indefinitely away, but with only a small flux in it. These two types of flux rope ejections may account for the different types of CMEs.

■ Session : 고층대기
4월 29일(수) 14:40 - 15:55 제2발표장

[ATM-01] Diurnal Variations of Sporadic Meteor Flux Observed by SKYiMet Meteor Radar

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Meteors are the important source of metallic atoms in the ionosphere. The sporadic meteors penetrating in 80-100 km altitudes provide a long term effect on the metallic ion layer formations. Earlier studies have shown that the sporadic meteor flux is not constant throughout the globe. However, recent studies showed that they are not random, but follow certain periodic diurnal and seasonal pattern. For a better understanding of meteor origin, it is important to know precisely the global annual, seasonal and diurnal variation of meteor flux. In the paper we study the diurnal variation of meter flux rate at different latitudes using observations from Thumba, India, Darwin, Buckland Park, Davis. We observed a secondary peak occurring at 0300 LT in addition to a morning peak occurring at 0600 LT at Thumba. At other latitudes only one peak occurring at 0600 LT is observed. Interestingly, this secondary peak has a clear seasonal variations. In summer (winter), the primary (secondary) peak is larger than the secondary (primary) peak. However, the primary and secondary peaks are comparable in equinoxes. Comparing with the observations from low to high latitudes, we conclude that the secondary peak is strongly limited in the region of the equator. We suggest that the secondary peak could be due to sporadic meteor sources located around apex, which may not be associated with Helion and Antihelion sources.

[ATM-02] On the Seasonal Variation of Meteor Decay Times Measured by a Meteor Radar at King Sejong Station(62°S, 58°W), Antarctica

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A meteor radar, installed at King Sejong Station (KSS), Antarctica in February 2007, has been detecting numerous meteors more than 18,000 per day. Meteors entering the earth's atmosphere reveal much information on the atmosphere through the process of interacting with the increasingly dense air molecules, especially the altitude region between 70km and 100km. Meteor decay times measured by a meteor radar have been used to infer the atmospheric temperature and pressure under the assumption that diffusion is the only process for decay of meteor echo signals. However, meteor decay times measured over KSS decrease with decreasing altitude below 80~85 km, clearly opposite behavior to the diffusion assumption for meteor decay. The monthly averaged height profiles of meteor decay times show a maximum at 80~85km, which appears at higher altitude during southern summer season than winter. This feature was previously attributed to additional removal of meteor trail electrons by icy dust particles in the cold mesosphere. Models of meteor decay time with dust particles (Havnes and Sigernes, 2005; Younger et al., 2008) predict shorter decay times for weak echoes than strong echoes, which was supported by some of previous observations (Ballinger et al., 2008; Singer et al., 2008). However, our measured meteor decay times are generally shorter for strong echoes than for weak echoes in the altitude region of about 70~90km. In addition, height profiles of meteor echo power and SNR (signal-to-noise ratio) show steep decreases below 80~85km, indicating fast extinguishing mechanism of meteor trails even in the beginning stage at the low altitudes. These characteristics found in our data may imply fast removal of plasma/electrons other than absorption by dust particles. We will discuss about other possible mechanisms related with D-region chemistry.

[ATM-03] Differences between the TOPEX/Jason and GPS TEC measurements

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The TEC data obtained from the TOPEX/Jason and GPS satellites have been extensively utilized for the various studies on the ionosphere due to their unprecedented temporal and spatial coverage. The TOPEX/Jason

observations have been continuously providing the TEC data over the global 'ocean' from the launch of the satellite in 1992. On the other hand, the GPS TEC data are based on the world-wide network of the ground receiver stations, which are mostly distributed over the 'continent' but scarce in the ocean. It seems to be very plausible that these discrepancies in the spatial coverage of the two can make them a perfect global TEC data set if they are combined. However, they have been hardly merged in the study of the ionosphere since there are additional differences in the data sets: the altitudes of the satellites are very different. The TOPEX/Jason satellites are orbiting at about 1330 km altitude, an approximate boundary between the topside ionosphere and plasmasphere at mid-latitudes, while the GPS satellites circle around the Earth at about 20,200 km altitude. This large discrepancy of the satellite orbit can yield significant differences in their TEC data. In this study, we perform a comprehensive comparison between the two data sets in order to quantify the differences in various geophysical conditions. The resulting TEC differences between 1330 and 20200 km altitudes may also provide an indication of the electron densities of the plasmasphere in the various geophysical conditions. The preliminary results of this study will be presented.

[ATM-04] Behavior of the NmF2 and hmF2 over Anynag station (37.4N, 127.0E, Geomag = 27.7N, 196.9E)

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The peak density of the F2 layer of ionosphere (NmF2) and the height of the maximum density of the F2 layer (hmF2) have been used as key ionospheric parameters for GPS signal time delay correction. It is well known that the trends of the NmF2 and hmF2 variation are different with the region since the work of Torr et al. (1970). A comprehensive database of the NmF2 and hmF2 over the local area is thus needed to be analyzed, in order to develop an accurate ionospheric correction model for the local area GPS receiver. For the purpose of improving time delay correction models of GPS radio signals propagating through the ionosphere over Korean Peninsula, we study the ionospheric climatology using NmF2 and hmF2 data over south Korea by analyzing the ion density profile measured by the digisonde at the Anyang station (37.4N, 127.0E, Geomag = 27.7N, 196.9E) during the period of April 1998 through December 2008. Anynag digisonde data cover one complete solar cycle period with various solar activities and geomagnetic activity conditions. We sorted the data for the solar activities, geomagnetic activities, local times, and seasons to analyze the variation of the NmF2 and hmF2 for each condition. Local time variations of NmF2 and hmF2 were probed for each case of three (strong, medium, low) solar and geomagnetic activities, and each months. The NmF2 and hmF2 variations were compared with those derived from IRI-2007 model. In our results, the response of the noon time NmF2 to the solar flux indices (F10.7) is much higher in January than July and the hmF2 does not show seasonal dependences significantly, as reported by Bremer (2000). The NmF2 and hmF2 at Anyang vary little with geomagnetic activities, but the hmF2 data were higher by at least 50 km than the values of IRI-2007 for high solar activity in the moderate and high geomagnetic conditions. We classified the data in the cases of low, moderate and high solar activities for the low, moderate and high geomagnetic activities, 9 combined conditions. The semi-annual variations of NmF2 and hmF2 are dominant during daytime but not during nighttime. Annual anomaly of the NmF2 (higher in winter than summer) is clearly seen for 6 combined conditions. Semi-diurnal variations of the hmF2 were apparent for most seasons as reported by Oliver et al. (2008).

[ATM-05] Mean winds and tidal variabilities in the mesopause region above King Sejong Station(62.1°S, 58.5°W), Antarctica

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The meteor radar at King Sejong Station have provided wind profiles in the mesopause region (80-100 km) since its installation in March 2007. Winds are determined from meteor trail evolution every hour from 80 to 100 km with 2 km height resolution. Monthly mean winds are mostly westward below 90 km during Austral summer months (November, December), while eastward winds appeared dominant between 80 and 100 km during winter (July, August). In addition to the mean wind fields, tidal variation, especially semi-diurnal tides are apparent in the measured wind profiles. A simple Fourier analysis of the measured winds shows various tidal components (diurnal, semidiurnal and others) and planetary waves that have period longer than a day. The monthly means of tidal parameters such as amplitudes and phases are obtained using a curve fitting