

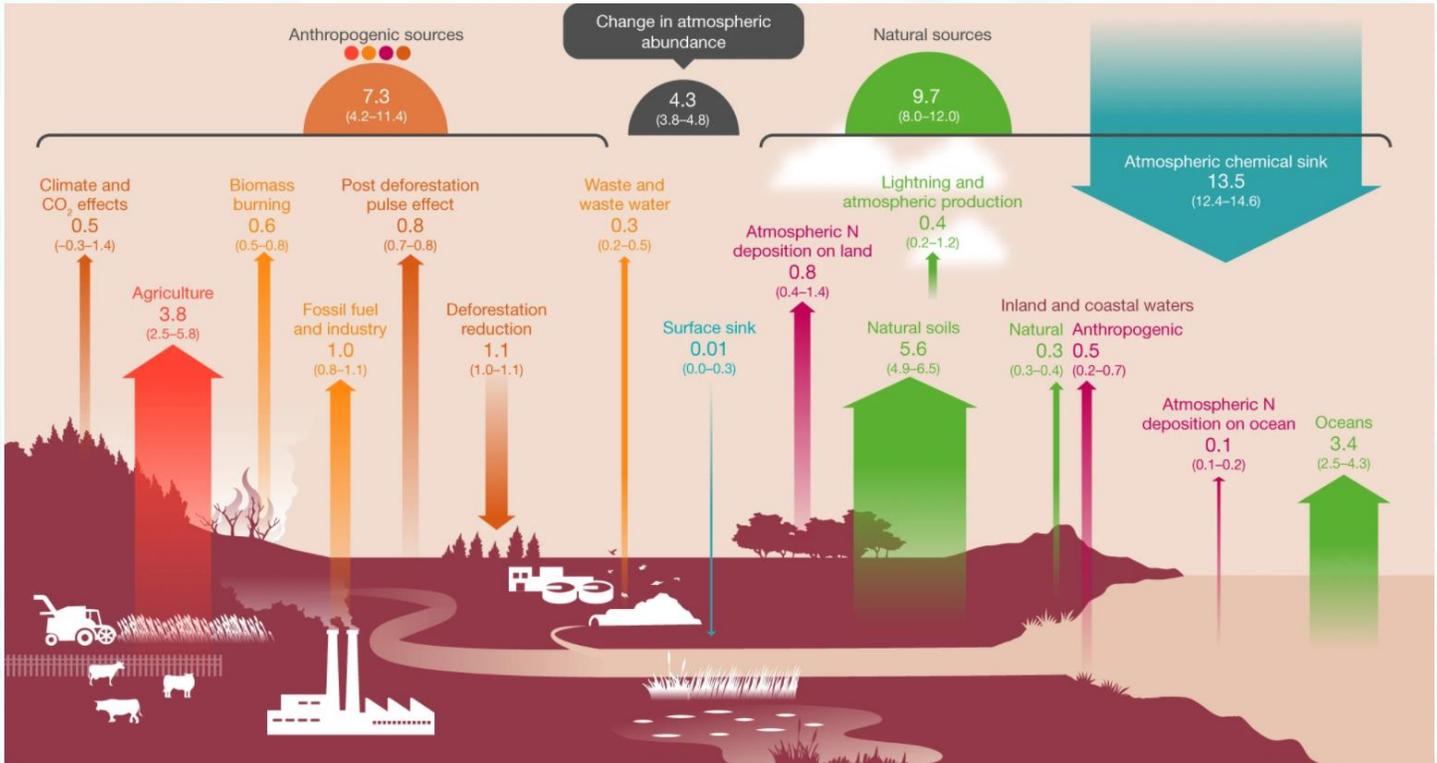


the weekly anthropocene



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

By Sam Matey, October 14, 2020



Nitrous Oxide. The climate crisis is primarily caused by humans’ burning of fossil fuels, which emit carbon dioxide, a greenhouse gas that traps heat in the atmosphere. Human civilization also emits a considerable amount of methane (mostly from oil and gas well flaring), which has become a secondary contributor to the climate crisis. A new study has identified a third climate culprit: nitrous oxide (N₂O) offgassing from wastefully applied fertilizer. (In the super-sciencey diagram above, the colored arrows represent flows of nitrous oxide in teragrams per year for 2007-2016). N₂O is a greenhouse gas 300 times more potent than CO₂, and stays in the atmosphere for over 100 years. Although there’s a lot less of it in the atmosphere, the amount is going up fast, from 270 parts per billion (ppb) in 1750 to 331 ppb in 2018, with most of the increase in the last fifty years. (Compare the rise in the level of atmospheric carbon dioxide, now at over 410 parts per million (ppm) now compared to around 280 ppm in the 1700s and 315 ppm in 1958). The researchers warn that if N₂O emissions continue to grow at this pace, it would lock us in to further global warming, likely breaching the Paris Agreement goal of keeping warming below 2 degrees Celsius all on its own. Worldwide, nitrogen fertilizers must be applied with considerably more precision and efficiency. The good news is that this problem is a lot easier to fix than carbon emissions (European fertilizer regulations have already led to a decrease in N₂O emissions from that continent), and now we know about its importance. For more, see <https://tinyurl.com/NitrousOxideProblem>. For the full study, see nature.com/articles/s41586-020-2780-0.



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London. A new report on London's air quality has found massive improvement over the past five years. In 2016, 2 million Londoners lived in and 455 schools were located in areas with illegally high levels of nitrogen dioxide (NO₂), a major component of smog. (Yes, nitrogen dioxide, NO₂, is a completely different harmful compound than nitrous oxide, N₂O, discussed in the last