Prelim Bits 23-04-2024 | UPSC Daily Current Affairs

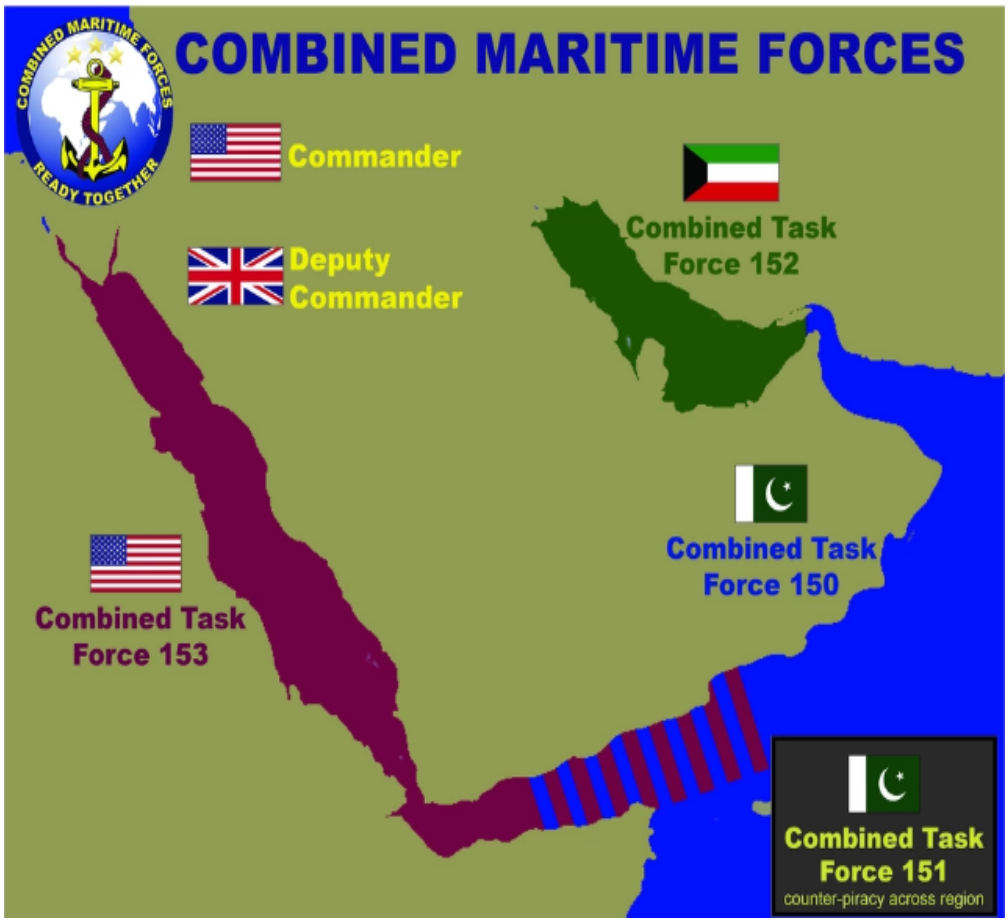
Combined Maritime Forces (CMF)

Indian Navy's elite MARCOs commandos deployed on INS Talwar, seized the narcotics from a 'dhow' as part of an operation named 'Crimson Barracuda'.

- **CMF** – It is a multinational maritime partnership, which exists to uphold the Rules-Based International Order (RBIO).

Combined Maritime Forces (CMF)	
Established in	2001
Headquarters	Bahrain
Partnership	43 member and partner nations
India	It is member nation

- It is the ***world's largest international naval partnership***.
- **Aim** – To uphold the international rules-based order by promoting *security and stability across* 3.2 million square miles of water encompassing some of the world's most important *shipping lanes*.
- **5 Combined Task Force (CTF)** – They are led by partner nations on a rotating basis.
    - **CTF 150** – Maritime Security Operations outside the Arabian Gulf (Gulf of Oman & Indian Ocean)
    - **CTF 151** – Counter-Piracy
    - **CTF 152** – Maritime Security Operations inside Arabian Gulf
    - **CTF 153** – Red Sea Maritime Security (Red Sea & Gulf of Aden)
    - **CTF 154 –** Maritime Security Training



Focussed Operation Crimson Barracuda

It was the 1st time the Indian Navy conducted a drug interdiction as part of the Combined Maritime Forces (CMF).

