wheat ecosystems. *Agricultural and Forest Meteorology* **131,** 162-179 (IF=3.67)

**23.** +Sankaran, M., Ratnam, J. and **Hanan, N.P.,** 2004. Tree grass coexistence in savannas revisited - insights from an examination of assumptions and mechanisms invoked in existing models. *Ecology Letters*, **7,** 480-490. (IF=8.20)

**22.** Baker, I., Denning, A.S., **Hanan, N.P.,** Prihodko, L., Uliasz, M., Vidale, P.-L., Davis, K.J. and Bakwin, P.S., 2003. Simulated and observed fluxes of sensible and latent heat and CO2 at the WLEF-TV tower using SiB2.5. *Global Change Biology,* **9,** 1262-1277. (IF=4.79)

**21.** House, J., Archer, S., Breshears, D. D., Scholes, R. J., Coughenour, M. B., Dodd, M. B., Gignoux, J., Hall, D. O., **Hanan, N. P.,** Joffre, R., et al., 2003, Conundrums in mixed woody-herbaceous plant systems. *Journal of Biogeography* **30,** 1763-1777. (IF=3.54)

**20.** Otter, L. B., Scholes, R. J., Dowty, P., Privette, J., Caylor, K., Ringrose, S., Mukelabai, M., Frost, P., **Hanan, N. P.,** Totolo, O., et al., 2002, The Southern African Regional Science Initiative (SAFARI 2000): Wet season campaigns. *South African Journal of Science* **98**, 131-137. (IF=0.67)

**19.** **Hanan, N. P.,** Burba, G., Verma, S. B., Berry, J. A., Suyker, A. and Walter-Shea, E. A., 2002, Inversion of net ecosystem CO2 flux measurements for estimation of canopy PAR absorption. *Global Change Biology* **8**, 563-574. (IF=4.79)

**18. Hanan, N. P.,** 2001, Enhanced two-layer radiative transfer scheme for a land surface model with a discontinuous upper canopy. *Agricultural and Forest Meteorology* **109**, 265-281. (IF=3.67)

**17.** Boegh, E., Soegaard, H., **Hanan, N. P.,** Kabat, P. and Lesch, L., 1999, A remote sensing study of the NDVI-Ts relationship and the transpiration from sparse vegetation in the Sahel based on high-resolution satellite imagery. *Remote Sensing of Environment* **69**, 224-240. [DOI: 10.1016/S0034-4257(99)00025-5](http://dx.doi.org/10.1016/S0034-4257%2899%2900025-5) (IF=3.01)

**16. Hanan, N. P.,** Kabat, P., Dolman, A. J. and Elbers, J. A., 1998, Photosynthesis and carbon balance of a Sahelian fallow savanna. *Global Change Biology* **4**, 523-538. (IF=4.79)

**15.** **Hanan, N.P**., Bégué, A. and Prince, S.D., 1997. Errors in remote sensing of intercepted photosynthetically active radiation: an example from HAPEX-Sahel. *Journal of Hydrology*, **188-189,** 676-696. (IF=2.16)

**14.** **Hanan, N.P**. and Prince, S.D., 1997. Stomatal conductance of West Central Supersite vegetation in HAPEX-Sahel: measurements and empirical models. *Journal of Hydrology*, **188-189,** 536-562. (IF=2.16)

**13.** **Hanan, N.P**., Prince, S.D. and Bégué, A., 1997. Modelling vegetation primary production during HAPEX-Sahel using production efficiency and canopy conductance model formulations. *Journal of Hydrology*, **188-189,** 651-675. (IF=2.16)

**12.** Bégué, A., Prince, S.D., **Hanan, N.P**. and Roujean, J.L., 1996. Shortwave radiation budget of Sahelian vegetation. 2. Radiative transfer models. *Agricultural and Forest Meteorology*, **79,** 97-112. (IF=3.67)

**11.** Bégué, A., Roujean, J.L., **Hanan, N.P**., Prince, S.D., Thawley, M., Huete, A. and Tanré, D., 1996. Shortwave radiation budget of Sahelian vegetation. 1. Techniques of measurement and results during HAPEX-Sahel. *Agricultural and Forest Meteorology*, **79,** 79-96. (IF=3.67)

**10.** **Hanan, N.P**., Elbers, J.A., Kabat, P., Dolman, A.J. and De Bruin, H.A.R., 1996. CO2 flux and photosynthesis of a Sahelian savanna during HAPEX-Sahel. *Physics and Chemistry of the Earth*, **21,** 135-141. (IF=0.65)

**9.** **Hanan, N.P**. and Bégué, A., 1995. A method to estimate instantaneous and daily intercepted photosynthetically active radiation using a hemispherical sensor. *Agricultural and Forest Meteorology*, **74,** 155-168. (IF=3.67)

**8.** **Hanan, N.P**., Prince, S.D. and Bégué, A., 1995. Estimation of absorbed photosynthetically active radiation and vegetation net production efficiency using satellite data. *Agricultural and Forest Meteorology*, **76,** 259-276. (IF=3.67)

**7.** **Hanan, N.P**., Prince, S.D. and Holben, B.N., 1995. Atmospheric correction of AVHRR data for biophysical remote sensing. *Remote Sensing of Environment*, **51,** 306-316. (IF=3.01)

**6.** Bégué, A., **Hanan, N.P**. and Prince, S.D., 1994. Radiative transfer in shrub savanna sites in Niger: preliminary results from HAPEX-Sahel. 2. Photosynthetically active radiation interception of the woody layer. *Agricultural and Forest Meteorology*, **69,** 247-266. (IF=3.67)

**5.** **Hanan, N.P**., Prince, S.D. and Franklin, J., 1993. Reflectance properties of West African savanna trees from ground radiometer measurements II. Classification of components. *International Journal of Remote Sensing*, **14,** 1081-1097. (IF=0.99)

**4.** Franklin, J., Prince, S.D., Strahler, S.D., **Hanan, N.P**. and Simonett, D.S., 1991. Reflectance and transmission properties of West African savanna trees from ground radiometer measurements. *International Journal of Remote Sensing*, **12,** 1369-1385. (IF=0.99)

**3.** **Hanan, N.P**., Prévost, Y., Diouf, A. and Diallo, O., 1991. Assessment of desertification around deep wells in the Sahel using satellite imagery. *Journal of Applied Ecology*, **28,** 173-186. (IF=4.22)

**2.** **Hanan, N.P**., Prince, S.D. and Hiernaux, P.H.Y., 1991. Spectral modelling of multicomponent landscapes in the Sahel. *International Journal of Remote Sensing*, **12,** 1243-1258. (IF=0.99)

**1.** Diallo, O., Diouf, A., **Hanan, N.P**., Ndiaye, A. and Prévost, Y., 1990. AVHRR monitoring of savanna primary production in Senegal, West Africa : 1987-1988. *International Journal of Remote Sensing*, **12,** 1259-1279. (IF=0.99)

##### e) Peer Reviewed Books and Book Chapters

**11.** Hill, M. J. and **Hanan, N. P.** (Editors), 2011, “Ecosystem Function in Savannas: measurement and modeling at landscape to global scales”. A peer reviewed book with 27 invited chapters commissioned by CRC Press/Taylor & Francis. ISBN: 978-1-4398-0470-4

**10. Hanan, N. P.** and Lehmann, C. E. R., 2011, Tree-grass Interactions in Savannas: Paradigms, Contradictions and Conceptual Models, Chapter 2 (pp 39-53) in “Ecosystem Function in Savannas: measurement and modeling at landscape to global scales” Hill, M. J. and Hanan, N. P. (eds), CRC Press.

**9.** Hill, M. J. and **Hanan, N. P.**, 2011, Current approaches to measurement, remote sensing and modeling in savannas: a synthesis, Chapter 27 (pp 515-545) in “Ecosystem Function in Savannas: measurement and modeling at landscape to global scales” Hill, M. J. and Hanan, N. P. (eds), CRC Press.

**8.** **Hanan, N. P.**, Boulain, N., Williams, C. A., Scholes, R. J. and Archibald, S., 2011, Functional Convergence in Ecosystem Carbon Exchange in Adjacent Savanna Vegetation Types of the Kruger National Park, South Africa, Chapter 4 (PP 77-95) in “Ecosystem Function in Savannas: measurement and modeling at landscape to global scales” Hill, M. J. and Hanan, N. P. (eds), CRC Press.

**7.** Bucini, G., **Hanan, N. P.**, Boone, R. B., Smit, I. P. J., Saatchi, S., Lefsky, M. A. andAsner, G. P., 2011, Woody fractional cover in Kruger National Park, South Africa: remote-sensing-based maps and ecological insights, Chapter 11 in “Ecosystem Function in Savannas: measurement and modeling at landscape to global scales” Hill, M. J. and Hanan, N. P. (eds), CRC Press.

**6.** Akhtar‐Schuster, M., Berliner, P., Bestelmeyer, B., Buenemann, M., Buttschardt, T., Chasek, P., Cowie, A., Critchley, W., **Hanan, N.P.**, Herrick, J., Herrmann, S., et al. 2009, Monitoring and Assessment of Sustainable Land Management Volume II of III in ‘Understanding Desertification and Land Degradation Trends’, White Papers for the First UNCCD Scientific Conference, Buenos Aires, Argentina 22‐24 September 2009

**5.** Nickless A., Archibald S.A., van der Merwe M., Scholes R.J., Williams C.A. and **Hanan, N. P.**, 2008, Estimation of net ecosystem exchange at the Skukuza Flux Site, Kruger National Park, South Africa, Chapter 3 in “Africa and the Global Carbon Cycle” Bombelli, A. and Valentini, R. (eds). FAO-World Soil Resources Report # 105.

