

UNST 124g fall 2011

global land use

1 introduction

A common complaint about modern science (for example, Flores, 1998) is that it is *reductionist*, that is, the methods of discovery tend to fragment the thinking about natural systems into parts. The concern is that when the scientist studies the parts, she loses sight of the interconnected whole. Your professor does not know any scientists who contemplate their subjects in such isolation, although she does admit that classical mechanics is reductionist, in that it seeks to reconcile macroscopic properties of systems with their microscopic components (that is, she insists upon the *divergence theorem* of calculus). More practically, we might say that scientists study individual components and then assemble the components into whole systems theories. It is, after all, impossible to understand the working of the whole elephant in any useful way if you—or you and your colleagues—have not studied each of its parts.

In their review paper, *Global Consequences of Land Use*, Jonathan Foley and colleagues assemble a diverse array of research papers, which themselves represent and build upon many other studies, in order to provide one global overview of the impact of human land use on Earth's environment. The price of global synthesis is that the coverage of each issue is brief. Nevertheless, this is a valuable starting point for further investigation. The paper can be considered in two parts, one in which the question presented at the end of the first section (“*Are land-use activities degrading the global environment...*”) is answered and a second in which ideas for meeting the challenges posed by the answers to that question are presented.

2 assignment

Please read the paper by Foley et al. (2005) and answer the following questions. The second question derives from the BBC television documentary *Future of Food: Sustainability and Security*, which we will watch in class.

1. Write an outline of the land use consequences identified by Foley et al. (2005). The section headings offer a useful guide for establishing a structure for the outline.
2. A number of ideas for improving food security are presented in the BBC documentary *Future of Food: Sustainability and Security*, some of which involve trade-offs between sustainability and human development. Identify and describe one of those trade-offs, and, if appropriate, a solution offered in the documentary. Is the trade-off you described identified in the paper by Foley et al. (2005)?

3 references

Flores, D. (1998). *A sense of the American west*. Spirit of place and the value of nature in the American west (pp. 31-40) J.S. Sherow (Eds.). University of New Mexico Press.

Foley, J. and 18 others. (2005). Global consequences of land use. *Science*, 309, 570-574.