

Curriculum Vitae

CHRISTOPHER MICHAEL USHER NEALE

**Director of Research
Daugherty Water for Food Global Institute, University of Nebraska, Lincoln**

**Professor, Department of Biological Systems Engineering
Professor, School of Natural Resources
University of Nebraska – Lincoln**

(435) 770-0297 (Cell), (402) 472-5359 (office), cneale@nebraska.edu

October 2025

EDUCATION:

Civil Engineering Degree, Escola de Engenharia Mauá
São Caetano do Sul, São Paulo, Brazil
Graduation: January 1980

Master of Science in Agricultural Engineering
Colorado State University, Fort Collins, Colorado
Graduation: May 1983

Doctor of Philosophy in Agricultural Engineering
Colorado State University, Fort Collins, Colorado
Graduation: May 1987

HONORARY AND PROFESSIONAL SOCIETIES:

Sigma Xi, Gamma Sigma Delta, Alpha Epsilon

American Society of Agricultural and Biological Engineers – ASABE
American Society of Civil Engineers – ASCE
American Geophysical Union – AGU
American Society for Photogrammetry & Remote Sensing – ASPRS
Society of Photo-Optical Instrumentation Engineers – SPIE
International Association of Hydrological Sciences – IAHS

PROFESSIONAL REGISTRATION: Civil Engineer, SP, Brazil, CREA# 193933

AREAS OF RESEARCH and TECHNICAL SPECIALIZATION:

- Irrigation water management and water demands estimates.
- Irrigation and Drainage Engineering
- Energy Balance and Evapotranspiration measurements with lysimeters, Bowen ratio, eddy covariance and scintillometer systems.
- GIS applications in irrigation engineering, including development of irrigation water user cadaster maps and databases.

- Remote sensing of energy balance components and Evapotranspiration.
- Development of crop coefficients including remote sensing approaches.
- Applied Remote Sensing from satellite and airborne systems in the visible, near infrared, thermal infrared and microwave portions of the electromagnetic spectrum.
- The use of airborne multispectral imagery for monitoring and mapping river corridors, riparian vegetation, wetlands, and irrigated agriculture.
- High resolution remote sensing with UAV systems
- Precision agriculture and crop yield estimation using satellite and UAV remote sensing and GPS equipment.
- Remote sensing of crop water productivity

LANGUAGES: Fluent in English, Portuguese, and Spanish. Conversational French.

EMPLOYMENT HISTORY AND EXPERIENCE:

Daugherty Water for Food Institute, University of Nebraska, Lincoln, NE

Director of Research (January 2014 to Present)

Department of Biological Systems Engineering, University of Nebraska, Lincoln, Professor; School of Natural Resources, UNL, Professor

- Directing research activities for DWFI, supporting faculty fellows of the Institute, representing DWFI at conferences, giving invited presentations, developing proposals with faculty and partner teams, coordinating research for the Water Resources Program of Excellence, supporting DWFI cluster hire faculty, engaging international partners in Brazil, Sri Lanka, Chile, Kazakhstan, India, Dominican Republic, Costa Rica and other countries to develop future research activities. Develop International research and technical transfer projects. Forming technical teams for submitting proposals for further funding. Supporting visiting scholars from different countries. Manage the DWFI graduate student support program.
- Founding Partner and executive committee member of the Irrigation Innovation Consortium, funded by the Foundation for Food and Agricultural Research (FFAR)
- Principal Investigator presently for research projects totaling over \$4.0 million dollars.

Utah State University, Department of Civil and Environmental Engineering – Irrigation Engineering Division

Logan, UT 84322-4110 (December 2009 to December 2013)

Professor

Recent Research Activities:

- Energy balance studies and airborne thermal infrared monitoring of hydrothermal features in Yellowstone National Park.
- Airborne multispectral and Lidar mapping of the Escalante River Canyon and Canyon de Chelly, Dinosaur National Monument for the National Park Service, Mojave River, CA for the US Bureau of Reclamation & other projects

- Remote sensing of evapotranspiration and estimation of riparian vegetation water use in the Lower Colorado River System
- Development of guidelines and specifications for the estimation of crop water use with remote sensing - USGS

Utah State University, Department of Biological and Irrigation Engineering

Logan, UT 84322-4105 (September 1988 to December 2009)

Assistant Professor, Associate Professor, Professor

Selected Research Activities:

- Director and PI for a large, irrigated area and infrastructure mapping project in the Dominican Republic (\$7.9 million dollars) for USU. The client INDRHI is the federal water resources agency of the Dominican Government. Funded by the Inter-American Development Bank
- Ongoing research in the areas of applied remote sensing to resource mapping, hydrology and precision irrigated agriculture using satellite imagery and airborne multispectral digital imagery from the USU airborne multispectral system.
- Developed the USU airborne multispectral digital remote sensing system that flies on a Cessna TU206 aircraft dedicated to remote sensing. Founding director of the Remote Sensing Services Laboratory (1993-2013)
- Use of airborne and satellite multispectral imagery for mapping riparian corridors, wetland areas, rangeland, forested and agricultural areas.
- Use of remote sensing and GIS for irrigation command area mapping and modeling of irrigation water demand.
- Development of hydrologic parameter retrieval algorithms for the Special Sensor Microwave/Imager, a U.S. Navy instruments onboard a DMSP satellite. Member of the calibration/validation team for the original SSM/I
- Modeling of energy balance fluxes in complex terrain in semi-arid watersheds, irrigated agriculture, riparian ecosystems as well as desert ecosystems in the Great Basin using remotely sensed inputs from airborne and satellite platforms.

Teaching:

- Graduate and senior level course in Irrigation Water Management and Irrigation Hydrology.
- Graduate and senior level course in Operation and Maintenance of Irrigation and Drainage Systems
- Developed a course on Remote Sensing of Land Surfaces that covers applications in agriculture and hydrology.
- GIS for Water Resources course, Fall 2007.
- Several short-course teaching assignments for the International Irrigation Center, including on-farm water management, pumps, irrigation scheduling, surface irrigation, computer applications in irrigated agriculture and remote sensing applied to irrigated agriculture.

Texas A&M University, Department of Agricultural Engineering

College Station, TX. (January 1987 to August 1988)

Research Agricultural Engineer

- Calibration and validation of algorithms for the retrieval of surface soil moisture, surface temperature and other parameters from microwave brightness temperatures obtained from a satellite. Experience included the day-to-day management of the project, mentoring of graduate students, development of specialized software to support project goals (expert systems, database control), and data analysis.
- Assistance in the development of a mobile evapotranspiration laboratory, with state-of-the-art Bowen ratio equipment.

Western Agri-Management Company

Fort Collins, Colorado (January 1985 to December 1986)

Civil and Agricultural Engineer

- Participated in the preparation of a feasibility study for the development of a vegetable farm (melons, cantaloupes) and packing plant in the Dominican Republic.
- Responsible for a feasibility study on the production of roses and ornamental plants in Costa Rica for the US market.

United States Department of Agriculture-ARS

Kimberly, Idaho (May to October 1984)

- Responsible for data collection and evaluation of automated surface irrigation systems (cablegation) in the Grand valley of Colorado. The experience included the installation of automated orifice plates and flumes, use of data loggers, irrigation system operation, system evaluation data gathering and analysis.

THEMAG Engenharia Ltda

Sao Paulo, SP, Brazil (1978 to 1980)

Student trainee progressing to Junior Civil Engineer

- Responsible for the translation of technical documents, curriculums, etc., to be used in proposal preparation.
- Participated in the preparation of a proposal for consulting services concerning the Upper Mazaruni hydroelectric power plant and aluminum smelter in Guyana.

INTERNATIONAL EXPERIENCE:

International Projects:

2014-Present: Several international partnerships and projects in different countries.

Middle East North Africa Region: Estimating daily evapotranspiration using the ALEXI model with VIIRS satellite input, for drought monitoring and water balance studies.

India: Development of a drought composite index for 2 States in India, using Geospatial technologies for monitoring large irrigation systems, developing irrigation schedules using in-field sensors.

Brazil: (1) Testing and verifying the ALEXI/VIIRS daily evapotranspiration product in several ecosystems and agricultural areas in Brazil, using eddy covariance flux towers; (2) Studies towards the sustainable development of the Urucuia aquifer, western state of Bahia, Brazil

(3) Studies towards the sustainable development of irrigation on existing agricultural lands in the state of Mato Grosso and Parana, Brazil.

Kazakhstan: Evaluation of the Turkestan Canal System in southern Kazakhstan, including field visit, examination of hydraulic structures, identification of maintenance issues, analysis of irrigated area and preliminary water resources analysis, report preparation and submittal to Minister of Ecology, Geology and Natural Resources. Signing of MOU with Ministry.

2010 – 2011 Mozambique: Directed the USU effort towards pursuing a joint project with the Gorongosa Restoration Project in the area of sustainable agriculture and forestry within the buffer zone of the Gorongosa National Park in Mozambique. Conducted a survey of small landholders on Mount Gorongosa through a sub-contract with the Pedagogic University of Beira to determine agricultural practices and social customs that lead to the present slash and burn activities. The results of this effort provided preliminary data for a comprehensive future proposal to the NSF Bread program and other funding agencies.

1999 to 2004 Dominican Republic: PI and Director of a large mapping project in the Dominican Republic: "Estudios Basicos para el Manejo de los Sistemas de Riego". Total project cost: \$7.9 million dollars. The client was the Instituto Nacional de Recursos Hidraulicos (INDRHI), the National water resources agency of the Dominican Republic (DR) Government. The project was funded with a loan from the Inter-American Development Bank (IADB) after USU's proposal won the International Tender and successfully negotiated the contract.

Project consisted of four studies:

(1) Color Aerial photography of the entire country at 1:20000 scale. Production of orthophotos and other mapping products for 4400 Km² of irrigated agriculture using the aerial photography and derived orthophotoquads.

(2) Production of irrigated property boundary (cadastre) maps from digital orthophotos in a GIS environment.

(3) Development of a hydro-climatological database and an interface for visualizing the data

(4) Monitoring salinity and drainage problems using airborne multispectral digital imaging.

Experience included:

- proposal writing, coordination, and preparation,
- contract negotiation with INDRHI, sub-contract negotiations with local Dominican partners "Ingenieria Agrofuturo", sub-contract negotiation with RLDA Surveying and Mapping, TOBIN International, GeoAir SA and other subcontractors,
- establishment of local office headquarters for USU,
- selection and hiring of personnel (28 people in the DR, 15 at USU),
- establishment of field methodology, training of field personnel,
- establishment and supervision of all technical aspects of the project
- establishment of a state-of-the-art Geomatics Laboratory at INDHRI and training of their personnel,
- project management
- writing of progress and final reports in Spanish, continuous contacts with client supervision.

International Consulting:

Inter-American Development Bank (IADB) (2002) Dominican Republic:

Prepared the Scope of Work and Terms of Reference for an international tender. The project would consist of mapping 15000 Km² of non-irrigated agriculture and the preparation of rural property cadastre maps in the Dominican Republic.

Secretaria de Recursos Hídricos – MMA, Brasilia, Brazil (1997-1998). A one-year (1/2 time), in-house consulting assignment at the Brazilian National Water Resources Agency in the areas of Remote Sensing and Geographical Information Systems, Irrigation Water Management and Water Resources in general. This activity was funded by the World Bank, through IICA (Inter-American Institute for Cooperation on Agriculture).

CODEVASF (Compania de Desenvolvimento do Vale do Sao Francisco) – Brasilia, DF, Brazil (1997-1998): A one-year (1/2 time), in-house consulting assignment at the Remote Sensing and GIS Laboratory of CODEVASF, the San Francisco valley development agency. Conducted training in ERDAS Imagine software and analysis procedures and techniques, developed projects using airborne videography equipment, participated in several on-going and new projects. Preparation of proposals to obtain funds for future lab activities. This activity was funded by the World Bank through IICA.

Golder Associates, Canada (1995 -1996) Brazil and Argentina: Mapped vegetation along the Paraguai-Parana waterway (3400 Km) in Brazil, Paraguay and Argentina using TM and MSS Landsat Imagery and airborne multispectral imaging as a ground truthing tool. This activity also involved field work in Argentina along the Parana River and in the Pantanal wetlands of Brazil.

U.S. Bureau of Reclamation (1992-1993) Egypt: Mapped the canal and drain layout of an irrigation system in the Nile Delta, using a combination of satellite imagery, GIS and GPS. Trained Ministry engineers in the use of GPS and GIS software.

EMBRAPA (Empresa Brasileira de Pesquisa Agropecuaria) Brazil:

1. **1988:** One-month consulting assignment in Brazil, to advise EMBRAPA, the Brazilian Agricultural Research Agency, on future Irrigation Engineering Research needs in the country.
2. **1994:** One-week consulting assignment with EMBRAPA to participate in an evaluation panel of one of their major irrigation and drainage research centers (CNPAT).

US Bureau of Reclamation at CODEVASF, Brasilia, Brazil, June 1990:

Training of CODEVASF personnel on the theory and use of portable radiometers for ground truthing of satellite imagery. Conducted a ground truthing experiment of a SPOT satellite image along with Bureau and CODEVASF personnel as part of the training.

