

DAILY ASSESSMENT FORMAT

Date:	02-07-2020	Name:	POOJA K S
Course:	IIRS OUTREACH PROGRAMME	USN:	4AL17EC070
Topic:	Introduction to Global Positioning System	Semester & Section:	6 th SEM 'B' section
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FORENOON SESSION DETAILS

INDIAN INSTITUTE OF REMOTE SENSING, DEHRADUN

SIGNAL-IN-SPACE ICD FOR INCOIS MESSAGES via NavIC MESSAGING SERVICE

VERSION 1.0

Table 7: Service ID

Service	Service ID
High wave	0111
Cyclone Warning	1111
Tsunami	0011
No Warning	1100

In addition to warning messages INCOS broadcasts Potential Fishing Zone (PFZ) / TUNA-PFZ information to the fishermen in India. The PFZ/TUNA-PFZ message has a **Message ID 26**.

U.S. AND SATELLITE CENTRE
INDIAN SPACE RESEARCH ORGANIZATION
BANGALORE

Live chat

Top chat 3.8K

- 4:53 PM **Manasa CH** present sir
- 4:53 PM **SHIV SHANKAR KUMAR YADAV** hlo
- 4:53 PM **rutuja bangar** Rutuja Bangar present
- 4:53 PM **pragadeesh sv** dei viki
- 4:53 PM **Ishaan Singh** present sir



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Receivers

Single-Frequency

- Baseline Accuracy $1\text{cm}/5\text{mm} + 2/1\text{ppm (rms)}$
- Uses Post process L1 carrier phase
- Used for all Surveying tasks with baselines up to 15Km
 - Network Densification, Detail Surveys
- Real Time
- Occupation time as per baseline
- Less expensive alternative to Dual frequency
- Most unsophisticated receivers track only L1 and use a simplified correction model



Dual- and Multi- Frequency

- The "high end" of the GPS Market
- Baseline Accuracy ranging from $5/3/3.5\text{mm} + 1/0.4\text{ppm (rms)}$
- Used in all GPS Surveying tasks :-
 - Geodetic Control Networks, Tectonic Plate Monitoring, Photogrammetric Control, Network Densification, Detail Surveys, etc.
- Real Time
- Smaller Occupation time
- New applications are found on a daily basis

3 Classes of GPS receivers

- **Geodetic class:** capable of sub-centimeter accuracy, high-precision mapping
- **Mapping grade:** capable of <3 meters accuracy, portable, less expensive
- **Navigation:** capable of 10 meters accuracy, light weight, cheap

Live chat

Top chat  4K



4:34 PM Shashi Singh present sir



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4:34 PM Anirban Bera present sir



4:34 PM Manasa Bhat present



4:35 PM Sanket Sanket Dilip Desai present sir



4:35 PM Manikandan S present sir





Open sources of DEMs

- Global
 - ETOPO-1/2
 - GTOPO (~1 km)
 - SRTM (C-band/X-band) DEM (90 / 30 m)
 - ASTER DEM (30 m)
 - ALOS PALSAR (12.5m)
 - ALOS PRISM (30m)
 - TanDEM-X (90m)
- National/Regional
 - Cartosat-1 DEM (30 m)
 - EU-DEM (30m)
- Fused /Assimilated DEMs
 - MERIT
 - EarthEnv 90m

Live chat

Top chat  3.6K



5:05 PM Pushkar Rai We can implement control system for this.



5:05 PM Avinash Balaji Present sir



5:05 PM Dharma Pal present



5:06 PM Sayani Das not able to login



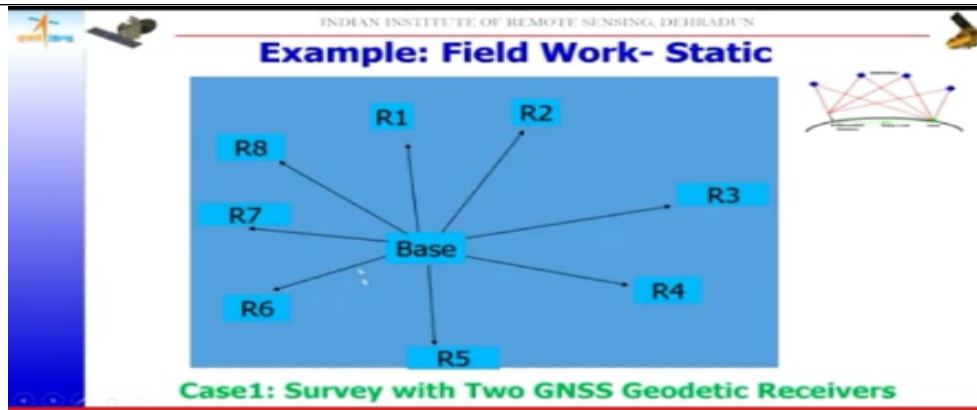
5:06 PM Ajmi Midhlaj how sbas works?



