Long Time Observations of Travelling Object Positions by RTK Form with Successiv Builds of Various Bases Shifts and Correlation

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Introduction

It is technically very difficult that we specify the positions of the object being travelling at high speed at an optional time.Accordingly,we have hypothetically thought a traveling object running at 100 meters a second on the straight road that links Matida City Hall electric fixed point with Nagaizumi electric fixed point.And,we have compared the real positions with the position measured by GPS at every .1 second interval

Purpose

We have had an intention of verifing the accuracy of the positions of a travelling object in essential terms of movements and pratical uses and executed the long time evaluations about the real time survey system of a travelling object.

Survey Area

The survey area is the hypothetical straight road that have an overall length of 1000 kilometers linked Matida City Hall electric fixed point with Nagaizume electric fixed point. But this road extends beyond Nagaizume electric fixed point as far as the air.The co-ordinates of each electric fixed point are the co-ordinates that turned ITRF BLH co-ordinates offered by GSI into xyz co-ordinates.

System Constructions

1. We have supposed that a precision ephemeris is located at every .1 second interval on the straight line which connects the places of two IGS precision ephemeris next to door,which are stated at every fifteen minutes interval.
2. We have supposed that each traveling object is located at every 10 meters distance on the hypothetical straight road linked Matida City Hall electric fixed point with Nadaizume electric fixed point.
3. We have supposed that a micro wave propagation route distance between a true satellite and a traveling object at an optional time equals the distance subtracted a s-distance stated on the IGS precision ephemeris from a straight distance between a prcision ephemeris and a traveling object at the same time.

Observation Order

1. We have supposed that a starting point of a travelling object is always settled.
2. We have supposed that a traveling object is always running at 100 meters a second. from a starting point to a place of destination.
3. We have supposed that the positions of a travelling object is measured at every .1 second interval by RTK form with successive builds of various bases shifts from a starting point to a place of destination.

Conclusion

At this time observation,we have confirmed that GPS by RTK form with successive builds of various bases shifts is well adapted for the real survey business and GPS by this form has a powerful performance and efficiency.

Also,we have confirmed a remarkable improvement in survy accuracy in case of the betterment of SN ratio is not brought exept in the exceedingly short time cases in which the clock of a traveling object keep very good time with coordinate universal time.Accordingly,the efficiency of the improvements of SN ratio is very small.