# Dr. Bruce Wilson
# ASU Seminar
# Abstract and Biographical Sketch


**Abstract:**

Informatics, broadly defined, is the science and engineering of using information technology for the storage, retrieval, display, and analysis of data. Various Informatics disciplines have been critical to recent scientific advances, with bioinformatics probably being the most prominant. However, the volume of data available to Earth Science researchers is as large and complex as that available to the various -omics researchers. As examples of ecoinformatics data volume, the Atmospheric Radiation Measurement (ARM) Archive at Oak Ridge National Laboratory holds about 85 Terabytes, the USGS Earth Resources Observations and Science (EROS) data center has nearly 2 Petabytes of ecology-related data, and NASA's Earth Observation Systems Data and Information Systems (EOSDIS) has well over 15 Petabytes combined across its archives. The task of finding relevant data is made even more daunting by the broad range of data that are collected in the ecological sciences and the different ways in which different disciplines describe similar concepts. Finding the information you need in the midst of this sea of data, particularly if you're not sure how someone else might have described it, can be a daunting task. Fortunately, there is an interesting alphabet soup of information systems technologies which are being developed and applied to make this data access problem more tractable for researchers, even as the volume and complexity of data continues to increase.

In this seminar, I will present my views of current state of ecoinformatics, describe some of the characteristics of successful systems, and look at trends within the field. These subjects will be discussed largely in the context of the holdings of the three primary environmental data centers at ORNL: the ARM Archive, the Carbon Dioxide Information and Analysis Center (CDIAC), and the ORNL NASA Distributed Active Archive Center (DAAC) for biogeochemical dynamics. I will also talk about trends in the management and publication of ecological data and what these trends may mean for researchers in the ecological sciences.

**Biographical sketch:**

Dr. Bruce Wilson earned a B.S. degree in Chemistry and Mathematics from Michigan State University in 1985 and a Ph.D. in Analytical Chemistry (Chemometrics) from the University of Washington in 1988. From there, he worked for Eastman Chemical Company in Kingsport, TN for 12 years, with a variety of positions in process analytical chemistry, synthetic polymer chemistry, computational chemistry, and chemical information management. In 2000, he moved to Midland, MI, where he worked for The Dow Chemical Company, eventually becoming a Technical Leader for a multi-site team developing and implementing information management systems for researchers doing High Throughput Research in catalysis and material sciences. In June of 2006, he returned to Tennessee to work as an Informatics Leader for the Enviromental Sciences Division of Oak Ridge National Laboratory. His responsibilities there include being the systems engineer for the ORNL Distributed Active Archive Center for Biogeochemical Dynamics (http://daac.ornl.gov) and working across the informatics projects for the division. His research interests include cybersecurity for open research systems, the involvement of citizen scientists and non-traditional observers in ecological monitoring (particularly phenology), and the systems architecture for widely distributed information systems.