

ASKING QUESTIONS OF NATURE: INTEGRATING ETHICS INTO EARTH SYSTEMS SCIENCE

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The relationship between ethics and the study of our planet is a problem of epistemology, the study of how we come to know. In the knowledge map, scientific and non-scientific methods of learning about the world are both valid, but they often conflict with, rather than complement, one another in the academic setting. Integrating ethics into earth systems science introduces and sensitizes students to the idea of multiple, valid methods of asking questions of the world, specifically nature. Introduction and integration of ethics into science was the focus of the environmental ethics component of our recent two-year NSF-REU research program.

The ethics component consisted three main efforts. First, students examined the relationship between ethics and professional values and scientific discovery. Second, the students were introduced to different approaches towards asking questions of nature and to the question of how and why we value nature. Third, the students were introduced to ethical issues typically encountered by geologists working in the environmental field. Pedagogical tools included readings in the philosophy of science, the scientific method, and the land ethic; small group discussions about student research problems and the assigned readings; examples of ethical issues from working environmental geologists; and a comparison of how the Japanese and Western views of nature inflicts cultural biases on science and scientists.

Overall, the goal was to bridge the gap between humanities and science. In environmental issues, the need for such a bridge is extraordinary. Student response in exit surveys has been overwhelmingly positive. Clearly, such responses illustrate the value of teaching the responsibilities and methods of science in comparison to other ways of knowing in addition to teaching the facts of science.