

Search for extraterrestrial materials in Antarctica: the results from the JARE phase VIII and plans for the phase IX

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Meteorites are derived from hundreds of asteroids, and Earth's moon and Mars. Thus, along with samples recovered by planetary missions, the research of meteorites provides clues for understanding the origin of early solar system and the evolutionary history of terrestrial planets. About 70% of the global collections are from Antarctica. Over 17,000 meteorites have been collected by 24 expeditions since the discovery of Yamato meteorites (Yoshida 2010). The National Institute of Polar Research (NIPR) has one of the largest meteorite collections in the world.

From 2009 to 2013 (part of the phase VII and VIII), three Japan-Belgium meteorite expeditions were conducted (e.g., Imae et al. 2015). The expeditions consist of the first joint mission (JARE51) in the Balchen Ice Field in the eastern Sør Rondane Mountains region (2009-2010), the second joint BELARE-SAMBA (2010-2011) in the north-west part of the Nansen Ice Field, and the third mission (JARE54 & BELARE-SAMBA) (2012-2013) in the south part of the Nansen Ice Field. The three expeditions were successful and recovered more than 1,200 meteorites including rare meteorites such as an angrite and carbonaceous chondrites (e.g., Yamaguchi et al. 2016). Meteorites recovered by these expeditions are shared with NIPR and Royal Belgian Institute for Natural Sciences (RBINS).

In the phase IX from 2016 to 2021 (JARE58-63), we plan to conduct both meteorite and micrometeorite search. We plan to visit meteorite fields near the Yamato Mountains although the details have not been planned yet. Fresh snow (expected to contain micrometeorites) will be collected near the Dome Fuji station (JARE59).

References

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