

## ***Interactive comment on “Agricultural sustainability in the semi-arid Near East” by F. Hole***

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The widespread, if not global, climate changes that periodically occurred during the Holocene had both beneficial and detrimental effects upon human populations and societies. During periods of favorable climate human settlements expanded and prosperity rose, whereas during periods of adverse climate there was social disruption, including the collapse of governments and states. While the “rise and fall” of civilizations has long been noted by archaeologists and historians, it is only with the advent of accurate climate records that it has been possible to causally link the two. Nevertheless the way humans adapt to climate change is based on a combination of technology, their understanding of natural fluctuations, the rapidity of changes, complexity of social organization, and unexploited opportunities such as virgin land. Social systems that have grown large and are in periods of expansion where they are approaching the limits of

sustainability, are the most vulnerable to climate changes. Today we have reached the limits of agricultural expansion in most regions of the world. Improvements in agricultural technology that help to conserve land and water allow for continued growth, but may not be able to overcome sustained climate change. The lessons from the past are that climate change will occur (whether or not CO<sub>2</sub> rises) and that some of these will be disruptive. While governments may fail they will rebound, but most likely in new forms that attempt to correct previous weaknesses.

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Interactive comment on Clim. Past Discuss., 2, 485, 2006.

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