**4. Hanan, N. P.,** 2004, Integrated Terrestrial Experiments: Vegetation Measurements. In ‘Biospheric Feedbacks in the Climate System and the Hydrological Cycle’. Gash, J. and Kabat, P., IGBP-BAHC. Chapter B.7. Vegetation Structure, Dynamics and Physiology, Pages 199-205.

**3.** Berry, J. A., Raupach, M. R. and **Hanan, N. P.,** 1998, Improving SVAT processes in GCMs: vegetation structure, dynamics and physiology. In ‘Land Surface Parameterizations/Soil Vegetation-Atmosphere Transfer Schemes. Conclusions and Working Group Reports of a Workshop, La Jolla, CA, 10-14 February, 1997’. Dolman, A. J. and Dickinson, R. E. (Eds.). Washington DC, GEWEX-WCRP, Report No. 31.

**2.** **Hanan, N.P**., 1997. Remote sensing of fractional PAR interception. In: P. Kabat, S.D. Prince and L. Prihodko (Editors), Hydrologic Atmospheric Pilot Experiment in the Sahel (HAPEX-Sahel): Methods, measurements and selected results from the West Central Supersite. DLO Winand Staring Centre, Wageningen, The Netherlands, pp. 139-149.

**1.** **Hanan, N.P**., Kabat, P., Prince, S.D. and Prihodko, L., 1997. Vegetation production and water relations. In: Kabat, Prince and Prihodko (Eds), Hydrologic Atmospheric Pilot Experiment in the Sahel (HAPEX-Sahel): Methods, measurements and selected results from the West Central Supersite. DLO Winand Staring Centre, Wageningen, The Netherlands, pp. 88-105.

##### f) Popular Press and Commentary

##### 1. Hanan, N.P., 2010, Progress on desertification? ClimateSense Journal, A commentary on desertification research and progress at the United Nations Convention to Combat Desertification Conference of Parties, 2009. Published Nov. 9, 2010, climatesense.org.

##### g) Submitted & in Review (papers led by \* graduate student, + post-doc)

**1.** \*Solórzano, A., Kumar, S., Hanan, N. P., Pinto, J. R. R. and Hay, J. D. V., (201x). Modelling the potential distribution of Brazilian cerradão woodland, and endangered plant physiognomy, *Journal of Land Use Science* (in review).

**2.** \*Dohn, J. and Hanan, N. P. (201x). Shrub-grass interactions, inverse texture and stress gradient hypotheses: insights from the Colorado shortgrass steppe. *Journal of Vegetation Science* (in review).

##### h) Published Data Sets (led by \* graduate student, + post-doc)

**8.** +Kaptue, A.T., N.P. Hanan, L. Prihodko, and J.A. Ramirez. 2015. Spatio-temporal Characteristics of Rainfall in Africa, 0.25 degrees, from 1998-2012. Data set. Available on-line [<http://daac.ornl.gov>] from Oak Ridge National Laboratory Distributed Active Archive Center, Oak Ridge, Tennessee, USA. <http://dx.doi.org/10.3334/ORNLDAAC/1263>

**7.** +Kaptue, A. T., Hanan, N. P., and Prihodko, L., 2015, Location and permanency of water bodies in the African Sahel region from 2003-2011. Data set. Available on-line [http://daac.ornl.gov] from Oak Ridge National Laboratory Distributed Active Archive Center, Oak Ridge, Tennessee, USA. <http://dx.doi.org/10.3334/ORNLDAAC/1269>.

**6. \***Tredennick AT, Hanan NP, Martinez K, Keita L, 2014, Data from: Effects of tree harvest on the stable-state dynamics of savanna and forest. Dryad Digital Repository. <http://dx.doi.org/10.5061/dryad.vg121>

**5.** Caroline E. R. Lehmann, C. E. R. Anderson, M. T., Sankaran, M., Higgins, S. I., Archibald, S., Hoffmann, W. A., Hanan, N. P., et al., 2014**, Savanna Vegetation-Fire-Climate Relationships Differ Among Continents, Science 343, 548-552 Supplementary Materials. Available on-line [http://www.sciencemag.org/content/343/6170/548/suppl/DC1],** DOI: 10.1126/science.1247355.

**4.** +Sankaran M., N. P. Hanan, and R. J. Scholes. 2007. Characteristics of African Savanna Biomes for Determining Woody Cover. Data set. Available on-line [http://www.daac.ornl.gov] from Oak Ridge National Laboratory Distributed Active Archive Center, Oak Ridge, Tennessee, U.S.A. doi:10.3334/ORNLDAAC/850

**3.** +Sankaran, M. Hanan, N. P. et al., 2005, [Determinants of woody cover in African savannas](http://www.nature.com/nature/journal/v438/n7069/full/nature04070.html), Data set. *Nature*-438, 846-849 Supplementary Information. Available on-line [http://www. nature. com/nature/journal/v438/n7069/suppinfo/nature04070.html], doi:10.1038/nature04070

**2.** Privette J. L., M. Mukelabai, N. Hanan, and Z. Hao. 2005. SAFARI 2000 Surface Albedo and Radiation Fluxes at Mongu and Skukuza, 2000-2002. Data set. Available on-line [http://daac.ornl.gov/] from Oak Ridge National Laboratory Distributed Active Archive Center, Oak Ridge, Tennessee, U.S.A. doi:10.3334/ORNLDAAC/786

**1.** Hanan N., R. Scholes, and M. Coughenour. 2004. SAFARI 2000 Meteorological Tower Measurements, Kruger National Park, 2000-2002. Data set. Available on-line [http://daac.ornl.gov/] from Oak Ridge National Laboratory Distributed Active Archive Center, Oak Ridge, Tennessee, U.S.A. doi:10.3334/ORNLDAAC/761

##### i) Invited & Keynote Presentations (since 2000)

Hanan, N. P., Dryland ecology, Invited Presentation, Plant and Environmental Sciences Department, New Mexico State University, Las Cruces, NM, 5/12/2016.

Hanan, N. P., Dryland ecosystems: plants, pastures, people and planet. Invited Presentation, Jornada LTER, Agricultural Research Service, Las Cruces, NM, 5/11/2016.

Hanan, N. P., Kaptué, A., Karembé, M., Dembélé, F., Prihodko, L., and Shapland, P., Grasslands and pastoral systems: resilient or fragile? Invited Presentation, Conference on People, Pastoralism & Biodiversity Conservation in Arid Grasslands, Gujarat, India, 11/26-11/28/2015.

Hanan, N. P., Kaptué, A., Karembé, M., Dembélé, F., and Prihodko, L., Grasslands, savannas and pastoral systems: drought, resilience and feedbacks, Invited Presentation, National Centre for Biological Science (NCBS), Bangalore, India, 11/24/2015.

Hanan, N. P., Kaptue, A., Karembe, M., Dembele, F. & Prihodko, L., Trends and Variability in Pastoral Resources in the West African Sahel (GC51F-02), Invited Presentation, American Geophysical Union Fall Meeting, San Francisco, 12/19/2014.

Hanan, N.P., Kaptue, A., Karembe, M., Dembele, F. and Prihodko, L., Grazing and ecohydrological interactions in African savannas: a Sahelian case-study, Global Land Project Open Science Meeting, Berlin, Invited Presentation, 3/19-3/21/2014.

Niall Hanan, Climate change, pastoral resources and livestock in the Sahel: developing a community-relevant pastoral prediction system, Adapting Livestock Systems to Climate Change Innovation Lab for Collaborative Research PI Meeting, Fort Collins, Invited Presentation, 10/4/2013.

Niall Hanan, Grazing the Sahel: charting a future between a tragedy of the commons and an exquisitely adaptive system, Science in the Pub, Invited Presentation, Jim’s Tap, Brookings, 1/19/2013.

Niall Hanan, An ecology of climate, management and sustainability in Africa, 43rd South Dakota State University Geography Convention, Brookings, Invited Presentation, 3/30/2012.

Niall Hanan, Remote sensing and modeling of fuel-wood resources in sub-Saharan Africa, EROS Data Center Science Seminar Series, Sioux Falls, Invited Presentation, 3/15/2012.

Niall Hanan, The Climate Relevance of Savanna Ecosystems, International Workshop on Ecosystem-Climate Relevance beyond Forest and Peatlands, Vilm, Germany, Invited Address, 10/26/2011.

Niall Hanan, Michael Hill & Scoping Study Participants, The NASA Terrestrial Ecology Tree-Grass Project (Scoping Study), NASA Terrestrial Ecology Workshop, Arlington, Virginia, Invited Address, 10/6/2011.

Niall Hanan, Prihodko, L., Dembélé, F., Karembé, M., Barry, I., Diarra, M., Telly, B., Tappan, G., Transhumance, natural resources and conflict in the Sahel: a pilot project, Livestock-Climate Change CRSP Annual Meeting, Golden, CO, 4/26-4/27/2011, Invited Presentation.

Niall Hanan, Africa, Environment and Climate Change, University of Bamako, Applied Ecology Masters Program*,* Bamako, Mali, Invited Seminar, 2/24/2011.

Niall Hanan, AfricaArray: Ecology & Carbon Cycle, AfricaArray Workshop, Howard University, Washington DC, Invited Presentation, 6/2/2010.

Niall Hanan and Michael Hill, Challenges and Opportunities in Remote Sensing of Global Savannas: A Scoping Study for a New TE Field Campaign, NASA Terrestrial Ecology Program Principal Investigators Workshop, Invited Address, 3/16/2010.

Niall Hanan, Savannas and the Crocodile’s Back: A Fulbright Experience in Mali, International Connections Fall 2009 Seminar Series, Colorado State University, Fort Collins, CO, Invited Address, 11/10/2009.

Niall Hanan, Africa and Global Environmental Change, International Conference *African Issues: Food Security, Environmental Sustainability, and Human Health*, Kansas State University, Manhattan, Kansas, Invited Keynote Address, 3/30/2009.

