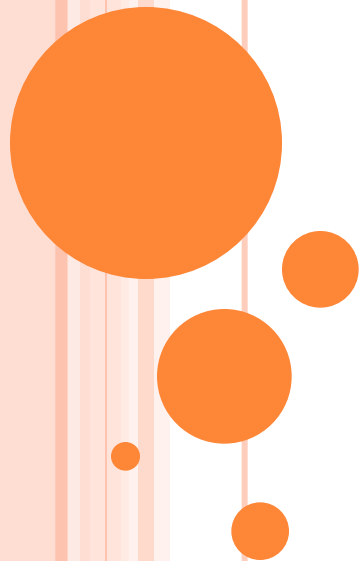


INTRODUCTION TO GPS

GPS WORKSHOP
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SURVEYING METHODS

- Static Surveys
 - High accuracy control
 - Network approach
- Dynamic Surveys
 - Post process
 - Real time
 - Control
 - Densification
 - Stake out



STATIC SURVEYS

Field Technique:	STATIC--L1 only (Post Processed)
Hardware Required :	L1 Receiver/antenna
Time of Occupation:	45-60 minutes +
Baseline Precision:	1 cm + 2ppm X Baseline Length
Advantages :	Tolerates cycle slips, needs only basic receiver Highest level of confidence in results, economical
Disadvantages :	Limited to approx. 15 km, long occupations

STATIC SURVEYS

Field Technique:	STATIC--L1/L2
Hardware Required :	L1/L2 Receiver . L1/L2 Antenna
Time of Occupation:	45-60 minutes +
Baseline Precision:	0.005m +1ppm X Baseline Length
Advantages :	Tolerates cycle slips, works out effects of ionosphere, very long baselines, highest level of confidence in results
Disadvantages :	Relatively long occupations

FAST- STATIC SURVEYS

Field Technique:	FAST-STATIC--L1/L2
Hardware Required :	L1/L2 Receiver . L1/L2 Antenna
Time of Occupation:	8-20 Minutes, depends on conditions
Baseline Precision:	Approaches Static
Advantages :	Short occupations, no need to maintain lock between points, good level of confidence, long baselines
Disadvantages :	Susceptible to multipath; requires careful planning and/or communication in the field

KINEMATIC (POST PROCESSED)

Field Technique:	Kinematic--L1 only
Hardware Required :	L1 Receiver
Time of Occupation:	1-30 seconds per occupation
Baseline Precision:	1cm + 2ppm X Baseline Length (horizontal) 2cm + 2ppm X Baseline Length (vertical)
Advantages :	Very short occupations, very efficient data collection, can be used on moving vehicles, economical solution.
Disadvantages :	Susceptible to multipath; requires initialization on a known (or previously surveyed) point when lock is lost

KINEMATIC (POST PROCESSED)

Field Technique:	Kinematic--L1/L2
Hardware Required :	L1 /L2 Receiver
Time of Occupation:	1-30 seconds per occupation
Baseline Precision:	1cm + 2ppm X Baseline Length (horizontal) 2cm + 2ppm X Baseline Length (vertical)
Advantages :	Very short occupations, efficient data collection Initialization 'On The Fly' done by GPSurvey (if Lock is lost, re-initialization is done while still moving) Longer Baselines, highest productivity
Disadvantages :	Susceptible to multipath, data is not statistically checked for integer ambiguity resolution in field.

KINEMATIC (REAL TIME)

Field Technique:	Real Time Kinematic--L1 only
Hardware Required :	L1 Receiver
Time of Occupation:	3-5 seconds per occupation
Baseline Precision:	1cm + 2ppm X Baseline Length (horizontal) 2cm + 2ppm X Baseline Length (vertical)
Advantages :	Very short occupations, extremely efficient data collection, quality checks in field, can perform staking; No office Post Processing, economical
Disadvantages :	Must return to known or previously point when lock is lost, for short baselines only (+/- 10km)

KINEMATIC (REAL TIME)

Field Technique:	Real Time Kinematic--L1/L2
Hardware Required :	L1/L2 Receiver
Time of Occupation:	3-5 seconds per occupation
Baseline Precision:	1cm + 2ppm X Baseline Length (horizontal) 2cm + 2ppm X Baseline Length (vertical)
Advantages :	Very short occupations, extremely efficient data collection, initialization done in the field (after lock is lost, re-initialization takes place automatically while moving- called OTF), can perform staking
Disadvantages :	For short baselines only (+/- 10 km)

CONTINUOUS TOPO

Important for topo mapping
Used by airborne and mobile LIDAR

Typically accuracies of individual points 3-5cm



STATIC

GPS PROJECT COMPONENTS

- 1. Control Network Design**
 - a) Project Specifications**

- 2. Mission Planning**
 - a) Field Reconnaissance**
 - b) Observation Schedule**

- 3. Field Campaign**
 - a) Data Acquisition**

- 4. Post Processing**
 - a) Data Analysis**
 - b) Modeling**
 - c) Adjustment**

