

AccuMM Accuracy to the millimetre

Accurate long term measurements of millimetre movements with a low cost solar GPS sensor network.

AccuMM patent pending distributed GNSS algorithm uses double difference multipath mitigation to accurately measure to the position and height of solar powered sensors relative to a local reference base station.

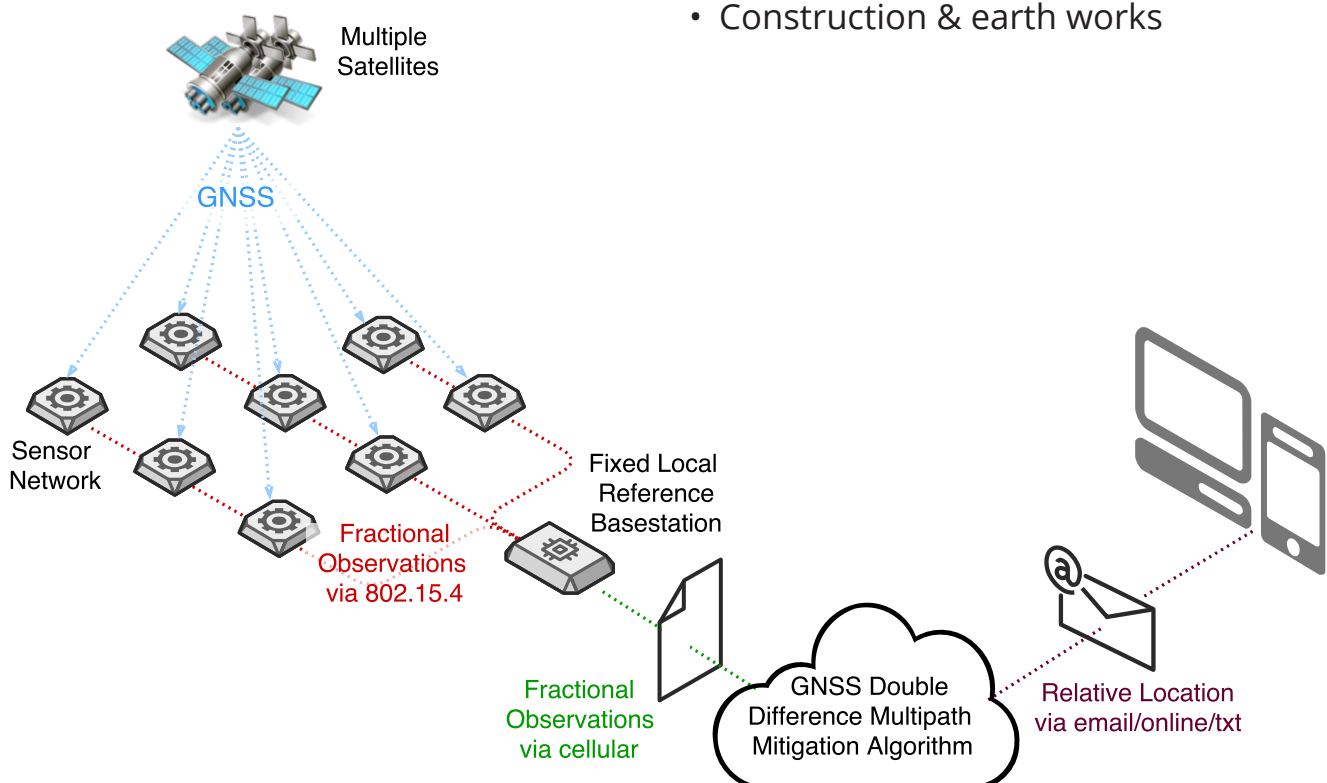
The IP67 sensors send fractional observations over a multi-hopped 802.15.4 network to the base station which aggregates and forwards the data to the cloud where the patent pending algorithm is applied to generate the X, Y and Z coordinates with 4mm accuracy for each sensor relative to the base station. This is transmitted to the Geotechnical Engineer for interpretation and analysis.