Western Agri-Management Company, Fort Collins, CO, (1985 - 1986):

- Participated in the preparation of a feasibility study for the development of an irrigated vegetable farm (melons, cantaloupes) and packing plant in the **Dominican Republic** targeting the US winter market. The experience included meeting and gathering data and technical information with the Dominican Federal Agencies, identification of suitable land sites for the project, negotiating with landowners, over the course of several trips to the country.
- Responsible for a feasibility study on the production of roses and ornamental tropical plants in **Costa Rica** for the US market. The experience included several trips to the country for data collection and site inspection, identification of potential partners, negotiations with the partners, technical analysis and design, financial analysis, procurement of financing and preparation of loan applications to OPIC.

SERVICE:**ASABE:**

Present Member of the NRES-03/2 US TAG ISO TC 23/SC 18: US Technical Advisory Group for ISO TC 23/18. This committee develops the position of the United States on international standardization activities for ISO TC23/SC 18, Irrigation and Drainage Equipment and Systems. (2018 to Present).

Present Member NRES-244 Irrigation Management committee, the NRES-24 Irrigation Group and MS-60 Unmanned Aerial Systems.

Past Member of the Irrigation Management Committee (~1988-1989)

Past Member of the NRES-03/2 Irrigation and drainage equipment and systems

ASCE: Secretary, Vice-Chair, Chair, Past chair of the Planning and Management of Irrigation and Drainage Committee. (~1989-1992)

Vice-Chair of the Special Committee for Remote Sensing. This committee wrote a series of papers on the state-of-the-art of Remote Sensing Applications in I & D. (~1991-1992)

Member of the publications committee, Journal of Irrigation and Drainage, ASCE. Reviewed technical papers, helped set policy and select award papers. (~1991-1994)

Co-Chair along with Dr. Rick Allen of the ASCE Park City Irrigation and Drainage Conference held in July 1993. (1992-1993)

IAHS: Presently Past-President of the International Commission on Remote Sensing (ICRS) – IAHS, President from July 2014 to July 2017. Vice-president and President-elect of ICRS, July 2008 to July 2014.

Chair of the Remote Sensing and Hydrology 2010 Symposium in Jackson Hole, Wy, September 28 – 30, 2010.

Co-Convener of the IAHS Symposium on Remote Sensing for Environmental Monitoring and Change Detection, Perugia, Italy, July 2007

SPIE: Symposium Chair for the SPIE Remote Sensing Europe 2018 and 2019, co-chair for 2016-2017. Conference Chair and Proceedings Editor for the Remote Sensing for Agriculture, Ecosystems, and Hydrology Conference: Florence, Italy, September 2007; Cardiff, Wales, September 2008; Berlin, Germany, September 2009, Toulouse, France, 2010; Prague Czech Republic, 2011; Edinburgh, Scotland 2012; Dresden Germany 2013; Amsterdam, Netherlands 2014; Toulouse, France 2015; Edinburgh, Scotland 2016; Warsaw, Poland 2017; Berlin, Germany 2018; Strasbourg, France 2019; Edinburgh, Scotland 2020 (Digital Forum); Madrid, Spain 2021 (Digital Forum); Berlin, Germany 2022; Amsterdam, Netherlands 2023, Edinburgh 2024.

World Water Council WWC: Board of Governors alternate member

Chaired and organized the sessions on Water for Agriculture and Food Production for the 10th World Water Forum in Bali, Indonesia 2024

World Wildlife Fund: Member of the Science Based Targets Network Freshwater Hub- Technical Advisory Group

Food and Agriculture Organization of the United Nations – FAO:

Member of the WASAG – The Global Framework on Water Scarcity in Agriculture Steering Committee

USDA-ARS: Member of the Remote Sensing and GIS Working Group for the Long-Term Agroecosystem Research (LTAR)

NE-Department of Natural Resources: Member of the NE-Rain Committee 2021-2023

SIWI – World Water Week: – Stockholm, Sweden – August 2023 – Organized session: Water Productivity to Improve Water Sustainability In Agricultural Production

ASPRS: Member of the Board of Directors of the Heartland Region: 2015-2018

Conference organizer and editor of the proceedings for the 14th Biennial Workshop on Color Photography, Videography and Airborne Imaging for Resource Assessment in 1993 and the 19th Biennial Workshop in 2003 for the American Society for Photogrammetry and Remote Sensing (ASPRS)

NASA: Chair of the NASA Pathfinder Committee, tasked with producing a complete, quality controlled SSM/I dataset to be used by the research community, and to give recommendations for parameter retrieval algorithms and include the parameters in the dataset. Member of the Technical Review Committee for the Center for Hydrology, Soil Climatology, and Remote Sensing sponsored by NASA and Alabama A&M

University. Organized and hosted the NASA WetNet Annual Meeting, September 1993 at the Eccles Conference Center at Utah State University

USBR: 2004 Member of the steering committee representing a US Western University to analyze the scope of work of the Alliance of Universities of Ohio on a remote sensing of ET for irrigation project.

AWARDS AND HONORS

- 2025 American Society of Agricultural and Biological Engineers - ASABE Fellow
- 2022 American Society of Civil Engineers - ASCE Royce J. Tipton Award for "significant contributions on the use of remote sensing for estimating evapotranspiration of agricultural crops, irrigation water management and hydrology, and the education of irrigation engineers."
- 2012 ESRI Award for Best Scientific Paper in Geographic Information Systems, American Society for Photogrammetry and Remote Sensing
- Certificate of Appreciation for Meritorious Service. American Society for Photogrammetry and Remote Sensing. April 1994
- USU College of Engineering, Research Excellence Award, 1994.

INVITATIONS TO MAKE PRESENTATIONS AT SCIENTIFIC/TECHNICAL MEETINGS – SELECTED SUBSET:

INIA Uruguay: Workshop: "Simposio de Sensoramiento Remoto y Manejo Eficiente del Agua en los Sistemas Productivos Agrícolas" Invited presentation: Nebraska: Example of Sustainable Irrigated Agriculture and Water Governance. March 2024

Ministry of Integration and Regional Development of Brasil: Commemoration of the first National Irrigated Agriculture Day: June 11, 2024 in Brasilia, Brasil: Invited presentation: Nebraska: Modelo de Irrigação Sustentavel (Nebraska: Model of Sustainable Irrigation)

Keynote presentation at the Irrigation of the Center West Brazil conference: June 2024 – Brasilia. "Agricultura Irrigada E o USo Sustentavel dos recursos hidricos subterraneos" (Irrigated Agriculture and the Sustainable Use of Groundwater Resources}

WASAG Meeting, Cape Verde – February 2023- Water Productivity: Innovations on Methods and Applications – Christopher Neale, Mesfin Mekonnen, Ivo Zution Goncalves

NRCS Irrigation Workshop, Oakes, ND – July 2023
The SETMI Irrigation Scheduling Tool and preliminary on-farm application in North Dakota – Christopher Neale, Ivo Zution Goncalves.

IICA Online Webinar Launch of their Agua y Agricultura (Water and Agriculture) Initiative – September 27, 2023 - Nebraska: An example of high productivity and sustainable governance of Water for agriculture – Christopher Neale

World Food Prize – IICA Panel – October 2023 - Efficiency and Innovations in Water Use for Agriculture – Christopher Neale

LICOR Connect 2023 – Atlanta, GA – November 2023 - The Parallel 41 Flux Network for Real-Time Daily Evapotranspiration – Christopher Neale, Ashish Masih, Ivo Zution Goncalves, Sami Akasheh, Dayle McDermitt

CONIRD: Brazilian Irrigation and Drainage Conference – Campinas, Sao Paulo, August 2022. Invited talk and panel participation: “Agricultura Irrigada Sustentavel Impulsiona desenvolvimento economico” (Sustainable Irrigated Agriculture Promotes Economic Development). Described the importance of water governance in Nebraska, DWFI’s role etc.

Invited Talk for the SBAGRO – Brazilian Society of Agrometeorology April 2022. Online Presentation. “Agrometeorologia e Sensoriamento Remoto: Exemplos de Nebraska” (Agrometeorology and Remote Sensing: Examples from Nebraska).

Invited Webinar, Feceral University of Parana, Brazil: “Agricultura Irrigada No NEBRASKA EUA: Governanca E USO SUSTENTAVEL Da Agua E Seus Impactos” (Irrigated Agriculture in Nebraska, USA: Governance and Sustainable Use of Water and its Impacts). February 2022.

Two presentations at the IV Seminário “Solo E Água No Contexto De Desenvolvimento Em Bacias Hidrográficas”, November 19 -21, 2019, CODEVASF, Brasilia, Brazil. (IV Seminar on Soil and Water in the Context of Development in Hydrografic Basins):
Importancia Da Governanca Conjunta de Aguas Superficiais e Subterraneas: O Exemplo De Nebraska (The importance of conjunctive management of surface and groundwatater: the Nebraska example) by **Christopher Neale**
Estado Da Arte Da Produtividade Da Água Na Agricultura Irrigada (State-of-the-Art on Water Productivity in Irrigated Agriculture) by **Christopher Neale**, Mesfin Mekonnen and Ivo Zution Goncalves.

“Operational retrievals of evapotranspiration: are we there yet?” AGU Fall Meeting, New Orleans, December 2017. Session H52G Remote Sensing and Modeling of the Terrestrial Water Cycle II. **Christopher M. U. Neale**, Martha C. Anderson, Christopher Hain, Mitchell Schull, Isidro Campos, Ivo Zution Goncalves

“A Daily Remote Sensing Based Evapotranspiration Product for the Brazilian Agricultural Areas”. **Christopher M. U. Neale**, Christopher Hain, Martha C. Anderson, Mitchell Schull. Brazilian Remote Sensing Symposium, May 28-31, 2017, Santos, Brazil.

“El roll de los Regantes en la Administración del Agua en el Estado de Nebraska” by **Christopher M. U. Neale**. In the Workshop: Primer Taller para la Autogestión

Financiera y Operativa de las Juntas de Regantes en la República Dominicana. Organized by Instituto Nacional De Recursos Hidricos (INDRHI), Consejo Nacional De Regantes Y La Pontificia Universidad Católica Madre Y Maestra, Unidad De Gestión Y Educación Sobre El Agua. May 25, 2017.

Invited Presentation: "Remote Sensing and Hydrology". **Christopher M. U. Neale.** INOVAGRI International Meeting, Fortaleza, Brazil, October 2-5, 2017.

Invited Presentation: "Evapotranspiration Estimates with remote sensing, verification using flux tower data". **Christopher M. U. Neale.** Potsdam GHG Flux Workshop. November 2017, Potsdam, Germany.

Irrigation New Zealand, 2016 Conference, Oamaru, NZ, April 5-7, 2016. Keynote address: "Our Future – What Will Irrigation Look Like In 2050"

World Water Forum – Korea April 13-17, 2015. Participated on two panels: Making Every Drop Count: Best Available Technology in Irrigated Agriculture with presentation "Making Every Drop Count: Integrating Geospatial Technology" and "Irrigation and Food Production in North America: Droughts and Policy Impacts" for the Americas Regional Process

International Workshop on Evapotranspiration Mapping for Water Security, World Bank, Washington DC, September 15-17, 2015. Invited Presentation: "Airborne Mapping of Evapotranspiration: Role of Piloted Systems in the Future"

University of Sao Paulo, "Estimativa da Evapotranspiracao com Sensoriamento Remoto em Diferentes Escalas" (Estimating Evapotranspiration with Remote Sensing at Different Scales). I WORK CTI Workshop de Ciencia e Tecnologia em Irrigacao, ESALQ -USP, Piracicaba, SP Brazil.

Federal University of Ceara and the INOVAGRI (Innovation and Research Institute for the Irrigated Agriculture) to be one of the main speakers at the III WINOTEC – International Workshop on Technological Innovation in Irrigation. "State of the Art of Remote Sensing Applied to the Cadastre of Irrigation Water Users in a GIS Environment". The event was held in Fortaleza, capital of the State of Ceará, Brazil, from June 8 to 11, 2010. Similar invitation to be a main speaker at the I Winotec in Sobral, Ceara, 2007

Neale, C.M.U. and M. J. McFarland. An overview of soil moisture monitoring using passive microwave. Workshop on soil moisture. National Hydrology Research Institute, Saskatoon, Canada. March 9-11, 1992. (Invited paper)

REFEREED JOURNAL PUBLICATIONS:

Prajapati, VK; Kaur, R; Prasad, V; Khanna, M; **Neale, CMU**; Hayes, M; Svoboda, M; Swigart, J; Tadesse, T; Sehgal, V; Rani, A. 2025. Drought declaration potential of seasonally averaged vs. end of season - composite drought indices: comparative validation over Karnataka state of India. Theoretical and Applied Climatology, Vol 156, Issue 1, DOI 10.1007/s00704-024-05266-1

Gonçalves, Ivo Z, Izael M Fattori, **Christopher MU Neale**, Carlos AC Santos, Alex Ruane, Meridel M Phillips, Fábio R Marin. 2024. How can Future Climate Change Affect the Corn Production System in Nebraska USA? International Journal of Plant Production, Vol 18, Issue 4, Pages 563-577.

