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South Island Subduction Initiation Experiment

- Subduction zones are very destructive plate boundaries, which are the main drivers of plate tectonics. So, they are the primary reason why the plates on Earth actually move.
- A new research reveals how a young subduction zone was formed in the Puysegur Trench, a deep cleft in the floor of the south Tasman Sea.
- [The Puysegur Trench was formed by the subduction of the Indo-Australian Plate under the Pacific Plate to the south of New Zealand.]
- This study was done by the scientists aboard the research vessel Marcus Langseth who set out to this region in 2018 as part of the South Island Subduction Initiation Experiment.
- They studied the Puysegur margin in the "Roaring Forties," the latitudes between 40 degrees south and 50 degrees south where the winds and currents are brutal.

Findings

- About 45 million years ago, a bit of the hidden continent of Zealandia got stretched and shifted, which led the denser oceanic crust to slam into it.
- A new plate boundary between the continental Australian and oceanic Pacific plates began to form because of a force called **extension** - Tectonic forces pulled the two plates apart like putty.
- As continental crust is thicker and more buoyant, the extensional forces working at the plate boundary couldn't crack Zealandia.
- Instead, the continental crust merely stretched as it spread, creating a thinned-out zone now known as the Solander basin.
- At the plate boundary, oceanic crust bumped up against oceanic crust, and continental crust against continental crust.
- **Continental crust is more buoyant than denser oceanic crust**.
- This difference in buoyancy allowed the denser Australian plate to slide under the lighter Pacific one, especially because the boundary between these plates was already weakened by the earlier **strike-slip faulting**.

Zealandia

- The secret continent of Zealandia is found on the boundary between the

Australian and Pacific plates.
- Zealandia is a submerged section of continental crust the size of Australia around New Zealand. It was perched over the north end of this extensional zone.

Microplastics in the Atmosphere

- According to the National Oceanic and Atmospheric Administration (NOAA), Microplastics measure less than 0.2 inches (5 mm) long.
- A new study has revealed that millions of microplastics are swirling around in Earth's atmosphere, with roads as the biggest contributor.
- Computer modeling showed how particles get transported vast distances across the globe and showed that nowhere is safe from the pollution.
- Likely hotspots for the highest levels of microplastics are Europe, Eastern Asia, the Middle East, India, and the United States.
- This environmental problem is likely to get much worse and could have serious effects on human health.
- **Source** - Roads provide the mechanical energy to move particles into the atmosphere.
- Other sources included the oceans (11%) and agricultural soil dust (5%), both of which involved strong winds pushing particles into the air.
- The atmosphere has the potential to transport plastics to disparate locations, across continents and to really remote locations that would otherwise be untouched by human pollution.
- **Upper limit** - The plastic particles could remain in the air for between one hour and 6.5 days.
- That upper limit is enough time for cross-continental transportation, which means even places like Antarctica are at risk of pollution.

Mice Plague

- A mouse plague that started around mid-March in Australia’s eastern states is being called one of the worst plagues in decades.
- As a result of the rampaging mice, some farmers lost entire grain harvests, hotels have had to close and residents of affected areas reported mice falling out from roof tops causing “mice rain”.
- The government of New South Wales (NSW) in Australia has extended a support package of $50 million to the farmers affected by the plague.
- **Causes** - Abundant grain harvest, short breeding cycle of mice (a pair of breeding mice can give birth to a new litter every 21 days or so) and mice are not very choosy about food rodents.
- Rats and mice can stay in walls, ceilings, under cupboards or bathtubs, in rubbish heaps, wood piles, thick vegetation and in holes under buildings.

- **Impacts** - Rodents are capable of destroying food grains and can cause widespread damage to domestic households, commercial businesses, farms, manufacturers and livestock.
- Rodents can chew through materials, ruin supplies by excreting on them, cause diseases such as leptospirosis and typhus fever, and also carry fleas or ticks that can harm pets and humans.
- **Control** - Increasing zinc phosphide in mouse baits will help farmers to battle the higher than average mouse numbers in eastern Australia.
- To control the plague, the NSW government has now authorised the use of an otherwise outlawed poison called bromadiolone.

