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Research Progresses of Ionospheric Plasma Irregularities from the Ground–Based Airglow Network in China

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China, from north to south, spans from the middle latitudes to the low latitude both in geographic latitude and geomagnetic latitude. And China has a variety of topography environment, which including high lands, plains, seas, and long coasts. To better understand topographic and latitudinal effects on the mesosphere and thermosphere and features of ionospheric plasma irregularities at various latitudes in China, we have established a ground-based airglow network in China gradually since 2010, which consists of 16 stations. This network almost cover China, which focuses on two airglow layers: the OI (~250 km) and OH (~87 km) airglow layers. The observations from OI airglow layers provide convenience to systematically investigate the morphologic feature and evolution of ionospheric plasma irregularities over China. Based on the airglow network observations, we mainly report some important research results of ionospheric plasma irregularities in recent years. These findings include (1) statistical characteristic of equatorial plasma bubble (EPB) over China, (2) the influences of severe extreme weather events on the ionosphere, (3) interaction between medium-scale traveling ionospheric disturbance (MSTIDs) and ionospheric irregularity, and (4) some new phenomena of ionospheric irregularities.