Gibson, Justin; Trenton E Franz, Troy Gilmore, Derek Heeren, John Gates, Steve Thomas, **Christopher MU Neale**. 2024. Groundwater recharge response to reduced irrigation pumping: Checkbook irrigation and the water savings payment plan. Water, Vol 16, Issue 20, Page 2910.

Bai, Geng Frank, Burdette Barker, David Scoby, Suat Irmak, Joe D Luck, **Christopher MU Neale**, James C Schnable, Tala Awada, William P Kustas, Yufeng Ge. 2024. High-throughput physiological phenotyping of crop evapotranspiration at the plot scale. Field Crop Research, Vol 316, <https://doi.org/10.1016/j.fcr.2024.109507>

Qiao Hu, Ligang Zhang, Jeff Drahota, Wayne Woldt, Dana Varner, Andy Bishop, Ted LaGrange, **Christopher MU Neale**, Zhenghong Tang. 2024. Combining Multi-View UAV Photogrammetry, Thermal Imaging, and Computer Vision Can Derive Cost-Effective Ecological Indicators for Habitat Assessment. Remote Sensing, Volume 16, Issue 6, Pages 1081.

Xin-Zhong Liang, Drew Gower, Jennifer A. Kennedy, Melissa Kenney, Michael C. Maddox, Michael Gerst, Guillermo Balboa, Talon Becker, Ximing Cai, Roger Elmore, Wei Gao, Yufeng He, Kang Liang, Shane Lotton, Leena Malayil, Megan L. Matthews, Alison M. Meadow, **Christopher M. U. Neale**, Greg Newman, Amy Rebecca Sapkota, Sanghoon Shin, Jonathan Straube, Chao Sun, You Wu, Yun Yang, and Xuesong Zhang. 2024. DAWN: Dashboard for Agricultural Water Use and Nutrient Management—A Predictive Decision Support System to Improve Crop Production in a Changing Climate. Bulletin of the American Meteorological Society. Pages E432 - 441 <https://doi.org/10.1175/BAMS-D-22-0221.1>

Singh, Pragya Vinay Kumar Sehgal, Rajkumar Dhakar, **Christopher M. U. Neale**, Ivo Zution Goncalves, Alka Rani, Prakash Kumar Jha, Deb Kumar Das, Joydeep Mukherjee, Manoj Khanna and Swatantra Kumar Dubey. 2024. Estimation of ET and Crop Water Productivity in a Semi-Arid Region Using a Large Aperture Scintillometer and Remote Sensing-Based SETMI Model. Water 2024, 16(3), 422; <https://doi.org/10.3390/w16030422>

Richa Pandey, Ravinder Kaur, Ivo Zution Goncalves, **Christopher Neale**, Manoj Khanna, Man Singh, Vinay Kumar Sehgal, Arjamadutta Sarangi, Manjaiah

Kanchikeri Math. 2024. Single vs dual source surface energy balance model based actual evapotranspiration estimation. Environment Conservation Journal, 25(1), 84–95. <https://doi.org/10.36953/ECJ.27532611>

Ivo Z Gonçalves, **Christopher MU Neale**, Andy Suyker, Fábio R Marin. 2023. Evapotranspiration adjustment for irrigated maize–soybean rotation systems in Nebraska, USA. International Journal of Biometeorology, Volume 67, pages 1869–1879

Fatemeh Rezaie, Mahdi Panahi, Sayed M Bateni, Saro Lee, Changhyun Jun, Clay Trauernicht, **Christopher MU Neale**. 2023. Development of novel optimized deep learning algorithms for wildfire modeling: A case study of Maui, Hawai'i. Engineering Applications of Artificial Intelligence. Volume 125, October 2023, 106699. <https://doi.org/10.1016/j.engappai.2023.106699>

Trang Thi Kieu Tran, Sayed M Bateni, Fatemeh Rezaie, Mahdi Panahi, Changhyun Jun, Clay Trauernicht, **Christopher MU Neale**. 2023. Enhancing predictive ability of optimized group method of data handling (GMDH) method for wildfire susceptibility mapping. Agricultural and Forest Meteorology Volume 339, Pages 109587. <https://doi.org/10.1016/j.agrformet.2023.109587>

Bhatti, Sandeep, Derek M Heeren, Susan A O'Shaughnessy, **Christopher MU Neale**, Jacob LaRue, Steve Melvin, Eric Wilkening, Geng Bai. 2023. Toward automated irrigation management with integrated crop water stress index and spatial soil water balance. Precision Agriculture, 24 (6), 2223–2247 <https://doi.org/10.1007/s11119-023-10038-4>

Ferreira, Thomás R, Mitchell S Maguire, Bernardo B da Silva, **Christopher M U Neale**, Edivaldo AO Serrão, Jéssica D Ferreira, Magna SB de Moura, Carlos AC dos Santos, Madson T Silva, Lineu N Rodrigues, Herica FS Carvalho. 2023. Assessment of water demands for irrigation using energy balance and satellite data fusion models in cloud computing: A study in the Brazilian semiarid region. Agricultural Water Management, Volume 281, Pages 108260

Ivo Zution Gonçalves, Anderson Ruhoff, Leonardo Laipelt, RC Bispo, Fernando Braz Tangerino Hernandez, **Christopher Michael Usher Neale**, Antônio Heriberto de Castro Teixeira, Fábio Ricardo Marin. 2022. Remote sensing-based evapotranspiration modeling using geeSEBAL for sugarcane irrigation management in Brazil. Agricultural Water Management, Volume 274, Pages 107965.

Paryani, Sina; Mojgan Bordbar, Changhyun Jun, Mahdi Panahi, Sayed M. Bateni, **Christopher M. U. Neale**, Hamidreza Moeini & Saro Lee. 2022. Hybrid-based approaches for the flood susceptibility prediction of Kermanshah province, Iran. Natural Hazards. <https://doi.org/10.1007/s11069-022-05701-4>

Vosoughifar, Hamidreza, Helaleh Khoshkam, Sayed M. Bateni, Changhyun Jun, Tongren Xu, Shahab S. Band, **Christopher M.U. Neale**. 2022. Estimation of daily reference evapotranspiration from limited climatic variables in coastal regions. Hydrological Sciences Journal. <https://doi.org/10.1080/02626667.2022.2142473>

Rezaie, Fatemeh, Mahdi Panahi, Sayed M Bateni, Changhyun Jun, **Christopher M U Neale**, Saro Lee. 2022. Novel hybrid models by coupling support vector regression (SVR) with meta-heuristic algorithms (WOA and GWO) for flood susceptibility mapping. *Nat Hazards* **114**, 1247–1283 (2022). <https://doi.org/10.1007/s11069-022-05424-6>

Bhatti, Sandeep, Derek M. Heeren, Steven R. Evett, Susan A. O'Shaughnessy, Daran R. Rudnick, Trenton E. Franz, Yufeng Ge, **Christopher M U. Neale**. 2022. Crop response to thermal stress without yield loss in irrigated maize and soybean in Nebraska. *Agricultural Water Management*, Vol. 274, Pages 107946. <https://doi.org/10.1016/j.agwat.2022.107946>

Maguire, Mitchell S., **Christopher M. U. Neale**, Wayne E. Woldt, Derek M. Heeren. 2022. Managing spatial irrigation using remote-sensing-based evapotranspiration and soil water adaptive control model. *Agricultural Water Management*, Vol. 272, Pages 107838 <https://doi.org/10.1016/j.agwat.2022.107838>

Santos, Robson Argolo, Everardo Chartuni Mantovani, Elpidio Inacio Fernandes-Filho, Roberto Filgueiras, Rodrigo Dal Sasso Lourenco, Vinicius Bof Bufon, **Christopher M. U. Neale**. 2022. Modeling Actual Evapotranspiration with MSI-Sentinel Images and Machine Learning Algorithms. *Atmosphere*, Vol 13, Issue 9, Page 1518 <https://doi.org/10.3390/atmos13091518>

Lopes, Tércio R, Jéssica G Nascimento, Adriano B Pacheco, Sergio N Duarte, **Christopher MU Neale**, Marcos Vinicius Folegatti. 2022. Estimation of sediment production and soil loss in a water supply basin for the metropolitan region of São Paulo-Brazil. *Journal of South American Earth Sciences*, Volume 118, Pages 103929 <https://doi.org/10.1016/j.jsames.2022.103929>

Bispo, R.C., F.B.T. Hernandez, I.Z. Goncalves, **C.M.U. Neale**, A.H.C. Teixeira. 2022. Remote Sensing based Evapotranspiration Modeling for Sugarcane in Brazil Using a Hybrid Approach. *Agricultural Water Management*, Vol 271, <https://doi.org/10.1016/j.agwat.2022.107763>

Becker, Sophia M, Trenton E Franz, Olufemi Abimbola, Dean D Steele, J Paulo Flores, Xinhua Jia, Thomas F Scherer, Daran R Rudnick, **Christopher MU Neale**. 2022. Feasibility assessment on use of proximal geophysical sensors to support precision management. *Vadose Zone Journal*. Pages e20228. <https://doi.org/10.1002/vzj2.20228>

Kayser, RH, A Ruhoff, L Laipelt, E de Mello Kich, DR Roberti, Vanessa de Arruda Souza, Gisele Cristina Dotto Rubert, Walter Collischonn, **Christopher Michael Usher Neale**. 2022. Assessing geeSEBAL automated calibration and meteorological reanalysis uncertainties to estimate evapotranspiration in subtropical humid climates. *Agricultural and Forest Meteorology*, Volume 314, Pages 108775

Singh, Jasreman, Yufeng Ge, Derek M Heeren, Elizabeth Walter-Shea, **Christopher MU Neale**, Suat Irmak, Mitchell S Maguire. 2022. Unmanned Aerial System-Based

Data Ferrying over a Sensor Node Station Network in Maize. *Sensors*, Vol 22, Issue 5, pp 1863.

Bhatti, Sandeep, Derek M Heeren, Susan A O'Shaughnessy, Steven R Evett, Mitchell S Maguire, Suresh P Kashyap, **Christopher MU Neale**. 2022. *Applied Engineering in Agriculture*, (doi: 10.13031/aea.14945)

Santos, CAC, **Neale, CMU**, Mekonnen, MM, Goncalves, IZ, Oliveira, G, Ruiz-Alvarez, O, Safa, B, Rowe, CM. 2022. Trends of extreme air temperature and precipitation and their impact on corn and soybean yields in Nebraska, USA. *Theoretical And Applied Climatology*. DOI10.1007/s00704-021-03903-7

Opstal, Jonna v., **C. M. U. Neale**, L. E. Hipps. 2022. Evaluating the adaptability of an irrigation district to seasonal water availability using a decade of remotely sensed evapotranspiration estimates. *Agricultural Water Management* 261, 107383
Hu, Q, Woldt, W, **Neale, C**, Zhou, YZ, Drahota, J, Varner, D, Bishop, A LaGrange, T, Zhang, LG, Tang, ZH. 2021. Utilizing unsupervised learning, multi-view imaging, and CNN-based attention facilitates cost-effective wetland mapping. *Remote Sensing of Environment*. Volume 267, Article Number 112757. DOI10.1016/j.rse.2021.112757, Dec 15 2021

Eger, Glauco ZS, Gerson C Silva Junior, Eduardo AG Marques, Bernardo RC Leão, Diana GTB da Rocha, Troy E Gilmore, Luís GH do Amaral, Juremá AO Silva, **Christopher Neale**. 2021. Recharge assessment in the context of expanding agricultural activity: Urucuia Aquifer System, western State of Bahia, Brazil. *Journal of South American Earth Sciences*, Paper 103601

Neale, CMU, Gonzalez-Dugo, MP; Serrano-Perez, A; Campos, I; Mateos, L. 2021. Cotton canopy reflectance under variable solar zenith angles: Implications of use in evapotranspiration models. *HYDROLOGICAL PROCESSES*, Volume: 35 Issue: 6, Article Number: e14162, DOI: 10.1002/hyp.14162. Published: JUN 2021

Shrestha, Nawaraj, Aaron R Mittelstet, Troy E Gilmore, Vitaly Zlotnik, **Christopher M Neale**. 2021. Effects of drought on groundwater-fed lake areas in the Nebraska Sand Hills. *Journal of Hydrology: Regional Studies* Volume 36, Article 100877 <https://doi.org/10.1016/j.ejrh.2021.100877>

Singh, Jasreman, Yufeng Ge, Derek M Heeren, Elizabeth Walter-Shea, **Christopher MU Neale**, Suat Irmak, Wayne E Woldt, Geng Bai, Sandeep Bhatti, Mitchell S Maguire. 2021. Inter-relationships between water depletion and temperature differential in row crop canopies in a sub-humid climate. *Agricultural Water Management*, Volume 256, Article 107061 <https://doi.org/10.1016/j.agwat.2021.107061>

Maguire, MS; **Neale, CMU**; Woldt, WE. 2021. Improving Accuracy of Unmanned Aerial System Thermal Infrared Remote Sensing for Use in Energy Balance Models in Agriculture Applications. *REMOTE SENSING*, Volume: 13 Issue: 9, Article Number: 1635. DOI: 10.3390/rs13091635. Published: MAY 2021

