

The plan of the search for Antarctic Meteorites on the Nansen Ice Field by the Joint Expedition between JARE-54 and BELARE 2012-2013.

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Introduction:

So far, meteorites around Sør Rondane Mountains in Antarctica have been recovered at the Mt. Balchen Ice Field [1,2] and the Nansen Ice Field [1,3].

We are soon going to carry out the meteorite search on the Nansen Ice Field by JARE-54 collaborating with BELARE 2012-2013 (SAMBA team) this austral summer season. Here we will show the plan of the meteorite search.

Itinerary:

We go to Cape Town in South Africa by commercial flights from our countries, in order to make use of the DROMLAN (Dronning Maud Land Air Network) at the beginning of December.

The main substances such as foods and clothes of the Japanese team will be sent to the warehouse of Antarctic Logistics Centre International (ALCI) in advance and the weight is about 1,200 kg.

Entering Novolazarevskaya Station (Russia) by the Ilyushin-76 aircraft (D5 flight) on 6 Dec. 2012, we move to Princess Elisabeth (PE) Station by feeder flight (Basler Turbo).

At the PE station, we will prepare the departure for meteorite search on the Nansen Ice Field and also carry out the micrometeorite search on the top of the Sør Rondane Mountains near the station by the logistical support of Belgium.

The access to the Nansen Ice Field far way from ~100 km is supported by the Belgian logistics with several (possibly three) large snow vehicles (Prinoth) in PE (71°57'S, 23°21'E, ~1300 m; Fig. 1). They will carry snowmobiles (Ski-doo), fuels of snowmobiles, foods, module sledges and containers for life, and so on.

After the setting of the base camp (BC1, 72°53'S, 24°18'E), the Belgian support team with snow vehicles will be back to PE.

Spending ~23 days at BC1, we will search for meteorites on the Nansen Ice Field within the area B indicated in Fig. 2. Then our base camp will move to another base camp (BC2, 72°47'S, 24°51'E) by the support of the Belgian logistics with snow vehicles. Spending ~20 days at BC2, we will search for meteorites on the Nansen Ice Field within the area C indicated in Fig. 2.

After the expedition on the Nansen Ice Field, we will go to the reverse route with the outward journey: from PE to Novo on 8 Feb. 2013, from Novo to Cape Town on 9 Feb. 2013 (D10 flight). The Japanese

team will be back to Japan on 14 Feb. 2013.

Food:

The Japanese team is preparing own various freeze dried foods for life on the Nansen Ice Field.

Expected number of meteorite:

The area A on the Nansen Ice Field has been searched by JARE-29 [1] and BELARE 2010-2011 [3], and the collected number of meteorites was 578 and 218, respectively. The number of 218/573 (= ~0.38) suggests a decreased factor on the Nansen Ice Field. The area B and C have been searched only by JARE-29, and the number of collected meteorites are 698 and 311, respectively. Applying the decreased factor of the area A into the area B and C, the expected number of meteorites of the area A and B is estimated to be ~270 and ~120, respectively, and the total is ~400.

Using handy GPS:

Handy GPS (GPSMAP 60CSx and 62S, GARMIN) will be used for recording the position of each collected meteorite and the navigation on the Nansen Ice Field.

Transportation of meteorites and their handling:

We will keep collected meteorites frozen using cool boxes from Antarctica to Cape Town. The collected meteorites will be carried to the NIPR freezer under the freezing condition using the specific containers by a Japanese company from warehouse of ALCI in Cape Town. Then the temperatures of collected meteorites will be increased to more than 0 °C in vacuum chamber in order to prevent water accumulation on meteorites in the curation facility at NIPR.

The preparation of safe expedition:

We have to escape any danger such as crevasses. A professional Alpine guide is included in the Japanese team. Three Japanese scientists have been trained by him, and learned how to use climbing rope (seil) combing with mountain tools (carabiner, grigri, ascender, self jamming pulley, pulley, rigging plate, back board, rescue winch) for emergency. Also the Japanese team is going to be trained for emergency medical care in advance.

Communication:

On the Nansen Ice Field we will communicate

with Syowa Station using HF radio or Iridium satellite phone at 21:00-21:30 (GMT+3 at Syowa station), 19:00-19:30 (GMT+1 at PE station) every day.

(2010) *Antarctic Meteorites XXXIII*, 34-35. [3] S. Goderis et al. (2011) *Antarctic Meteorites XXXIV*, 12.

References: [1] K. Yanai (1993) *Proc. NIPR Symp Antarcti. Meteorit.* 6, 148-170. [2] H. Kaiden et al.

