SYMPOSIUM ON INTEGRATED APPLICATIONS (B5)
Tools and Technology in Support of Integrated Applications (2)

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GLOBAL ASSIMILATION AND INFORMATION ACCESS (GAIA): AN INTEGRATED APPROACH TO EARTH SCIENCE PROBLEMS

Abstract

Our Earth is a complex system consisting of inter-connected biological, chemical, and physical systems that support another complex web that we call civilization. The Earth science research community focuses on solving problems that are well-defined and assumed to be tractable. In order to make progress, problems are broken down into manageable pieces. Even the data sources are focused and discrete. The challenge faced by policy makers is that the community, in order to make progress, has become increasingly focused on subdisciplines. Coordinating science resources and developing a consensus is difficult. We have examined the issues associated with supporting decision makers and find that while the individual pieces are available in the Earth Science community, there needs to be some "glue" created that will connect these pieces. We see this glue as consisting of three parts: 1) virtual observatories 2) e-connectivity and 3) user interface. Virtual observatories are the means by which a user or analyst can access data archived at many different locations. The tools and means for managing a virtual observatory will be discussed. Social networking and knowledge management tools provide the underpinnings for the creation of a shared community of experience that enables knowledge to be shared widely rather than held closely. The key to the success of any effort that seeks to transform data into actionable knowledge is a flexible, data interface that enables visualization of the data. The problem is that many users lack the resources to fully develop an independent visualization suite. A key element of the GAIA concept is to provide a cost-effective means for members of the user community to access data and tools regardless of their geographic location or economic status.