Hanan, N. P. and Prihodko, L. Developing Climates: how will Africa fare? Colorado State University *Changing Climates*, Invited Address, 2/4/2009.

Nickless A., Archibald S.A., van der Merwe M., Scholes R.J., Williams C.A., Hanan N., Estimation of net ecosystem exchange at the Skukuza flux site, Kruger National Park, South Africa, CarboAfrica Open Science Conference, Accra, Ghana, Invited Keynote Presentation, 25-27 November, 2008.

Niall Hanan, Le gaz carbonique et le climat de l’Afrique, EcoVie (Ecole de la Vie) Lycee Superieur, Bamako, Mali, Invited Lecture, 4/16/2008.

Hill, M. and Hanan, NP, Frameworks, schemes and hierarchies for reducing uncertainties in estimation of carbon dynamics in tree-grass systems, American Geophysical Union Fall Meeting, San Francisco, CA, 12/10-12/14/07, Keynote.

Christopher A. Williams, Niall P. Hanan, What drives spatio-temporal variability of Africa's carbon fluxes and their connection to climate oscillations? American Geophysical Union Fall Meeting 2007, San Francisco, CA, 12/10-12/14/07, Invited Presentation.

Niall Hanan, The African Carbon Exchange (ACE) Project and CarboAfrica, CarboAfrica Modeling Workshop, Jena, Germany, 4/12-4/13/07, Invited Presentation.

Niall Hanan, Williams, CA, Scholes, RJ, Denning, AS, Berry, JA, Neff, J, Privette, J, (In and) Out of Africa: estimating the carbon exchange of a continent, International Carbon Dioxide Conference, Broomfield, CO, 9/26-9/30/05, Invited Presentation.

Niall Hanan, *Afriflux*: promoting research on ecosystem function and land-atmosphere interactions in Africa, FluxNet 10th Anniversary Meeting, Florence, Italy, 12/13-12/15/04, Invited Presentation.

Niall Hanan, Seeing the savanna for its trees: new insights through ecosystem research, Global Connections between NREL and the World: Lessons Learned, Colorado State University*,* 9/8/04, Invited Presentation.

Niall Hanan, Jack Morgan, Thomas Peterson, Jean Reader, Indy Burke and Keith Paustian, Carbon, Water and Land-Use in Conservation Reserve Program Lands of the Shortgrass Prairie, National Institute for Global Environmental Change 2004 Annual Great Plains PI Workshop, Lincoln, NE, 7/8/04, Invited Presentation.

Niall Hanan, Ecosystem and Community Dynamics of the Kruger National Park, Kruger National Park Science Network Meeting, Skukuza, South Africa, 4/01/04, Invited Session Summary.

Niall Hanan, Africa in the Global Carbon Cycle, Afriflux Initiation Workshop (ILEAPS 1st International Science Conference), Hyytiälä, Finland, 10/4/03, Invited Presentation.

Niall Hanan, Eddy Covariance: the silver bullet or the damp squib of systems ecology and ecosystem physiology? Department of Forestry, F570 Ecophysiology, Colorado State University, 11/11/03, Invited Presentation.

Niall Hanan, Jack Morgan, Thomas Peterson, Jean Reader, Indy Burke and Keith Paustian, Carbon, Water and Land-Use in Conservation Reserve Program Lands of the Shortgrass Prairie, National Institute for Global Environmental Change 2003 Annual Great Plains PI Workshop, 8/18/03, Invited Presentation.

Invited Presentation, Niall Hanan, An introduction to biocomplexity, Biology Department Introduction to Ecology (BY320), Colorado State University, 4/23/03.

Niall Hanan, Bob Scholes, Mary Scholes, Mahesh Sankaran & Ian McHugh, The KNP Flux Tower: resource interactions in savanna systems, First Annual Scientific Network Meeting, Kruger National Park, South Africa, 3/25-3/27/03, Invited Presentation.

Mahesh Sankaran, Niall Hanan & Robert J. Scholes, Biocomplexity in African Savannas – A continental scale analysis of pattern in savanna structure and function, First Annual Scientific Network Meeting, Kruger National Park, South Africa, 3/25-3/27/03, Invited Presentation.

Hanan, NP, Inferring canopy biophysical properties from measurements of CO2 exchange above vegetated surfaces, Oak Ridge National Laboratory, Environmental Sciences Seminar, 9/18/02, Invited Presentation.

Hanan, NP, *Biocomplex Ecology of African Savannas,* Department of Rangeland Ecosystem Science Seminar Series, Colorado State University, 2/26/02, Invited Presentation.

Hanan, NP, Scholes, R. J., Privette, J. L., Carbon, Water and Energy Fluxes in an African Savanna Ecosystem, AGU Fall Meeting, San Francisco, 12/10-12/14/01, Invited Presentation.

Hanan, NP, Understanding ecosystem metabolism: measurements and models, Horticulture Seminar, Colorado State University, 10/2/01, Invited Presentation.

Hanan, NP, Land surface-atmosphere interactions and EOS validation in African savanna ecosystems, LTER/GTOS Carbon Flux Scaling Workshop, H.J. Andrews LTER site (OSU, Corvallis) Oregon, 5/21-5/22/01, Invited Presentation.

**j) Other Conference Presentations and Published Abstracts (since 2000)**

**\*2016**

Christoffer Axelsson and Niall P Hanan, Estimating vegetation structure in African savannas using high spatial resolution imagery (B31E-0514), AGU Fall Conference, San Francisco, CA, 12/12-12/16/2016.

Brianna Lind and Niall P Hanan, Monitoring termite-mediated ecosystem processes using moderate and high resolution satellite imagery (B53D-0552), AGU Fall Conference, San Francisco, CA, 12/12-12/16/2016.

Milkah Njoki Kahiu and Niall P Hanan, Mapping forage resources using earth observation data: a cast study to assess the relationship between herbaceous and woody cover components as determinants of large herbivore distributions in sub-Saharan Africa (GC13D-1225), AGU Fall Conference, San Francisco, CA, 12/12-12/16/2016.

Kaboro Samasse and Niall P Hanan, Cropland estimation in West Africa: case of Mali (IN11B-1620), AGU Fall Conference, San Francisco, CA, 12/12-12/16/2016

**\*2015**

## [Sally E. Koerner,](mailto:sally.koerner@duke.edu) Melinda D. Smith, Deron E. Burkepile & The Grazing Exclosure Consortium (including NP Hanan), Dominance controls diversity: Plant community responses to grazing from a worldwide meta-level analysis (PS 39-187), Ecological Society of America Annual Meeting, Baltimore, MD, 8/10-8/14/2015.

Brianna Lind, Niall Hanan, Paul Eggleton, & Vivienne Uys, In a Test of Biodiversity Theory with Termites, Clear Roles for Productivity and Heterogeneity (Termite diversity in southern Africa: A test of biodiversity theory, PS 39-178), Ecological Society of America Annual Meeting, Baltimore, MD, 8/10-8/14/2015.

Wadsworth, G. & Hanan, N. P., Climate and Conflict in Africa and Southeast Asia, South Dakota Undergraduate Research Symposium, 29-30/7/2015.

Kahiu, M. N & Hanan, N. P., Partitioning savanna tree and grass leaf area index (LAI) from MODIS aggregates in Sub-Saharan Africa, NASA CC&E PI Meeting, College Park, MD, 4/2015.

**\*2014**

Kahiu, M. N. and Hanan, N. P., Fuel for the fire: improved understanding of fire behavior in Africa based on partitioned herbaceous & woody LAI from MODIS satellite data (GC32B-07), American Geophysical Union (AGU) Fall Meeting 2014, San Francisco, CA, 12/15-12/19/2014.

Axelsson, C. and Hanan, N. P., Predicting vegetation patterning across climate, soil, and topographic gradients (EP31C-3573), American Geophysical Union (AGU) Fall Meeting 2014, San Francisco, CA, 12/15-12/19/2014.

Fan, Z., Neff, J., Hanan, N. P., The pulsed response of soil respiration to precipitation in an African savanna ecosystem,: a coupled measurement and modeling approach (B23K-0125), American Geophysical Union (AGU) Fall Meeting 2014, San Francisco, CA, 12/15-12/19/2014.

Prihodko, L.,N. P. Hanan, A. T. Kaptue**,** 2014, Using GPS collars and remotely sensed data to evaluate cattle foraging in heterogeneous landscapes: examples from West Africa, South Dakota Statewide Geospatial Conference 2014, Mitchell, SD, 10/14-10/15/2014.

Tredennick, A.T., Hanan, N.P., Bucini, G., and Parton, W. “Africa’s Fuelwood Footprint and the Biome-Level Impacts of Tree Harvest”, Station d’Ecologie Experimentale du CNRS, Moulis, France, September, 2014

Dohn, J., Tredennick, A. T., Sankaran, M., Augustine, D. J., and Hanan, N. P. “Environmental stress and neighborhood density drive tree-grass interactions in savannas: Evidence from East and West Africa.” Poster presentation, Future of Africa Symposium: Sustainable African Ecosystems & Societies under Global Change, Colorado State University, Fort Collins, CO. April, 2014.

Dohn, J., Sankaran, M., Augustine, D. J., and Hanan, N. P. “Tree-grass interactions in savannas: Linking meta-scale patterns to underlying mechanisms.” Invited seminar, Geospatial Science & Engineering Seminar Series, South Dakota State University, Brookings, SD. April, 2014.

Dohn, J., Moustakas, A., and Hanan, N. P. “Environmental stress and neighborhood density drive tree-grass interactions in savannas: Evidence from East, South and West Africa.” Poster presentation, Savanna Science Network Meeting, Kruger National Park, South Africa. March, 2014.

