

Study of equatorial ionospheric instability by using trans-equatorial HF propagation

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It is well established that the basic mechanism of plasma bubbles, which cause severe ionospheric scintillations, is gravitational Rayleigh-Taylor instability. In addition to this, a variety of mechanisms play important roles to seed or to trigger, and to suppress the instability, which makes it difficult to predict the onset of plasma bubbles prior to the event. We have a plan to monitor ionospheric conditions relevant to the generation of bubbles. HF radio beacon signals transmitted from Darwin in Australia are planned to be monitored in Yamagawa in Kyusyu, both stations are magnetic conjugate points. Angles of arrival and delay times of the received signals will be measured, by which we expect to detect precursory signals of the generation of a plasma bubble.