



歴史

1973 アメリカ海軍が検討開始

1978-1985 試験衛星11機打ち上げ
(ブロックI衛星)

1989 本衛星ブロックII衛星

26衛星 精度100m

2000.5 精度劣化操作停止 精度10m

計測原理

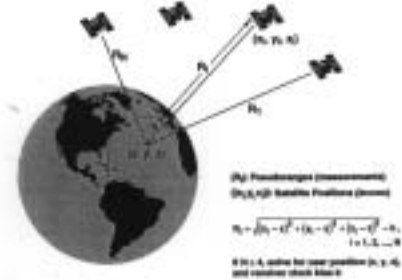


Fig. 1. The principle of satellite navigation. The user satellite range measurements based on the lines of pseudorange and clock of the signals are based by a combination of the receiver between the satellite and receiver clocks, they are called pseudorange. Pseudorange measurements from three satellites are needed to estimate the user position and the corresponding receiver clock bias.

航法データの概要

- 衛星軌道情報
- 搭載時計の情報(GPS時刻との差)
- 電離層補正データ
- 他の衛星の軌道情報

衛星配置



Fig. 2. The GPS constellation consists of 24 satellites and 3 ground stations. The satellites are arranged in six orbital planes. The ground stations are located at Colorado Springs, Hawaii, and Kwajalein.

使用周波数

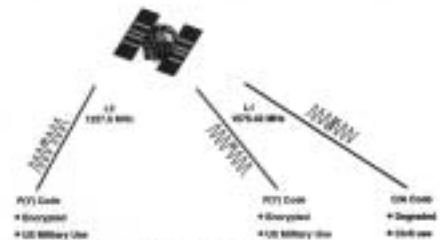


Fig. 3. Each GPS satellite transmits two frequencies in the L-band. The scrambling code (C/A code) has been available for civil use in a degraded mode. Access to the P(Y) code is limited to the authorized users via encryption. Civil users may use the P(Y) code signals, but without the benefit of tracking data (ephemeris).

主要諸元

衛星個数: 4個X6軌道

衛星設計寿命: 7.5年

軌道半径: 26,561km

周回周期: 11時間58分2秒

送信電力: L1 C/A 26W, Pcode 13W

L2 Pcode 4W

搬送周波数: L1:1,575.42MHz, L2:1,227.6MHz

測距信号: C/Acode L1波、民生用、Pcode L1,L2 軍用

信号変調