- **Focus** – To counter terrorist and criminal organizations' use of the high seas to conduct smuggling operations in the Western Indian Ocean region.
- **Location** – ***Western Arabian Sea***
- **Operation by** – ***INS Talwar*** which was operating in support of the Canadian-led Combined Task Force (CTF) 150.
- **Operation** – Seized 940 kg of contraband narcotics from dhow
  - It includes ***methamphetamines, hash and heroin***

Dhow *is the generic name of a number of traditional sailing vessels with one or more masts with settee or sometimes lateen sails, used in the Red Sea and Indian Ocean region.*

- **Significance** – This seizure is the 4th of this Focused Operation.

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1. ETV Bharat| Operation Crimson Barracuda
2. CMF| Combined Maritime Forces

BrahMos missile

Recently, Indian BrahMos missiles delivered to the Philippines as per contract with the Philippines signed in 2022 for supply of Shore Based Anti-Ship Missile System.

- **Origin** – BrahMos missile was derived from the Russia's P-800 Oniks (Yakhont) missile, whose name 'Brahmos' is after the rivers Brahmaputra (India) and Moskva (Russia).
- **BrahMos Aerospace** – A joint venture between India (50.5% share) and Russia (49.5% share), founded in ***1998***.
- **Aim** – To develop, design, manufacture and market *world's only supersonic cruise missile system*-BrahMos.
- **Features** – It is a 2-stage ***air to surface cruise missile***
    - **1st stage** – Solid propellant engine, brings the missile to supersonic speed and then gets separated.
    - **2nd stage** – Liquid ramjet, takes the missile closer to 3 times the speed of sound in cruise phase.
- It has a very *low radar signature*, with varied trajectories.
- The *'fire and forget'* type missile can achieve a cruising altitude of 15 km and a terminal altitude as low as 10 m to hit the target.
- It has *3 times the speed*, *2.5 times flight range* and higher range compared to subsonic cruise missiles.

Different version of BrahMos Missile	
Land version	• 4 to 6 mobile autonomous launchers, each with 3 missiles, can be fired almost simultaneously. • Upgraded version can cruise at 2.8 Mach, can hit targets at a range up to 400 km with precision.
Ship version	• Inducted into India's warships from 2005. • Hit sea-based targets beyond the radar horizon. • Launched as a single unit or in a salvo of up to 8 missiles, separated by 2.5-second intervals. • Successful in sea-to-sea and sea-to-land modes.
Air version	• Successfully flight-tested for the 1st time from a Sukhoi-30MKI. • 1,500km range, without mid-air refuelling.
Submarine version	• Launched from ~50m below the water surface. • The canister-stored missile is launched vertically from the pressure hull of the submarine. • Successfully tested 1st in 2013 from a submerged platform off the coast of Visakhapatnam.

*Cruise missiles are also called as '**standoff range weapons**', can be fired from a range far enough to allow the attacker to evade defensive counter-fire.*

	Cruise missiles	Ballistic missiles

Operation	Powered throughout flight, *manoeuvrable*	Powered only in the first phase of flight, *not manoeuvrable*
Range	Typically 1,000 km, can be as much as 4000 km	From <1,000 km to >10,000 km, missiles are classified according to range
Trajectory	*Low altitude*, level trajectory — hard to detect	*High* altitude, *parabolic* trajectory — hard to detect
Precision	High, up to a few metres — fit for *small, moving targets*	Low precision, roughly a few 100 m — fit for *larger, stationary targets*
Speed	Subsonic (<Mach 1) to hypersonic (>Mach 5) — *slower than ballistic* missiles, possible to intercept	Can hit targets at >25,000 km/h or >Mach 20 — very fast, extremely hard to intercept even with state of art technology

References

1. The Indian Express| BrahMos exported to Philippines
2. The Indian Express| Difference between Cruise and Ballistic missile

Declaration of Rights for Cetaceans

Pacific Island leaders signed a treaty, He Whakaputanga Moana, to recognise Cetaceans as legal persons.

