

# Kenneth Blake Vernon

Scientific Computing and Imaging Institute  
University of Utah  
72 So. Central Campus Drive Room 3750  
Salt Lake City, Utah 84112

kbvernon.io   
kbvernon   
0000-0003-0098-5092   
2PE4za4AAAAJ 

## PROFESSIONAL APPOINTMENTS

---

- 2025 **One-U Responsible AI Postdoctoral Fellow**  
Scientific Computing and Imaging Institute; School of Environment, Society, and Sustainability,  
University of Utah
- 2022 **Post-Doctoral Associate**  
Center for Collaborative Synthesis in Archaeology, CU Boulder
- 2018 **Assistant Director**  
University of Utah Archaeological Center

## EDUCATION

---

- 2022 **PhD in Anthropology** | University of Utah, Salt Lake City, UT
- 2009 **MA in Philosophy** | Northern Illinois University, DeKalb, IL
- 2006 **BA in History and Philosophy** | University of Central Arkansas, Conway, AR

## PEER-REVIEWED JOURNAL ARTICLES

---

- 2026 **The impact of subsistence change on demography: Theory-informed Approximate Bayesian Computation reveals 4-fold increase in carrying capacity following economic intensification**  
Journal of Archaeological Science 189:106523  
 Kurt M. Wilson, Brian F. Coddling, Weston C. McCool, Ishmael Medina, Kenneth Blake Vernon, Simon C. Brewer  
 10.1016/j.jas.2026.106523
- A reconstruction of the Indigenous maize farming niche of Utah**  
Journal of Archaeological Science: Reports 69:105493  
 Ishmael D. Medina, Kenneth B. Vernon, Weston C. McCool, Jerry D. Spangler, Brian F. Coddling  
 10.1016/j.jasrep.2025.105493

## **Migration and environmental learning in interstitial areas: An example from the Northern Rio Puerco Valley, New Mexico**

Open Archaeology 12(1)

👤 Kenneth B. Vernon, Donald A. Shiffler, Scott G. Ortman

📄 10.1515/opar-2025-0075

## 2025 **Modeling the rise and demise of Classic Maya cities: Climate, conflict, and economies of scale**

Proceedings of the National Academy of Sciences 122(42):e2512325122

👤 Weston C. McCool, Brian F. Coddling, Bridgette Degnan, Claire E. Ebert, Emily S. Johnson, Kenneth Blake Vernon, Kurt M. Wilson, Timothy Beach, Keith M. Prufer, Douglas J. Kennett

📄 10.1073/pnas.2512325122

## **Targeted explorations of Pleistocene-Holocene transition archaeology on the Colorado Plateau in southern Utah**

Quaternary International 746:109992

👤 Abby S. Baka, Kenneth B. Vernon, Madeline E. Mackie, Simon Brewer, Jerry Spangler, Brian F. Coddling, Lisbeth A. Louderback, Thomas H. Flanigan, Alexandra M. Greenwald

📄 10.1016/j.quaint.2025.109992

## **Drought, Population Pressure, and Inequality Drive Intergroup Conflict in the Precontact North American Southwest**

American Antiquity:1-19

👤 Weston C. McCool, Kenneth B. Vernon, Ishmael D. Medina, Joan Brenner Coltrain, Kurt M. Wilson, Brian F. Coddling

📄 10.1017/aaq.2025.10107

## **Environmental drivers of wealth inequality among Ancestral Puebloan farmers in Bears Ears National Monument**

American Antiquity:1-7

👤 Roxanne Lois F. Lamson, Kurt M. Wilson, Hayley T. Kievman, Kenneth Blake Vernon, Peter M. Yaworsky, Brian F. Coddling

📄 10.1017/aaq.2025.8

## 2024 **A method for defining dispersed community territories**

Journal of Archaeological Science 170:106048

👤 Kenneth B. Vernon, Scott G. Ortman

📄 10.1016/j.jas.2024.106048

## **Trade-off between market and ecosystem services drives settlement decisions among smallholder ranchers in Baja California Sur, Mexico**

Sustainability Science 19(4):1377-1390

👤 Kenneth B. Vernon, Brian F. Coddling, Simon C. Brewer, Shane J. Macfarlan

📄 10.1007/s11625-024-01491-9

## **The Goldilocks Zone for maize agriculture and the settlement and abandonment of the West Tavaputs Plateau**

Quaternary International 689-690:30-42

👤 Peter M. Yaworsky, Kenneth B. Vernon, Weston C. McCool, Isaac A. Hart, Jerry Spangler, Brian F. Codding

