Meteor stream survey in the southern hemisphere using SAAMER

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We present in this manuscript two meteor shower surveys in the Southern Hemisphere utilizing the Southern Argentina Agile Meteor Radar (SAAMER). SAAMER, which operates at the southern most region of South America, is a new generation SKiYMET system designed with significant differences from typical meteor radars including high transmitted power and an 8-antenna transmitting array enabling large detected rates at low zenith angles. For the first survey, we applied the statistical methodology developed by Jones and Jones (2006) to the data collected each day during 4 years and compiled the results into 1 composite representative year at 1-degree resolution in Solar Longitude. We then search for enhancements in the activity, which last for at least 3 days and evolve temporally as is expected for a meteor shower. Using this methodology, we have identified in our data 32 shower radiants, two of which were not part of the IAU commission 22 meteor shower working list (Janches et al., 2014). Recently, SAAMER's capabilities were enhanced by adding two remote stations to receive meteor forward scatter signals from meteor trails and thus enable the determination of meteoroid orbital parameters. SAAMER started recording orbits in January 2012. We also present a 1-year survey using a wavelet-transform approach (Galligan and Baggaley, 2002ab; Brown et al., 2008) of this new orbital dataset to isolate enhancements in radiant density in geocentric coordinates resulting in not only radiant information but shower orbital properties.

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