



Effective and responsible teaching of climate change in Earth Science-related disciplines

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Climate change is a core topic within Earth Science-related courses. This vast topic covers a wide array of different aspects that could be covered, from past climatic change across a vast range of scales to environmental (and social and economic) impacts of future climatic change and strategies for reducing anthropogenic climate change. The Earth Science disciplines play a crucial role in our understanding of past, present and future climate change and the Earth system in addition to understanding leading to development of strategies and technological solutions to achieve sustainability. However, an increased knowledge of the occurrence and causes of past (natural) climate changes can lead to a lessened concern and sense of urgency and responsibility amongst students in relation to anthropogenic causes of climatic change. Two concepts integral to the teaching of climate change are those of scientific uncertainty and complexity, yet an emphasis on these concepts can lead to scepticism about future predictions and a further loss of sense of urgency. The requirement to understand the nature of scientific uncertainty and think and move between different scales in particular relating an increased knowledge of longer timescale climatic change to recent (industrialised) climate change, are clearly areas of troublesome knowledge that affect students' sense of responsibility towards their role in achieving a sustainable society.

Study of the attitudes of university students in a UK HE institution on a range of Earth Science-related programmes highlights a range of different attitudes in the student body towards the subject of climate change. Students express varied amounts of 'climate change saturation' resulting from both media and curriculum coverage, a range of views relating to the significance of humans to the global climate and a range of opinions about the relevance of environmental citizenship to their degree programme. Climate change is therefore a challenging topic to cover within the Earth Science-related curricula due to wide-ranging, and sometimes polarised, existing attitudes of students and levels of existing partial and sometimes flawed knowledge in addition to the troublesome concepts that need to be grasped.

These issues highlight the responsibility and challenge inherent in teaching the subject of climate change and the importance of consideration of integrating sustainability issues with the core science of climate change. The talk will include a discussion of strategies and resources for the effective teaching of climate change topics for a range of levels and discipline backgrounds.