📄 10.1016/j.quaint.2023.12.003

## **Can we reliably detect adaptive responses of hunter-gatherers to past climate change? Examining the impact of Mid-Holocene drought on Archaic settlement in the Basin-Plateau Region of North America**

Quaternary International 689-690:5-15

👤 Brian F. Codding, Heidi Roberts, William Eckerle, Simon C. Brewer, Ishmael D. Medina, Kenneth B. Vernon, Jerry S. Spangler

📄 10.1016/j.quaint.2023.06.014

## **The Fremont frontier: Living at the margins of maize farming**

American Antiquity 89(3):440-458

👤 Kenneth B. Vernon, Peter M. Yaworsky, Weston McCool, Jerry D. Spangler, Simon Brewer, Brian F. Codding

📄 10.1017/aaq.2024.22

## 2022 **Ecological constraints on violence avoidance tactics in the Prehispanic Central Andes**

Environmental Archaeology:1-14

👤 Weston C. McCool, Kurt M. Wilson, Kenneth B. Vernon

📄 10.1080/14614103.2022.2137652

## **Socioecological dynamics structuring the spread of farming in the North American basin-plateau region**

Environmental Archaeology 27(4):434-446

👤 Brian F. Codding, Joan Brenner Coltrain, Lisbeth Louderback, Kenneth Blake Vernon, Kate E. Magargal, Peter M. Yaworsky, Erick Robinson, Simon C. Brewer, Jerry D. Spangler

📄 10.1080/14614103.2021.1927480

## **Decomposing habitat suitability across the forager to farmer transition**

Environmental Archaeology 27(4):420-433

👤 Kenneth B. Vernon, Peter M. Yaworsky, Jerry Spangler, Simon Brewer, Brian F. Codding

📄 10.1080/14614103.2020.1746880

## **Subsistence strategy mediates ecological drivers of human violence**

PLOS ONE 17(5):e0268257

👤 Weston C. McCool, Kenneth B. Vernon, Peter M. Yaworsky, Brian F. Codding

📄 10.1371/journal.pone.0268257

**Climate change-induced population pressure drives high rates of lethal violence in the Prehispanic central Andes**

Proceedings of the National Academy of Sciences 119(17):e2117556119

Weston C. McCool, Brian F. Coddling, Kenneth B. Vernon, Kurt M. Wilson, Peter M. Yaworsky, Norbert Marwan, Douglas J. Kennett

[10.1073/pnas.2117556119](https://doi.org/10.1073/pnas.2117556119)

2021 **Plant species richness at archaeological sites suggests ecological legacy of Indigenous subsistence on the Colorado Plateau**

Proceedings of the National Academy of Sciences 118(21):e2025047118

Bruce M. Pavlik, Lisbeth A. Louderback, Kenneth B. Vernon, Peter M. Yaworsky, Cynthia Wilson, Arnold Clifford, Brian F. Coddling

[10.1073/pnas.2025047118](https://doi.org/10.1073/pnas.2025047118)

2020 **Marriage dynamics in old Lower California: Ecological constraints and reproductive value in an arid peninsular frontier**

Biodemography and Social Biology 65(2):156-171

Shane J. Macfarlan, Ryan Schacht, Caroline Foley, Sydney Cahoon, Grace Osusky, Kenneth B. Vernon, Evan Tayler, Celeste Henrickson, Eric Schniter

[10.1080/19485565.2020.1728685](https://doi.org/10.1080/19485565.2020.1728685)

**Advancing predictive modeling in archaeology: An evaluation of regression and machine learning methods on the Grand Staircase-Escalante National Monument**

PLOS ONE 15(10):e0239424

Peter M. Yaworsky, Kenneth B. Vernon, Jerry D. Spangler, Simon C. Brewer, Brian F. Coddling

[10.1371/journal.pone.0239424](https://doi.org/10.1371/journal.pone.0239424)

2017 **The ecology of population dispersal: Modeling alternative Basin-Plateau foraging strategies to explain the Numic expansion**

American Journal of Human Biology 29(4):e23000

Kate E. Magargal, Ashley K. Parker, Kenneth Blake Vernon, Will Rath, Brian F. Coddling

[10.1002/ajhb.23000](https://doi.org/10.1002/ajhb.23000)

**MANUSCRIPTS**

---

2026 **TerraCal: A global deep foundation radiocarbon calibration curve**

Kenneth B. Vernon, Brian F. Coddling, Simon C. Brewer

**Some Kantian and Aristotelian themes in anthropological thought**

Kenneth B. Vernon

**An encoder-decoder neural network for down-scaling soil moisture estimates**

Kenneth B. Vernon, Brian F. Coddling, Simon C. Brewer

**Urbanism, population decline, and biodiversity in an arid environment**

Kenneth B. Vernon, Brian F. Coddling, Simon C. Brewer, Shane J. Macfarlan

## **RagStone: A retrieval-augmented language model for archaeological reports**

👤 Kenneth B. Vernon, Brian F. Codding, Simon C. Brewer

## **One theory, many models of habitat suitability**

👤 Kenneth B. Vernon

## **Predicting PHT archaeology on the northwest Colorado Plateau: A predictive model for determining targeted survey areas**