Nascimento, Jessica G.; Althoff, D.; C. Bazame, H.; **Neale, C. M. U.**; N. Duarte, S.; Ruhoff, A.; Z. Gonçalves, I. 2021. Evaluating the Latest IMERG Products in a Subtropical Climate: The Case of Paraná State, Brazil. Remote Sens. 2021, 13, 906. <https://doi.org/10.3390/rs13050906>

Martins, JA; Fiorio, PR; Barros, PPD; Dematte, JAM; Molin, JP; Cantarella, H; **Neale, CMU**. 2021. Potential use of hyperspectral data to monitor sugarcane nitrogen status. ACTA SCIENTIARUM-AGRONOMY. Volume: 43 Article Number: e47632. DOI: 10.4025/actasciagron.v43i1.47632. Published: 2021

Venancio, Luan Peroni, Everardo Chartuni Mantovani, Cibele Hummel do Amaral, **Christopher Michael Usher Neale**, Roberto Filgueiras, Ivo Zution Gonçalves, Fernando Franca da Cunha. 2021. Evapotranspiration mapping of commercial corn fields in Brazil using SAFER algorithm. SCIENTIA AGRICOLA. Volume 78, Issue 4. DOI: 10.1590/1678-992X-2019-0261

Chavez, Jose L.; Torres-Rua, Alfonso F.; Woldt, Wayne E.; Zhang, Huihui; Robertson, Christopher; Marek, Gary W.; Wang, Dong; Heeren, Derek M.; Taghvaeian, Saleh; and **Neale, Christopher M. U.** 2020. A Decade of Unmanned Aerial Systems in Irrigated Agriculture in the Western U.S. Applied Engineering in Agriculture, Vol. 36(4): 423-436

Venancio, Luan Peroni, Everardo Chartuni Mantovani, Cibele Hummel do Amaral, **Christopher Michael Usher Neale**, Ivo Zution Gonçalves, Roberto Filgueiras, Fernando Coelho Eugenio. 2020. Potential of using spectral vegetation indices for corn green biomass estimation based on their relationship with the photosynthetic vegetation sub-pixel fraction. Agricultural Water Management, Vol 236, Pages 106-155. June 20, 2020. <https://doi.org/10.1016/j.agwat.2020.106155>

Mekonnen, Mesfin M., Arjen Y. Hoekstra, **Christopher M. U. Neale**, Chittaranjan Ray, Haishun S. Yang. 2020. Water productivity benchmarks: The case of maize and soybean in Nebraska. Agricultural Water Management. Volume 234, 1 May 2020, 106122. <https://doi.org/10.1016/j.agwat.2020.106122>

Laipelt, Leonardo, Anderson Luis Ruhoff, Ayan Santos Fleischmann, Rafael Henrique Bloedow Kayser, Elisa de Mello Kich, Humberto Ribeiro da Rocha, **Christopher Michael Usher Neale**. 2020. Assessment of an Automated Calibration of the SEBAL Algorithm to Estimate Dry-Season Surface-Energy Partitioning in a Forest-Savanna Transition in Brazil. Remote Sens. 2020, 12(7), 1108; March 21, 2020. <https://doi.org/10.3390/rs12071108>

Bhatti, Sandeep, Derek M. Heeren, J. Burdette Barker, **Christopher M.U. Neale**, Wayne E. Woldt, Mitchell S. Maguire, Daran R. Rudnick. 2020. Site-specific irrigation management in a sub-humid climate using a spatial evapotranspiration model with satellite and airborne imagery. Agricultural Water Management. Volume 230, 1 March 2020, 105950 <https://doi.org/10.1016/j.agwat.2019.105950>

Geli, Hatim M. E., José González-Piqueras, **Christopher M. U. Neale**, Claudio Balbontín, Isidro Campos and Alfonso Calera. 2020. Effects of Surface Heterogeneity Due to Drip Irrigation on Scintillometer Estimates of Sensible, Latent Heat Fluxes and Evapotranspiration over Vineyards. *Water*. 12(1), 81; <https://doi.org/10.3390/w12010081>

Santos, Carlos A. C., Denis A.Mariano, Francisco das Chagas A. do Nascimento, Fabiane Reginada C. Dantas, Gabrielde Oliveira, Madson T.Silva, Lindenberg L.da Silva, Bernardo B.da Silva, Bergson G.Bezerra, Babak Safa, Salomão de S. Medeiros, **Christopher M.U.Neale**. 2020. Spatio-temporal patterns of energy exchange and evapotranspiration during an intense drought for drylands in Brazil. *International Journal of Applied Earth Observation and Geoinformation*. Volume 85, March 2020, 101982 <https://doi.org/10.1016/j.jag.2019.101982>

Zution Gonçalves, Ivo; Mesfin M.Mekonnen; **Christopher M.U.Neale**; Isidro Campos; Michael R.Neale. 2020. Temporal and spatial variations of irrigation water use for commercial corn fields in Central Nebraska. *Agricultural Water Management*. Volume 228, 20 February 2020, 105924

Barker, JB; WE Woldt, B. D. Wardlow; **C. M. U. Neale**; M. S. Maguire; B. C. Leavitt; D. M. Heeren. 2019. Calibration of a common shortwave multispectral camera system for quantitative agricultural applications. *PRECISION AGRICULTURE*. DOI: 10.1007/s11119-019-09701-6

He, Zinlei; Tongren Xu, Sayed Bateni, **Christopher M. U. Neale**; Shaomin Liu; Thomas Auligne; Kaicun Wang, Kebiao Mao, Yunjun Yao,Shaodong Zu. 2019. Mapping Regional Turbulent Heat Fluxes via Assimilation of MODIS Land Surface Temperature Data into an Ensemble Kalman Smoother Framework. *Earth and Space Science*. DOI: 10.1029/2019EA000705

Mekonnen, Mesfin M.; **Christopher M.U. Neale**; Chittaranjan Ray; Galen E.Erickson; Arjen Y.Hoekstra. 2019. Water productivity in meat and milk production in the US from 1960 to 2016. *Environment International* Volume 132, November 2019, 105084. <https://doi.org/10.1016/j.envint.2019.105084>

Venancio, Luan Peroni; Everardo Chartuni Mantovani; Cibebe Hummeldo Amaral; **Christopher Michael Usher Neale**; Ivo Zution Gonçalves; Roberto Filgueiras; IsidroCampos. 2019. Forecasting corn yield at the farm level in Brazil based on the FAO-66 approach and soil-adjusted vegetation index (SAVI). *Agricultural Water Management*. Volume 225, 20 November 2019, 105779.

Blöschl, Günter, Marc Icon, F.P. Bierkens, Antonio Chambel, Christophe Cudennec, and 40 other authors including **Christopher Neale**. 2019. Twenty-three unsolved problems in hydrology (UPH) – a community perspective. *Hydrological Sciences Journal*, Volume 64, 2019 - Issue 10, page 1141-1158. <https://doi.org/10.1080/02626667.2019.1620507>

Barker, J. Burdette, Sandeep Bhatti, Derek M. Heeren, **Christopher M. U. Neale**

and Daran R. Rudnick. 2019. Variable Rate Irrigation of Maize and Soybean in West-Central Nebraska Under Full and Deficit Irrigation. *Frontiers in Big Data*, 24 September 2019 <https://doi.org/10.3389/fdata.2019.00034>

Bosquilia, Raoni W.D.; **Christopher M.U. Neale**; Sergio N. Duarte; Solon J. Longhia; Silvio F. de B. Ferraz; Frank E. Muller-Karger. 2019. Evaluation of evapotranspiration variations according to soil type using multivariate statistical analysis. *Geoderma*. <https://doi.org/10.1016/j.geoderma.2019.113906>

Filgueiras, R; Mantovani, EC; Dias, SHB; Fernandes, EI; da Cunha, FF; Neale, **CMU**. 2019. New approach to determining the surface temperature without thermal band of satellites. *European Journal of Agronomy*, Volume: 106 Pages: 12-22. DOI: 10.1016/j.eja.2019.03.001. Published: MAY 2019

Foster, T; IZ Gonçalves; I Campos; **CMU Neale** and N Brozović. 2019. Assessing landscape scale heterogeneity in irrigation water use with remote sensing and in situ monitoring. *Environ. Res. Lett.* 14 024004

Mesfin M Mekonnen, Thiago L Romanelli, Chittaranjan Ray, Arjen Y Hoekstra, Adam J Liska, **Christopher MU Neale**. 2018. Water, Energy, and Carbon Footprints of Bioethanol from the US and Brazil. *Environmental science & technology*. Volume 52, Issue 24, Pages 14508-14518

Bosquilia, Raoni W.D.; **Christopher M.U. Neale**, Sergio N. Duarte, Solon J. Longhi, Silvio F. de B. Ferraz, Frank E. Muller-Karger, Matthew J. McCarthy. 2018. Evaluation of evapotranspiration variations as a function of relief and terrain exposure through multivariate statistical analysis. *Ecohydrology and Hydrobiology*. <https://doi.org/10.1016/j.ecohyd.2018.11.001>

Xinlei He, Tongren Xu, Sayed Bateni, **Christopher Neale**, Thomas Auligne, Shaomin Liu, Kaicun Wang, Kebiao Mao, Yunjun Yao. 2018. Evaluation of the Weak Constraint Data Assimilation Approach for Estimating Turbulent Heat Fluxes at Six Sites. *Remote Sensing*. Volume 10, Issue 12, Pages 1994 <https://doi.org/10.3390/rs10121994>

Bosquilia, RWD; **Neale, CMU**; Duarte, SN; Longhi, SJ; Ferraz, SFD; Muller-Karger, FE; McCarthy, MJ. 2018. Temporal evaluation of evapotranspiration for sugar cane, planted forest and native forest using landsat 8 images and a two-source energy balance. *Computers and Electronics in Agriculture*. Volume: 151 Pages: 70-76. DOI: 10.1016/j.compag.2018.06.003. Published: AUG 2018

Gese, EM; Terletzky, PA; Cavalcanti, SMC; **Neale, CMU**. 2018. Influence of behavioral state, sex, and season on resource selection by jaguars (*Panthera onca*): Always on the prowl? *Ecosphere*. Vol 9, Issue 7, Article Number: e02341. DOI: 10.1002/ecs2.2341. Published: JUL 2018

Taghvaeian, S; **Neale, CMU**; Osterberg, JC; Sritharan, SI; Watts, DR. 2018. Remote Sensing and GIS Techniques for Assessing Irrigation Performance: Case Study in Southern California. *Journal of Irrigation and Drainage Engineering*.

Volume 144, Issue 6. Article Number: 05018002
DOI: 10.1061/(ASCE)IR.1943-4774.0001306. Published: JUN 2018

Barker, JB; Heeren, DM; **Neale, CMU**; Rudnick, DR. 2018. Evaluation of variable rate irrigation using a remote-sensing-based model. *Agricultural Water Management*, Volume: 203, Pages: 63-74,
DOI: 10.1016/j.agwat.2015.02.022 Published: APR 30 2018

Xu, TR; Bateni, SM; **Neale, CMU**; Auligne, T; Liu, SM. 2018. Estimation of Turbulent Heat Fluxes by Assimilation of Land Surface Temperature Observations From GOES Satellites Into an Ensemble Kalman Smoother Framework. *Journal of Geophysical Research-Atmospheres*. Volume: 123 Issue: 5 Pages: 2409-2423
DOI: 10.1002/2017JD027732. Published: MAR 16 2018

Campos, Isidro, **C. M.U. Neale**, T. J. Arkebauer, A. E. Suyker, I. Z. Gonçalves. Water Productivity and Crop Yield: A Simplified Remote Sensing Driven Operational Approach. 2018. *Agricultural and Forest Meteorology*. Volume: 249 Pages: 501-511
Published: FEB 15 2018 <https://doi.org/10.1016/j.agrformet.2017.07.018>

Barker, JB; **Neale, CMU**, Heeren, DM; Suyker, AE. 2018. Evaluation of A Hybrid Reflectance-Based Crop Coefficient and Energy Balance Evapotranspiration Model For Irrigation Management. 2018. *TRANSACTIONS OF THE ASABE*. Volume: 61 Issue: 2 Pages: 533-548 DOI: 10.13031/trans.12311

Gava, R; **Neale, CMU**; Frizzzone, JA; Anselmo, JL; Cotrim, MF; Kuhn, IE. 2017. Performance of maize hybrids subject to different application depths under center pivot. *Water Resources and Irrigation Management*, Vol 6, Issue 3, Pages 161-168.