article. Atmospheric chemistry is complicated, and there's a lot going on). London Mayor Sadiq Khan, elected in 2016, instituted a wide-range of pollution-busting policies, from extending cycling space to deploying low-emission buses to introducing the London Ultra-Low Emissions Zone (ULEZ) in 2019, an area of Central London in which highly polluting vehicles are fined. Now, there are only 119,000 people and 14 schools in illegally high NO₂ areas, reductions of 94% and 97% respectively. In the ULEZ, NO₂ concentrations in February 2020 were 44% lower than in February 2017. There's more to do to ensure a clean air city-the ULEZ is set to expand greatly in October 2021! Props to London for working to be a human- and animal-safe landscape. For more, see <https://tinyurl.com/LondonCleanAir>.

South Australia. For a few hours on October 12th, the state of South Australia was powered by 100% solar energy. Rooftop solar met 76.3% of electricity demand in the state, and utility-scale solar brought it to over 100%. (The extra power was exported to Victoria and diverted to battery systems). South Australia also leads its nation in developing grid-scale battery storage, and is likely to set even more clean energy records in the coming months and years! For more, see tinyurl.com/SouthAustraliaSolar.

Vietnam. Vietnam has created a new nature reserve, the Dong Chau-Khe Nuoc Trong Nature Reserve, spanning 54,689 acres of lowland evergreen forest in the Truong Son (or Annamite) mountains. To quote the Mongabay article on its creation, "threatened species thought to be living in the new reserve include...two species of muntjac deer (*Muntiacus vuquangensis* and *M. truongsoneensis*), the Annamite striped rabbit (*Nesolagus timminsi*), the Sunda pangolin (*Manis javanica*), the southern white-cheeked gibbon (*Nomascus siki*), the red-shanked douc langur (*Pygathrix nemaeus*), and the crested argus (*Rheinardia ocellata*), which resembles a drab peacock." (Pictured: a critically endangered red-shanked douc at Khe Nuoc Trong). It's also possible that this area could be home to the saola, a mysterious antelope known as the "Asian unicorn" that has been photographed by camera traps but never seen in-person by a researcher in the wild. Great news! For more, see tinyurl.com/KheNuocTrong.

