

南極昭和基地でライダー観測されたオーロラ粒子降り込み時のNa層

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Lidar observations of Na layer interaction with auroral precipitation at Syowa Station, Antarctica

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The mesosphere and lower-thermosphere (MLT) temperature and Na density were observed with a Na temperature lidar at the Syowa Station, Antarctica (69°S, 39°E) from 2000 to 2002. The Na temperature lidar system was developed jointly by Shinshu University and the National Institute of Polar Research in order to examine the mechanism of energetic interactions between the lower-thermosphere and upper- mesosphere through the mesopause region. The observations were performed using the two-frequency technique as demonstrated by She et al. [1990] during winter (mainly from March to October). Total observation nights were more than 250 nights for the three years. For 2000-2002, solar activity was quite high, and there were many nights of simultaneous observations of Na layer and auroral precipitation. Nomura et al. [1987] reported that the Na layer was disturbed (Na abundance decreased and layer width became thinner) by an auroral breakup. However, there is no study supporting or opposing their suggestion yet. In this study, we focus on nights of high K-index (more than 5) at Syowa and compare the changes of Na density and/or Na layer width with the K-index or the CNA observed by a RIO meter.