Campos, Isidro, **C. M.U. Neale**, T. J. Arkebauer, A. E. Suyker, I. Z. Gonçalves. Water Productivity and Crop Yield: A Simplified Remote Sensing Driven Operational Approach. 2017. *Agricultural and Forest Meteorology*.
<https://doi.org/10.1016/j.agrformet.2017.07.018>

Barker, JB; Franz, TE; Heeren, DM; **Neale, CMU**; Luck, JD. 2017. Soil water content monitoring for irrigation management: A geostatistical analysis. *Agricultural Water Management*. Vol 188, Pages 36-49. DOI: 10.1016/j.agwat.2017.03.024

Campos, Isidro, **C. M.U. Neale**, A. E. Suyker, T. J. Arkebauer, I. Z. Gonçalves. 2017. Reflectance-based crop coefficients REDUX: For operational evapotranspiration estimates in the age of high producing hybrid varieties. *Agricultural Water Management*, Vol. 187, Pages 140-153.
<http://dx.doi.org/10.1016/j.agwat.2017.03.022>

Gava, R; Anselmo, JL; **Neale, CMU**; Frizzzone, JA; Leal, AJF. 2017. Different Soybean Plant Populations Under Central Pivot Irrigation. *Engenharia Agricola*. Volume: 37 Issue: 3 Pages: 441-452 DOI: 10.1590/1809-4430-Eng.Agric.v37n3p441-452/2017

Long, AL; Kettenring, KM; Hawkins, CP; **Neale, CMU**. 2017. Distribution and Drivers of a Widespread, Invasive Wetland Grass, *Phragmites australis*, in Wetlands of the Great Salt Lake, Utah, USA. WETLANDS, Volume: 37 Issue: 1 Pages: 45-57. DOI: 10.1007/s13157-016-0838-4

Foster, T., N. Brozovic, A.P. Butler, **C.M.U. Neale**, D. Raes, P. Steduto, E. Fereres, T.C. Hsiao. 2017. AquaCrop-OS: An open source version of FAO's crop water productivity model. Agricultural Water Management 181: 18-22.
<http://dx.doi.org/10.1016/j.agwat.2016.11.015>

Campos, I., **C.M.U. Neale**, A. Calera. 2016. Is row orientation a determinant factor for radiation interception in row vineyards? Australian Journal of Grape and Wine Research. DOI: 10.1111/ajgw.12246

Neale, C. M. U.; C. Jaworowski; H. Heasler; S. Sivarajan; A. Masih. 2016. Hydrothermal Monitoring in Yellowstone National Park Using Airborne Thermal Infrared Remote Sensing. Remote Sensing of Environment. Volume: 184 Pages: 628-644. DOI: 10.1016/j.rse.2016.04.016

Xia, Ting; William P. Kustas; Martha C. Anderson; Joseph G. Alfieri; Feng Gao; Lynn McKee; John H. Prueger; Hatim M. E. Geli; **Christopher M. U. Neale**; Luis Sanchez; Maria Mar Alsina and Zhongjing Wang. 2016. Mapping evapotranspiration with high-resolution aircraft imagery over vineyards using one- and two-source modeling schemes. Hydrol. Earth Syst. Sci., 20, 1523-1545, 2016.
<http://www.hydrol-earth-syst-sci.net/20/1523/2016/> doi:10.5194/hess-20-1523-2016

Odi-Lara, M; Campos, I; **Neale, CMU**; Ortega-Farias, S; Poblete-Echeverria,; Balbontin, C; Calera. 2016. Estimating Evapotranspiration of an Apple Orchard Using a Remote Sensing-Based Soil Water Balance. REMOTE SENSING, Vol. 8, Issue 3, Pages: 612-631. March 2016.

Corcoles, J. I., Frizzzone, J.A.; Lima, S. C. R. V.; Mateos, L.; **Neale, C. M. U.** Snyder, R. L. Souza, F.. 2016. Irrigation Advisory Service and Performance Indicators in Baixo Acaraú Irrigation District, Brazil. IRRIGATION AND DRAINAGE, Volume: 65 Issue: 1 Pages: 61-72. DOI: 10.1002/ird.1941. Published: FEB 2016

Campos, Isidro; Balbontin, C; Gonzalez-Piqueras, J; Gonzalez-Dugo, MP; **Neale, CMU**; Calera, A. 2016. Combining a water balance model with evapotranspiration measurements to estimate total available soil water in irrigated and rainfed vineyards. AGRICULTURAL WATER MANAGEMENT, Volume: 165 Pages: 141-152. DOI: 10.1016/j.agwat.2015.11.018. Published: FEB 2016

Glenn, Diana T.; Endter-Wada, Joanna; Kjellgren, Roger; **Neale, CMU**. 2015. Tools for evaluating and monitoring effectiveness of urban landscape water conservation interventions and programs. LANDSCAPE AND URBAN PLANNING Volume: 139 Pages: 82-93 Published: JUL 2015

Biudes, Marcelo Sacardi; George Louis Vourlitis; Nadja Gomes Machado; Paulo

Henrique Zanella de Arruda; Geraldo Aparecido Rodrigues Neves; Francisco de Almeida Lobo; **Christopher M. U. Neale**; José de Souza Nogueira. 2015. Patterns of energy exchange for tropical ecosystems across a climate gradient in Mato Grosso, Brazil. *Agricultural and Forest Meteorology*. Volume 202, 15 March 2015, Pages 112–124

Taghvaeian, Saleh; **Christopher M. U. Neale**; John Osterberg; Subramania I. Sritharan and Doyle R. Watts. 2014. Water Use and Stream-Aquifer-Phreatophyte Interaction along a Tamarisk-Dominated Segment of the Lower Colorado River. In *Remote Sensing of the Terrestrial Water Cycle*. American Geophysical Union. DOI: 10.1002/9781118872086.ch6

Campos, Isidro; **Christopher M. U. Neale**; Maria-Llanos López; Claudio Balbontín; Alfonso Calera. 2014. Analyzing the effect of shadow on the relationship between ground cover and vegetation indices by using spectral mixture and radiative transfer models. *J. Appl. Remote Sens.* 8(1), 083562 (Aug 25, 2014). doi:10.1117/1.JRS.8.083562

Zaccaria, D; **Neale, CMU**. 2014. Modeling delivery performance in pressurized irrigation systems from simulated peak-demand flow configurations. *IRRIGATION SCIENCE*, Volume: 32 Issue: 4 Pages:295-317. DOI: 10.1007/s00271-014-0426-4

Vanderlinder, MS; **CMU Neale**; DE Rosenberg; KM Kettenring, 2014. Use Of Remote Sensing To Assess Changes In Wetland Plant Communities Over An 18-Year Period: A Case Study From The Bear River Migratory Bird Refuge, Great Salt Lake, Utah. *WESTERN NORTH AMERICAN NATURALIST*, Volume: 74, Issue: 1 Pages: 33-46

Lewis, C.S; Geli, H.M.E; **Neale, C.M.U**. 2014. Comparison of the NLDAS Weather Forcing Model to Agrometeorological Measurements in the western United States *Journal of Hydrology*, Volume: 510, Pages: 385-392

Paul, G., Gowda, P. H., Prasad, P. V. Vara, Howell, T. A., Aiken, R.M., **Neale, C. M. U.** (2014). Investigating the influence of roughness length for heat transport (z_{oh}) on the performance of SEBAL in semi-arid irrigated and dryland agricultural systems. *Journal of Hydrology*, Volume: 509, Pages: 231-244

Hernandez, F. B. T.; **Neale, C. M. U.**; Teixeira, A. H. de C.; Taghvaeian, S. 2014. Determining large scale actual evapotranspiration using agrometeorological and remote sensing data in the Northwest of Sao Paulo State, Brazil. *Acta Horticulturae*, Issue: 1038 Pages: 263-270

Cheryl Jaworowski, Henry Heasler, **Christopher Neale**, Sivarajan Saravanan Ashish Masih. 2013. Temporal and Seasonal Variations of the Hot Spring Basin Hydrothermal System, Yellowstone National Park, USA. *Remote Sens.* 2013, 5, 6587-6610; doi:10.3390/rs5126587

Paul, G., Gowda, P. H., Prasad, P. V. Vara, Howell, T. A., Staggenborg, S. A., **Neale, C. M. U.** (2013). Lysimetric evaluation of SEBAL using high resolution

airborne imagery from BEAREX08. *ADVANCES IN WATER RESOURCES*, 59, 157-168.

Zaccaria, D., Lamaddalena, N., **Neale, C. M. U.**, Merkley, G. P., Palmisano, N., Passarella, G. (2013). Simulation of peak-demand hydrographs in pressurized irrigation delivery systems using a deterministic–stochastic combined model. Part I: model development. *Irrigation Science*, 31(3), 209-224.

Zaccaria, D., Lamaddalena, N., **Neale, C. M. U.**, Merkley, G. P. (2013). Simulation of peak-demand hydrographs in pressurized irrigation delivery systems using a deterministic–stochastic combined model. Part II: model applications. *Irrigation Science*, 31(3), 192-208.

Alfieri, J. G., W. P. Kustas, J. H. Prueger, L. E. Hipps, S. R. Evett, J. B. Basara, **C. M.U. Neale**, A.N. French, P. Colaizzi, N. Agam, M. H. Cosh, J. L. Chavez, T. A. Howell. 2012. On the discrepancy between eddy covariance and lysimetry-based surface flux measurements under strongly advective conditions, *Advances in Water Resources*, Volume 50, December 2012, Pages 62-78, ISSN 0309-1708, 10.1016/j.advwatres.2012.07.008.

Prueger, J.H., J.G. Alfieri, L.E. Hipps, W.P. Kustas, J.L. Chavez, S.R. Evett, M.C. Anderson, A.N. French, **C.M.U. Neale**, L.G. McKee, J.L. Hatfield, T.A. Howell, N. Agam. 2012. Patch scale turbulence over dryland and irrigated surfaces in a semi-arid landscape under advective conditions during BEAREX08, *Advances in Water Resources*, Volume 50, December 2012, Pages 106-119, ISSN 0309-1708, 10.1016/j.advwatres.2012.07.014.

Kustas, W. P., J. G. Alfieri, M. C. Anderson, P. D. Colaizzi, J. H. Prueger, S. R. Evett, **C. M.U. Neale**, A. N. French, L. E. Hipps, J. L. Chávez, K. S. Copeland, T. A. Howell. 2012. Evaluating the two-source energy balance model using local thermal and surface flux observations in a strongly advective irrigated agricultural area, *Advances in Water Resources*, Volume 50, December 2012, Pages 120-133, ISSN 0309-1708, 10.1016/j.advwatres.2012.07.005.

Neale, C. M.U., H. M.E. Geli, W. P. Kustas, J. G. Alfieri, P. H. Gowda, S. R. Evett, J.H. Prueger, L. E. Hipps, W. P. Dulaney, J. L. Chávez, A. N. French, T. A. Howell. 2012. Soil water content estimation using a remote sensing based hybrid evapotranspiration modeling approach. *Advances in Water Resources*, Volume 50, December 2012, Pages 152-161, ISSN 0309-1708, 10.1016/j.advwatres.2012.10.008.

Bingham, QG; Neilson, BT; **Neale, CMU**; Cardenas, MB. 2012. Application of high-resolution, remotely sensed data for transient storage modeling parameter estimation. *Water Resources Research*, Volume: 48 Article Number: W08520 DOI: 10.1029/2011WR011594 Published: AUG 25 2012

Geli, Hatim M. E.; **Neale, Christopher M. U.**; Watts, Doyle; Osterberg, J; De Bruin, HAR; Kohsiek, W; Pack, RT; Hipps, LE. 2012. Scintillometer-Based Estimates of Sensible Heat Flux Using Lidar-Derived Surface Roughness. *Journal of Hydrometeorology*, Volume: 13 Issue: 4 Pages: 1317-1331 DOI: 10.1175/JHM-D-11-085.1 Published: AUG 2012

Terletzky, Pat; Ramsey, R. Douglas; **Neale, Christopher M. U.** 2012. Spectral Characteristics of Domestic and Wild Mammals. *GISScience and Remote Sensing*, Volume: 49 Issue: 4 Pages: 597-608 DOI: 10.2747/1548-1603.49.4.597 Published: JUL-AUG 2012

Chavez, J. L.; Gowda, P. H.; Howell, T. A.; Garcia, L. A.; Copeland, K. S.; **Neale, C. M. U.** 2012. ET Mapping with High-Resolution Airborne Remote Sensing Data in an Advective Semiarid Environment. *Journal of Irrigation and Drainage Engineering-ASCE*, Volume: 138 Issue: 5 Pages: 416-423 DOI: 10.1061/(ASCE)IR.1943-4774.0000417 Published: MAY 2012

Zaman, B.; McKee, M.; **Neale, C. M. U.** 2012. Fusion of remotely sensed data for soil moisture estimation using relevance vector and support vector machines. *INTERNATIONAL JOURNAL OF REMOTE SENSING* Volume: 33 Issue: 20 Pages: 6516-6552 DOI: 10.1080/01431161.2012.690540 Published: 2012

Edward P. Glenn, **Christopher M. U. Neale**, Doug J. Hunsaker and Pamela L. Nagler. 2011. Vegetation index-based crop coefficients to estimate evapotranspiration by remote sensing in agricultural and natural ecosystems. *Hydrological Processes*, Volume 25, Issue 26, Pages 4050-4062.

Saleh Taghvaeian and **Christopher M. U. Neale**. 2011. Water balance of irrigated areas: a remote sensing approach. *Hydrological Processes*, Volume 25, Issue 26, Pages 4132-4141

Farag, F. A.; **C. M. U. Neale**; R. K. Kjelgren; J. Endter-Wada. 2011. Quantifying Urban Landscape Water Conservation Potential Using High Resolution Remote Sensing and GIS Photogrammetric Engineering and Remote Sensing 77 11 1113-1122

Santos, C.A.C., **C. M. U. Neale**, T. V. R. Rao and B. B. da Silva. 2011. Trends in indices for extremes in daily temperature and precipitation over Utah, USA. *International Journal of Climatology*, 31 12 1813-1822

Lecina, S. **C.M.U. Neale**, G.P. Merkley, C.A.C. Santos. 2011. Irrigation evaluation based on performance analysis and water accounting at the Bear River Irrigation Project (U.S.A.). *Agricultural Water Management*, 98:1349-1363

Cardenas B.; **C. M. U. Neale**; C. Jaworowski; H. Heasler. 2011. High-resolution mapping of river-hydrothermal water mixing: Yellowstone National Park. *International Journal of Remote Sensing* 32 10 2765-2777.

