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## Moving Toward Climate Resilience

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# AVON HILLS SALON

Thoughts from the Avon Hills

## *Derek Larson on “Moving Toward Climate Resilience”*

SEPTEMBER 6, 2017

Derek Larson

As south Texas begins the recovery process in the wake of hurricane Harvey and Irma bears down on south Florida, good reporters have been careful not to claim these storms are the result of anthropogenic (human-induced) climate change. That of course is true: human-driven climate disruption cannot be said to have caused these or any other specific extreme weather events. But it almost certainly has increased their severity; in the case of tropical storms directly as a product of higher ocean surface temperatures lending more energy to developing storm systems. A multi-decade study published last year in *Nature Geoscience* found an increase in storm frequency of 2-3 times the baseline rate and increases in average storm intensity of 12-15% across a wide region of the Pacific, giving us some idea of how much worse tropical storms have become within our lifetimes. Neither of those figures may seem that impressive unless you have experienced a Category 3 or 4 hurricane directly, then imagine such events coming more often and with even greater force.

For decades climate scientists warned that we were running out of time to prevent serious disruption of the global climate system, and today the consensus is that our time has expired. We can no longer speak hopefully of preventing climate change, but instead must speak of mitigating its effects and adapting to a new baseline climate. Mitigation refers to efforts to reduce emissions and ideally limit the scope of future warming. Dramatic reductions in fossil fuel consumption, strict controls over greenhouse-gas emissions, and widespread efforts to sequester carbon outside the atmosphere and oceans will be required to prevent catastrophic climate disruptions a century from now. But what of the shorter term, which in the geosciences might mean a generation or two?

Ultimately adaptation to a changed climate will be required because we cannot easily reverse the consequences of actions taken over the last 150+ years as ancient fossil carbon was liberated into the atmosphere. We have, as some climate scientists like to say, “baked climate change into the cake.” At this point some level of overall warming is guaranteed, and indeed we are witnessing its effects already in the form of rising average temperatures on every continent, rising surface temperatures in the world’s oceans, and other signals that a “new normal” is developing around us. Like a massive ocean liner steaming straight ahead, simply turning off the engines can only slow, but not stop, this forward momentum in the short or medium term. We now need to exhibit the critical human trait of adaptation: we must plan for, prepare for, and accept the reality that climate in which our common future plays out will not be like that of our past.

The key to climate adaptation is resilience. Both scientists and planners speak of “climate resilience” when asked what we must do to adapt to climate change. This quality of resilience refers to the ability of a society to survive disruption and manage change. It could be local; a coastal city like Houston could intentionally plan to become more resilient to hurricanes, for example by improving infrastructure and limiting new development in flood-prone areas. It could be national; a government initiative could fund both research on and implementation of resilience efforts on a broad scale, from coastal erosion controls to disaster preparedness. It could even be global; bodies like the UN Food and Agriculture Organization could work to secure the global food system against future climate disruption as insurance against famine. Unfortunately, far too little time and energy is actually going into such efforts, and with the ascendancy of Trumpism in the United States progress has actually been reversed. Today the U.S., and as result the entire globe, is actually headed in the wrong direction, toward being less resilient, less prepared, and less adaptive to our changing climate. This will not only make things worse for current generations, but will make the challenges faced by future generations even more daunting, surely a moral failing that will not easily be forgiven by our grandchildren.

What we have seen in Houston and surrounding areas was not in itself a direct result of anthropogenic climate change. But human-induced global warming amplified the severity of the storm, and our failure to prepare adequately—to take the idea of resilience seriously—has made the consequences more severe as well. Like other metropolitan areas Houston is a product of urban sprawl that dramatically reduced the capacity of surrounding natural systems to absorb water from major rain events. The unchecked expansion of impervious surfaces like roads,

parking lots, and roofs ensured that even more water rushed into overburdened drainage systems, streams, rivers, and soils than otherwise would have. Despite suffering three five-hundred-year storm events in three years, life in coastal Texas has continued under a business-as-usual approach in the era of climate change. This is not to single out Houston; no major US city is prepared for the new normal or has shifted either its resources or policies toward resilience to the degree necessary to do much beyond responding to short-term crises. Adaptation, for all of us, lies well into the future, and perhaps farther off today than it was six months ago.

Extreme weather events like hurricane Harvey are part of our new normal. In North America we will see more hurricanes, more flooding, more precipitation records broken—and also more heat waves and droughts, because climate change does not yield similar effects across all geographical boundaries. All we can count on is disruption: more, bigger, stronger, and costlier weather events will take their toll even before the impacts of global sea level rise, new patterns of disease, severe agricultural declines, mass extinctions, loss of the polar ice caps, or other projected threats from climate change are realized. Indeed, responding to the localized weather impacts of climate change may be among the easiest challenges we face at this juncture. We have the capacity to adapt, to become more resilient, and to stop making the problem worse—but we need to muster the collective will make a move in the right direction. The clock has been running since the Industrial Revolution, and our opportunities to keep hitting the snooze button are clearly running out. The political leadership of the federal government has failed America and the world. The responsibility to address climate change and to develop a more resilient society now rests firmly with the states, municipalities, and individuals who are already suffering the consequences of our inaction.