



Statistical Distribution of Terrestrial AKR Sources

R. L. Mutel and I. W. Christopher

University of Iowa

We report the first statistical study of AKR burst occurrence over the polar caps which properly accounts for the sampling bias caused by AKR angular beaming (Mutel and Christopher 2008). We used the WBD receivers on the Cluster spacecraft to determine the locations of individual AKR bursts using a VLBI (differential-delay) location algorithm. The narrow angular beaming pattern confines the burst emission to a plane tangent to the local auroral oval. This pattern strongly biases the resulting location distribution, since a single spacecraft at can only detect a small region on the polar cap from a given location. After correcting for this sampling bias, we analyzed a database of more than 20,000 AKR burst locations determined from epochs 2002-2007. We will present maps of sampling bias-corrected distributions of AKR sources as a function of season and hemisphere at 125, 250, and 500 kHz, corresponding to heights between 3100 and 8700 km. We compare these distributions with previous studies of the seasonal distribution of optical-UV aurora. We discuss these comparisons in the context of the physics of the ionospheric-magnetospheric connection.