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Can magnetic waves in the auroral region transform into acoustic waves? JADA MAXWELL, E.J. ZITA, The Evergreen State College — Aurorae are caused by geomagnetic storms created by magnetic storms from the Sun (Akasofu, 1991). These storms drive magnetic waves in the magnetosphere (Cornilleau-Wehrlin, 2000). Infrasonic waves have been observed to emanate from aurorae (Wilson and Olson, 2005). This suggests that magnetic waves in Earth's upper atmosphere may drive infrasound in Earth's lower atmosphere. Similar processes have been demonstrated in reverse in the Sun's atmosphere (Johnson, et al., 2002; Bogdan, et al., 2000, 2002, 2003). Using techniques from solar magnetohydrodynamics (MHD), we have shown that atmospheric pressure and magnetic pressure are comparable (plasma beta = 1) at 120 km, well within the auroral region, above Fairbanks, AK (Maxwell and Zita, 2005). This is an important condition for MHD wave transformations to occur (Bogdan, et al., 2003). We have also proposed mechanisms for the creation of infrasonic waves from electromagnetic waves (Maxwell and Zita, 2005). Now, we investigate evidence and data from satellite and ground-based instruments to test our hypotheses.

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