Combining multiple constraints on climate sensitivity

JD Annan and JC Hargreaves

FRCGC/JAMSTEC, Yokohama, Japan

Several different approaches to estimating climate sensitivity from observational evidence have been proposed, but even though most studies point to a value around 3C as most likely, none of them so far forms a sufficiently strong constraint so as to rule out a sensitivity of 6C or greater. However, when separate studies use independent evidence, their estimates can, and indeed must, be combined using Bayes' Theorem. We show that when this is performed, we obtain a much tighter overall estimate. We conclude that climate sensitivity is very likely (5-95%CI) to lie in the range of 1.8-4.5C.