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Global Climate Change IS Increasing Weather Volatility

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For many people, climate change is perceived to manifest as a **systematic** shift away from average weather to some kind of new average weather. A priori, there was never any physical reason to expect this kind of behavior; only glacial-interglacial dynamics produces such shifts. Consequently, denial of climate change is rising because there is no perception of an average weather change. However, climate is a complex and non-linear interplay between surface ocean heat distribution and the atmospheric heat re-distribution and the natural timescales in those systems is different by three orders of magnitude. By adding energy (now measureable) to the atmospheric-ocean interface, humans have changed pathways and exchange rates, leading to a non-linear response of the system that is manifest as **climate volatility**. This climate volatility easily now appears in the data. Three most recent examples are a) two extreme polar vortex intrusions to very southerly latitudes in Winter 13-14, b) Summer 13 incredibly weak jet stream that lead to prolonged retrograde storms (storms that move from east to west) and c) the conditions that spawned SuperStorm Sandy. This talk will make the case that climate volatility is quite real, that some non-linear thresholds are being reached, that increases in deep tropical convection may be the principle driver of the currently observed volatility, and that the connections between the oceans and the atmosphere are deeper and more complicated than previously appreciated. Most all of this has occurred within just the last 3-4 years due to significant advances in observational instrumentation and computational modeling and has re-written climate literacy 101.