



GPS Spoofing

[Source:TH](#)

During [Operation Brahma](#), the [Indian Air Force](#) claimed that its transport aircraft delivering relief to [quake-hit Myanmar](#) faced [Global Positioning System \(GPS\)](#) spoofing.

- Under '**Operation Brahma**', India deployed six military transport aircraft to deliver humanitarian aid, field hospitals, and rescue teams to earthquake-hit Myanmar.
- **GPS Spoofing (GPS Simulation):** It is a form of [cyberattack](#) in which **false GPS signals are generated to mislead an aircraft's navigation systems**, posing serious risks to flight safety and mission success.
 - GPS spoofing takes advantage of the weak signals sent by satellites, which are easy to overpower.
 - Attackers transmit stronger, **fake signals that mimic real satellite data**.
 - The **GPS receiver locks onto these counterfeit signals**, mistaking them for genuine.
 - This causes the device to **display incorrect location data**, misleading navigation systems.
- **Risk:** It can hijack planes, redirecting them to unintended locations, posing security risks.
 - It can also **disrupt military operations**, causing misdirected forces and **friendly fire**.
- **Mitigation:** To **mitigate GPS spoofing risks, multi-constellation systems, advanced signal processing, and anti-spoofing devices** can enhance security.

NAVIGATION WITH INDIAN CONSTELLATION (NavIC)

Navigation with Indian Constellation, also known as NavIC, is a stand-alone satellite navigation system, which is similar to GPS.

+ DEVELOPED BY

- Indian Space Research Organisation (ISRO)

+ NUMBER AND POSITIONING OF SATELLITES

- 8 (only 7 active): 3 in geostationary and 4 in geosynchronous orbits

+ PREVIOUSLY KNOWN AS

- Indian Regional Navigation Satellite System (IRNSS)

NavIC is recognised by IMO as a part of World-Wide Radio Navigation System (WWRNS) for operation in the Indian Ocean Region.

+ APPLICATIONS

- Navigation** - Terrestrial, aerial and marine
- Tracking and Mapping** - Vehicle and fleet management
- Location Based** - Precise timing for ATMs and power grids
- Resource Monitoring** - Surveying and geodesy, scientific research
- Safety-of-life alert dissemination**
- Time dissemination** and synchronization
- Integration with mobile phones**

+ SIGNIFICANCE

- Real time information** for civilian as well as strategic users
- India's reduced dependence** on other countries
- Scientific & technological **advancement**
- Regional integration and India's diplomatic goodwill gesture

+ ISSUES

- Constellation satellites **exceeding their operational lifespan**
- Mobile phones **lacking compatibility** with NavIC
- Limited coverage** of NavIC (extends only 1,500 km beyond India)

+ OTHER NAVIGATION SYSTEMS

Global Systems

- GPS** (US), **GLONASS** (Russia), **Galileo** (European Union) and **BeiDou** (China)

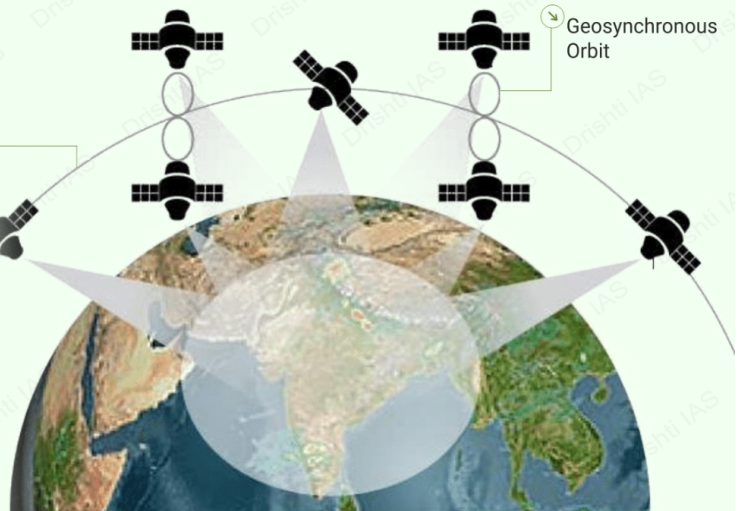
Regional Systems

- Quasi-Zenith Satellite System (QZSS)** from Japan



Geostationary Orbit

Geosynchronous Orbit



Read More: [NavIC](#), [Myanmar Earthquake](#)