

Mission plan for ionosphere/magnetosphere observation with satellite formation flying

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The ionosphere/magnetosphere disturbances caused by energy deposition from solar wind appear in a variety of scale size. For example, it is known that charged particle precipitation has scale size of several tens km while aurora brightenings appear all longitude on aurora oval and the effect to ionosphere has global scale phenomena. In order to study the ionosphere/magnetosphere storms having complex structures, multi-point observation has been required in space physics society. For this purpose, KASI (Korea Astronomy and Space Science Institute) has a plan to launch a new mission that consists of one small satellite (mother sat) of 100 kg and four Cubesats (daughter sat) of 3 kg. These four Cubesats are deployed on orbit and separated from mother sat slowly and reach 100 km distance after 1 year. The mother sat has optical instruments and new particle detector package covering wide energy range while the daughter sats have simple particle detectors and magnetometers. With this mission, we can study multi-scale structures of ionosphere/magnetosphere in low earth orbit. Now this mission is under planning phase and we submit the proposal in 2016. If this mission is accepted by Korean government, it would be launched in 2020.