

# YOPP-SH ACTIVITIES OF THE KOREAN ANTARCTIC STATIONS DURING FIRST SOP

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## ABSTRACT

Korea Polar Research Institute (KOPRI) is operating two Antarctic stations. Among them, King Sejong Station (KSJ) is located at about 62.23°S, 58.79°W on the King George Island, north off the Antarctic Peninsula. Since its opening in 1988, there was practically no radiosonde observation except three-day campaign in early 1990's. But with aim of advancing our understanding on Antarctic climate and improving weather forecast there, KOPRI has taken part in the discussion of YOPP-SH since 2015. In 2016 KOPRI had secured fund for radiosonde observations at KSJ and shipped balloon and sondes to KSJ in August of 2017 while getting a certificate of YOPP-SH project. Meanwhile, we gladly cooperated with Dr. Penny Rowe representing Chilean effort in YOPP-SH to make radiosonde operation twice a day at the King George Islands. We used DFM09 sonde of GRAW (German), which is the same model with that of Chilean team. KSJ launched a balloon at 12UTC from November 16 to February 14, a total 91-observation with help of overwintering members. In addition, there had been radiosonde balloon launches from mid-March to mid-November with total number of twenty-seven. The balloon reached 21-km high on average with horizontal distance often beyond 200-km mostly southeastward or eastward.

The second Korean station is Jang-Bogo Station (JBS), located at 74° 37'S, 164° 13'E at Terra Nova Bay, East Antarctica. JBS began its operation in February 2014 and started radiosonde sounding in end of 2014. JBS launches radiosonde balloon using Autosonde (AS14, Vaisala) with RS41 sonde (Vaisala) once a day except during Austral summertime, when Italian Mario-Zucchelli station (MZS) launches a balloon once a day. During YOPP-SOP, JBS had launched a balloon once a day at 18UTC making four times a day launches with cooperation of MZS where radiosonde was launched three times a day at 00, 06, 12UTC. At JBS, there were total 86-launches from 11 November to 11 February.

At the end of presentation, we will present our views on the winter SOP and possible contribution to 2<sup>nd</sup> SOP.

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# CLIMATOLOGY OF THE KING SEJONG STATION AND RADIOSONDE SOUNDINGS

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## ABSTRACT

King Sejong Station (KSJ) is located on the King George Island, north off the Antarctic Peninsula at about 62.23S, 58.79W. Regular meteorological observation has been made at KSJ (WMO Index No. 89251) since February 1988 to provide weather information for field activities as well as to study Antarctic climate. While the meteorological data has served well enough for station operation, the 30-year data from 1988 to 2017 inevitably contains some erroneous values due to sensor or system failure. There is also human errors in observations of cloud, weather phenomenon, snow etc. as well. Recognizing these kind of errors, we have carried out thorough quality control on the 10-minute raw AMOS (Automatic Meteorological Observation System) data to filter out doubtful values. Then daily statistics of AMOS data were compared to monthly weather reports (MWR) which were compiled by a meteorologist in each year. From this comparison, we could detect some additional erratic values in AMOS and/or MWR and correct as possible.

Using the quality-controlled meteorological data, we have studied various climatology of variables such as air temperature, wind, atmospheric pressure, precipitation, snow, solar radiation, cloud amount at the King Sejong Station. From 30-year data, mean annual temperature is  $-1.7\text{ }^{\circ}\text{C}$ , wind speed is  $8.0\text{ m/s}$ , sea level pressure is  $990.5\text{ hPa}$ . Interestingly, it was found that annual temperature recovered warming trend since 2010 contrary to cooling trend between 1999 and 2010. It was also noted that mean wind speed showed weakening trend since 2010 and cloud amount showed increasing trend.

In this talk, we are going to present also some preliminary results obtained from radiosonde soundings in 2018 will be given. This will include vertical structure of troposphere with focus on atmospheric boundary layer.

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