
Evaluation of the Measurement Noise and the Systematic Errors for the KOMPSAT-1 GPS Navigation Solutions

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GPS Navigation Solutions are used for operational orbit determination for the KOMPSAT-1 spacecraft. GPS point position data are definitely affected by systematic errors as well as noise. Indeed, the systematic error effects tend to be longer term since the GPS spacecrafts have periods of 12 hours. And then, the overlap method of determining orbit accuracy is always optimistic because of the presence of systematic errors with longer term effects. In this paper, we investigated the measurement noise and the system error for the KOMPSAT-1 GPS Navigation Solutions. To assess orbit accuracy with this type of data, we use longer data arcs such as 5-7 days instead of 30 hour data arc. For this assessment, we should require much more attention to drag and solar radiation drag parameters or even general acceleration parameters in order to assess orbit accuracy with longer data arcs. Thus, the effects of the consideration of the drag, solar radiation drag, and general acceleration parameters were also investigated.