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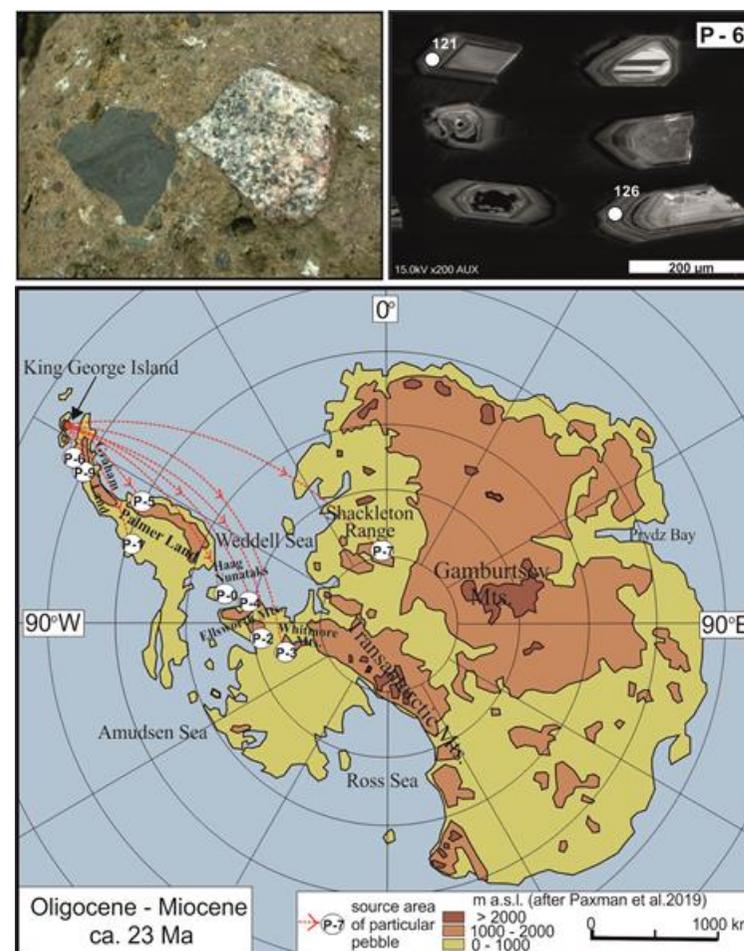
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AntClimNow						

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A BRIEF SUMMARY OF SCIENTIFIC HIGHLIGHTS:						
<i>See the following pages</i>						

Nawrocki J., Pańczyk M., Wójcik K. & Tatur A. 2021. U-Pb isotopic ages and provenance of some far travelled exotic pebbles from glaciogenic sediments of the Polonez Cove Formation (Oligocene, King George Island). *Journal of the Geological Society* 178: jgs2020-113.

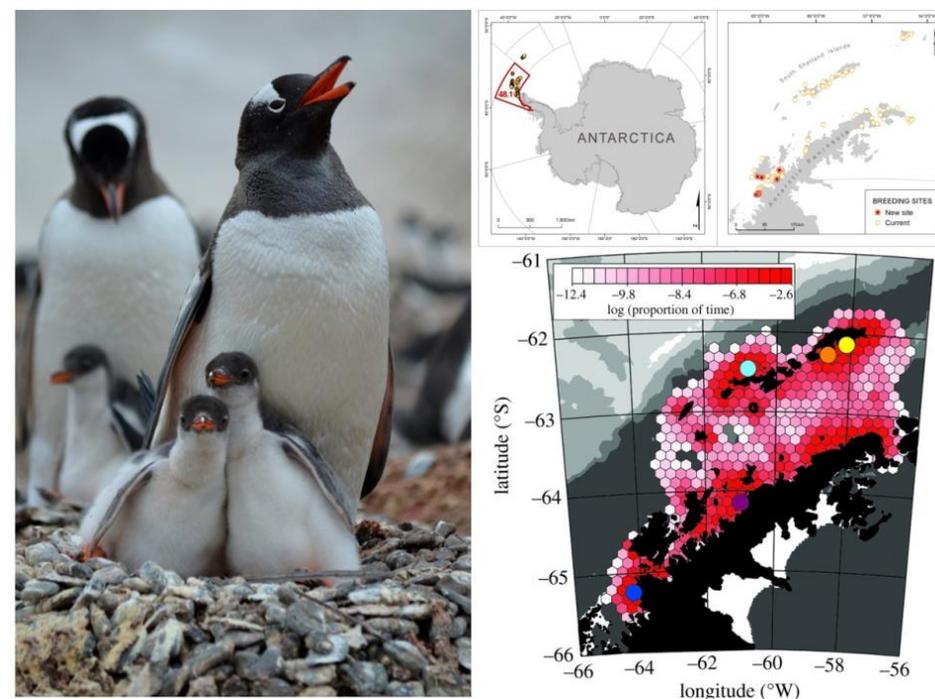
Glacial tills can contain a set of far travelled exotic pebbles that may provide a unique information on the extensions and nuclei of glaciations. On the other hand, the provenance studies of exotic pebbles can enable insight into geological structures now covered by the ice. The record of the early/middle Oligocene Polonez Glaciation is very well documented on southern King George Island. The U-Pb ages of zircon grains from exotic pebbles of the Polonez Cove Formation were analyzed to establish the source areas for these erratics, in particular whether they were derived from the nearby Antarctic Peninsula or from more distant areas like the Ellsworth or Transantarctic mountains. The isotope data indicated that pebbles of crystalline rocks were derived from the Antarctic Peninsula as well as from the Antarctic mainland. These data analytically support the earlier thesis that the Oligocene ice-sheet covered a substantial part of Antarctica and its nucleus was located in its central, continental part.



