Physics > Atmospheric and Oceanic Physics

Public Perception of Climate Change and the New Climate Dice

James Hansen, Makiko Sato, Reto Ruedy

(Submitted on 5 Apr 2012)

"Climate dice", describing the chance of unusually warm or cool seasons relative to climatology, have become progressively "loaded" in the past 30 years, coincident with rapid global warming. The distribution of seasonal mean temperature anomalies has shifted toward higher temperatures and the range of anomalies has increased. An important change is the emergence of a category of summertime extremely hot outliers, more than three standard deviations (3{\sigma}) warmer than climatology. This hot extreme, which covered much less than 1% of Earth's surface in the period of climatology, now typically covers about 10% of the land area. It follows that we can state, with a high degree of confidence, that extreme anomalies such as those in Texas and Oklahoma in 2011 and Moscow in 2010 were a consequence of global warming, because their likelihood in the absence of global warming was exceedingly small. We discuss practical implications of this substantial, growing, climate change.

Comments:	19 pages, 12 figures; submitted to Proceedings of the National Academy of Sciences
Subjects:	**Atmospheric and Oceanic Physics (physics.ao-ph)**
Journal reference:	Proc. Natl. Acad. Sci., 109 (2012), 14726-14727, E2415-E2423
DOI:	10.1073/pnas.1205276109
Cite as:	**arXiv:1204.1286 [physics.ao-ph]**
	(or **arXiv:1204.1286v1 [physics.ao-ph]** for this version)

Submission history

From: Robert Schmunk [view email]
[v1] Thu, 5 Apr 2012 17:43:22 GMT (1599kb)

Which authors of this paper are endorsers?