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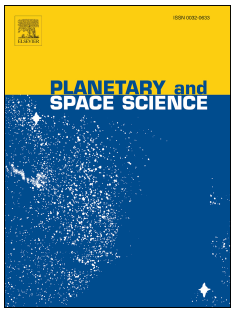

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A Survey of Southern Hemisphere Meteor Showers

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Abstract. Results are presented from a video-based meteoroid orbit survey conducted in New Zealand between Sept. 2014 and Dec. 2016, which netted 24,906 orbits from +5 to -5 magnitude meteors. 44 new southern hemisphere meteor showers are identified after combining this data with that of other video-based networks. Results are compared to showers reported from recent radar-based surveys. We find that video cameras and radar often see different showers and sometimes measure different semi-major axis distributions for the same meteoroid stream. For identifying showers in sparse daily orbit data, a shower look-up table of radiant position and speed as a function of time was created. This can replace the commonly used method of identifying showers from a set of mean orbital elements by using a discriminant criterion, which does not fully describe the distribution of meteor shower radiants over time.

1. Introduction

Meteor showers identify streams of meteoroids that approach from a similar direction and presumably originated from the same parent object (Jenniskens, 2017). In recent years, over 300 meteor showers have been identified, of which 112 have been established and are certain to exist. A Working List of identified showers is maintained by the IAU Meteor Data Center (Jopek & Kanuchova, 2017).