the weekly anthropocene

dispatches from the wild, weird world of humanity and its biosphere

By Sam Matey

New Report: IPCC 1.5. On October 7th, the Intergovernmental Panel on Climate Change (IPCC) released the "Special Report on Global Warming of 1.5°C," which analyzed over 6,000 studies to determine the effect of a 1.5°C (2.7°F) increase in Earth's average temperature. Since the Industrial Revolution, the world has already warmed by 1°C (1.8°F), which has been enough to cause the last decade's unprecedented run of hurricanes, wildfires, droughts, and floods. The report warns that the current emissions-reduction pledges under the Paris Agreement would result in a warming of 3°C (5.4°F) by 2100, and that the 1.5°C warming could be reached in as little as 11 years. The report also discussed potential solutions. Stabilizing warming at 1.5°C would require eliminating the use of fossil fuels in 30 years, as well as investment in direct capture of CO_2 from the atmosphere (either through a technological fix or through planting more forests). This is sobering news, but I believe that humanity has the potential to rise to this challenge. For more, see goo.gl/Lzi4rA.

New Inventions: PDRC Polymer. In a fascinating new innovation, a team of researchers at Columbia Engineering have created a highly reflective polymer that uses passive daytime radiative cooling (PDRC) to cool down anything it's applied on. The air voids in the polymer scatter and reflect heat energy, efficiently cooling the surface beneath. The polymer is normally white, but can be dyed in a variety of colors without losing its functionality. In tests in the Arizona desert, the polymer stayed 6°C cooler than the ambient temperature. In the age of climate change, this could be a vital tool to cool down buildings, vehicles, and perhaps entire cities. "Now is a critical time to develop promising solutions for sustainable humanity," said Dr. Yuan Yang, team leader. "This year, we witnessed heat waves and record-breaking temperatures in North America, Europe, Asia, and Australia. It is essential that we find solutions to this climate challenge, and we are very excited to be working on this new technology that addresses it." The researchers are currently refining the polymer and talking with industry about the next steps. Great news! For more, see goo.gl/vi65hu.

New Discoveries: Diverse Forests. A new study published in the journal *Science* has found that forests home to multiple tree species sequester more carbon than single-species forests. (Plants take in carbon dioxide from the air during photosynthesis, and sequester the carbon in their bodies. This is part of what normally keeps Earth's carbon dioxide levels relatively constant, and why forest conservation is so important in the fight against climate change). A team of over 60 researchers spent 8 years monitoring the growth of 150,000 trees that were planted in plots with a range of one to 16 species per plot. By the end of the project, the plots with the most species diversity had sequestered an average of 32 tons of carbon per hectare, compared to 12 tons of carbon per hectare for the single-species plots. This is more evidence that maintaining (and creating) healthy, diverse forests is one of the best things that humanity can do to help maintain this world's wondrous biosphere. A fascinating discovery! For more, see goo.gl/Lc5Bqu