Kahiu, M. N. and Hanan, N. P., Beyond “big-leaf” LAI: partitioning MODIS LAI into tree and grass components in Sub-Saharan Africa, EARSeL-NASA Land Cover Land Use Change Workshop, 2014, Berlin, 3/17-3/18/2014.

**\*2013**

American Geophysical Union (AGU) Fall Meeting 2013, San Francisco, CA, 12/9-12/13/2013, Warms, M., J. A. Ramirez, A. Kaptue, N. P. Hanan, M. Sigdel-Phuyal and N. Giree, Parameterization and calibration of a hydrological model for long-term simulations of a small un-gauged basin in the Malian Sahel.

American Geophysical Union (AGU) Fall Meeting 2013, San Francisco, CA, 12/9-12/13/2013, A. Kaptue, L. Prihodko, N. P. Hanan, Ecohydrological relationships in dryland grazing systems of the Sahel.

Ecological Society of America Annual Meeting, Minneapolis, August 5-9, 2013, Presentation, Hanan, N.P., A. T. Tredennick, L. Prihodko, G. Bucini, J. Dohn, Detecting bifurcations and alternate stable states in vegetation with remote sensing: when hypotheses and errors align.

Ecological Society of America Annual Meeting, Minneapolis, August 5-9, 2013, Presentation, Tredennick, A. T., and Hanan, N.P., Tree harvest, fire, and drought can drive state transitions in savannas.

Ecological Society of America Annual Meeting, Minneapolis, August 5-9, 2013, Presentation, Dohn, J. and Hanan, N.P., Shrub-grass interactions in the Colorado shortgrass steppe.

Ecological Society of America Annual Meeting, Minneapolis, August 5-9, 2013, Poster, Kaptue, A., Hanan, N. P., Prihodko, L., Giree, N., and Sigdel-Phuyal, M., Socio-ecohydrological interactions in Sahelian watersheds

**\*2012**

American Geophysical Union (AGU) Fall Meeting 2012, San Francisco, CA, 12/3-12/7/2011, Poster (B51B-0510), B. Orescanin; S. Denning; I.T. Baker; N.P. Hanan, Meteorological determinants of growing season onset in grassland.

Ecological Society of America Annual Meeting, Portland, August 2012, Presentation, Dohn, J,. Dembélé, F., Karembé, M. and Hanan, N. P., Tree effects on grass growth in savannas: Competition or facilitation?

Ecological Society of America Annual Meeting, Portland, August 2012, Presentation, Tredennick, A. T.,. Bentley, L. P., and Hanan, N. P., Whole-tree and branch-level scaling in savannas: testing Metabolic Scaling Theory in a non-ideal system

Ecological Society of America Annual Meeting, Portland, August 2012, Presentation, Prihodko, L., Hanan, N. P., Kaptue, A., McKeown, R., Karembé, M., Dembélé, F., Fiarra, F., Boubacar, D., Traore, F., Ecology, hydrology and alternate stable states in Sahelian grazing systems.

KNP Science Networking Meeting, Kruger National Park, South Africa, March 2012, Presentation, Tredennick, A. T., Hanan, N. P., Bucini, G. and Parton, W., Patterns and sustainability of fuelwood production and demand in sub-Saharan Africa.

KNP Science Networking Meeting, Kruger National Park, South Africa, March 2012, Presentation, Dohn, J., Hanan, N. P., Dembélé, F. and Karembé, M. Tree effects on grass growth in savannas: competition or facilitation?

KNP Science Networking Meeting, Kruger National Park, South Africa, March 2012, Poster, Tredennick, A. T., Hanan, N. P., and Bentley, L. P., Scaling the savannas: does MST apply in savannas?

**\*2011**

American Geophysical Union (AGU) Fall Meeting 2011, San Francisco, CA, 12/5-12/9/2011, Poster, Kaptué Tchuenté, A. T.,Hanan, N. P., Prihoko, L., Ramirez, J., Impact of an improved land surface heterogeneity on estimates of energy, water and carbon fluxes in the Sahel region.

Geographic Information Science Center of Excellence Seminar, South Dakota State University, Brookings, SD, 11/17/2011, Hanan, N. P., On climate and anthropogenic drivers of biome distributions in Africa.

NASA Carbon Cycle and Ecosystems Workshop, Arlington, Virginia, Poster, 10/4/2011, Niall Hanan and Michael Hill, *Tree-Grass*: Proposal for a NASA Terrestrial; Ecology field activity in savannas and mixed tree-grass ecosystems.

International Symposium on Remote Sensing of Environment (ISRSE), 2011, Sydney, Australia, 4/10-4/15/2011, Presentation, Lara Prihodko, Hanan, N. P. McKeown, R., Bucini, G., Tredennick, A., Fueling the source: mapping and modeling carbon and woody resources for continental Africa.

International Symposium on Remote Sensing of Environment (ISRSE), 2011, Sydney, Australia, 4/10-4/15/2011, Presentation, Michael Hill, Hanan, N. P., Hoffmann, W., Scholes, R. J., Prince, S. D., Lucas, R., Baker, I., Arneth, A., Higgins, S., Remote sensing and modeling of savannas: the state of the dis-union.

**\*2010**

European Space Agency - Integrated Land Ecosystem-Atmosphere Process Study – European Geophysical Union Joint Conference on Earth Observation for Land-Atmosphere Interaction Science, 10/3-10/5/2010, Poster, Hanan, N. P. and Hill, M. J., Challenges and opportunities for improved remote sensing and modeling of global savannas.

**\*2009**

Ecological Society of America (ESA) Annual Meeting 2009, Albuquerque, New Mexico, 8/3/09, Presentation, Hanan, N. P., Prihodko, L., Williams, C. A., Challenging desertification paradigms: towards an objective quantification of land degradation and the Charney effect in African ecosystems.

Ecological Society of America (ESA) Annual Meeting 2009, Albuquerque, New Mexico, 8/4/09, Presentation, Prihodko, L., Hanan, N. P., [Transport and deposition of pyrogenic nitrogen in Africa: Role in regional biogeochemistry and fertility](javascript:var%20myWindow=window.open('http://eco.confex.com/eco/2009/techprogram/P19258.HTM','whatever','width=775,menubar=no,location=yes,directories=no,status=yes,scrollbars=yes,height=350,resizable=yes');%20if%20(myWindow.focus)%20%7bmyWindow.focus();%20%7d).

International Geoscience and Remote Sensing Society (IGARSS) Annual Meeting 2009, Cape Town, South Africa, 7/14-7/19/09, Poster, Bucini, G., Hanan, N. P., Saatchi, S. Lefsky, M., Measuring and mapping woody vegetation cover in the Kruger National Park, South Africa.

International Geoscience and Remote Sensing Society (IGARSS) Annual Meeting 2009, Cape Town, South Africa, 7/14-7/19/09, Presentation, Saatchi, S. Hanan, N. P., et al. Woody resource mapping in African woodlands

**\*2008**

American Geophysical Union Fall Meeting 2008, San Francisco, CA, 12/15-12/19/08, Presentation, Hanan, N. P. and Prihodko, L., Hydrology, Ecology and Pastoralism in the Sahel:   
Ephemeral and Perennial Water Resources in a Dynamic Coupled System, EOS Transactions, AGU 89 (53), Fall Meeting Supplement, Abstract H24A-08.

American Geophysical Union Fall Meeting 2008, San Francisco, CA, 12/15-12/19/08, Poster, Prihodko, L, and Hanan, N. P., Nitrogen Subsidies and Fire Prone Ecosystems: the Case of African Savannas, EOS Transactions, AGU 89 (53), Fall Meeting Supplement, Abstract B31E-0348.

American Geophysical Union Fall Meeting 2008, San Francisco, CA, 12/15-12/19/08, Poster, Lokupitiya, R. S., Zuanski, D., Denning, A. S., Parazoo, N., Kawa, R., Baker, I., Hanan, N. P., Zupanski, M., Estimation of carbon fluxes by MLEF-PCTM model for years 2003 and 2004, EOS Transactions, AGU 89 (53), Fall Meeting Supplement, Abstract A41D-0146.

CarboAfrica Open Science Meeting 2008, Accra, Ghana, 11/25-11/27/08, Presentation, Hanan, N. P., Prihodko, L., Parton, W., Laporte, N. and Saatchi, S., African Carbon Exchange II: a systems approach for diagnosis and prediction of carbon, vegetation and disturbance dynamics

CarboAfrica Open Science Meeting 2008, Accra, Ghana, 11/25-11/27/08, Presentation, Williams, C. A.and Hanan, N. P., Patterns of variability and climate controls on African Photosynthesis

Front Range Student Ecology Symposium, Fort Collins, CO, 2/15/07, Bucini, G, Hanan, NP, Woody canopy cover estimation in the Kruger National Park, South Africa

**\*2007**

American Geophysical Union Fall Meeting 2007, San Francisco, CA, 12/10-12/14/07, Poster, Michael J. Hill, Niall P. Hanan, Frameworks, Schemes and Hierarchies for Reducing Uncertainties in Estimation of Carbon Dynamics in Tree-Grass Systems

American Geophysical Union Fall Meeting 2007, San Francisco, CA, 12/10-12/14/07, Invited Presentation, Christopher A. Williams, Niall P. Hanan, What drives spatio-temporal variability of Africa's carbon fluxes and their connection to climate oscillations?

