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The O₂ aurora observed by the TIMED/SABER satellite

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We studied O₂ aurora based on the observations of O₂ emission at 1.27 μm from the Sounding of the Atmosphere using Broadband Emission Radiometry (SABER) instrument during the nighttime over 18 years. The horizontal structure and vertical profile of O₂ auroral volume emission rate is obtained after removing O₂ nightglow contamination. The O₂ auroral intensity varies between 0.14 and 5.97 kR, and the peak volume emission rate varies between 0.97×10^2 and 41.01×10^2 photons cm⁻³ s⁻¹. The O₂ auroral intensity and peak volume emission rate exponentially increases with increasing Kp index, whereas the peak height decreases with increasing Kp index. The O₂ auroral intensity and peak volume emission rate under solar minimum condition are larger than those under solar maximum condition. The peak height under solar minimum condition is lower than that under solar maximum condition.