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Poster
With the upcoming solar maximum, users may find themselves unable to navigate in high-latitude regions due to a higher likelihood of geomagnetic storm activity combined with the limited number of satellites in view of high latitude receivers. By analyzing data from high-resolution Connected Autonomous Space Environment Sensor (CASES) GPS receivers located in Poker Flat, Alaska Research Range during a geomagnetic storm that occurred on August 26, 2018, we are studying the effects that satellite configurations have on position solution error. The project aims to determine the relationship between the configuration of the satellites in view of the receiver and the direction in which the deviation between the known receiver location and the flawed position solution occur. We want to understand why the position solution error deviates in a specific direction given the levels of scintillation activity that are affecting each of the satellites in the configuration. We are conducting this analysis during times when all satellites in view of the receiver have nominal STEC values in order to isolate the variable of configuration. The results of this analysis will be used to contribute to the develop an index to categorize the severity of geomagnetic storms and the effects they have on the operational use of GPS receivers at higher latitudes.

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