



## CHRISTOPHER J MORAN, PHD – FIRE SCIENTIST

### NARRATIVE

Chris endeavors to develop and apply science for improved ecosystem management. He has expertise in data science, remote sensing, and fire ecology with over fourteen years of experience in wildfire research, application, and management. He develops custom analytics and data products to improve wildfire risk quantification. Past and ongoing research includes leveraging LiDAR, SfM photogrammetry, EO imagery, and machine learning to improve fuel maps, characterizing the spatial variation in wildfire ignitions by cause, evaluating fuel treatment effectiveness, designing and implementing experimental prescribed burns for advancement of next-generation fire models, and fusing drone-collected data and CFD fire modeling to characterize fuel pattern and fire process interactions. Chris also has several years of wildland fire experience including assisting on over 50 prescribed and research burns.

### ACCOMPLISHMENTS

- Co-developed and produced continuously variable Weather Type Probability (WTP) rasters using gridded historical weather datasets (gridMET, NREL, RTMA)
- Co-developed and produced a Wildfire Threat Index (WTI) for assessing the environmental influences on utility-wildfire risk
- Developed and produced wildfire ignition probability maps for both human and natural causes
- Developed and produced spatial data to identify persistently-green irrigated land cover (e.g., golf courses) to improve LANDFIRE-based fuel maps

### WORK HISTORY

**Fire Scientist, Pyrologix LLC, Missoula, MT**  
August 2019-Present

**Remote Sensing Scientist and Affiliate Professor, Fire and Fuels Program Lead  
National Center for Landscape Fire Analysis, University of Montana, Missoula, MT**  
September 2020-Present

**Postdoctoral Fellow, USDA Forest Service, Fire Sciences Laboratory, Missoula, MT**  
September 2019-September 2021

**Research Assistant  
National Center for Landscape Fire Analysis, University of Montana, Missoula, MT**  
September 2015-August 2019

**Geospatial Analyst, RTL Networks, Inc.  
Contractor to the USDA Forest Service Fire Sciences Laboratory, Missoula, MT**  
July 2018 – June 2019

### EDUCATION

PhD 2019	Forest and Conservation Sciences	University of Montana
M.S 2011	Biological Sciences, Geospatial Sciences Center of Excellence	South Dakota State University
B.S. 2009	Biology, Ecology Specialization	South Dakota State University

## PUBLICATIONS

Epstein, M., C. Seielstad, and C.J. Moran. Preprint 2023. Event-scale impact and recovery of forest cover following wildfire in the Northern Rocky Mountains. *Fire Ecology Preprint*.

Moran, C.J., V. Hoff, R.A. Parsons, L.P. Queen, and C.A. Seielstad. 2022. Mapping fine-scale crown scorch in 3D with remotely piloted aircraft systems. *Fire* 5: 59.

Moran, C.J., C.A. Seielstad, and V.R. Kane. 2020. Mapping forest canopy fuels in the western United States with LiDAR-Landsat covariance. *Remote Sensing* 12: 1000.

Scott, J.H., A.M. Brough, J.W. Gilbertson-Day, G.K. Dillon, and C.J. Moran. 2020. Wildfire Risk to Communities: Spatial datasets of wildfire risk for populated areas in the United States. Fort Collins, CO: Forest Service Research Data Archive.

Scott, Joe. H., J.W. Gilbertson-Day, C.J. Moran, G.K. Dillon, K.C. Short, K.C. Vogler. 2020. Wildfire Risk to Communities: Spatial datasets of landscape-wide wildfire risk components for the United States. Fort Collins, CO: Forest Service Research Data Archive.

Moran, C.J.. 2019. New, multi-scale approaches to characterize patterns in vegetation, fuels, and wildfire. PhD Dissertation. University of Montana, Missoula, MT.

Moran, C.J., C.A. Seielstad, M.R. Cunningham, V. Hoff, R.A. Parsons, L. Queen, K. Sauerbrey, and T. Wallace. 2019. Deriving fire behavior metrics from UAS imagery. *Fire* 2: 36.

Moran, C.J., E. Rowell, and C.A. Seielstad. 2018. A data-driven framework to identify and compare forest structure classes using LiDAR. *Remote Sensing of Environment* 211: 154-166.

Lawrence, R.L. and C.J. Moran. 2015. The AmericaView classification methods accuracy comparison project: A rigorous approach for model selection. *Remote Sensing of Environment* 170: 115-120.

Moran, C.J. and M.A. Cochrane. 2012. Do mountain pine beetle outbreaks change the probability of active crown fire in lodgepole pine forests?: Comment. *Ecology* 93(4): 939-941.

Cochrane, M.A., C.J. Moran, M. C. Wimberly, A.D. Baer, M.A. Finney, K.L. Beckendorf, J. Eidenshink, and Z. Zhu. 2012. Estimation of wildfire size and risk changes due to fuels treatments. *International Journal of Wildland Fire* 21(4): 357-387.

Moran, C.J.. 2011. Mountain pine beetles, mitigation treatments, and fire behavior in ponderosa pine of the Black Hills, SD. Masters Thesis. South Dakota State University, Brookings, SD.

Cochrane, M.A. and C.J. Moran. 2011. Past, present, and future climates for South Dakota: Observed climatic variation from 1895-2010 and projected climate change to 2099. White Paper. Provided as support materials for the South Dakota Wildlife Action Plan, South Dakota Department of Game, Fish and Parks.