ABSTRACT

The *Visualization for Terrestrial and Aquatic Systems* project (VISTAS) aims to help scientists produce effective environmental science visualizations for their own use and for use in presenting their work to a wide range of stakeholders (including other scientists, decision makers, and the public). The need for better visualization tools for environmental science is well-documented, but little prior work has been done to determine what kinds of visualizations work and with whom. The VISTAS research and development project has applied social science methods to this question, and has identified issues relevant to visualization software development, particularly where the application area involves wicked problems such as climate change. This paper presents visualization problems of scientists whose presentations of scientific results might be enhanced if they and software developers were consciously aware of the nature of so-called wicked problems and the considerations of non-scientist secondary users. While VISTAS focuses on visualization software, we believe results are generalizable to software in general. The primary lesson learned from our work is that extending the scope of the domain context will likely provide scientists with software that is more effective and relevant to non-scientist stakeholders, but that doing so can be time consuming and more costly unless the nature of the underlying science problem is recognized and characterized early in the product cycle.