

**Artificial Intelligence and the Accessibility and Analysis of Geospatial Data:
A SCINet Workshop**

Wooton Hall, Jornada Exp. Range ARS, 2995 Knox St, Las Cruces, NM
September 10-11, 2019

Workshop goals:

1. To identify problems in conducting analyses and model simulations requiring large geospatial datasets on a high performance computer (HPC), and provide solutions for those problems
2. To identify solutions for the common problems in 1.
3. To provide exposure to machine learning and deep learning approaches relevant to geospatial problems in agriculture and natural resources
4. To develop a SCINet geospatial working group of scientists interested in collaborating and networking to address these complex problems
5. To outline short- and long-term products to move the science forward

Tuesday, September 10

8:00	Sign In: Wooton Hall (enter thru front door at corner of Knox and Frenger)	
8:15	Opening Remarks: Dr. Deb Peters	
8:30	Participant Introductions – research area, experience with SCINet/HPC, experience with AI/ML; Workshop goals and products	
9:30	Geospatial successes on the HPC	Rowan Gaffney: Big Data & Machine Learning: Mapping Grassland Vegetation
9:50	Break	
10:10	Geospatial Challenges and Opportunities on the HPC	Dr. Alisa Coffin: “HPC systems and AI in the Long-Term Agroecosystem Research Network–status, challenges, and potential for network level modeling and geospatial research”
10:30		Dr. Dave Fleisher: “Mapping Crop Yields in the Northeastern Seaboard Region: There Must be an Easier Way!”
10:50		Dr. Scott Havens (remote presentation): “Challenges of spatial modeling in the cloud during the era of big data”
11:10		Dr. Feng Gao: “Large area crop phenology and water use mapping using satellite data: opportunities and challenges”
11:30	Working lunch: Common issues to be solved among geospatial ag problems for using the HPC	
1:00	SCINet Basics, Introduction to SCINet resources for geospatial data Dr. Andrew Severin and Jim Coyle, Iowa State University (zoom)	
2:00	Small groups: Identifying SCINet Issues for Geospatial Researchers	
3:00	Break	
3:15	Small Groups continue	
4:00	Report Outs from groups	
5:00	Poster session	
6:00	Adjourn – dinner on your own	

Wednesday, September 11

8:00	Opening Remarks and Summary of Day 1	
8:30	AI/ML in Geospatial Research	Dr. Laura Boucheron (NMSU): “Predictive geospatial modeling using machine learning”
9:15		“Deep learning for geospatial data”
10:00	Break	
10:30	AI/ML in Geospatial Research, continued	Dr. Dawn Browning (Jornada ARS): “Applications of ML in natural resources w/geospatial data”
11:00		Dr. Niall Hanan (NMSU): “Machine learning: friend and foe of geospatial and ecological science”
11:30	Discussion	
12:00	Lunch Break	
1:30	Small working groups (3): integrating ML/DL and the HPC potential and challenges for solving geospatial problems	
3:00	Break	
3:30	Presentations by working groups	
4:00	Development of a SCINet Geospatial Research Working Group: Goals, Roles & Responsibilities; outcomes and products	
5:30	Wrap-up, Closing Remarks and Collection of Participant Feedback	
6:00	Adjourn	