

## Preliminary results of the ionospheric observation by new ionosondes, VIPIR2, in Japan

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National Institute of Information and Communications Technology (NICT) has been observing ionosphere by ionosondes for over 60 years in Japan. At present, four ionosondes at Wakkanai (Sarobetsu), Kokubunji, Yamagawa, Okinawa (Ogimi) are automatically operated and controlled from Tokyo. Ionospheric parameters such as foF2 and foEs are automatically scaled from the ionograms. The scaled parameters are provided through our web site (<http://wdc.nict.go.jp/IONO/>) and used for monitoring ionospheric disturbances. Currently we are replacing the current 10C type ionosondes with Vertical Incidence Pulsed Ionospheric Radar 2 (VIPIR2) ionosondes. VIPIR2 ionosonde can separate the O- and X-modes of ionospheric echoes automatically using an antenna array, which would make it easy and successful to scale the ionogram automatically. As of 2016, hardware of VIPIR2 ionosonde are installed at the four stations and its observation has started. Arrival directions of ionospheric echo were also estimated with the phase measurements of the antenna array. In the presentation, preliminary results of the VIPIR2 observation will be shown and possible collaborations will be discussed.

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