Journal of Archaeological Science: Reports

👤 Abby S. Baka, Kenneth B. Vernon, Simon C. Brewer, Brian F. Codding, Jerry D. Spangler, Alexandra M. Greenwald

## **NetC14: A Gaussian mixture neural network for calibrating and summarizing radiocarbon dates**

Journal of Archaeological Science

👤 Kenneth B. Vernon, Brian F. Codding, Simon C. Brewer

## **Socio-economic status before we measured it: A machine learning approach to imputing income and education in the US Census before 1950**

👤 Kelsey Carlston, Kenneth B. Vernon

## **The evolution of a labor market**

👤 Kenneth B. Vernon, Kelsey Carlston, Weston C. McCool, Kurt M. Wilson, Brian F. Codding

## **Responsible artificial intelligence and the science of human-environment interactions**

Environmental Data Science

👤 Kenneth B. Vernon, Brian F. Codding, Simon C. Brewer

## **Explaining PaleoIndian settlement in the Intermountain West**

American Antiquity

👤 Kenneth B. Vernon, Kate E. Magargal, David Zeanah, D. Craig Young, Robert G. Elston, Simon C. Brewer, Brian F. Codding

## **GRANTS, FELLOWSHIPS, AND AWARDS**

---

2025 **extendr: Community-focused development for scientific computing with Rust and R**

ISC Grant | R Consortium

PI: Kenneth B. Vernon, Josiah Parry, Mossa M. Reimert | \$4,000

2022 **Archaeological Survey of Cottonwood Wash, San Rafael Desert, Emery County, Utah**

Cooperative Agreement (L20AC00267) | Bureau of Land Management

PI: Brian F. Codding, Jerry D. Spangler | \$18,698

2020 **Developing a Modular Online Introduction to the R Environment**

Cross-College Training Grant | University of Utah College of Social and Behavioral Sciences

PI: Simon Brewer, Brian F. Codding, Kenneth B. Vernon | \$21,020

### **Advancing Stewardship with Theory and Models**

David C. Williams Memorial Graduate Fellowship | University of Utah

PI: Kenneth B. Vernon | \$6,000

#### 2019 **Graduate Research**

Earl and Elies Skidmore Endowed Graduate Fellowship | University of Utah

PI: Kenneth B. Vernon | \$7,500

### **Advancing Stewardship with Theory and Models**

David C. Williams Memorial Graduate Fellowship | University of Utah

PI: Kenneth B. Vernon | \$8,500

#### 2018 **Why Were Prehistoric Agricultural Societies in Utah Unable to Adapt to the Medieval Megadroughts?**

Interdisciplinary Faculty Research Seed Grant | University of Utah Global Change and Sustainability Center

PI: Brian F. Codding, Simon Brewer | \$20,000

### **Advancing Stewardship with Theory and Models**

David C. Williams Memorial Graduate Fellowship | University of Utah

PI: Kenneth B. Vernon | \$1,000

#### 2017 **Human Plant Use in Red Butte Canyon**

Research Grant | Friends of Red Butte

PI: Kenneth B. Vernon | \$2,000

### **Human Plant Use in Red Butte Canyon**

Research Grant | University of Utah Global Change and Sustainability Center

PI: Kenneth B. Vernon | \$3,000

### **Archaeological Sites as Endangered Species: Using Next Generation Models to Predict and Protect Cultural Properties on the Grand Staircase-Escalante National Monument**

Grand Staircase-Escalante National Monument Cooperative Agreement | Bureau of Land Management

PI: Brian F. Codding | \$22,066

## **PRESENTATIONS**

---

#### 2025 **Working with REST APIs to access spatial data**

Spatial Utah Data Science (SUDS) Meeting

👤 Kenneth B. Vernon

### **Promoting water-use efficiency with responsible AI**

One-U Responsible AI Annual Symposium

👤 Kenneth B. Vernon

### **Indirect dating with Mixture Density Networks**

Utah Center for Data Science, Data Science & AI Lecture Series

🪄 Kenneth B. Vernon, Brian F Coddington, Scott G. Ortman, Simon C. Brewer

### **Indirect dating with Mixture Density Networks**

90th Annual Meeting of the Society for American Archaeology

🪄 Kenneth B. Vernon, Brian F Coddington, Scott G. Ortman, Simon C. Brewer

### 2024 **The network ecology of settlement persistence**

workshop 'Advances in modelling past human ecosystems'