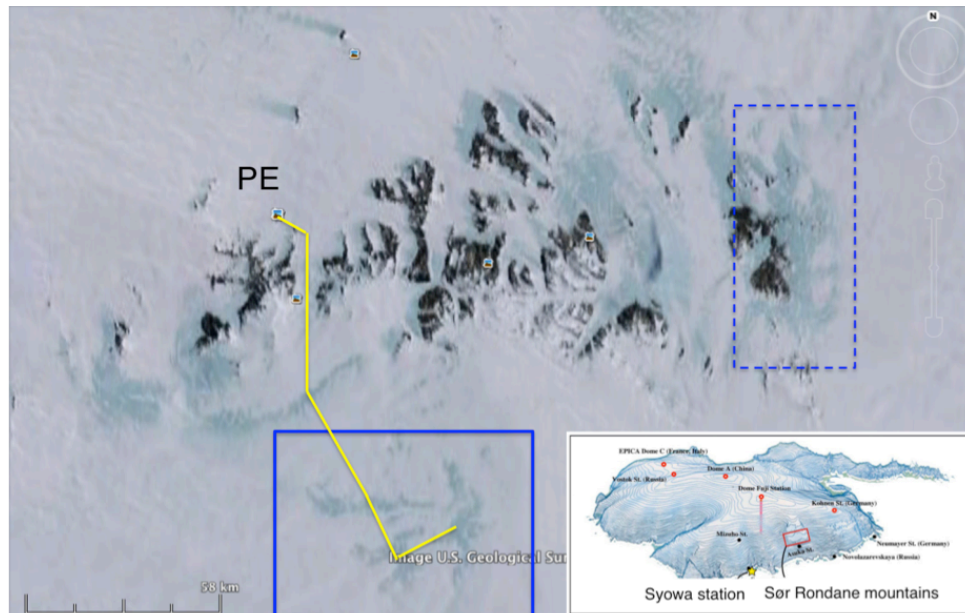


Fig. 1. Sør Rondane Mountains in Antarctica. The blue rectangular area is the Nansen Ice Field for this expedition. The dotted blue area is the Mt. Balchen Ice Field.

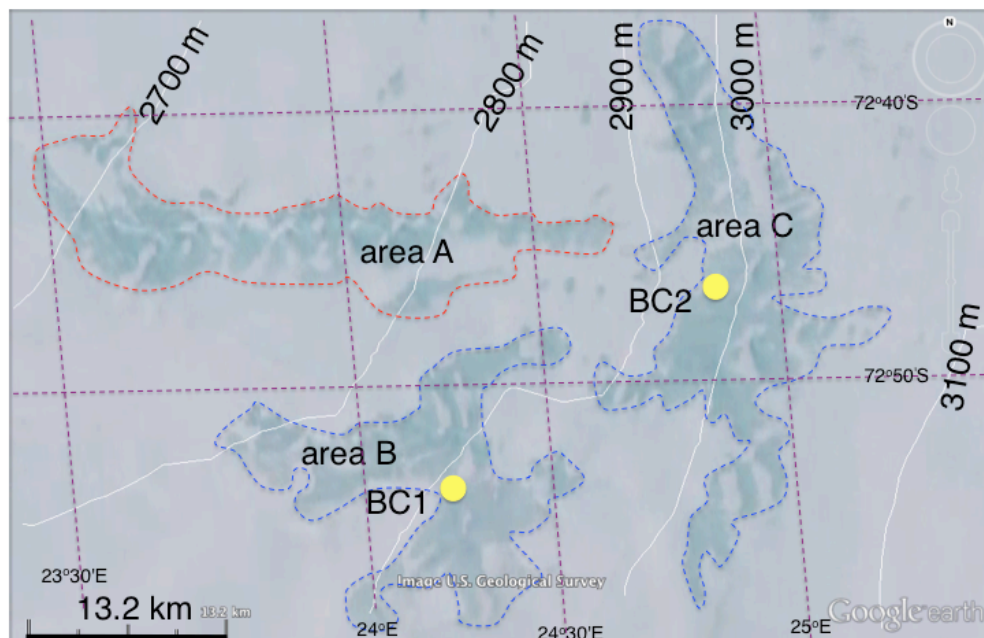


Fig. 2. Nansen Ice Field. The area A indicated as red dotted area has been searched in the previous expedition (2010-2011). The area B and C indicated as blue dotted area are for this expedition. BC1 and BC2 are base camps.