Elephant Casualties on Train Tracks

- According to the Project Elephant Division of the Environment Ministry, a total of 186 elephants were killed after being hit by trains across India between 2009-10 and 2020-21.
- Assam (62) accounted for the highest number of elephant casualties, followed by West Bengal (57), and Odisha (27).
- Trains claimed the highest number of pachyderms in **2012-13**, when 27 elephants were killed in 10 States.
- **Measures taken** - A Permanent Coordination Committee was constituted between the Railways Ministry (Railway Board) and the Environment Ministry for preventing elephant deaths in train accidents.
- The Ministry cleared vegetation along railway tracks to enable clear view for loco pilots, signage boards at suitable points to alert loco pilots about elephant presence on the track.
- Moderating slopes of elevated sections of railway tracks, setting up underpass/overpass for safe passage of elephants, regulation of train speed from sunset to sunrise in vulnerable stretches.
- Regular patrolling of vulnerable stretches of railway tracks by frontline staff of the Forest Department and wildlife watchers.
- Environment Ministry released funds to protect elephants for the elephant range States under Centrally Sponsored Schemes of Project Elephant.

Pradhan Mantri Kisan Samman Nidhi

- The Prime Minister of India released the eighth instalment of payouts under the Pradhan Mantri Kisan Samman Nidhi (PM-KISAN).
- PM-KISAN is a 100% centrally funded income support scheme that was announced in the Interim Budget for 2019-20, but it was implemented from December 1, 2018.
- Every family owning not more than 2 hectares of cultivable land is entitled to

receive Rs 6,000 per year via Direct Benefit Transfer (DBT) to their bank accounts in three equal instalments i.e Rs 2,000 each time.

- **Requirements** - PM-KISAN spelt out that furnishing a proper land record and bank account details is necessary to become a beneficiary.
- The beneficiaries need to have Aadhaar identification. An alternate list of identification documents has also been provided, as options.
- **Working** - State governments are required to send correct and verified data of farmers, which State Nodal Officers (SNOs) authenticate and upload to the scheme portal in batches.
- Based on the verified data, SNOs sign the Request For Transfer (RFT), with the total number of beneficiaries.
- The Public Finance Management System (PFMS) then issues a Fund Transfer Order (FTO).
- Based on this, the Department of Agriculture, Cooperation & Farmers' Welfare in the Ministry of Agriculture & Farmers' Welfare issues the transaction order for the mentioned amount.
- The money goes to the State Nodal Account maintained at a sponsor bank, and the PM-Kisan amount will be credited into the accounts of eligible farmers.

Pradhan Mantri Bhartiya Janaushadhi Pariyojana

- Pradhan Mantri Bhartiya Janaushadhi Kendras (PMBJKs), Bureau of Pharma PSUs of India (BPPI) and other stakeholders have come together to fight against the second wave of Covid 19 pandemic.
- Pradhan Mantri Bhartiya Janaushadhi Pariyojana (PMBJP) or Jan Aushadi Campaign was launched in 2008 by the Department of Pharmaceuticals, under the Ministry of Chemicals & Fertilizers.
- Implementation agency of the scheme is the Bureau of Pharma PSUs of India (BPPI) under the Ministry of Chemicals & Fertilizers.
- Exclusive outlets called PMBJKs were opened to make quality generic medicines available at affordable prices for all, particularly the poor and the disadvantaged.
- It will create awareness about generic medicines through education and publicity so that quality is not synonymous with an only high price.
- The scheme's product basket has been expanded to cover around 650 medicines and around 150 surgicals and consumables.
- A medicine under PMBJP is priced on the principle of a maximum of 50% of the average price of the top three branded medicines.
- So, the price of Jan Aushadhi Medicines is cheaper at least by 50% and in some cases, by 80% to 90% of the market price of branded medicines.

Source: PIB, The Hindu, The Indian Express, Live Science

