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Mesospheric Na layer during solar proton event (SPE) observed over Utah, Logan (41.7°N, 112°W)

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It is well known that the solar proton event (SPE) induces the changes in the neutral and ion species in Earth's atmosphere. The highly energetic protons produce odd hydrogen (OH_x) and odd nitrogen (NO_y) after a series of chemical reactions during SPE. The production of odd hydrogen and odd nitrogen severely affect the mesospheric chemistry and dynamics due to the presence of secondary ozone layer. In the mesosphere, this ozone layer along with atomic oxygen density dictates the behavior of Na density layer. We report the influence of SPE on mesospheric Na layer as observed over Utah (41.7°N, 112°W) during the SPE of 19 July 2012 using Na density measured by Utah State University (USU) Na LIDAR. The variation in the mesospheric Na density layer is discussed in contrast with the atomic oxygen density and neutral temperature obtained from NRLMSISE-00 neutral model atmosphere along with the proton flux measured by GOES satellite.