SuperDARN future plan in terms of Planning of phase X 6-year project of Japanese Antarctic Research Expedition and beyond

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Planning of phase X 6-year project of Japanese Antarctic Research Expedition (JARE 64-69, 2022-2028) has been actively discused. We here try to discuss and summarise SuperDARN future plan at Antarctic Syowa station in terms of Phase X JARE project and beyond.
NIPR in Japan has joined the SuperDARN (Super Dual Auroral Radar Network) project since its establishment in 1995 and run 2 SENSU SuperDARN radars, Syowa South and Syowa East radars (SENSU stands for “Syowa South & East HF Radars of NIPR for SuperDARN”) in Japanese Antarctic Syowa station (69.00 S, 39.58 E) in polar auroral zone. Both radars have substantially contributed to the SuperDARN project and scientific researches, for example, studies on various types of auroral phenomena, geomagnetic pulsations, substorms, reconnection, precise neutral wind observation around mesopause region using meteor echoes, studies on polar mesospheric summer echoes (PMSEs), magnetosphere-ionosphere-neutral atmosphere vertical coupling, studies on influence of low solar activity or grand minimum on geospace space weather. We here summarise our important achievements so far including during current phase IX JARE project period and will discuss on issues remaining unresolved and ways forward and the future perspective of the scientific direction of our SENSU SuperDARN research towards phase X JARE period and beyond as one of the comprehensive observations at Syowa station and as one of the most important basic, long-term and cutting-edge geospace scientific tools especially in terms of space weather and space climate.

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