NOAA Principal Investigators Meeting, Silver Spring, MD, 9/15/07, Williams, CA, Hanan, NP, Denning, AS, Scholes, RJ, Berry, JA, Neff, J, Collatz, J, Spatio-temporal variability of African carbon fluxes and their connection to climate

Kruger National Park Science Network Meeting, Skukuza, South Africa, 4/16-4/19/07, Presentation, Hanan, NP, Prihodko, L, African savanna fires and nitrogen fertilization: functional and dysfunctional relationships among the eutrophic and dystrophic savannas

Kruger National Park Science Network Meeting, Skukuza, South Africa, 4/16-4/19/07, Presentation, Sea, W, Hanan, NP, Govender, N., The impacts of tree size structure on savanna function: modeling and observations

Marcillac, NM, Schwandner, FM, Follett, RF, Collett, JL, Hanan, NP, 2007, Characterization and quantification of emissions from dairies. *Journal of Animal Science,* 85 (S1), 162-162.

**\*2006**

American Geophysical Union Fall Meeting 2006, San Francisco, CA, 12/11-12/15/06, Poster, Christopher A. Williams, Niall P. Hanan, Joseph Berry, Jim Collatz, A. Scott Denning, Jason C. Neff, Robert J. Scholes, Variability and Vulnerability of Carbon Cycling in Africa: Diagnosing Controls on Regional Exchanges from Forward and Inverse Modeling

CarboEurope Open Science Conference on the Greenhouse Gas Cycle in Northern Europe, Assithi, Crete, 11/14-11/18/06, Presentation, Christopher A. Williams, N.P. Hanan, J.A.Berry, J. Collatz, A.S. Denning, J. Neff, R.J. Scholes, Variability and vulnerability of carbon cycling in Africa

Kruger National Park Remote Sensing Workshop, 11/13/06, Presentation, Gabriela Bucini and Niall Hanan, Biocomplexity in African Savannas: Pattern and Process of Woody Community Structure in the Kruger National Park

Kruger National Park Science Network Meeting, Skukuza, South Africa, 3/14-3/17/06, Presentation, Mahesh Sankaran, R. J. Scholes, G. Danglmayr & N. P. Hanan, Nitrogen and Phosphorous relationships with productivity, fire and herbivory: insights from a simple model

Kruger National Park Science Network Meeting, Skukuza, South Africa, 3/14-3/17/06, Presentation, Jayashree Ratnam, Mahesh Sankaran, Niall Hanan, Rina Grant, Nick Zambatis, Micro- and macro- nutrient profiles of soils and plants across KNP- implications for herbivore dynamics

Kruger National Park Science Network Meeting, Skukuza, South Africa, 3/14-3/17/06, Presentation, Gabriela Bucini, and N. P. Hanan, Tree cover dynamics at local to continental scales: Kruger National Park and continental Africa

Kruger National Park Science Network Meeting, Skukuza, South Africa, 3/14-3/17/06, Presentation, William Sea, W. Bond, and N. P. Hanan, Using long-term datasets for ecological studies: the Kruger National Park Experimental Burn Plots

International Land-Ecosystem-Atmosphere Process Study (ILEAPS) 1st Science Conference, Boulder, CO, 1/20-1/25/06, Poster, I.T. Baker, A.S. Denning, N. Hanan, J.A. Berry, G.J. Collatz, K.M. Schaefer, A.W. Philpott, L. Prihodko, N.S. Suits, The next generation of the simple biosphere model (SiB3): model formulation and preliminary results.

**\*2005**

American Geophysical Union Fall Meeting, San Francisco, CA, 12/5-12/9/05, Poster and Published Abstract, Sea, WB and Hanan, NP, Self-thinning concepts applied to savannas

American Geophysical Union Fall Meeting, San Francisco, CA, 12/5-12/9/05, Presentation and Published Abstract, Williams, CA, Hanan, NP and Scholes, RJ, Seasonal Controls on Water and Carbon Fluxes Responding to Pulse Precipitation Events in Dryland Systems: Examples from Southern African Savannas

American Geophysical Union Fall Meeting, San Francisco, CA, 12/5-12/9/05, Presentation and Published Abstract, Bucini, G and Hanan, NP, A Continental-Scale Analysis of Tree Cover in African Savannas

International Carbon Dioxide Conference, Broomfield, CO, 9/26-9/30/05, Poster, Hanan, NP, Peterson, T, Williams, CA, Carbon, water and land use in the Western Great Plains: management impacts on local and regional biosphere-atmosphere interactions

Kruger National Park Science Network Meeting, Skukuza, South Africa, 4/4-4/7/05, Presentation, Sea W, Bucini G, Hanan NP, Bond WJ, February E & Higgins S, Self thinning in the savannas of the KNP: Does competition between trees limit maximum woody biomass?

Kruger National Park Science Network Meeting, Skukuza, South Africa, 4/4-4/7/05, Presentation, Ratnam J, Sankaran M, Hanan NP, McHugh I, Grant CC & Zambatis N, N:P stoichiometry of savanna trees and grasses in the KNP: Variation and significance for ecosystem function

Kruger National Park Science Network Meeting, Skukuza, South Africa, 4/4-4/7/05, Presentation, Kutsch WL, Hanan NP, Scholes R, McHugh I, Kubheka W & Eckhardt HC, Savanna carbon and water fluxes

Kruger National Park Science Network Meeting, Skukuza, South Africa, 4/4-4/7/05, Presentation, Williams CA, Hanan NP, Berry J, Scholes R, Denning SA, Neff J & Privette J, Africa and the global carbon cycle: field networks and model studies of African Carbon Exchange

Sub-Saharan Africa Workshop, National Science Foundation, Arlington, VA, 1/24-1/27/05, Poster, Mahesh Sankaran, Niall Hanan, Robert J. Scholes & Jayashree Ratnam, Determinants of woody cover in African Savannas: is tree-grass coexistence disturbance dependant?

Sub-Saharan Africa Workshop, National Science Foundation, Arlington, VA, 1/24-1/27/05, Poster, Christopher A. Williams, Niall Hanan, Joseph Berry, Robert Scholes, A. Scott Denning, Jason Neff, and Jeffrey Privette, Africa and the global carbon cycle: field networks and model studies of African carbon exchange

**\*2004**

CSU Environmental Research Colloquium, 11/9-11/10/04, Poster, Thomas Peterson, Niall Hanan, Jack Morgan et al., Carbon, Water and Land-Use in Conservation Reserve Program Lands of the Shortgrass Prairie

Ameriflux 2004 Annual Meeting, Boulder, CO, 10/5-10/7/04, Poster, Niall Hanan, Thomas Peterson, Jack Morgan, Jean Reeder, Indy Burke, and Keith Paustian, Land use impacts on carbon and water flux in eastern Colorado

Kruger National Park Science Network Meeting, Skukuza, South Africa, 3/29 – 4/02/04, Presentation, Jayashree Ratnam, Mahesh Sankaran, Rina Grant, Niall Hanan, Nick Zambatis, Ian McHugh, Jenna Rettenmayer and Robert Scholes, Nutrient Stoichiometry of savanna trees and grasses along soil and rainfall gradients in the KNP: a preliminary analysis

Kruger National Park Science Network Meeting, Skukuza, South Africa, 3/29 – 4/02/04, Presentation, Niall Hanan, Bob Scholes, Werner Kutsch and Ian McHugh, Water and productivity in semi-arid savannas: examining the water-limited paradigm using whole-ecosystem flux measurements

Kruger National Park Science Network Meeting, Skukuza, South Africa, 3/29 – 4/02/04, Poster, William Sea, Gabriela Bucini, Niall Hanan, Ecological Self-thinning Relationships at Kruger National Park

Kruger National Park Science Network Meeting, Skukuza, South Africa, 3/29 – 4/02/04, Presentation, Mahesh Sankaran, Niall Hanan, Bob Scholes, Jayashree Ratnam and BAS-Savanna complexity workshop participants, Vegetation structure in African savannas: a continental scale analysis of patterns.

Kruger National Park Science Network Meeting, Skukuza, South Africa, 3/29 – 4/02/04, Poster, Jayashree Ratnam, Macroecology of seed size variation in a savanna tree species (*Faidherbia albida*)

**\*2003**

American Geophysical Union Fall Meeting, San Francisco, CA, 12/8 – 12/12/03, Eos Trans. AGU, 84(46), Fall Meet. Suppl., Abstract 2003, McCord, RA, Hargrove, WW, Jager, HI, Brandt, CC, Hanan, NP, Characterizing and Filling Data Gaps in ARM Measurements for Carbon Models

Ameriflux 2003 Annual Meeting, Boulder, CO, 10/14 – 10/16/03, Poster, Thomas Peterson, Niall Hanan, Jack Morgan, Changes in Carbon and Water Balance with Modified Land-Use in the Conservation Reserve Program Lands of the Shortgrass Steppe (Preliminary Results)

NSF-Biocomplexity PI Meeting, Arlington, VA, 9/15 – 9/17/03, Poster, Niall P. Hanan, Mahesh Sankaran & Jayashree Ratnam, Vegetation Structure in African Savannas: continental scale patterns suggest equilibrium, and disequilibrium dynamics

Ecological Society of America, Annual Meeting, Savannah, GA, 8/4 – 8/9/03, Poster, Niall P. Hanan, Mahesh Sankaran & Jayashree Ratnam, Vegetation Structure in African Savannas: a continental scale analysis of patterns

North American Carbon Program, Joint PI Meeting, Washington, DC, 5/12 – 5/14/03, Poster, Thomas Peterson, Niall Hanan, Jack Morgan, Jean Reeder, Indy Burke, and Keith Paustian, Carbon, water and land-use in Conservation Reserve Program Lands of the Shortgrass Steppe

Front Range Student Ecology Symposium, Fort Collins, CO, 4/2/03, Presentation, Gabriela Bucini, William Sea, Niall P. Hanan, *Plant diameter distributions in Kruger National Park, South Africa*

Front Range Student Ecology Symposium, Fort Collins, CO, 4/2/03, Presentation, William Sea, Gabriela Bucini, Niall P. Hanan, *An Ecological Thinning Law Applied to Trees in Kruger National Park, South Africa*

