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Strong whistler mode waves observed in the vicinity of Jupiter's moons

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Understanding of wave environments is critical for the understanding of how particles are accelerated and lost in space. This study shows that in the vicinity of Europa and Ganymede, that respectively have induced and internal magnetic fields, chorus wave power is significantly increased. The observed enhancements are persistent and exceed median values of wave activity by up to 6 orders of magnitude for Ganymede. Produced waves may have a pronounced effect on the acceleration and loss of particles in the Jovian magnetosphere and other astrophysical objects. The generated waves are capable of significantly modifying the energetic particle environment, accelerating particles to very high energies, or producing depletions in phase space density. Observations of Jupiter's magnetosphere provide a unique opportunity to observe how objects with an internal magnetic field can interact with particles trapped in magnetic fields of larger scale objects.