Campos I; **C. M. U. Neale**; A. Calera; C. Balbontin; J. G. Piqueras. 2010. Assessing satellite-based basal crop coefficients for irrigated grapes (*Vitis vinifera* L) *Agricultural Water Management* 98 1 45-54

Zaccaria, D., Ines Oueslati, **C. M. U. Neale**, N.Lamaddalena, Michele Vurro Luis S. Pereira. 2010. Flexible delivery schedules to improve farm irrigation and reduce pressure on groundwater: a case study in southern Italy. *Irrigation Science*, Volume 28, Issue 3 (2010), Page 257 - 270

Sridhar, BBM; RK Vincent, RK.; WB Clapham, SI Sritharan, J Osterberg, **CMU Neale**, DR Watts. 2010. Mapping saltcedar (*Tamarix ramosissima*) and other riparian and agricultural vegetation in the Lower Colorado River region using multi-

spectral Landsat TM imagery. Geocarto International. Volume: 25, Issue: 8, Pages: 649-662 DOI: 10.1080/10106049.2010.521857

Gonzalez-Dugo, MP., **C. M. U. Neale**, L Mateos, WP Kustas, JH Prueger, MC Anderson and F. Li. 2009. A comparison of operational remote sensing-based models for estimating crop evapotranspiration. Agricultural and Forest Meteorology, 149 (2009) pp1843-1853

Chavez, J. L., P. H. Gowda, T. A. Howell, **C. M. U. Neale** and K.S. Kopeland. 2009. Estimating Hourly Crop ET Using a Two-Source Energy Balance Model and Multispectral Airborne Imagery. Irrigation Science, Vol. 28, No. 1, pp: 79-91.

Costa dos Santos, Carlos Antonio, B. B.Silva, T. V. R. Rao and **Christopher M. U. Neale**. 2009. Energy balance measurements over a banana orchard in the Semiarid region in the Northeast of Brazil. Pesq. agropec. bras., Brasília, v.44, n.11, p.1365-1373, nov. 2009

Chavez, JL; **CMU Neale**, J. H. Prueger, W. P. Kustas. 2008. Daily evapotranspiration estimates from extrapolating instantaneous airborne remote sensing ET values. Irrigation Science, Volume: 27 Issue: 1 Pages: 67-81

Akashah O.Z., **Neale, C. M. U.**, Jayanthi, H. 2008. Detailed mapping of riparian vegetation in the middle Rio Grande River using high resolution multi-spectral airborne remote sensing. Journal of Arid Environments, Volume: 72, Issue: 9, Pages: 1734-1744

Endter-Wada J., Kurtzman J., Keenan S.P., Kjelgren R.K., **Neale C.M.U.** 2008. Situational waste in landscape watering: Residential and business water use in an urban Utah community. Journal of the American Water Resources Association, Volume: 44, Issue: 4, Pages: 902-920

Konrad, C. P., Black, R. W., Voss, F., **Neale, C. M. U.** 2008. Integrating remotely acquired and field data to assess effects of setback levees on riparian and aquatic habitats in glacial-melt water rivers. River Research and Applications. Volume: 24, Issue: 4, Pages: 355-372

Agam N, Kustas W.P., Anderson M.C., Li F.Q., **Neale C.M.U.** 2007. A vegetation index based technique for spatial sharpening of thermal imagery. Remote Sensing Of Environment 107 (4): 545-558

Jayanthi H., **Neale C.M.U.**, Wright J.L. 2007. Development and validation of canopy reflectance-based crop coefficient for potato. Agricultural Water Management 88 (1-3): 235-246

Cooper, D. I., Eichinger, W. E., Archuleta, J., Hipps, L., **Neale, C. M. U.**, Prueger, J. H. 2007. An advanced method for deriving latent energy flux from a scanning Raman lidar. Agronomy Journal 99 (1): 272-284

Payero, J. O., **C. M. U. Neale**, J. L. Wright. 2006. Effect of stability correction on remote sensing estimates of near-noon sensible heat flux of alfalfa and tall fescue grass. *International Journal of Remote Sensing*, Vol 27, No. 2, pp 307-328.

Payero, J. O., **C. M. U. Neale**, J. L. Wright. 2006. Near-noon albedo values of alfalfa and tall fescue grass derived from multispectral data. *International Journal of Remote Sensing*. Vol 27, No. 3, pp 569 - 586

Eichinger W.E., D. I. Cooper, L. E. Hipps, W. P. Kustas, **C. M. U. Neale**, J.H. Prueger. 2006. Spatial and temporal variation in evapotranspiration using Raman lidar. *Advances In Water Resources* 29 (2): 369-381

Neale, C.M.U., H. Jayanthi, J.L. Wright. 2005. Irrigation water management using high resolution airborne remote sensing. *Journal of Irrigation and Drainage Systems*, Volume 19, Numbers 3-4, Pages: 321 - 336

Li, Fuqin, William P.Kustas, John H. Prueger, **C. M. U. Neale**, Thomas J. Jackson. 2005. Utility of Remote Sensing Based Two-Source Energy Balance Model Under Low and High Vegetation Cover Conditions. *Journal of Hydrometeorology*, Vol. 6, No. 6, pages 878-891

Chávez, J. L., **C. M. U. Neale**, L. E. Hipps, J. H. Prueger, and W. P. Kustas. 2005. Comparing aircraft-based remotely sensed energy balance fluxes with eddy covariance tower data using heat flux source area functions. *Journal of Hydrometeorology*, Vol. 6, No. 6, pages 923-940.

Prueger, J. H., J. L. Hatfield, W. P. Kustas, L. E. Hipps, J. I. MacPherson, **C. M. U. Neale**, W. E. Eichinger, D. I. Cooper, and T. B. Parkin. 2005. Tower and Aircraft Eddy Covariance Measurements of Water Vapor, Energy, and Carbon Dioxide Fluxes during SMACEX *Journal of Hydrometeorology*, Vol. 6, No. 6, pages 954-960

Payero, J.O, **C.M.U. Neale**, and J.L. Wright. 2005. Estimating soil heat flux for alfalfa and clipped tall fescue grass. *Applied Engineering in Agriculture*, 21(3): 401-409.

Payero, J.O., **C.M.U. Neale**, and J.L. Wright. 2005. Non-water-stressed baselines for calculating crop water stress index (CWSI) for alfalfa and tall fescue grass. *Transactions of the ASAE*, 48(2): 653-661.

Anderson , M.C., **C.M.U. Neale**, F. Li, J.M. Norman, W.P. Kustas, H. Jayanthi, and J. Chavez. 2004. Up scaling ground observations of vegetation water content, canopy height, and leaf area index during SMEX02 using aircraft and Landsat imagery. *Remote Sensing of Environment*, 92 447-464.

Payero, J.O., **C. M. U. Neale** and J.L. Wright. 2004. Comparison of eleven vegetation indices for estimating plant height of alfalfa and grass. *ASAE Applied Engineering in Agriculture*. Vol 20(3): 385-393.

Payero, J.O., **C.M.U. Neale**, J.L. Wright, R.G. Allen. 2003. Guidelines for Validating Bowen Ratio Data. *Transactions of the ASAE*, Vol 46 (4) 1:10

Cooper, D.I., W.E. Eichinger, J. Archuleta, L. Hipps, J. Kao, M. Y. Leclerc, **C. M. Neale**, and J. Prueger. 2003. Spatial source-area analysis of three-dimensional moisture fields from lidar, eddy covariance, and a footprint model. *Agric. and Forest Meteorol.* Vol. 114: Issue 3-4, Pages 213-234.

Artan, G. A., **C. M. U. Neale** and D. G. Tarboton. 2000. Characteristic Length Scale of Input Data to Distributed Models: Implications for Modelling Grid Size. *Journal of Hydrology*, vol 227, Issue 1-4, pp. 128-139.

Hawkins, C. P., K. L. Bartz and **C. M. U. Neale**. 1997. Vulnerability of Riparian Vegetation to Catastrophic Flooding: Implications for Riparian Restoration. *Restoration Ecology*, Vol. 5, No. 48, pp. 75-84.

O'Niell, M. P., J.C. Schmidt, J. P. Dobrowolski, C.P. Hawkins and **C.M. U. Neale**. 1997. Identifying Sites for Riparian Restoration: Application of a model to the Upper Arkansas River Basin. *Restoration Ecology*, Vol5, No. 48, pp 85-102.

Neale, C. M. U. 1997. Classification and Mapping of Riparian Systems Using Airborne Multispectral Videography. *Restoration Ecology*, Vol. 5, No. 48, pp.103-112

Sun, C., **C. M. U. Neale**, J. J. McDonnell, H. D. Cheng. 1997. Monitoring land-surface snow conditions from SSM/I data using an artificial neural network classifier. *IEEE Transactions On Geoscience And Remote Sensing* 35 (4): 801-809 JUL 1997

M. S. Moran, A. Vidal, D. Troufleau, J. Qi, T. R. Clarke, P. J. Pinter, T. A. Mitchell, Y. Inoue, **C. M. U. Neale**. 1997. Combining multifrequency microwave and optical data for crop management. *Remote Sensing of Environment* 61 (1): 96-109

Sun, C., **C. M. U. Neale** and J.J. McDonnell. 1996. Snow Wetness Estimates of Vegetated Terrain from Satellite Passive Microwave Data. *Hydrological Processes*, Vol 10 (12), 1619-1628

Neale, C.M.U. and B.G. Crowther. 1994. An airborne multispectral video/radiometer remote sensing system: development and calibration. *Remote Sensing of Environment*, Volume: 49 Issue: 3 Pages: 187-194.

Neale C. M. U., M.J. McFarland and K. Chang. Land Surface Type Classification using microwave brightness temperatures from the Special Sensor Microwave/Imager. *IEEE Transactions on Geoscience and Remote Sensing*, Vol 28, No. 5, September 1990, pp 829-838.

McFarland M. J., R.L.Miller and **C.M.U. Neale**. Land surface temperature derived from the SSM/I passive microwave brightness temperatures. *IEEE Transactions on Geoscience and Remote Sensing*. Vol 28 No. 5, September, 1990, pp 839-845.

Neale, C. M. U., W.C. Bausch and D.F. Heermann. 1989. Development of reflectance based crop coefficients for corn. *Transactions of the ASAE*, Vol. 32(6):1891-1899

Bausch W. C. and **C.M.U. Neale**. 1989. Spectral inputs improve corn crop coefficients and irrigation scheduling. Transactions of the ASAE, Vol. 32(6):1901-1908

Heilman, J. L., C.L. Brittin, and **C.M.U. Neale**. 1989. Fetch requirement for Bowen Ratio Measurements of Latent and Sensible Heat. Agriculture and Forestry Meteorology. 44 (3-4): 261-273

Kruse G. and **C. M. U. Neale**. 1989. Sources of error in hydraulic weighing lysimeter measurements. Transactions of the ASAE. 32(1):81-88.

Bausch W. C. and **C. M. U. Neale**. 1987. Crop coefficients derived from reflected canopy radiation: A concept. Transactions of the ASAE. 30(3):703-709.

