

# Solar cycle trend of NO<sub>2</sub> at low latitude from HALOE and GOME satellite payloads

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The remote sounding of atmospheric parameters from the space-borne platforms over the past 20 years has provided a wealth of data to increase our knowledge of atmospheric processes. To assess the long time change of nitrogen dioxide, NO<sub>2</sub>, its natural variation with solar activity must be known. It is also an important minor species for the chemistry of O<sub>3</sub> in the Earth's atmosphere. HALOE payload on UAR satellite has been measuring vertical distribution of this species from about 10 to 55km since 1991. GOME payload on ERS-2 has also been measuring this species since 1995. We have used this data set to obtain a picture of solar activity. We have concentrated for a station of coordinate, 23°N, 75°E. Analysis of data shows an increase in NO<sub>2</sub> density with decrease in solar activity level. The correlation coefficient is found to be -0.79. NO<sub>2</sub> density has a peak around 30 km. The density of this species in the troposphere is only 10%. But, sometimes, its density in the troposphere has been found to be as high as that in the stratosphere. GOME values are found to be about a factor of 2 higher than the HALOE values. They appear to agree with the SAGE-3 data. Analysis of data further shows that NO<sub>2</sub> decreases by a factor of ~3 from low to high solar activity condition. If UV flux in  $\lambda < 400\text{nm}$  decreases by a factor ~3 then this decrease in NO<sub>2</sub> can be explained by photochemistry.