ARM-CART Annual Meeting, Broomfield, CO, 3/31-4/3/03, Poster, Hargrove, W. H., Brand, C. C., Jager, H., Hanan, N. P., McCord, R. A. , Characterizing and filling temporal gaps in hour-aggregated ARM measurements for use in carbon models

African Savanna Complexity Workshop, 1/23-1/25/03, Poster, Gerhard Dangelmayr, William Sea, Niall Hanan, Event statistics of time series simulated using a spatial savanna model and a simple threshold model

African Savanna Complexity Workshop, 1/23-1/25/03, Poster, William Sea, Gerhard Dangelmayr, Niall Hanan, Effects of spatial heterogeneity and scale on a savanna model

African Savanna Complexity Workshop: Different Perceptions, Common Ground, Luiperdskloof Game Lodge, South Africa, 1/23-1/25/03, Poster, Gabriela Bucini, Niall Hanan, Mahesh Sankaran, A continental-scale analysis of tree-cover in African savannas

Shortgrass Steppe LTER Symposium, Fort Collins, 1/10/03, Poster, Thomas Peterson, Niall Hanan, Jack Morgan, Jean Reeder, Indy Burke, and Keith Paustian, Carbon, water and land-use in Conservation Reserve Program Lands of the Shortgrass Steppe

American Meteorological Society 83rd Annual Meeting, Long Beach, California, February 2003. Liu, J., A.S. Denning, I. Baker, D. Randall, N. Hanan, J. Kleist, P.L. Silva Dias, M.A. Silva Dias, 2003, The impact of ecosystem drought stress on carbon exchange and tropical precipitation.

**\*2002**

NREL 35th Anniversary Symposium, 10/30/02, Poster, Niall Hanan, Robert Scholes, Jeff Privette, Seasonal and inter-annual carbon & water dynamics of savanna systems in southern Africa

NREL 35th Anniversary Symposium, 10/30/02, Poster, Mahesh Sankaran, Niall Hanan, Robert Scholes, Gerhard Dangelmayr, Mike Coughenour, Luanne Otter, Phil Omi, Biocomplexity in African savannas

American Society of Agronomy, Annual Meeting, Indianapolis, 10/10-10/14/02, Presentation, K. N. Nang, E. A. Walter-Shea, M. A. Mesarch, N. P. Hanan, Spectral Reflectance Relation to Canopy PAR Absorption

SAFARI-2000 Synthesis Workshop, , 10/7-10/11/02, Poster, Hanan, N. P., Scholes, R. J., Privette, J., Seasonal and inter-annual carbon & water dynamics of savanna systems in southern Africa

The Kruger Experience: Ecology and Management of Savanna Heterogeneity, 4/16-4/18/02, Poster, Scholes, R. J., Hanan, N. P., Eckhardt, H., Marufu, L., The Skukuza flux tower

The Kruger Experience: Ecology and Management of Savanna Heterogeneity, 4/16-4/18/02, Poster, M. Sankaran, N. P. Hanan, R. J. Scholes, G. Dangelmayr, M. B. Coughenour, L. Otter, P. Omi, Biocomplexity in African savannas

NAS Workshop on Integration of Education in Biocomplexity Research, Washington DC, 4/14-4/16/02, Poster, M. Sankaran, N. P. Hanan, R. J. Scholes, G. Dangelmayr, M. B. Coughenour, L. Otter, P. Omi, Biocomplexity in African savannas

Community Climate System Model (CCSM) Workshop, 6/25-6/28/02, Breckenridge, CO., Poster, Baker, I.T., N. Hanan, P-L. Vidale, N. Suits, A.S. Denning, L. Prihodko, K. Schaefer, O. Leonard, 2002, Simple Biosphere Model (SiB), Version 3.0: Overview and Preliminary Results.

**\*2001**

Ameriflux Annual Meeting, Argonne National Laboratory, 10/31-11/1/01, Poster, Hanan, N. P., Berry, J. A., Verma, S. B., Walter-Shea, E. A., Model analyses of biosphere-atmosphere exchange of CO2, water and energy from Great Plains tallgrass prairie and wheat sites (Oklahoma)

ESA Annual Meeting, Madison, Wisconsin, 8/6-8/10/01, Presentation & published abstract, Hanan, N. P., Burba, G., Berry, J. A. Verma, S. B., Walter-Shea, EA., Inversion of eddy covariance CO2 flux measurements for the estimation of canopy structure

ESA Annual Meeting, Madison, Wisconsin, 8/6-8/10/01, Poster & published abstract, Prihodko, L., Denning, A. S., Hanan, N. P., Davis, K., Bakwin, P., Parameter sensitivity of a land surface model using Monte Carlo analysis and eddy covariance measurements at the WLEF-TV tower site, Wisconsin

Challenges of a Changing Earth, IGBP Open Science Conference, Amsterdam, 7/10-7/13/01, Poster & published abstract, Scholes, R. J., Hanan, N. P., Scholes, M., Mavundla, M., Privette, J., Marufu, L., Eckhardt, H., Net ecosystem exchange, vegetation structure and biogeochemistry of savannas at Skukuza

AGU Spring Meeting, 2001, Boston, MA, Baker, I.T., A.S. Denning, K. Davis, P. Bakwin, N. Hanan and L. Prihodko, 2001, Modeled and observed fluxes at the WLEF-TV Tower in North-Central Wisconsin.

**\*2000**

Ameriflux Meeting, Altanta, Georgia, 10/24-10/25/00, Presentation, Hanan, N. P., Verma, S. B., Berry, J. A., Modeling net ecosystem exchange of prairie and wheat at Oklahoma Ameriflux sites

SAFARI-2000 Science and Aviation Open Day, Pietersburg, South Africa, 8/12/00, Poster, Scholes, R. J., Mavundla, M., Hanan, N. P., Privette, J., Pinheiro, A., Measurements of savanna carbon and energy balance in Kruger National Park

ESA-LTER meeting, Snowbird, Utah, 8/2-8/4/00, Poster & published abstract, Hanan, N. P.; Biggs, H.; Potgeiter, A.; Mavundla, M.; Scholes, R. J. , Function and fire in savanna ecosystems: new and long-term research in Kruger National Park, South Africa (Page 386)

First LBA Science Conference, Belem, Brazil, 6/25 - 6/30/00, Poster & published abstract, Denning, A. S.; Prihodko, L.; Suits, N.; Uliasz, M.; Nicholls, M.; Hanan, N. P.; Inazawa, E.; Vidale, P.-L., Estimating the exchange of CO2 and its stable isotopes between Amazonian ecosystems and the atmosphere at multiple spatial scales

First LBA Science Conference, Belem, Brazil, 6/25 - 6/30/00, Poster & published abstract, E. E. Inazawa, A. S. Denning, M. Nicholls and N. P. Hanan, Coupled simulations of physical climate and CO2 exchange in Rondonia

SAFARI-2000 Dry Season Campaign workshop, Pietersburg, South Africa, 4/3-4/6/00, Presentation, Hanan, N. P., SAFARI-2000 related activities at KNP flux tower

Fall Meeting of the American Geophysical Union, San Francisco, CA, 12/4-12/19/00, Denning, A.S., M. Uliasz, P. Silva-Dias, M. Silva-Dias, M. Nicholls, E. Inazawa, N. Suits and N. Hanan, Top-down constraints on regional CO2 flux in Amazonia: Inverse modeling at multiple spatial scales.

**k) Research Support**

**\*Active Projects**

**Bistability and feedbacks in tropical woodlands and savannas: carbon cycle implications of changing climate and management,** PI NP Hanan, Co-Investogator L Prihodko, 2/1/17-1/31/20 (~$730,000)

**Supporting pastoralist communities in West Africa: Remote sensing of rangeland forage production, vegetation structure & trend,** PI NP Hanan, 7/18/16-7/17/19, NASA-SERVIR Applied Sciences Team ($583,776)

**Borlaug Higher Education for Agricultural Research and Development (BHEARD) - Kaboro Samasse (Mali),** PI NP Hanan, 8/16/15-8/15/19, Michigan State University BHEARD Fellowship Program ($193,725)

**Schlumberger Faculty for the Future Fellowship (Njoki Kahiu),** PI NP Hanan, 8/1/15-5/31/17. Schlumberger Foundation ($88,000)

**Partitioning savanna tree and grass LAI and fPAR from MODIS and VIIRS aggregates: methods, validation and applications,** PI NP Hanan, 7/1/13-6/30/17, NASA-Terrestrial Ecology ($478,298)

**\*Past Projects**

**Hydrology, Ecology and Pastoralism in the Sahel: ephemeral and perennial water resources in a dynamic coupled system,** PI NP Hanan, Co-Investigators L Prihodko, S BurnSilver, R. Boone, J Ramirez, CollaboratorsM Karembé, F Dembélé 10/1/10-9/31/16, NSF-CNH, ($1,350,000)

**Schlumberger Faculty for the Future Fellowship (Esther Mosase),** PI NP Hanan, 8/1/14-7/31/15. Schlumberger Foundation ($50,000; Year 1 of 1)

**Climate change, pastoral resources and livestock in the Sahel (CCPRL): developing a community-relevant pastoral prediction model,** PI NP Hanan, Co-Investigators L Prihodko, F. Dembélé, M. Karembé, G. Tappan, 11/1/11-9/30/15, USAID Adapting Livestock Systems to Climate Change Innovation Laboratory (Formerly the Livestock-Climate Change CRSP), ($696,886)

**The Sahelian Savanna Disturbance Experiment,** PI NP Hanan, Co-Investigators M Karembé (U. Bamako), F Dembélé (Institut Polytechnique Rural), 7/1/09-9/30/15, NSF-DEB, ($618,000)