Ellis J.E., E. G. Kruse, A.E. Mcsay, **C. M. U. Neale**, R. A. Horn. 1986. A Comparison Of 5 Irrigation Methods On Onions. Hortscience 21 (6): 1349-1351

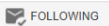
Google Scholar:



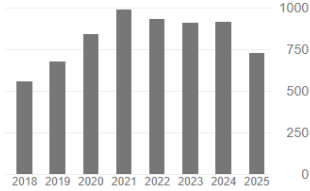
Christopher M U Neale 

University of Nebraska, Daugherty Water for Food Global Institute
Verified email at nebraska.edu

[Irrigation Water Management](#) [Applied Remote Sensing](#) [Hydrology](#) [Evapotranspiration](#)
[Surface Energy Balance](#)



	All	Since 2020
Citations	10901	5325
h-index	50	38
i10-index	148	100



	TITLE	CITED BY	YEAR
☐	Twenty-three unsolved problems in hydrology (UPH)—a community perspective G Blöschl, MFP Bierkens, A Chambel, C Cudennec, G Destouni, A Fiori, ... Hydrological sciences journal 64 (10), 1141-1158	962	2019
☐	A vegetation index based technique for spatial sharpening of thermal imagery N Agam, WP Kustas, MC Anderson, F Li, CMU Neale Remote sensing of Environment 107 (4), 545-558	563	2007
☐	Development of reflectance-based crop coefficients for corn CMU Neale, WC Bausch, DF Heermann Transactions of the ASAE 32 (6), 1891-1900	329	1990

OTHER SIGNIFICANT PUBLICATIONS

Proceedings Edited

Neale, C. M. U. and A. Maltese. 2024. Remote Sensing for Agriculture, Ecosystems and Hydrology XXVI. SPIE, Volume 13191. December 2024. Conference Proceedings

Neale, C. M. U. and A. Maltese. 2023. Remote Sensing for Agriculture, Ecosystems and Hydrology XXV. SPIE, Volume 12727. October 2023. Conference Proceedings

Neale, C. M. U. and A. Maltese. 2022. Remote Sensing for Agriculture, Ecosystems and Hydrology XXIV. SPIE, Volume 12262. DOI doi: 10.1117/12.2664782 October 2022. Conference Proceedings

Neale, C. M. U. and A. Maltese. 2021. Remote Sensing for Agriculture, Ecosystems and Hydrology XXIII. SPIE, Volume 11856. DOI 10.1117/12.2615051 October 2021. Conference Proceedings

Neale, C. M. U. and A. Maltese. 2019. Remote Sensing for Agriculture, Ecosystems and Hydrology XXI. SPIE, Volume 11149, <https://doi.org/10.1117/12.2554500> December 2019 Conference Proceedings

Neale, C. M. U. and A. Maltese. 2018. Remote Sensing for Agriculture, Ecosystems and Hydrology XX. SPIE, Volume 10783, ISBN 9781510621497 December 2018 Conference Proceedings

Neale, C. M. U. and A. Maltese. 2017. Remote Sensing for Agriculture, Ecosystems and Hydrology XIX. SPIE, Volume 10421, ISBN 9781510613065 December 2017 Conference Proceedings

Neale, C. M. U. and A. Maltese. 2016. Remote Sensing for Agriculture, Ecosystems and Hydrology XVIII. SPIE, Volume 9998, ISBN 9781510604001 December 2016 Conference Proceedings

Neale, C. M. U. and A. Maltese. 2015. Remote Sensing for Agriculture, Ecosystems and Hydrology XVII. SPIE, Volume 9637, ISBN: 9781628418477 November 2015 Conference Proceedings

Neale, C. M. U. and A. Maltese. 2014. Remote Sensing for Agriculture, Ecosystems and Hydrology XVI. SPIE, Volume 9239, ISBN: 9781628413021 November 2014 Conference Proceedings.

Neale, C. M. U. and A. Maltese. 2013. Remote Sensing for Agriculture, Ecosystems and Hydrology XV. SPIE, Volume 8887, ISBN: 9780819497567 November 2013 Conference Proceedings.

Neale, C. M. U. and A. Maltese. 2012. Remote Sensing for Agriculture, Ecosystems and Hydrology XIX. SPIE, Volume 8531, ISBN: 9780819492715 November 2012 Conference Proceedings.

Neale, C. M. U. and A. Maltese. 2011. Remote Sensing for Agriculture, Ecosystems and Hydrology XIII. SPIE, Volume 8174, ISBN: 9780819488015 October 2011 Conference Proceedings.

Neale, C. M. U. and A. Maltese. 2010. Remote Sensing for Agriculture, Ecosystems and Hydrology XII. SPIE, Volume 7824, ISBN: 9780819483416 October 2010 Conference Proceedings.

Neale, C. M. U. and A. Maltese. 2009. Remote Sensing for Agriculture, Ecosystems and Hydrology XI. SPIE, Volume 7472, doi:10.1117/12.848121, October 2009 Conference Proceedings.

Neale, C. M. U., Manfred Owe and Guido D'Urso. 2008. Remote Sensing for Agriculture, Ecosystems and Hydrology X. SPIE, Volume 7104, ISBN 9780819473356, October 2008

Neale, C. M. U., Manfred Owe and Guido D'Urso. 2007. Remote Sensing of Agriculture, Ecosystems and Hydrology IX. SPIE, Volume 6742, ISBN 9780819469007, October 2007

Owe, M. and C. M. U. Neale. 2007. Remote Sensing for Environmental Monitoring and Change Detection. IAHS Publ. 316 ISBN 978-1-901502-24-4 288 pp

Neale, C. M. U. 2003 (Editor). Proceedings of the 19th Biennial Workshop on Color Photography, Videography and Airborne Imaging for Resource Assessment. American Society for Photogrammetry and Remote Sensing, Bethesda, MD. ISBN 1-57083-074-6

Neale, C.M.U. 1994. (Editor). Color Aerial Photography and Videography for Resource Monitoring. Proceedings of the 14th Biennial Workshop on Color Aerial Photography and Videography for resource monitoring. American Society for Photogrammetry and Remote Sensing. Bethesda, MD.

Allen, R. G. and C. M. U. Neale. 1993. (Editors). Management of Irrigation and Drainage Systems: Integrated Perspectives. Proceedings ASCE National Conference on Irrigation and Drainage Engineering. ISBN 0-87262-919-8, 1204 p.

Selected Peer Reviewed Symposium Papers

Jayanthi, H., Christopher Neale, and James L. Wright. Seasonal Evapotranspiration Estimation Using Canopy Reflectance - A Case Study Involving Pink Beans. 2001. Proceedings of the Remote Sensing and Hydrology 2000 Symposium. Editors Manfred Owe, Kaye Brubaker, Jerry Richtie & Albert Rango. IAHS Publ. no. 267 (2001), ISBN 1-901502-46-5

May, C., Christopher Neale, and Norm Henderson. Mapping Riparian Resources in Semi-Arid Watersheds Using Airborne Multispectral Imagery. Proceedings of the Remote Sensing and Hydrology 2000 Symposium. Editors Manfred Owe, Kaye Brubaker, Jerry Ritchie & Albert Rango. IAHS Publ. no. 267 (2001), ISBN 1-901502-46-5

Farag, F., Christopher Neale, and Roger Kjelgren. Development of A GIS-Based Model To Estimate Landscape Water Demand in the Urban/Rural Interface. Proceedings of the Remote Sensing and Hydrology 2000 Symposium. Editors Manfred Owe, Kaye Brubaker, Jerry Ritchie & Albert Rango. IAHS Publ. no. 267 (2001), ISBN 1-901502-46-5

Neale, C.M.U., L. E. Hipps, J. H. Prueger, W. P. Kustas, S. Bawazir, W. E. Eichinger and D. I. Cooper Spatial Mapping of Energy Balance Components Over Riparian Vegetation Using High Resolution Airborne Remote Sensing. Proceedings of the Remote Sensing and Hydrology 2000 Symposium. Editors Manfred Owe, Kaye Brubaker, Jerry Ritchie & Albert Rango. IAHS Publ. no. 267 (2001), ISBN 1-901502-46-5 (Best poster paper award)

Neale, C. M. U. 1991. An airborne multispectral video/radiometer remote sensing system for agricultural and environmental monitoring. In: Automated Agriculture for the 21st Century, Proceedings of the International Conference, ASAE, December 1991.

Crowther, B. G.; Neale, C. M. U. 1991. Calibration of multispectral video imagery. In: Automated agriculture for the 21st century. Proceedings of the International Conference ASAE, Chicago, Illinois, USA, 16-17 December 1991. Pages: 51-59

Book Chapters

L. Hipps, D. Or and C.M.U. Neale. 1996. "Spatial structure and scaling of surface fluxes in a Great Basin ecosystem". In: Scaling up in Hydrology using Remote Sensing. J.B Stewart, E.T. Engman, R.A. Feddes, Y. Kerr. John Wiley and Sons.

Selected Conference Papers

"Evaluation of a hybrid remote sensing evapotranspiration model for variable rate irrigation management". 2015. J. Burdette Barker, **Christopher M. U. Neale**, Derek M. Heeren. Paper Number: 2147813, In: Emerging Technologies for Sustainable Irrigation, ASABE/IA Joint Symposium, Long Beach, CA, November 10-12, 2015

Neale, C.M.U., Hatim Geli, S. Taghvaeian, Ashish Masih, Robert T. Pack, R. D. Simms, Michael Baker, J. A. Milliken, Scott O'Meara A. J. Witherall. 2011. Estimating Evapotranspiration of Riparian Vegetation using High resolution Multispectral, Thermal Infrared and Lidar Data. IN: Remote Sensing for Agriculture, Ecosystems and Hydrology XIII, Proceedings of the SPIE Remote Sensing Europe

Neale, C.M.U., S. Sivarajan, A. Masih, C. Jaworowski H. Heasler Estimating Heat Flow of Thermal Features in Yellowstone National Park Using Airborne Thermal Infrared Remote Sensing, AGU Fall Meeting, Dec 2011 Poster H51C-1225

Hatim Geli, **C. M. U. Neale**, Doyle Watts, John Osterberg, Robert Pack. 2010. "Incorporating LIDAR Data into Scintillometer-Based Estimates of Sensible Heat Flux Considering Different Atmospheric Stability Conditions". Remote Sensing and Hydrology 2010. Proceedings of a symposium held at Jackson Hole, Wyoming, USA, In press.

S. Taghvaeian, **C.M.U. Neale** C. A.C. Santos Doyle Watts John Osterberg S. I. Sritharan. 2010. Two Different Remote Sensing Techniques for Monitoring Crop Coefficient and Water Requirement of Cotton. Remote Sensing and Hydrology 2010. Proceedings of a symposium held at Jackson Hole, Wyoming, USA, In press.

Geli, H., **C. M. U. Neale**. 2010. Spatial EvapoTranspiration Modeling Interface (SETMI). Remote Sensing and Hydrology 2010. Proceedings of a symposium held at Jackson Hole, Wyoming, USA, In press.

Geli, H., S. Taghvaeian, **C. M. U. Neale**, Robert Pack Doyle Watts John Osterberg. 2010. Estimation of Evapotranspiration of Tamarisk using Energy Balance Models with High Resolution Airborne Imagery and LIDAR Data. AGU Fall Meeting, H23J-06

Jaworowski, Cheryl, Henry P. Heasler, **C. M. U. Neale**, Bayani Cardenas, S. Sivarajan. 2009. Using Night-Time, Thermal Infrared Imagery To Remotely Monitor The Hydrothermal System At Hot Spring Basin, Yellowstone National Park Rocky Mountain GSA meeting – SLC May 2009 (presentation)

Neale, C. M. U. and D. Wenger. 2009. Mapping Wetlands Resources for a Mitigation Bank in the Great Salt Lake Ecosystem using Airborne Multispectral Digital Imagery 12th National Mitigation & Ecosystem Banking Conference, Salt Lake City, May 5-8 2009 (Presentation)

Lecina, S, **C. M. U. Neale**, G. P. Merkley, C. C dos Santos. 2009. Increasing field work Productivity in Irrigation Evaluation Processes Through the Use of Combined Irrigation Models ASCE World Environmental and Water Resources Congress 2009: Great Rivers 2009

Neale, C.M.U., S. Sivarajan, O. Z. Akasheh, C. Jaworowski, H. Heasler. 2009. Monitoring Geothermal Activity in Yellowstone National Park Using Airborne Thermal Infrared Remote Sensing Remote Sensing for Agriculture, Ecosystems and Hydrology XI Published, October 2009

Jaworowski, Cheryl, Henry P. Heasler, **C. M. U. Neale** 2009. Integrating Lidar And Airborne Thermal Infrared Imagery for Geologic Mapping Of Hot Spring Basin, Yellowstone National Park 2009 Portland GSA Annual Meeting 18-21 October 2009 (presentation)

Taghvaeian, S.; **C. M. U. Neale**, Carlos C. Santos, Doyle Watts, John Osterberg S Sritharan. 2009. Using Remote Sensing and Gis Techniques For Studying Irrigation Performance Of Palo Verde Irrigation District. US Commission on Irrigation and Drainage – USCID Conference, Salt Lake City, Nov. 2009

Napan, Katherine, Gary P. Merkley and **C. M. U. Neale**. 2009. Seepage Evaluation In Cache Valley Irrigation Canals US Commission on Irrigation and Drainage – USCID Conference, Salt Lake City Nov. 2009

Sivarajan, Saravanan and **C. M. U. Neale**. 2009. Validating and Estimating Yield of Irrigated Potatoes Using Aerial Multispectral Remote Sensing. US Commission on Irrigation and Drainage – USCID Conference, Salt Lake City Nov. 2009

Geli, Hatim and **C. M. U. Neale**. 2009. Estimation of Spatial Evapotranspiration over Non-Irrigated Agricultural Areas Using a Two-Source Energy Balance Model. US Commission on Irrigation and Drainage–USCID Conference, Salt Lake City, 2009

J.L. Chávez, W.P. Kustas, P.H. Gowda, T.A. Howell, J.H. Prueger, L.E. Hipps, S. O'Shaugnessy, P.D. Colaizzi, S.R. Evett, **C.M.U. Neale**, M.C. Anderson, K.S. Copeland. 2009. Aerodynamic Temperature Derived from Flux-Profile Measurements and Two-Source Model Predictions over a Cotton Row Crop in an Advective Environment, Tri-Society Meetings (ASA-CSSA-SSSA) Houston, Nov. 2009

Hatim Geli and **C. M. U. Neale**. 2009. A Hybrid Approach for Estimating Evapotranspiration Using Remote Sensing (HET). AGU Fall Meeting, San Francisco, Dec. 2009 (presentation)

Neale, C. M. U. 2008. Airborne Remote Sensing Applications in Hydrology and Water Resources. 2008. Proceedings of the SPIE 13th International Symposium on Remote Sensing, Cardiff, Wales. September 2008.

