

Lバンド帯・新赤道大気レーダーシステムの提案 Conceptual Study of L-band new Equatorial Atmosphere Radar System

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In this paper, the conceptual study of the extremely new style radar system will be discussed for considering the next generation Equatorial Atmosphere Radar. To monitor the wide spatial distribution of ionosphere and lower atmosphere, the pair of high-elevation antenna array facing the opposite azimuth direction is very useful. The high power antenna beam with the elevation of 10-15 degrees is required to observe the ionosphere over the geomagnetic equator. To elucidate the detailed behavior of the columns convection in the Equatorial region, Comprehensive horizontal distribution of radial wind velocity and turbulence intensity is also very important to elucidate the detailed behavior of columns convections and their impact on the atmospheric activity in TTL region. This radar enables us to monitor the radial wind velocity by detecting clear-air echo in the no precipitation conditions.

The required total power of this radar with L-band radiowave is roughly estimated to 1 MW in peak power to monitor the lower atmosphere from the atmospheric boundary layer to the tropopause region and ionosphere.

The detailed concept of this new radar system will be explained. We are very welcome to discuss the advantage/disadvantage and feasibility of this new concept radar system.

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