SWELL WAVES

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Context:

Recently, Swell waves have inundated coastal areas in central and southern districts of Kerala, causing concern for coastal communities and prompting district-level disaster management authorities to be on high alert.

Background:

These swell waves flooded beaches along the coastal regions in Thiruvananthapuram, Kollam, Alappuzha, and Thrissur districts.

About Swell waves:

1. Swell waves refer to ocean waves that have travelled over long distances from their area of origin, usually generated by distant weather systems or storms.
2. These waves typically have a consistent and smooth appearance and can travel thousands of kilometers across the ocean's surface without breaking.
3. Swell waves are a significant factor in shaping coastal areas and can cause inundation and erosion when they reach shore.
4. They are composed of a series of surface gravity waves.
5. They occur not due to the local winds, but rather due to distant storms like hurricanes, or even long periods of fierce gale winds.
6. During such storms, a huge energy transfer takes place from the air into the water, leading to the formation of very high waves.
7. These waves can propagate in directions that differ from the direction of the wind, in contrast to a wind sea.
8. Their wavelengths may rarely exceed more than 150 m.
9. In India, early warning systems like the Swell Surge Forecast System launched by the Indian National Centre for Ocean Information Services (INCOIS) in 2020 gives forewarning seven days in advance.