- **Cetacean** – The name is from the Latin "cetus", which means ***large sea creature***.
- It refers to *the over 80 species of marine mammals* that include all whales, dolphins, and porpoises.
- **Declaration of Rights for Cetaceans** – It was signed to foster moral and legal change in protection of Cetaceans.
- **Signed in** – 2010
- **Rights** – Whales and dolphins should not be held in captivity.
- Every individual cetacean has a right to life, right to freedom of movement and residence within their natural environment.
- No cetacean is the property of any State, corporation, human group or individual.
- Right to the protection of their natural environment.
- Right not to be the subject to the disruption of their cultures.
- Rights shall be protected under international and domestic law.
- **Partnership** – Open to individuals as well as nations.

> *In 2013, India declared dolphins as non-human persons to prevent their import and use for commercial entertainment in water parks, dolphinariums or aquariums*

- **Challenges** – There have been attempts at establishing animal rights like the universal declaration of animal rights at UNESCO in 1978, but still no international set

standard of animal rights.

He Whakaputanga Moana

A declaration to grant cetaceans the legal personhood status.

- **Signing authority** – New Zealand, Tonga, Tahiti & Cook Islands.
- **Basis** – Customary law, or tikanga Māori, rather than Crown law.
- **Objectives** – To protect the rights of whales (tohorā) to migrate freely and to use knowledge of Māori alongside science for better protections.
- To set up a dedicated fund for whale conservation.
- **Significance** – The animals are protected not only for their high cognition but also for their importance to ecosystems.

Environmental Personhood status
• **New Zealand (Aotearoa)** – ***River*** (Te Awa Tupua Whanganui River), ***land*** (Te Urewera) and a ***mountain*** (Taranaki maunga). • **India** – Several India state high courts have given legal person status to glaciers, rivers (***Ganga & Yamuna***), lake (***Sukhna Lake***), animals, and Mother Earth. • While these are binding at the state level, there's *no countrywide legal personhood law* for animals, plants, water bodies, or nature.

References

1. The Print| Personhood Status to Environment
2. Cetacean Rights| Declaration of Rights of Cetaceans
3. The Hindu| He Whakaputanga Moana

Euvichol-S

World Health Organisation (WHO) prequalifies new oral vaccine Euvichol-S for cholera.

- It is an ***inactivated oral vaccine***, simplified formulation of the oral cholera vaccine (OCV) Euvichol-Plus.
- It is the *3rd product* of the same family of vaccines ***for cholera*** in current WHO prequalification list after Euvichol and Euvichol-Plus.
- **Manufactured by** – South Korea-based EuBiologics Co., Ltd.

  EuBiologics *is the largest supplier of oral cholera vaccine in the world, representing more than 80% market share and able to produce up to 50 million doses after expansion is completed in 2023.*

- **Significance** – It has a ***similar efficacy*** to existing vaccines but a simplified formulation, allowing *opportunities to rapidly increase production capacity*.

Prequalification List of Medical Products by WHO

• **List** – It contains *finished pharmaceutical products* used to treat diseases, and for reproductive health, that have been assessed by WHO and found to be acceptable, in principle, for procurement by UN agencies.
• **Coverage** – IVDs, medicines, vaccines and immunization devices and vector control practices.

Cholera

- It is an ***acute diarrhoeal disease***.
- **Caused by** – The ***bacterium Vibrio cholerae***.
- **Transmission** – By the *ingestion of food or water* contaminated with the bacterium.
- **Spread** – Currently, *23 countries are reporting cholera* outbreaks.
- **Infection** – It can *kill within hours* if left untreated.
- It is estimated that each year there are 1.3 to 4.0 million cases of cholera and 21,000 to 143,000 deaths worldwide due to cholera.
- **Symptoms** – Most people exposed *don't become ill and don't know they've been infected*.
- According to WHO, the bacteria are present in the faeces of infected people for 1–10 days after infection and they can still infect others through contaminated water.
- Symptoms include *diarrhoea, nausea & vomiting and dehydration*.
- **Prevention** – Wash your hands with soap and water frequently
    - Drink only safe water
    - Eat food that's completely cooked and hot
    - Stick to fruits and vegetables that you can peel yourself

