



1 Robust decision making frameworks for climate change mitigation based on multivariable non-minimum state space feedback control

A. Jarvis, D. Leedal, P. Young

Lancaster Environment Centre, Lancaster University, UK

Frameworks to support climate change mitigation decision making have been heavily focused on an ‘anticipatory’ management strategy through the use of predictions from a range of climate and socio-economic models implemented within either inversion or optimisation schemes. However, despite the best efforts of this research community, it is likely that these predictive approaches will require ‘correcting’ in the future due to the effects of incomplete understanding and deep uncertainty associated with the coupled climate-socioeconomic system. This results in the need to develop robust Sequential and Adaptive decision-making frameworks for climate mitigation (Lempert and Schlesinger 2002) and yet research in this area has been remarkably limited to date (Toth and Mwandosya, 2001). One obvious framework that has been overlooked in this respect is feedback control. This talk will introduce the utility of feedback control as a climate mitigation decision support framework by exploring the online specification of CO₂ emissions policies targeting the control of atmospheric CO₂ burden and global mean temperature change under conditions of deep uncertainty.

Lempert RJ and Schlesinger ME (2002). Adaptive Strategies for Climate Change. in: Innovative Energy Strategies for CO₂ Stabilization, Cambridge University Press.

Toth FL and Mwandosya M (2001) Decision Making Frameworks. Chapter 10 in: Climate Change 2001: Mitigation (eds. B. Metz, O. Davidson, R Swart and J Pan). Cambridge University Press.