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Live chat

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4:42 PM Sagarika Bhattacharjee Present sir



4:42 PM Bhanu Prakash present sir



4:42 PM karanam ramya present sir



4:42 PM Balu Deesari 0 attendance for all ?? right b



4:42 PM Anshuman Jha @anandu askok the what is the purpose of watching this live session



4:43 PM Bimlendu Shahi in case of GPS surveying, Are we able to perform(lat, long) and also altitude also ?





4:43 PM Nikita kaple present sss




4:43 PM Bilov Biswas present please



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GPS Surveying Techniques

- Static
 - For long baselines (>20Km), where the highest possible accuracy is required
 - This is the traditional technique for providing Geodetic Networks and the only solution for large areas
- Rapid Static / Fast Static
 - For baselines up to 20Km
 - Short Occupation times/high production
- Stop and Go
 - Detail Surveys. Any application where many points close together have to be surveyed
 - Fast, economical & Ideal for open areas
- Kinematic
 - Used to track the trajectory of a moving object (continuous measurements)
 - Can be used to profile roadways, stockpiles, etc.

Live chat

Top chat  3.9K



4:41 PM Yash Raj present sir Yash Raj



4:41 PM aisvariya sri present sir



4:41 PM Faiz Ahmad present sir



4:41 PM NEYYILA JAYAKRISHNA anyone from ANDHRAPRADESH



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4:41 PM B. S. Dwivedi nice presentation



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History of Mapping and Surveying

- First Maps were mental maps used for navigation.
- Indus Valley civilization had a system of underground drainage.
- About 5000 years ago the Babylonians produced property descriptions and simple property maps on stone tablets.
- First known surveying by ancient Egyptians- used to reestablish property corners destroyed by flooding of R. Nile.
- About 2000-2500 years ago Greeks and Romans surveyed and mapped their new settlements with a great degree of precision using methods that changed very little up to this century.
- Instruments: Chain, Tape, Theodolites, Compass, Levels, EDM, TS, GPS/GNSS
- Classical Methods- Triangulation/trilateration: 19th 20th Cen.,
- Oct. / Nov. 1957: Launch of SPUTNIK-1 & -2
- Jan. 1958: Launch of Explorer-1:
- 1958: Earth's Flattening from Satellite Data [$f = (a-b)/a = 1/298.3$]

Note: Clear Line of sight requirement i.e. inter-visibility of consecutive surveyed points

Live chat

Top chat 1.9K



3:59 PM Shilpita Hazra present sir... Shilpita Hazra



3:59 PM Raghav Sankaran present



3:59 PM Harshad mane present sir



3:59 PM surbhi sharma preset sir



3:59 PM Swamy Sri present sir



3:59 PM Vidhya Kesavan Dr.K.Vidhya Sri
Ramakrishna Engineering College, Coimbatore



3:59 PM Pranay Pokala present sir



3:59 PM vishal shukla Good evening sir

The Global Positioning System :

The **Global Positioning System** (GPS) is a satellite-based navigation **system** made up of a network of 24 satellites placed into orbit by the U.S. Department of Defense. **GPS** was originally intended for military applications, but in the 1980's, the government made the **system** available for civilian use.

GPS Stands for "Global Positioning System." **GPS** is a satellite navigation **system** used to determine the ground **position** of an object. ... The satellites are evenly spread out so that



four satellites are accessible via direct line-of-sight from anywhere on the globe.

Global Positioning System PDF :

Global Positioning System (GPS) is part of satellites orbiting round the universe. It sends the details of their **position** in space back to earth. ... It is available to any user with a **GPS** receiver. It has its usefulness in military, weather conditions, vehicle location, farms, mapping and many other areas.

What is GPS and how it works?

The Global Positioning System (**GPS**) is a network of about 30 satellites orbiting the Earth at an altitude of 20,000 km. ... These signals, travelling at the speed of light, are intercepted by your **GPS** receiver, which calculates how far away each satellite is based on how long it took for the messages to arrive.

The 3 components of GPS :

The **Global Positioning System (GPS)** is a U.S.-owned utility that provides users with positioning, navigation, and timing (PNT) services. This system consists of **three** segments: the space segment, the control segment, and the user segment

The Global Positioning System (GPS), originally NAVSTAR GPS, is a satellite-based radio navigation system owned by the United States government and operated by the United States Space Force. It is one of the global navigation satellite systems (GNSS) that provides geolocation and time information to a GPS receiver anywhere on or near the Earth where there is an unobstructed line of sight to four or more GPS satellites. Obstacles such as mountains and buildings block the relatively weak GPS signals.

The GPS does not require the user to transmit any data, and it operates independently of any telephonic or internet reception, though these technologies can enhance the usefulness of the GPS positioning information. The GPS provides critical positioning



capabilities to military, civil, and commercial users around the world. The United States government created the system, maintains it, and makes it freely accessible to anyone with a GPS receiver.

