An introduction to the ionosphere research in Institute of Geology and Geophysics, Chinese Academy of Sciences

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There has been a long history of ionosphere research with observations and numerical model simulations in the ionosphere group of Institute of Geology and Geophysics, Chinese Academy of Sciences (IGGCAS). In this talk, we will present a brief review on the observational studies of the middle and low latitude ionosphere in China, discuss and seek to enhance possible future cooperation in potential areas including the development of ground-based space environment observation network in the Asian and Oceanian regions. The talk will be focused on the following aspects: (1) The ground-based observational network conducted by IGGCAS, which mainly includes four types of instruments (ionosonde, GNSS receiver, all-sky meteor radar and magnetometer) deployed at four long-term observation sites around 120^oE (Mohe, Beijing, Wuhan and Sanya) for monitoring the lower thermosphere and ionosphere, and the Solar-Terrestrial Environment Research Network (STERN) which provides access to the observed data. (2) The outcomes (e.g., the validation of COSMIC ionospheric parameters with a chain of ionosondes, the East-West difference and nighttime enhancement in F region electron density, and the tidal wind mapping technique) derived from the observational network in recent years, and plans of expanding the present network of lower thermosphere/ionosphere observation. (3) The Sanya VHF coherent and UHF incoherent scatter radars designed for improved studies of the lower thermosphere and ionosphere in the Chinese low latitude region with high spatial and temporal resolution. Some recent results of ionospheric E- and F-region irregularities and meteor trail irregularities obtained from the Sanya VHF radar (which was installed in 2009) will be presented. (4) The future research topics of the IGGCAS ionosphere group, and plans for international cooperation.