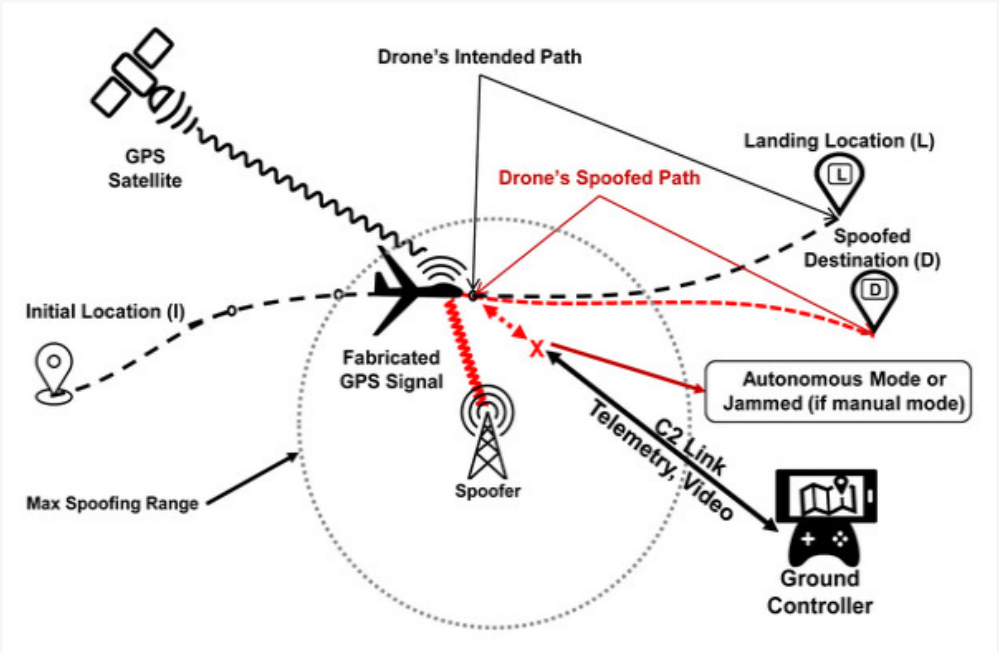
Reference

1. Financial Express| New Oral Vaccine for Cholera

GPS spoofing

Ahead of Iran's first-ever direct attack on Israel, Israeli intelligence reportedly jammed the country's GPS navigation system signals to confuse Tehran's missile targeting teams.

- **GPS Spoofing** – It involves the *manipulation of GPS signals* to *deceive receivers*, offering false information about a user's location, time, or velocity.
- Thus it is also called as ***GPS simulation***.
- Unlike GPS jamming, which disrupts signals, GPS spoofing actively transmits counterfeit signals to mislead GPS receivers.
- **Working** – It involves a*cquiring information of the victim's GPS setup*, including the types of signals it uses and how they are processed.
- Then the attacker *sends counterfeit GPS signals that mimic the real ones* and these fake signals are stronger, causing the receiver to recognize them as authentic signals.
- As a result, the victim's GPS receiver ends up processing these counterfeit signals, leading to erroneous location information.



- **Impact** – It can *hinder the adversary's military operations* and the accuracy of its missiles and drones, which often use a combination of GPS, inertial guidance and terrain contour matching to accurately navigate to their programmed target.

A 2021 United States Naval Institute article explained that US used GPS Spoofing technology to "degrade" GPS accuracy for the Indian military during the Kargil war, which "hindered Indian operations".

Global Positioning System (GPS)
• A *satellite-based radio navigation system* to calculate and pinpoint the precise location of a specified point on a global scale. • **Owned by** – USA • **Space Segment** – 27 satellites that orbit the Earth (24 are operational, and 3 are backup satellites) every 12 hours. • **User Segment** – It has GPS receivers to receive the signals sent by GPS satellites and use them to determine the user's position in space and time. • **Control segment** – Different tracking stations are located around the globe which pick up microwave carrier signals transmitted by the satellites. • **Working principle** – The tracker uses a process called *trilateration* which uses the *position of 3 or more satellites* from GPS satellites and its distance from them to determine latitude, longitude, elevation, and time. • **Challenges** – Due to the *weak signal strength* of the GPS satellites, these signals can be easily *overwhelmed by fake signals*, resulting in inaccurate location data on the receiving device.

References

Business Standard| Israel uses GPS Spoofing to evade Iran’s attack

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