



## **Assessing the future sea level contributions of the Greenland and Antarctic ice sheets: modelling challenges and potential solutions**

T. Payne

University of Bristol, School of Geographical Sciences, Bristol, United Kingdom (a.j.payne@bristol.ac.uk)

The Third Assessment Report (TAR) of the IPCC declined to make an assessment of the contribution of changing ice sheet dynamics on sea level. This decision was made because of a range of satellite-based observations suggesting the potential for future rapid mass loss which the then current generation of ice sheet models could not reproduce. Four main areas of concern can be identified. For Greenland, they are the lubricating effect of surface melt water penetrating to the ice sheet bed and the effect of increased quantities of ice berg calving. For Antarctica they are grounding line retreat triggered by either fluctuations in ocean temperature and associated changes in the melt of floating ice shelves, or the collapse of ice shelves as a consequence of surface melt water penetrating crevasses. This talk will review progress made since the TAR in improving ice sheet models. It will suggest that many of the fundamental issues affecting ice sheet models are being addressed but that issues remain in providing the detailed regional climate forcing necessary.