

# Global observations of the mesospheric sodium layer from the OSIRIS instrument on ODIN

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Limb-scanning observations of the Na *D*-line radiance at 589 nm in the earth's day-glow, made from the OSIRIS instrument on the ODIN satellite, have been used to retrieve absolute Na density profiles. These have been ground-truthed using a Na lidar at Ft. Collins, Colorado. Two years of data (2003/2004) have been analyzed to characterize the seasonal and latitudinal dependence of the global Na layer. This paper will first describe the retrieval algorithm and error analysis, and then discuss some of the important findings. First is a pronounced diurnal variation in the equatorial region, with the morning Na density being much lower than in early evening. This is almost certainly caused by the effect of the strong diurnal tide on the local atomic oxygen density. Second, there is substantial depletion of Na in the presence of polar mesospheric clouds at high latitudes during summer, which leads to a very marked seasonal variation in the layer. Finally, the vertical resolution in the retrieved profiles is good enough to resolve sporadic (or sudden) Na layers (SSLs). The global probability distribution of SSLs is rather unexpected, with a much higher probability at mid-to high latitudes in the southern hemisphere.