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Observations and Models of the Lunar Sodium Exosphere 1988 - 1999

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Sodium in the lunar exosphere is easily observed from the Earth's surface due to its strong resonance emission lines in the visible region of the spectrum. Although sodium is a trace element, it is easily ejected from the surface by a number of processes. The variation of this exospheric constituent both spatially and temporally can help to constrain these sources and the loss processes and their timescales. Due to a revival of interest in the Moon and its volatiles, observations of the lunar exosphere obtained at the McMath-Pierce solar telescope in 1998 and 1999 have recently been reduced and analyzed. In addition, observations of the lunar sodium exosphere obtained with the Mt. Lemmon Lunar Coronagraph on Mt. Lemmon, Arizona, have also been published (Sprague et al., 2012). We combine these new data with data previously published [Mendillo et al, 1999; Potter and Morgan, 1988; 1991, 1994; Sprague et al., 1992; Verani et al, 2001] and reanalyzed by Sarantos et al. (2010). This comprehensive data set will be modeled using both a simple Chamberlain exosphere model and a comprehensive Monte Carlo model (Killen et al., 2012; Crider and Vondrak, 2000).

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