**Animal nutrition profiles in transhumant systems of West Africa and South Asia,** PI NP Hanan, Co-I Netra Chhetri, Elaine Grings, 4/1/14-4/15/15. USAID Adapting Livestock Systems to Climate Change Innovation Laboratory ($62,204)

**Nutritional outcomes for women and children in pastoralist households in Senegal,** PI NP Hanan, Co-I Sarah McKune, 4/1/14-3/31/15. USAID Adapting Livestock Systems to Climate Change Innovation Laboratory ($61,311)

**ETBC: Teleconnections in the earth system: Nutrient subsidies and fire prone ecosystems**, PIL. Prihodko, Co-InvestigatorsNP Hanan, Y Desayterik, W Parton, A Ba, 1/1/10-12/31/12, NSF-ETBC, ($80,000)

**Transhumance, Natural Resources and Conflict in the Sahel: A Pilot Project,** PI NP Hanan, Co-Investigators L. Prihodko, I, Barry, M. Telly, B. Témé, F Dembélé, M. Karembé, 1/1/11-8/31/12, USAID-Livestock Climate Change CRSP, ($79,968)

**Enhancing International Collaborative Research: Climate change and natural resource management around Agoufou natural pond in Mali,** PI M Karembé, Co-Investigators F Dembélé, NP Hanan, 1/1/11-12/31/11, USAID-NSF Partnership for Enhanced Engagement in Research (PEER) Pilot Program, ($25,265)

**Challenges and Opportunities in Remote Sensing of Global Savannas: A Scoping Study for a New TE Field Campaign,** PI NP Hanan, Co-Investigator MJ Hill, 5/1/09-4/30/11, NASA Terrestrial Ecology Program ($165,173).

**Savannas and Environmental Change in Africa,** PI F. Dembélé, Co-Investigators M. Karembé, NP Hanan, 7/1/08-6/31/09, IGBP-START ($14,000)

**African Carbon Exchange II: a systems approach for diagnosis and prediction of carbon, vegetation and disturbance dynamics in the natural and anthropogenic grasslands, savannas and forests of Africa,** PI Hanan, Co-Investigators N Laporte, L Prihodko, S Saatchi, W. Parton. 5/1/08-4/30/11, NASA ($791,751)

**Etude expérimentale sur l’effet du feu et du pâturage sur les ressources sylvo-pastorales et leurs impacts sur l’économie des communautés rurales de Afrique de l’ouest, PI** M Karembé, Co-Investigators F Dembélé, NP Hanan, 5/1/08-4/30/09, USAID ($31,000)

**Rising to the Challenge – African Dryland Development: A Regional Network for African-US University Collaboration and Capacity Building,** PI’s R. S. Reed, J. Njoka, CoI’s D. Swift, N.P. Hanan, M. Coughenour, K. Galvin, G. Bowser, L. Prihodko, B. Bruyere, P. Evangelista, J. Worden, D. Nkedianye, P. Kristjanson, M. Said, M. Karembe, R. Ngugi, W. Ekaya, M. Ngugi, 4/1/09-9/31/09, HED Africa-U.S. Higher Education Initiative Planning Grants, ($50,000)

**The Sahelian Savanna Disturbance Experiment (SSDE): Long-term impacts of fire and herbivory on the ecology of the Sahel,** PI Hanan, 11/1/07-4/30/09, National Geographic Society ($28,200).

**Savannas, global change and Africa; Long-term effects of fire and herbivory on the ecology and dynamics of Sahelian savanna communities,** PI Hanan, 9/1/07-8/31/08, Fulbright Scholar Program (~$100,000)

**African Carbon Exchange I: The Role of Africa in Terrestrial Carbon Exchange and Atmospheric CO2,** PI Hanan, Co-Investigators AS Denning, JA Berry, RJ Scholes, J Neff, J Privette. 3/1/04-5/31/08, Joint NOAA and NASA ($1,050,000)

**US-South Africa Doctoral Dissertation Enhancement Project: Pattern and Process of Woody Community Structure in the Kruger National Park**, PI Hanan, Co-I Bucini, 6/1/06-5/31/08, NSF-International Programs ($8,954)

**Carbon, Water and Land-Use in Conservation Reserve Program Lands of the Shortgrass Prairie II,** PI Hanan, Co-Investigators I. Burke, J. Morgan, TC Peterson, K. Paustian. 9/1/05-11/30/07, DOE-NIGEC ($220,000)

**Air Emissions from Dairy CAFOs: multi-scale measurements and process-based modeling,** PI D Johnson (CSU Animal Science), Co-PI Hanan, 12/1/04-11/30/07, USDA-NRI ($482,279)

**Biocomplexity in African savannas,** PI Hanan, Co-Investigators RJ Scholes, M Coughenour, G Dangelmayr. 9/1/01-8/31/06, NSF ($1,424,965); Supplement 2/1/03-8/31/06, NSF-International Programs ($15,075)

**Carbon, Water and Land-Use in Conservation Reserve Program Lands of the Shortgrass Prairie I,** PI Hanan, Co-Investigators I Burke, J Morgan, K Paustian. 7/1/02-8/31/05, DOE-NIGEC ($428,769)

**Fire and climate change feedback in Southern Africa,** PI Mary Scholes (University of Witwatersrand, South Africa), Co-Investigators NP Hanan, N Govender, M Mbidzo, RJ Scholes. 9/1/04-8/31/05, IGBP-START ($18,000)

**Precision CO2 and Flask Samplers to Characterize Regional Carbon Drawdown and Stable Isotope Dynamics for the Western Great Plains Region,** PI Hanan, 9/1/04-8/31/05, DOE-NIGEC ($23,318)

**Fluxnet Initiation in Africa: enhancing African science community capacity to make observations of land atmosphere exchanges of water, CO2 and energy,** PI Robert Scholes (Centre for Scientific and Industrial Research, South Africa), Co-Investigator NP Hanan, 1/1/04-6/30/05, IGBP-START ($22,000)

**ARM Carbon Modeling & Land Surface-Atmosphere Model Applications**, PI Hanan, 3/8/02-10/15/04, University of Tennessee/Oak Ridge National Laboratory ($45,740)

**Net Carbon & Energy Balance of Savanna Ecosystems at Earth Observing System (EOS) Validation Sites in Southern Africa,** PI Hanan, 7/1/99-6/30/00, NASA ($170,000); Supplement 3/1/00-6/30/00, NASA ($22,159)

**Characterization & Improvement of Earth Observing Systems Land Products,** PI Hanan, 3/1/98-2/28/02, Sub-contract to University of Nebraska-Lincoln ($108,924)

**\*Pending Proposals**

**Preliminary Proposal: Bifurcation in the role of termite mounds as mediators of landscape-scale vegetation pattern and resilience in African savannas,** PI NP Hanan, Pre-Proposal, NSF Division of Environmental Biology-Ecosystems, Dates and Budget TBD on invitation to full proposal.

**The Sahelian Savanna Disturbance Experiment (SSDE): field measurements and remote sensing to support livestock production in West African grazing lands,** PI M Karembé (U. Bamako, Mali), Co-Investigators F. Dembélé (IPR, Mali), NP Hanan (SDSU), USAID-PEER Pre-proposal for foreign collaborator participation in collaborative research.

**Invasive alien plants in pastoral rangelands of Ethiopia Somali Region: map, control, development of management strategy framework and awareness creation,** PI F Zerfu (Jigjiga University, Ethiopia), Co-Investigators NP Hanan (SDSU), USAID-PEER Pre-proposal for foreign collaborator participation in collaborative research.

**Friend or Foe? Ecological and social consequences of invasive shrub encroachment in the arid and semi-arid grazing lands of India,** PI NP Hanan, Co-Investigators, M. Sankaran (NCBS, India), J, Ratnam (NCBS, India) and L. Prihodko (SDSU), Step-1 Proposal, NASA Land Cover-Land Use Change Program, 4/1/17-3/31/20, ($650,000)

**Supporting agro-pastoralist communities in West Africa through remote sensing of forage production, vegetation structure, modeling and long-term trend analysis,** PI NP Hanan, Step-1 Proposal, NASA SERVIR Applied Sciences Team, 9/1/16-8/31/19, ($600,000)

##### l) Teaching and Mentoring

**\* Recent Courses Taught**

Readings in Sustainability (GSE-792, Geospatial Science & Engineering, South Dakota State University, Spring 2016)

Geospatial Sciences and Engineering Seminar (GSE-790, Geospatial Science & Engineering, South Dakota State University, Fall 2013, Spring & Fall 2014, Spring 2015)

Readings in Coupled Natural-Human Systems (GSE-792, Geospatial Science & Engineering, South Dakota State University, Fall 2013)

Advanced Methods in Geospatial Modeling: Ecological Modeling (GSE-760, Geospatial Science & Engineering, South Dakota State University, Spring 2012, 2013, 2015)

Ecology and Society in Semi-Arid Africa (NR582 Natural Resources, Colorado State University)

Global Change and the Developing World: Ecosystem and Societal Impacts, Adaptation and Mitigation (NR/Ecol592 Natural Resources/Graduate Degree Program in Ecology, CSU)

Les Effets du Changement Globaux en Afrique (Global change impacts in Africa) (Université de Bamako, Mali, Masters in Ecology/Honors in Biology)

What in the World is Biocomplexity?: An investigation of complexity in environmental systems (EY592, Graduate Degree Program in Ecology, CSU)

Peer Review in the Environmental Sciences (EY592, Graduate Degree Program in Ecology, CSU)

Research Methods in Ecology (EY592, Graduate Degree Program in Ecology, CSU)

**\*Undergraduate Student Advisees**

Jacob Amundson, Erika Jozwiak, Anita Lahey, Kara Loyd, Thomas McGinley, Jenna Retenmayer, Alan Roseto, Brady Ross, Robert Thomas, Garth Wadsworth