🪄 Kenneth B. Vernon, Simon C. Brewer, Brian F. Coddington, Scott G. Ortman

### **The socio-ecology of community centers**

89th Annual Meeting of the Society for American Archaeology

🪄 Kenneth B. Vernon, Scott G. Ortman

### **The network ecology of settlement persistence**

30th Annual Meeting of the European Archaeological Association

🪄 Kenneth B. Vernon, Simon C. Brewer, Brian F. Coddington, Scott G. Ortman

### 2023 **Exploring the dynamics of late precontact obsidian procurement and exchange networks across the US Southwest and Northwest Mexico using cyberSW**

The Southwest Symposium Archaeological Conference

🪄 Sarah Oas, Kenneth B. Vernon, Matthew A. Peeples, Barbara J. Mills, Joshua Watts, Jeffery J. Clark, Steven Shackley, Scott G. Ortman

### **A core-periphery approach to defining community boundaries**

29th Annual Meeting of the European Archaeological Association

🪄 Kenneth B. Vernon, Scott G. Ortman

### **How do I work this? this R project**

Spatial Utah Data Science (SUDS) Meeting

🪄 Kenneth B. Vernon

### **The ecology of agglomeration and the rise of Chaco Great Houses**

88th Annual Meeting of the Society for American Archaeology

🪄 Kenneth B. Vernon, Weston C. McCool, Simon C. Brewer, Brian F. Coddington, Scott G. Ortman

### 2022 **The Fremont frontier: Living at the margins of maize farming**

87th Annual Meeting of the Society for American Archaeology

🪄 Kenneth B. Vernon, Jerry D. Spangler, Weston C. McCool, Peter M. Yaworsky, Simon C. Brewer, Brian F. Coddington

### 2021 **Explaining PaleoIndian settlement in the Intermountain West: A regression adjustment approach**

86th Annual Meeting of the Society for American Archaeology

🪄 Kenneth B. Vernon, David Zeanah, D. Craig Young, Robert G. Elston, Brian F. Coddington

2019 **Decomposing habitat suitability with theory-driven machine-learning**

84th Annual Meeting of the Society for American Archaeology

👤 Kenneth B. Vernon, Peter M. Yaworsky, Brian F. Codding

2018 **Prearchaic land use in Grass Valley, Nevada: This time with Bayes**

Bi-annual Great Basin Anthropological Conference

👤 Kenneth B. Vernon, Peter M. Yaworsky, Kate E. Magargal, D. Craig Young, David Zeanah, Brian F. Codding

**Prearchaic land use in Grass Valley, Nevada: A novel statistical implementation of optimal distribution modeling**

83th Annual Meeting of the Society for American Archaeology

👤 Kenneth B. Vernon, Peter M. Yaworsky, Kate E. Magargal, D. Craig Young, David Zeanah, Brian F. Codding

2015 **Numic fires: Modeling the effects of anthropogenic fire on foraging decisions in the Great Basin**

80th Annual Meeting of the Society for American Archaeology

👤 Kenneth B. Vernon, Kate E. Magargal, Ashley K. Parker, Will Rath, Brian F. Codding

---

## TEACHING

Teaching interests: Behavioral Ecology, Urban Science, Environmental Data Science, Statistics, Geography, Conservation & Sustainability, Human Prehistory, North American Prehistory.

### University of Utah

ANTH 1010: Culture and the Human Experience

ANTH 1030: Introduction to World Prehistory

ANTH 5850: Quantitative Analysis of Archaeological Data

---

## PROFESSIONAL AFFILIATIONS

2016 Great Basin Anthropological Association

2014 Society for American Archaeology

2022 Coalition for Archaeological Synthesis

2023 European Association of Archaeologists

---

## SERVICE, OUTREACH, AND OTHER ACTIVITIES

2022 **Studio Lab** | University of Colorado, Boulder, 2022–2024

Mentor. Supporting undergraduate research.

2018 **Undergraduate Research Opportunities Program** | University of Utah, 2018–2022

Mentor. Supporting undergraduate research.

**Journal Club: Problems in Evolutionary Anthropology** | University of Utah, 2018–2022

Organizer.

**Hopi Tribe v Donald J. Trump, Utah Diné Bikéyah v Donald J. Trump, Natural Resources Defense Council v Donald J. Trump**

Brief Amici Curiae of Archaeological Organizations in Support of Plaintiffs. Contributor.

## REFERENCES

---

*Available upon request.*