Exotic pebbles of crystalline rocks (upper left picture) are frequently present in Oligocene glaciogenic rocks of the Polonez Cove Formation, King George Island. They yielded zircon grains (upper right picture) that were used for U-Pb dating. The isotope ages allowed to establish the source areas for these erratics in the Antarctic Peninsula and the Antarctic mainland. These areas are shown by red arrows on the map.

Korczak-Abshire M., Hinke J.T., Milinevsky G., Juárez M.A. & Watters G.M. 2021. Coastal regions of the northern Antarctic Peninsula are key for gentoo populations. *Biology Letters* 17: 20200708.

Southern Ocean ecosystems are rapidly changing due to climate variability. An apparent beneficiary of such change in the western Antarctic Peninsula (WAP) is the gentoo penguin *Pygoscelis papua*, which has increased its population size and expanded its range southward in the last 20 years. To better understand how this species has responded to large-scale changes, we tracked individuals during the non-breeding winter period from five colonies across the latitudinal range of breeding sites in the WAP, including from a recently established colony. Results highlight latitudinal gradients in movement; strong associations with shallow, coastal habitats along the entire Antarctic Peninsula, and movements that are independent of, yet constrained by, the sea ice. It is clear that coastal habitats essential to gentoo penguins during the breeding season are similarly critical during winter. Larger movements of birds from northern colonies in the WAP further suggest that leap-frog migration may influence colonization events by facilitating nest-area prospecting and use of new haul-out sites. This study is crucial for the ecosystem-based management and for ongoing work on the design of marine protected areas (MPAs). Winter habitats used by gentoo penguins outline high priority areas for improving the management of the spatio-temporally concentrated krill (*Euphausia superba*) fishery that operates in this region during winter.



The presented study was a part of the project *Tracking the overwinter habitat use of krill dependent predators from Subarea 48.1*, which was examining the at-sea distribution of three *Pygoscelis* penguins species from multiple breeding colonies in the South Shetland Islands and along the western Antarctic Peninsula. 130 Argos satellite tags were attached to adults and recently fledged penguin chicks to track the dispersal from their colonies during winter. The project enabled scientists to identify important winter habitats for the penguins and to quantify the overlap between these penguins, which feed on Antarctic krill, and the krill fishery in the Antarctic Peninsula during the winter. The CCAMLR Ecosystem Monitoring Program (CEMP) Fund was used to support collaboration between Poland, Argentina, Ukraine, and the USA.

Geosciences

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2. Kusiak M.A., Dunkley D.J., Wilde S.A., Whitehouse M.J., Kemp A.I.S. 2021. Eoarchean crust in East Antarctica: Extension from Enderby Land into Kemp Land. *Gondwana Research* 93: 227–241.
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4. Nawrocki J., Pańczyk M., Wójcik K., Tatur A. 2021. U-Pb isotopic ages and provenance of some far-travelled exotic pebbles from glaciogenic sediments of the Polonez Cove Formation (Oligocene, King George Island). *Journal of the Geological Society* 178: jgs2020-113.

Life sciencesMarine ecosystems

5. Błażewicz M., Jakiel A., Bamber R.N., Bird G.J. 2021. Pseudotanaididae Sieg , 1976 (Crustacea: Peracarida) from the Southern Ocean: diversity and bathymetric pattern. *The European Zoological Journal* 88: 994–1070.
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7. Majewski W., Holzmann M., Gooday A.J., Majda A., Mamos T., Pawłowski J. 2021. Cenozoic climatic changes drive evolution

and dispersal of coastal benthic foraminifera in the Southern Ocean. *Scientific Reports* 11: 19869.

