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Ionospheric Alfven resonator and ring current dynamics

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Data of two year observations (2001-2002) of Ionospheric Alfven resonator (IAR) structures at complex Geophysical observatory Karimshino (Kamchatka, Russia) and Dst index, characterizing ring current intensity, are analyzed to reveal possible association of IAR generation and ring current protons precipitation into the ionosphere. The question about the energy source for mid-latitude IAR is still open, as thunderstorm generation, including World Thunderstorm centers, nearby and conjugated discharges give not enough energy to explain observed amplitudes of IAR resonances. The other possibility is particle precipitation into the ionosphere. This source was considered for auroral IAR, but never for middle latitudes. However, there are magnetospheric structures, which influence sufficiently the mid-latitude ionosphere: external electron radiation belt and proton ring current. In the present paper we analyze the relation between mid-latitude IAR and ring current, supposing the possibility of IAR excitation at the recovery phase of magnetic storms. A weak but systematic difference between ring current behavior for IAR and non-IAR nights is found. IAR structures are seen predominantly under growing Dst.