Hybrid Networks for Geodetic Data Collection toward Deformation Monitoring

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SUMMARY

One of the primary goals of governments in developing and emerging nations, tends to be the expansion of infrastructure. Today, achieving this in a sustainable manner involves making decisions on trends of solid earth deformation. In areas undergoing active deformation, it is imperative that the frames in which spatial data is presented are appropriately designed.

The development of highly accurate deformation models requires vast amounts of data, over long periods. Common problems include a lack of operational, reliable CORS and insufficient spatial or temporal sampling of data from any one observation method. Additionally, geodetic surveys are often carried out using traditional surveying techniques. Though accuracies between data obtained using GNSS technology and those acquired during episodic campaigns often differ, it is possible that combining methods when observing a network can be a feasible approach. These hybrid networks once sufficiently maintained, can then be used to develop more accurate models than those attainable using CORS or episodic data alone.

This research aims to develop a method for the integration of traditional surveying and GNSS observations of points within a network designed for use in deformation monitoring. Successful completion will result in a framework for the combination of data from traditional methods and GNSS surveys in future exercises, in addition to potentially providing a means to increase the spatial resolution of existing models of solid earth deformation.

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