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Terrestrial plants and fungi

9. Androsiuk P., Chwedorzewska K.J., Dulcka J., Milarska S., Giełwanowska I. 2021. Retrotransposon-based genetic diversity of *Deschampsia antarctica* Desv. from King George Island (Maritime Antarctic). *Ecology and Evolution* 11: 648–663.
10. Arnold P.A., Briceño V.F., Gowland K.M., Catling A.A., Bravo L.A., Nicotra A.A. 2021. A high-throughput method for measuring critical thermal limits of leaves by chlorophyll imaging fluorescence. *Functional Plant Biology* 48: 634–646.
11. Crous P.W., Cowan D.A., Maggs-Kölling G., Yilmaz N., Thangavel R., Wingfield M.J., Noordeloos M.E., Dima B., Brandrud T.E., Jansen G.M., ..., Galera H. et al. 2021. Fungal Planet description sheets: 1182–1283. *Persoonia* 46: 313–528.
12. Harańczyk H., Strzałka K., Kubat K.M., Andrzejowska A., Olech M., Jakubiec D., Kijak P., Casanova-Katny A. 2021. A comparative analysis of gaseous phase hydration properties of two lichenized fungi: *Niebla tigrina* (Follman) Rundel & Bowler from Atacama Desert and *Umbilicaria antarctica* Frey & I. M. Lamb from Robert Island, Southern Shetlands Archipelago, maritime Antarctica. *Extremophiles* 25: 267–283.
13. Milarska S., Androsiuk P., Giełwanowska I. 2021. Anatomy of the generative structures of the Subantarctic flowering plant *Colobanthus apetalus* (Labill.) Druce. *Polish Polar Research* 42: 45–58.

Bacterial communities

14. Grzesiak J., Woltyńska A., Zdanowski M.K., Górniak D., Świątecki A., Olech M.A., Aleksandrak-Piekarczyk T. 2021. Metabolic fingerprinting of the Antarctic cyanolichen *Leptogium puberulum*–associated bacterial community (Western Shore of Admiralty Bay, King George Island, Maritime Antarctica). *Microbial Ecology* 82: 818–829.
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16. Znój A., Gawor J., Gromadka R., Chwedorzewska K.J., Grzesiak J. 2021. Root-associated bacteria community characteristics of Antarctic plants: *Deschampsia antarctica* and *Colobanthus quitensis*—a comparison. *Microbial Ecology*: 10.1007/s00248-021-01891-9.
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Aliens in Antarctica

18. Galera H., Rudak A., Pielech M., Znój A., Chwedorzewska K.J., Wódkiewicz M. 2021. Influence of the population spatial structure on seed rain distribution of an invasive plant under harsh environment. *Polar Biology* 44: 587–591.
19. Galera H., Znój A., Chwedorzewska K.J., Wódkiewicz M. 2021. Evaluation of factors influencing the eradication of annual bluegrass (*Poa annua* L.) from Point Thomas Oasis, King

George Island, Maritime Antarctica. *Polar Biology* 44: 2255–2268.

Physical Sciences

20. Kreczmer K., Dąbski M., Zmarz A. 2021. Terrestrial signature of a recently-tidewater glacier and adjacent periglaciation, Windy Glacier (South Shetland Islands, Antarctic). *Frontiers in Earth Science* 9: 671985.
21. Lombardi C., Kuklinski P., Bordone A., Spirandelli E., Raiteri G. 2021. Assessment of annual physico-chemical variability via high-temporal resolution monitoring in an Antarctic shallow coastal site (Terra Nova Bay, Ross Sea). *Minerals* 11: 374.
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23. Szufa K.M., Mietelski J.W., Olech M.A. 2021. Assessment of internal radiation exposure to Antarctic biota due to selected natural radionuclides in terrestrial and marine environment. *Journal of Environmental Radioactivity* 237: 106713
24. Wójcik-Długoborska K.A., Bialik R.J. 2021. The influence of shadow effects on the spectral characteristics of glacial meltwater. *Remote Sensing* 13: 36.

Anthropogenic pollutants

25. Souza J.S., Pacyna-Kuchta A., Teixeira Da Cunha L.S., Costa E.S., Niedzielski P., Machado Torres J.P. 2021. Interspecific and intraspecific variation in organochlorine pesticides and polychlorinated biphenyls using non-destructive samples from *Pygoscelis* penguins. *Environmental Pollution* 275: 116590.

26. Szopińska M., Luczkiewicz A., Jankowska K., Fudala-Ksiazek S., Potapowicz J., Kalinowska A., Bialik R.J., Chmiel S., Polkowska Ż. 2021. First evaluation of wastewater discharge influence on marine water contamination in the vicinity of Arctowski Station (Maritime Antarctica). *Science of The Total Environment* 789: 147912.
27. Szumińska D., Potapowicz J., Szopińska M., Czapiewski S., Falk U., Frankowski M., Polkowska Ż. 2021. Sources and composition of chemical pollution in Maritime Antarctica (King George Island), part 2: Organic and inorganic chemicals in snow cover at the Warszawa Icefield. *Science of The Total Environment* 796: 14905.