

## Overview of Ground Based Observations of the Exosphere

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In 1985, Potter and Morgan discovered the sodium exosphere of Mercury at the McDonald Observatory (Potter and Morgan, 1985), and they subsequently discovered a potassium exosphere. It was not until 2000 that Bida et al. reported the discovery of the Ca exosphere.

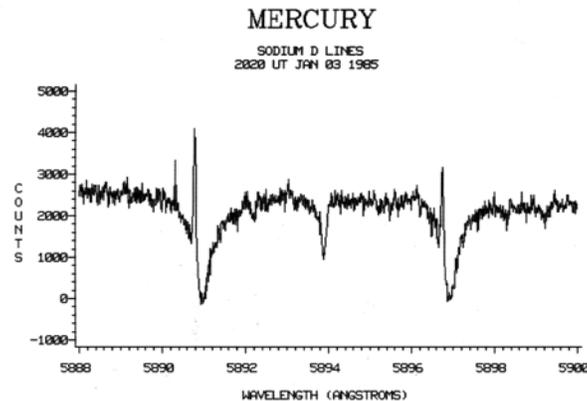


Fig. 1. Sodium discovery spectrum showing D<sub>1</sub> and D<sub>2</sub> sodium emission lines within the solar Fraunhofer absorption lines reflected from the Mercury surface (Potter and Morgan, 1985).

Sprague *et al.* (1997) published a series of Mercury sodium measurements using a long-slit spectrograph. Schleicher *et al.* (2004) observed the sodium D<sub>2</sub> line in absorption against the surface of the Sun during the transit of 2003, the only ground based observation with which an unambiguous east-west asymmetry can be observed. The first observation of the sodium tail of Mercury was reported by Potter *et al.* in 2002. Numerous observations have shown evidence for high latitude enhancements in the sodium exosphere (e.g. Leblanc *et al.*, 2009; Mangano *et al.*, 2009), and asymmetries in the K exosphere. More recent observations of Na have been made showing north-south asymmetries in the sodium tail (Potter *et al.*, 2008), very wide-angle observation (Baumgardner *et al.*, 2008), and reports of other metallic species (Bida *et al.*, 2007; Doressoundiram *et al.*, 2009; Killen *et al.*, 2009). The importance of ground based observations planning for and interpreting results of space-based missions will be discussed.