

南極用無人オーロライメージャの開発

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Development of unmanned aurora imager for Antarctica

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There are numbers of all-sky aurora imagers operated in Antarctica. However, there are still huge gaps between their field of views (FOVs). Based on successful experience of low-power unmanned magnetometer observation in Antarctica, we are developing unmanned aurora imager (UAI) to fulfil these gaps in aurora observation. Useful application of the UAI is to track the motion of conjugate auroras. We have found from our long-term observation that the conjugate aurora sometimes moved hundreds of km azimuthally in tens of minutes. We are planning to install UAIs at Soer Rondane Mountains and Amundsen Bay, 700km to the west, and 550km to the east of Syowa Station, respectively. FOV of these imagers, together with that of Syowa, extends more than 2000km in geomagnetic east-west direction, and very useful for tracking the motion of conjugate auroras.

Power consumption of the UAI system is designed to be less than 20W, and it is supplied from three sets of wind generator, Rutland FM910, four 60W solar panels, and 800Ah battery. Watec TV camera is used for the all-sky imager, and the image is taken 1 frames/s. GPS TEC and 3-component flux-gate magnetometer observations are also made in this system. The data are recorded in SD card and the summary data, including keogram of aurora image, will be transferred to Japan daily via Inmarsat BGAN telephone. We are planning to start the field observation from 2016.