The GPS project was started by the U.S. Department of Defence in 1973, with the first prototype spacecraft launched in 1978 and the full constellation of 24 satellites operational in 1993. Originally limited to use by the United States military, civilian use was allowed from the 1980s following an executive order from President Ronald Reagan. Advances in technology and new demands on the existing system have now led to efforts to modernize the GPS and implement the next generation of GPS Block IIIA satellites and Next Generation Operational Control System (OCX). Announcements from Vice President Al Gore and the White House in 1998 initiated these changes. In 2000, the U.S. Congress authorized the modernization effort, GPS III. During the 1990s, GPS quality was degraded by the United States government in a program called "Selective Availability"; this was discontinued in May 2000 by a law signed by President Bill Clinton.

The GPS service is provided by the United States government, which can selectively deny access to the system, as happened to the Indian military in 1999 during the Kargil War, or degrade the service at any time. As a result, several countries have developed or are in the process of setting up other global or regional satellite navigation systems. The Russian Global Navigation Satellite System (GLONASS) was developed contemporaneously with GPS, but suffered from incomplete coverage of the globe until the mid-2000s. GLONASS can be added to GPS devices, making more satellites available and enabling positions to be fixed more quickly and accurately, to within two meters (6.6 ft). China's BeiDou Navigation Satellite System began global services in 2018, and finished its full deployment in 2020. There are also the European Union Galileo positioning system, and India's NavIC. Japan's Quasi-Zenith Satellite System (QZSS) is a GNSS satellite-based augmentation system to enhance GNSS's accuracy in Asia-Oceania, with satellite navigation independent of GPS scheduled for 2023.

When selective availability was lifted in 2000, GPS had about a five-meter (16 ft.) accuracy. The latest stage of accuracy enhancement uses the L5 band and is now fully deployed. GPS receivers released in 2018 that use the L5 band can have much higher accuracy, pinpointing to within 30 centimetres or 11.8 inches

The Global Positioning System (GPS) is a satellite-based navigation system made up of a network of 24 satellites placed into orbit by the U.S. Department of Defense. GPS was originally intended for military applications, but in the 1980's, the government made the system available for civilian use. GPS works in any weather conditions, anywhere in the world, 24 hours a day, 365 days a year. The 24 satellites that make up the GPS space segment are orbiting the earth about 12,000 miles above us. These satellites are travelling at speeds of roughly 7,000 miles an hour. GPS satellites are powered by solar energy. They have backup batteries onboard to keep them running in the event of a solar eclipse, when there's no solar power. Small rocket boosters on each satellite keep them



flying in the correct path. Each satellite weighs about 2,000 pounds and is built to last about ten years.

How Does GPS Work?

GPS satellites circle the earth twice a day in a very precise orbit and transmit signal information to earth. GPS receivers take this information and use triangulation to calculate the user's exact location. Essentially, the GPS receiver compares the time a signal was transmitted by a satellite with the time it was received. The time difference tells the GPS receiver how far away the satellite is. Now, with distance measurements from a few more satellites, the receiver can determine the user's position and display it on the user's electronic map. A GPS receiver must be locked on to the signal of at least three satellites to calculate a 2D position (latitude and longitude) and track movement. With four more satellites in view, the receiver can determine the user's 3D position (latitude, longitude and altitude). Once the user's position has been determined, the GPS unit can calculate other information, such as speed, bearing, track, trip distance, distance to destination, sunrise and sunset time and more.

What is WAAS?

Wide Area Augmentation System (WAAS) is a system of satellites and ground stations that provide GPS signal corrections, giving you even better position accuracy. How much better? Try an average of up to five times better. A WAAS-capable receiver can give you a position accuracy of better than three meters, 95 percent of the time. As long as your GPS system is WAAS enabled you do not need any additional equipment or pay any service fees.

**WEBINAR ON CAREER OPPORTUNITIES AND INDUSTRY
READINESS DURING DIFFICULT TIMES HOSTED BY MANIKANTA
NAMBURI ON THURSDAY , 02 JULY 2020**



2:14

VoLTE 4G LTE1

Recording

LIVE

on Facebook

Impact on the job market

- Industry experts say that there is a 65% drop in hiring
- Survey Indicates 19% expect an adverse impact to last over a 2 years
- 5% of organizations expect a positive business impact in 12-24 months
- Freeze/slowdown in hiring
- Workforce optimization
- Wage cuts, delays in start dates, offer rescind



Manikanta Namburi's screen



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2:31



VoLTE 4G LTE1



Recording

LIVE

on Facebook

Unparalleled career opportunities in B Tech

- Higher Studies(GATE, M. Tech, Digital Marketing)
- Public Service Undertakings (State govt)
- Management
- Entrepreneurship
- Campus Placements
- Becoming an Expert (AI, ML, Block Chain, IOT)
- Civil Service
- Teaching profession/ Research



Manikanta Namburi's screen



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