Measuring Earth with GPS, Unit 1: Lecture Notes Page

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As you listen to the lecture, take notes in the space below.

Part 1: How it works

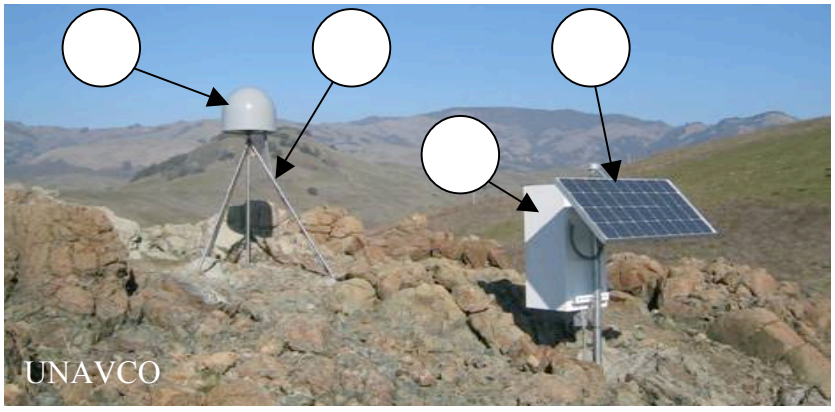
A receiver obtains signals from _____. There is a network of 24–32 satellites circling Earth with precisely known orbits.

The receiver position is calculated by determining the distance to _____ satellites. The receiver can then determine its position in terms of:

- _____ position
- _____ position
- _____
- time

Part 2: High-precision permanent GPS stations

Write in the letters to label each component of a high-precision permanent GPS station.



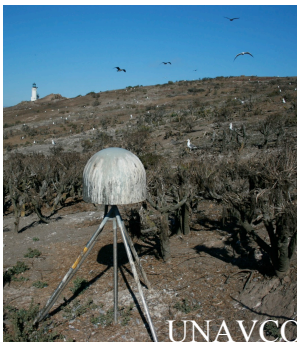
A. GPS antenna inside of dome

B. Monument solidly attached into the ground with braces

C. Solar panel for power

D. Equipment enclosure (GPS receiver, power/batteries, communications/radio/modem,

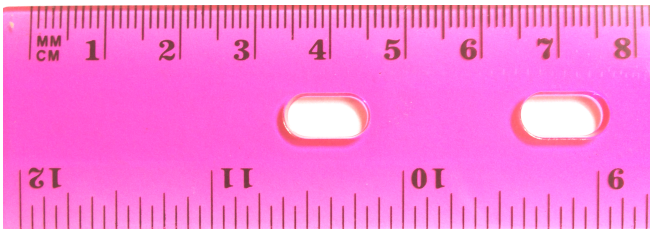
What are considerations that should be made when installing a GPS station?



What causes a high-precision permanent GPS station to move?

At any given time, a high-precision permanent GPS station can measure movements of _____cm.

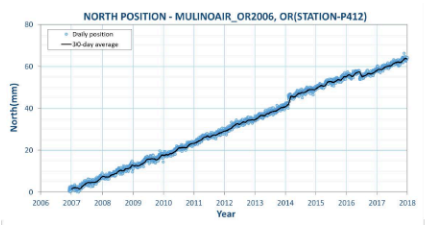
Draw this on the ruler.

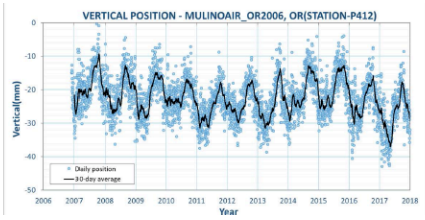


Several years of data can be used to measure velocities as small as _____ mms per year.

Draw this on the ruler.

Graphical representation of high-precision permanent GPS station data.





Part 3: GPS and society

Below is a list of what GPS can measure. Why is studying these types of GPS motion beneficial to society?

Movement of ground…

- due to plate motion
- near earthquake faults
- during earthquakes
- due to movement of magma
- due to glacier size
- due to snow depth
- due to compaction
- due to groundwater
- due to lake size
- from a landslide

Sea level

Vegetation growth

Amount of soil moisture

Amount of water in the atmosphere

Amount of ash in the atmosphere