In September this year, the IPCC published its latest report on the Physical Basis of Climate Change. It represents the culmination of many years’ work by the climate science community to understand the latest observations, improve climate models and provide new projections of climate change. The evidence base is stronger than ever before and there is greater confidence in many aspects of the future scenarios. But as society requires more and more robust information on which to base costly mitigation and adaptation decisions the pressure remains on climate science to provide more confident and reliable assessments. So where should climate science go next? This talk will address some of the key challenges for climate science and how these are shaping the research agendas at the Met Office and the wider international community.