

Advances in Cyber-Enabled Science: An Overview

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Abstract

Technology is changing rapidly, and is changing nearly every aspect of the flow of information in society. Scientists must be able to flexibly adapt to the new information environment. Much effort is under way in computational sciences to address scientific needs. However, these advances are not well known outside of physics, chemistry, and molecular biology. Ecologists must not witness this paradigm change from the sidelines, but must participate both by learning how to apply these newest technologies and by informing the process to ensure that there is a mapping between development of new technologies and the capabilities that are truly needed. Yet the learning curve is steep, tools and technologies are immature and difficult to use, and there has been little research on mechanisms to make the transition easier for scientists. This presentation will provide an overview of emerging technical approaches in science with examples from ecology and other natural sciences, as a starting point for understanding the new scientific information ecosystem.