**\*Graduate Student Advisees / Graduate Committees** (Degree, Program, Year Graduated, Role)

Christoffer Axelsson (PhD, GSE-SDSU, Chair), Jameson Brennan (PhD, NRM-SDSU, Member), Gabriela Bucini (PhD, GDPE-CSU, 2010, Chair), Kurt Chowanski (PhD, NRM-SDSU, Member), Kathy Corbin (MSc, Atmos-CSU, 2005, Member), Thomas Cox (PhD, Chemistry-SDSU, Member), Amadou Dieye (PhD, GSE-SDSU, Member), Justin Dohn (MSc, GDPE-CSU, 2015, Chair), Victor Garrett (MSc, Biology-SDSU, Member), Njoki Kahiu (PhD, GSE-SDSU, Chair), Zhengpeng Li (PhD, GSE-SDSU, Member), Brianna Lind (MSc, Biology-SDSU, 2015, Chair), Esther Mosase (PhD, GSE-SDSU, Chair), Seth Munson (PhD, GDPE-CSU, 2008, Member), Nick Parazoo (MSc, Atmos-CSU, 2006, Member), Andrew Philpott (MSc, Atmos-CSU, 2006, Member), William Sea (PhD, GDPE-CSU, 2007, Chair), Andrew Schuh (PhD, Atmos-CSU, 2008, Member), Mandira Sigdel-Phuyal (MSc, Geography-SDSU, Chair), Sanath Sathyachandran (PhD, GSE-SDSU, 2014, Member), Andrew Tredennick (PhD, GDPE-CSU, 2014, Chair), Tony Swemmer (PhD, Biology-CSU, 2006, Member), Emma White (PhD, GSE-SDSU, Member)

Alliance for Graduate Education and the Professoriate (AGEP; www.agep.us) minority faculty mentor, Colorado State University (2008-2010).

**\* Postdoctoral Mentor for:**

Dr. Bok-Haeng Baek (2004), Dr. Armel Kaptué (2011-present), Dr. Mahesh Sankaran (2002-2006); Dr Jayashree Ratnam (2002-2006), Dr. Christopher Williams (2004-2007).

##### m) Service and Outreach

\* **International**

External Evaluator, Promotion & Tenure, National Center for Biological Sciences, Bangalore (2014, 2016)

External Evaluator, Promotion & Tenure, University of Witwatersrand, Johannesburg (2016)

External Examiner, PhD Dissertation, University of Witwatersrand, South Africa (2013-14, 2016)

Organizer, Unsettled Futures for Subsistence Pastoralism Symposium, Society for Range Management Annual Meeting, Orlando, FL, February 13, 2014.

External Evaluator, Promotion & Tenure, CSIR, Pretoria (2013-14)

External Examiner, PhD Dissertation, University of Cape Town, South Africa (2013)

Lead author on White Paper to NASA Terrestrial Ecology Program Proposing an $80-$100 Million Research Initiative to improve earth observation capabilities in tree-grass ecosystems (2011)

External Examiner, PhD Dissertation, University of Lund, Sweden (2010)

Organizer of the Savanna Remote Sensing Workshop, Fort Collins, March 2-4, 2010

Progress on Desertification? *Climate Sense*, Volume 1, Editorial on the United Nations Convention to Combat Desertification (UNCCD)

Keynote Speaker “Africa and Global Environmental Change”, Conference “*African Issues: Food Security, Environmental Sustainability, and Human Health*”, Kansas State University, 3/31/09.

External Advisory Board Member, CarboAfrica Project of the EU 8th Framework (2007-2010)

US Fulbright Foundation Proposal Review Board Member (Africa Region, 2008-2010)

Guest editor, J. Hydrology Special Issue on the ‘African Monsoon Multidisciplinary Analysis’ (AMMA), Vol 375, Issues 1-2, 2009.

Organizer of the Luiperdskloof Workshop on African Savanna Complexity, January 23-25, 2003

Coordinator & Organizer of the Afriflux Intitiation Workshop (ILEAPS 1st International Science Conference), Hyytiälä, Finland, October 4, 2003

Coordinating PI of *Afriflux* and *Ameriflux* sites in South Africa and Colorado

Invited Author for the World Climate Research Program (WCRP) Global Energy and Water Experiment (GEWEX) and International Geosphere-Biosphere Program (IGBP) Biospheric Aspects of the Hydrological Cycle (BAHC)

Proposal Review for UK Natural Environmental Research Council (NERC) and South African National Research Foundation (NRF)

\* **National**

**Research Advisory Committee Member,** USDA Agricultural Research Service Central Plains Experimental Range (ARS-CPER) (2010-present)

**Proposal Review Panels**

NASA Carbon Monitoring Program Review Panel Member (May 2016)

NSF Coupled Natural-Human Systems Review Panel Member (February 2016)

NSF Jornada-LTER Mid-Term Review Panel Member (October 2015)

National Academy of Science PEER Proposal Review Panel 2014

NSF CNH Panel 2013 & 2014

NASA IDS Panel 2013

NSF EPSCoR Reverse Site Visit Panel 2012

NSF Division of Environmental Biology Panel 2010

US Fulbright Foundation Review Board Member (Africa) 2008-2010

NSF Partnerships for International Research and Education 2009

NOAA Global Carbon Cycle Panel 2006

NASA Biodiversity Program Panel 2006

NASA North American Carbon Program Panel 2004

NASA LBA-Ecology Panel 2003

**Proposal Review**

Belgium-FWO, Department of Energy (DOE), International Geosphere-Biosphere Program-System for Analysis and Research Training (IGBP-START), National Science Foundation (NSF), National Aeronautic and Space Administration (NASA), National Oceanic and Atmospheric Administration (NOAA), National Institute for Climate Change Research (NICCR), National Institute for Global Environmental Change (NIGEC), UK Natural Environmental Research Council (NERC), South African National Research Foundation (NRF)

**Journal Editorial**

Ecology/Ecological Applications/Monographs Guest Editor (2007, 2011, 2014)

IEEE International Geoscience and Remote Sensing Symposium Review Board (2009)

ISRN-Ecology Review Board (2010-2011)

Tree Physiology Editorial Review Board (2008)

Journal of Hydrology Guest Editor (2008-2009)

**Journal Review**

African J. Ecology, Agricultural and Forest Meteorology, Agricultural Ecosystems and Environment, Ambio, American Naturalist, Annals of the American Geographical Society, Atmospheric Science Letters, Australian Journal of Botany, Biogeosciences Discussions, Ecological Applications, Ecological Modeling, Ecological Monographs, Ecology, Ecosystems, Forest Ecology & Management, Geophysical Research Letters, Global Change Biology, Global Ecology and Biogeography, IEEE Transactions on Geoscience and Remote Sensing, Int. J. Digital Earth, Int. J. Appl. Earth Obs. and Geoinf., ISRN-Ecology, J. Applied Ecology, J. Applied Meteorology, J. Biogeography, J. Climate, J. Coastal Research, J. Ecology, J. Hydrology, J. Geophysical Research-Atmospheres, J. Geophysical Research-Biogeosciences, J. Tropical Ecology, Land, Landscape Ecology, Nature, Nature-Climate Change, Nature-Communications, Nature-Geosciences, New Phytologist, Nutrient Cycling in Ecosystems, Oecologia, Oikos, Physics and Chemistry of the Earth, Phil Trans. Royal Society-B, PLoS-1, PLoS-Biology, Remote Sensing, Remote Sensing of Environment, Science, Soil Research, Southern Forest Review, Southwestern Naturalist, Tellus B, Tree Physiology

\* **Departmental and University Service & Leadership**

SDSU International Affairs Committee Chair (Sept 2014-Aug 2016)

SDSU International Affairs Committee Vice Chair (Jan-Aug. 2014, Sep-Dec. 2016)

SDSU Natural Resource Management Departmental P&T Committee Member (2016)

SDSU International Affairs Committee Member (2013-2016)

SDSU GSCE Senior Scientist Search Committee (2013)

SDSU Holtry Distinguished Lecture Series Committee (2013-2014)

SDSU GSCE Strategic Planning Committee (2013)

SDSU Department of Natural Resource Management Standards Committee (2012)

SDSU Global Studies Advisory Committee Member (2011-2016)

SDSU Assistant Vice President for International Affairs Search Committee Member (2011)

SDSU GSCE Administrative Assistant Search Committee (2011)

CSU Dept. of Ecosystem Science & Sustainability (DESS) Curriculum Committee (2007-2010)

CSU Natural Resource Ecology Laboratory Executive Committee member (2003-2010)

CSU NREL African Ecosystems and Societies Program Co-coordinator (2005-2010)

CSU NREL Director Search Committee Member (2005)

CSU Graduate Degree Program in Ecology (CSU) Executive Committee member (2003-2005)

CSU NREL Promotion and Evaluation Committee – Tenure Evaluation Committee Chair (2004)

CSU NREL Research Associate Search Committee Chair (2001, 2003)

CSU Dept. of Animal Science Research Associate Search Committee Member (2004, 2005)

\* **Community Outreach, Service & Media Coverage**

“Scientists document recovery of western Africa grasslands”, The Brookings Register, November 27, 2015.

Organizing Committee, South Dakota World Affairs Council, Food and Water Security Symposium, Spring 2015

Coordinator of Graduate Student Community Outreach: “Science in the Pub Special Editions”, May and December 2014, May 2015, Brookings, SD.

“Grazing the Sahel: charting a future between a tragedy of the commons and an exquisitely adapted system”. Science in the Pub Series, 1/9/2013 Brookings, SD.

“Progress on desertification?” *ClimateSense Journal*, A commentary on desertification research and progress at the United Nations Convention to Combat Desertification Conference of Parties, 2009. Hanan, N.P., Published Nov. 9, 2010, climatesense.org