Benefits:

- Daily measurements without site visits
- Accurate to 4 mm
- No line of sight or cabling requirements
- Suitable for long term monitoring (5+ years) without intervention
- Easy attachment to ground stacks or bolted to rocks
- Measure movement at multiple points across a landslide to understand its dynamics

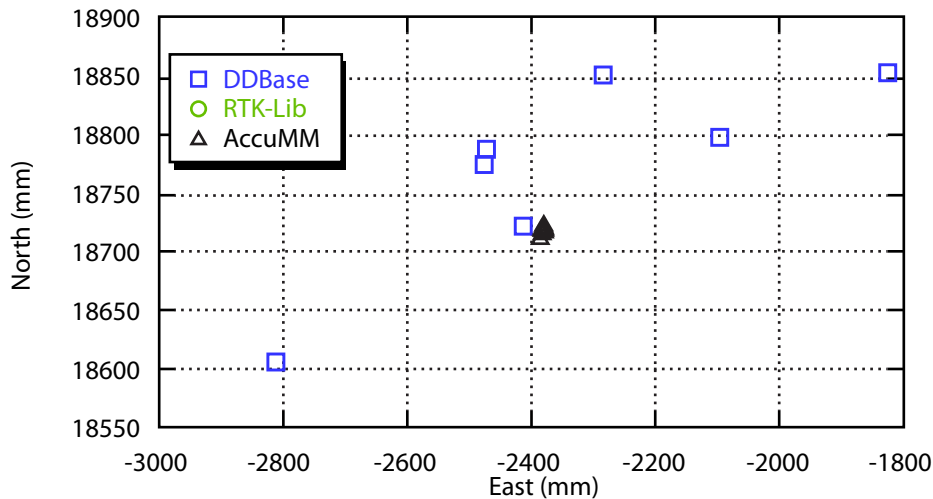
Applications:

- Landslides & property subsidence
- Road & rail transport corridors
- Construction & earth works

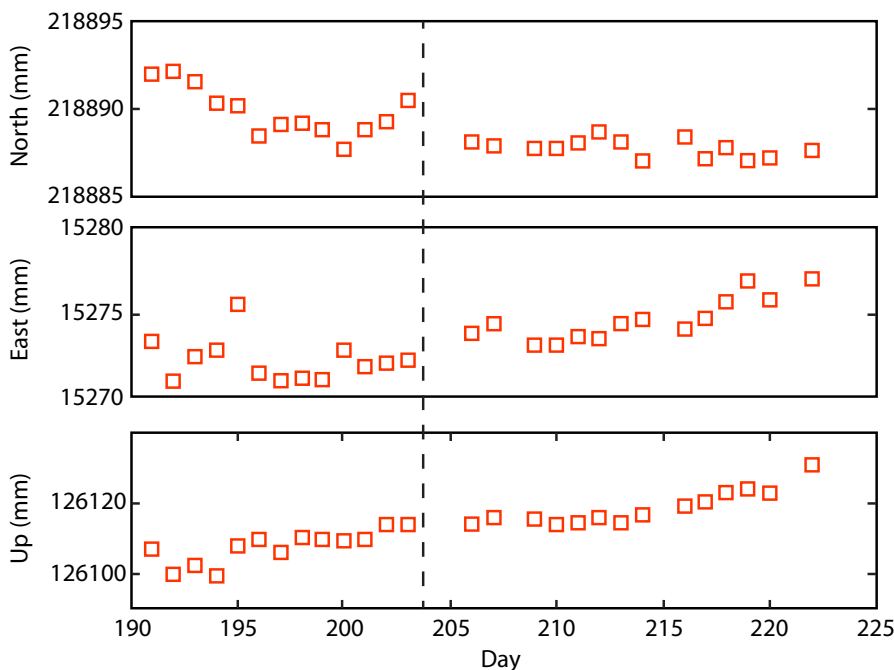


Schematic of the AccuMM solution

AccuMM Sensor		AccuMM Base station	
Size	240 mm x 160 mm x 90 mm	Size	500 mm x 300 mm x 300 mm
Weight	1.0 kg	Weight	10 kg (excluding solar & battery)
Orientation	Universal hinge for solar collection	Power Requirements	12V 0.5A
Ground Attachment	Bolt directly to rock or U-bolt to soil stake	Power Source	Battery & solar or transformer
Recommended Minimum Sensors	5 per site (for double difference algorithm)	Network Uplink	3G cellular, RJ45 Ethernet or Wifi
Wireless Range	500 m with ability to use repeaters for longer range	Wireless Range	Based on cellular



Fixed location accuracy of DDBase, AccuMM software algorithms using solar powered sensors. The accuracy of RTK-Lib was outside the range shown here.



Daily X, Y, Z measurements of node 277 relative to node 274 on moving landslide. Day 204 represents a local typhoon. The upwards movement of node 277 reflects the downwards movement of node 274.