Chavez, J.L., T. A. Howell, P. H. Gowda, **C. M. U. Neale**, P. D. Collaizzi. 2008. Evaluation Airborne Remote Sensing ET Estimates using Eddy Covariance Systems and a Heat Flux Source Area Function. Irrigation Association Show, Anaheim, CA

Chavez, J. L., P. H. Gowda, T. A. Howell, **C. M. U. Neale**, K. Copeland. 2008. Estimating Seasonal ET from Multispectral Airborne Imagery: An Evaluation of Interpolation-Extrapolation Techniques. ASABE Annual International Meeting Providence, Rhode Island

CMU Neale, MP Gonzalez-Dugo, L Mateos, WP Kustas, Y Kaheil 2007. A Hybrid Approach for Estimating Spatial Evapotranspiration From Satellite Imagery. In: Remote Sensing of Agriculture, Ecosystems and Hydrology IX. Proceedings of SPIE, Volume 6742, ISBN 9780819469007

Neale, C. M. U., D. Wenger, H. Jayanthi, F. Farag. 2007. Mapping And Monitoring Wetlands Using Airborne Multispectral Imagery. In: *Remote Sensing for Environmental Monitoring and Change Detection (Proceedings of Symposium HS3007 at IUGG2007, Perugia, July 2007)*. IAHS Publ. 316, 2007.

Neale, C. M. U., L. Mateos, M. P. Gonzalez-Dugo. 2006. A real-time crop classification system for evapotranspiration estimates in irrigated areas. Proceedings of the SPIE 13th International Symposium on Remote Sensing, Stockholm, Sweden. Paper # 6359-33

Gonzalez-Dugo, M. P., **C. M. U. Neale**, L. Mateos, W. P. Kustas and F. Li. 2006. Comparison of Remote Sensing-Based Energy Balance Methods for Estimating Crop Evapotranspiration. Proceedings of the SPIE 13th International Symposium on Remote Sensing, Stockholm, Sweden. Paper # 6359-36

Jaramillo, A. and **C. M. U. Neale**. 2005. Mapping of Salinity and Waterlogged Areas in the Dominican Republic Through Remote Sensing and GIS Techniques. International Salinity Forum: Managing Saline Soils and Water: Science, Technology, and Social Issues. UC Center for Water Resources, Riverside, California, April 25- 27.

Neale, C. M. U. and R. K. Vinukollu. 2005. A Hybrid Surface Energy Balance Approach for the Estimation of Evapotranspiration in Agricultural Areas. International Conference Earth Observation for Vegetation Monitoring and Water Management. Napoli, November 10 – 11, 2005.

Neale, C.M.U., Craig Addley, Raghuvier Vinukollu, Deepak Lal, and Daniel Zaccaria. 2005. Estimating Water Surface Area at Different Flows Using High-Resolution Multispectral Digital Imagery. Proceeding of the 20th Biennial Workshop on Aerial Photography, Videography, and High-Resolution Digital Imagery for Resource Assessment, Weslaco, TX.

H. Jayanthi, **C. M. U. Neale** and J.L. Wright. 2003. An assessment of crop growth variability for precision agricultural applications Proceedings of the 19th Biennial Workshop on Workshop on Color Photography, Videography and Airborne Imaging for Resource Assessment, Utah State University, Logan, Utah.

Farag, F.A., **C. M. U. Neale** and C. R. Kjelgren. 2003. Determination of the Percentage of Shaded Grass Under Trees Using Airborne Remote Sensing. Proceedings of the 19th Biennial Workshop on Workshop on Color Photography, Videography and Airborne Imaging for Resource Assessment, Utah State University, Logan, Utah.

Akashah, O., **C. M. U. Neale** and F. Farag . Spatial Mapping of Riparian Vegetation of the Middle Rio Grande River, New Mexico. 2003. Proceedings of the 19th Biennial Workshop on Workshop on Color Photography, Videography and Airborne Imaging for Resource Assessment, Utah State University, Logan, Utah.

Cai, B. and **C. M. U. Neale**. 1999. A Method for Constructing 3-Dimensional Models from Airborne Imagery. In: Color Photography and Videography for Resource Assessment Proceedings of the 17th Biennial Workshop. American Society for Photogrammetry and Remote Sensing, Bethesda, MD.

Crosby, G.S., **C. M. U. Neale** and M. Seyfried. 1999. Vegetation Parameter Scaling on a Semi-Arid Watershed. In: Color Photography and Videography for Resource Assessment Proceedings of the 17th Biennial Workshop. American Society for Photogrammetry and Remote Sensing, Bethesda, MD.

Ahmed, R. H. and **C.M. U. Neale**. 1997. Estimating Irrigation District Water Demand Using Remote Sensing and GIS. In: Videography and Color Photography for Resource Assessment. Proceedings of the 16th Biennial Workshop. American Society for Photogrammetry and Remote Sensing, Bethesda, MD.

Sandararaman, S. and **C. M. U. Neale**. 1997. Geometric Calibration of the USU Videography System. 1997. In: Videography and Color Photography for Resource Assessment. Proceedings of the 16th Biennial Workshop. American Society for Photogrammetry and Remote Sensing, Bethesda, MD.

Mikati, G. and **C.M.U. Neale**. 1997. Use of airborne multispectral video imagery to delineate salinity problems on agricultural lands. In: Videography and Color

Photography for Resource Assessment. Proceedings of the 16th Biennial Workshop. American Society for Photogrammetry and Remote Sensing, Bethesda, MD.

Abdalla, S. H. and **C. M. U. Neale**. 1997. Estimating Energy Balance Components for Desert Regions Using Multispectral Video Imagery. In: Videography and Color Photography for Resource Assessment. Proceedings of the 16th Biennial Workshop. American Society for Photogrammetry and Remote Sensing, Bethesda, MD.

Neale, C.M.U., A. Mello, E. Ferrante, L. Almir Cavalcante, A. Curado and A. L. Cavalcanti. 1997. Airborne multispectral videography in Brasil: The CODEVASF system and its uses in agricultural and environmental monitoring. In: Videography and Color Photography for Resource Assessment. Proceedings of the 16th Biennial Workshop. American Society for Photogrammetry and Remote Sensing, Bethesda, MD.

Sun, C., **C. M. U. Neale**, J. J. McDonnell and H. D. Cheng. 1996. Snow classification from SSM/I data over varied terrain using an artificial neural network classifier. IEEE Transactions on Geosciences and Remote Sensing. Proc. International Geoscience and Remote Sensing Symposium (IGARSS'96), vol. I, pp. 133-135, 1996.

C. Sun, **C. M. U. Neale** and J. J. McDonnell. 1996. Snow wetness estimation from SSM/I data over varied terrain using an artificial neural network. Presented at the 53rd Eastern Snow Conference, Williamsburg, VA, May1-3, 1996.

Neale, C.M.U., J.Qi, M.S. Moran, P. Pinter, T. Clarke, T. Mitchell, S. Sundararaman and R.H. Ahmed. 1995. Methods of radiometric calibration and reflectance determinations for airborne multispectral digital video imagery. Proceedings of the 15th Biennial Workshop on Videography and Color Photography in Resource Assessment. Indiana State University, Terre Haute, Indiana, May 1-3, 1995, Editor Paul Mausel, pp 87-99.

Neale, C.M.U., G. A. Artan, C. L. Hanson and D.G. Tarboton. 1995. A spatially distributed energy balance model: development, validation and application. Proceedings of the Hydrology Conference, American Meteorological Society, January 15-20, Dallas, Tx, pp 152-156.

Artan, G.A., **C.M.U. Neale**, L.E. Hipps and D.G. Tarboton. 1995. Determination of the energy balance flux terms using airborne multispectral digital video imagery. Proceedings of the Hydrology Conference, American Meteorological Society, January 15-20, Dallas, Tx, pp 143-146.

Diak, G.R., R.M. Rabin, **C.M.U. Neale** and K.P. Gallo. 1995. Regional-scale comparisons of NDVI, soil moisture indices from surface and microwave data and surface energy budgets evaluated from satellite and in-situ data. Proceedings of the Hydrology Conference, American Meteorological Society, January 15-20, Dallas, Tx.

Sun, Changyi, H.D. Cheng, J.J. McDonnell, and **C.M.U. Neale**. 1995. Identification of mountain snow cover using SSM/I and artificial neural network. Proceedings of the 1995 International conference on acoustics, speech and signal processing. IEEE. Detroit, Michigan, May 9-12, 1995.

Neale, C. M. U., D.G. Tarboton, G. A. Artan, P.V. Unnikrishna, J. J. McDonnell, T. H. Jackson, K.R. Cooley, C.L. Hanson and G. N. Flerchinger. 1995. A spatially distributed water and energy balance model: development and validation in complex terrain. Presentation at the IAHS symposium during IUGG general assembly, July 3-14, Boulder, CO.

K. Panja, T. B. Hardy and **C.M.U. Neale**. 1994. Comparison of Meso-Scale Hydraulic Features at Different Discharges in a Turbid River System using Multispectral Videography. In: Color Aerial Photography and Videography for Resource Monitoring. Proceedings of the 14th Biennial Workshop on Color Aerial Photography and Videography for resource monitoring. C.M.U. Neale, Editor. American Society for Photogrammetry and Remote Sensing. Bethesda, MD. 1994.

Jayanthi, H., **C. M. U. Neale** and J.L. Wright. 2003. An assessment of crop growth variability for precision agricultural applications Proceedings of the 19th Biennial Workshop on Workshop on Color Photography, Videography and Airborne Imaging for Resource Assessment, Utah State University, Logan, Utah.

Farag, F.A., **C. M. U. Neale** and C. R. Kjelgren. 2003. Determination of the Percentage of Shaded Grass Under Trees Using Airborne Remote Sensing. Proceedings of the 19th Biennial Workshop on Workshop on Color Photography, Videography and Airborne Imaging for Resource Assessment, Utah State University, Logan, Utah.

Akashah, O., **C. M. U. Neale** and F. Farag . 2003. Spatial Mapping of Riparian Vegetation of the Middle Rio Grande River, New Mexico. Proceedings of the 19th Biennial Workshop on Workshop on Color Photography, Videography and Airborne Imaging for Resource Assessment, Utah State University, Logan, Utah.

Shih, S.F, E.T. Engman and **C.M.U. Neale**. 1992. Applications of Remote Sensing to Drainage. Proceedings of the ASCE National Conference, Water Forum 92. August 1992. Baltimore, MD.

Kruse, G, **C.M.U. Neale**. 1991. Hydraulic Weighing Lysimeter Measurement Errors. Proceedings of the ASCE International Lysimeter Symposium, Hawaii, July 1991.

Neale, C.M.U., G. Kruse and R.Yoder. 1991. Field Experience with Hydraulic Weighing Lysimeters. Proceedings of the ASCE International Lysimeter Symposium, Hawaii, July 1991.

Baselga, J., **C. M. U. Neale** and J. Greene. 1990. An assessment of input variables to the Penman-Monteith equation using canopy reflectance measurements. Proceedings of the ASCE Irrigation and Drainage Conference, Durango, Co, July 1990.

Neale, C.M.U. and M.J.McFarland. 1990. Classification of Snow and Frozen Ground Surfaces with SSM/I Signatures. Proceedings of the Workshop on Applications of Remote Sensing in Hydrology. National Hydrology Research Institute, Saskatoon, Canada, February, 1990.

Neale, C.M.U. and M. J. McFarland. 1990. An overview of soil moisture monitoring using passive microwave. Workshop on soil moisture. National Hydrology Research Institute, Saskatoon, Canada.

Wolfe, Mary Leigh, **C. M. U. Neale.** 1988. Input data development for a distributed parameter hydrologic model (FESHM) Proceedings of the International Symposium on Modeling Agricultural Forest and Rangeland Hydrology. ASAE, December 1988.

Selected Research Project reports:

Evapotranspiration Water Use Analysis of Saltcedar and Other Vegetation in the Mojave River Floodplain, 2007 and 2010. Mojave Water Agency Water Supply Management Study, Phase 1 Report. 2010. Christopher M. U. Neale, Saleh Taghvaeian, Hatim Geli, and Saravanan Sivarajan, Ashish Masih, Robert Pack, Amy Witherall, Scott O'Meara, Ron Simms, Mike Baker, Jeff Milliken. Final Report presented to the Mojave Water Agency.

DMSP Special Sensor Microwave/Imager Calibration/Validation. Naval Research Laboratory, Washington, D.C. Final Report Volume 2. Responsible for sections 9.1 Land Surface type classification and 9.3 Surface moisture retrieval algorithms. Co-author of the report along with several other investigators.

Evaluation of Coastal Wetland States using Spatial and Spectral Metrics derived from multispectral video imagery. Neale, C.M.U., T.B. Hardy and J. Shoemaker. Final project report for U.S. Environmental Protection Agency, Corvallis, Oregon. January 1994.

Mapping of Canal and Drain Layouts for Modeling Irrigation Distribution Systems in Egypt. Neale, C. M. U. and R. D. Ramsey. Submitted to the U.S. Bureau of Reclamation and Ministry of Public Works and Water Resources, Egypt. May 1993.