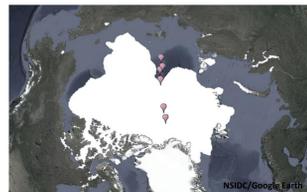


## Study area



Giant box corer (GKG)  
023-2: 86° 37.86' N-44° 52.45' W, 2439 m  
055-1: 85° 41.47' N-148° 59.47' E, 730.7 m

Multi-corer (MUC)  
030-3: 88° 39.39' N-61° 25.55' W, 1277.8 m  
070-3: 83° 48.18' N-146° 7.04' E, 1340.2 m  
079-3: 83° 12.09' N-141° 22.54' E, 1358 m  
099-4: 81° 25.50' N-142° 14.33' E, 741.2 m

PS87 stations sampled

Arctic Sea Ice Minimum in September 2014

Arctic Sea Ice Maximum in March 2014

The Lomonosov Ridge is an underwater ridge of continental crust that stretches East-West over 1800 km in the center of the Arctic, from the Laptev-East Siberian seas occupied presently by annually renewed sea ice cover to Northern Greenland characterized by multi-year perennial sea ice. It separates the Eurasian basin from the Canadian basin and is under the influence of the Beaufort Gyre and the Transpolar drift (TPD).

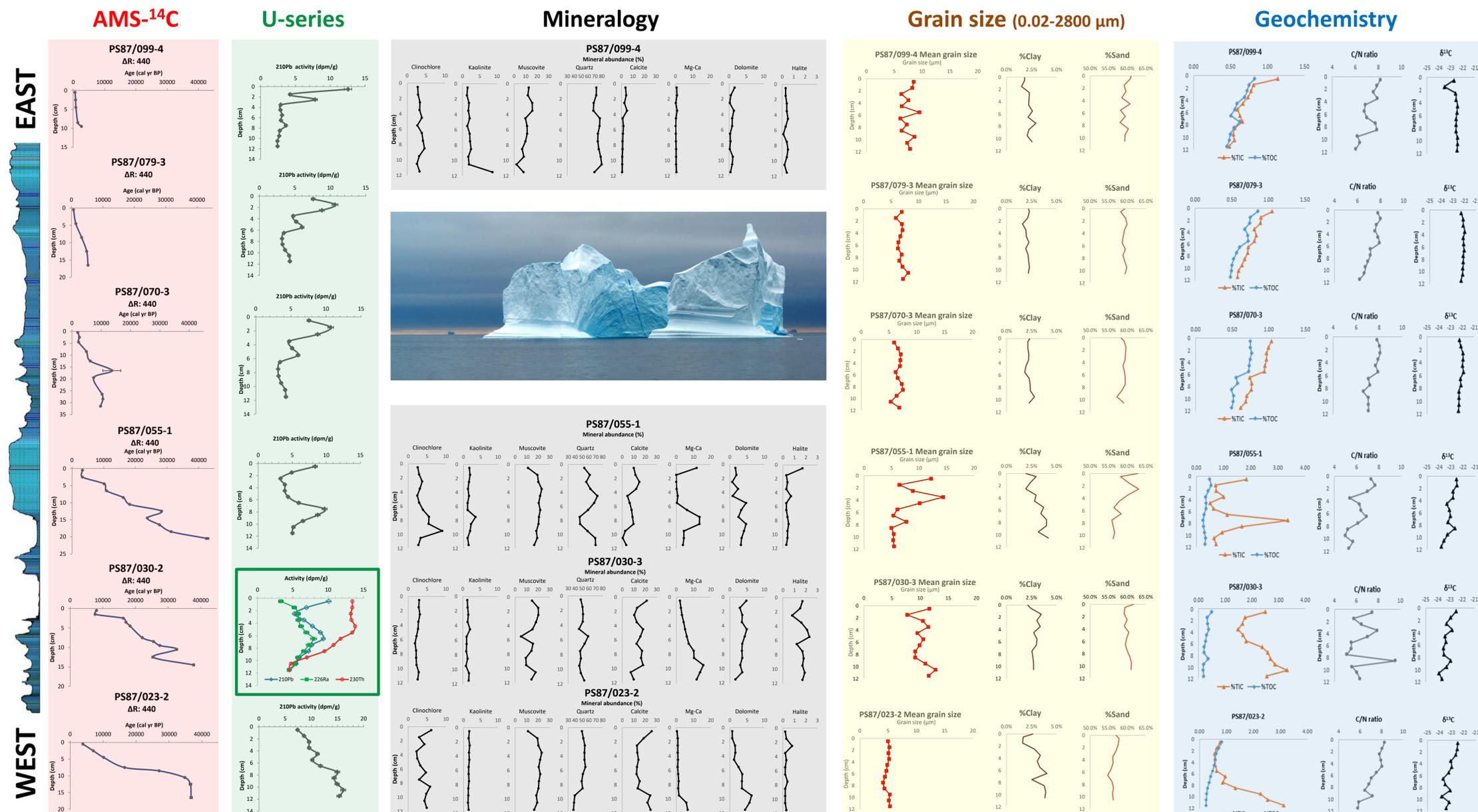
## Introduction

A high resolution analysis of 6 cores raised during the Polarstern expedition PS87 in 2014 was undertaken with the objective to **characterize and quantify sediment composition and fluxes over the ridge during the late Quaternary.**

## Methods

Centimetre-thick samples were collected at 1 cm intervals. Measurements include AMS-<sup>14</sup>C ages (on the 150-250 μm fraction, using planktic foraminifer assemblages of *Neoglobobulimina pachyderma*), U-series by alpha/gamma counting and resin chromatography, bulk grain size, x-ray diffraction mineralogy and geochemical properties (total, organic/inorganic carbon, δ<sup>13</sup>C, N).

## Results



## Outcome

- Results highlight areas with very low sedimentary fluxes westward (~4 mm.ka<sup>-1</sup> year) to relatively high sedimentation rate eastward (~100 mm.ka<sup>-1</sup> year), illustrating a 2 orders of magnitude difference in ice-rafting deposition rates.
- Whereas the excess <sup>210</sup>Pb distribution downcore is controlled by bioturbation and diffusion down to layers dated of several tens of ka by <sup>14</sup>C, <sup>226</sup>Ra distribution is governed by its diffusion in the upper ~7 cm of cores (see green box above), below, it is supported by <sup>230</sup>Th. The decay sequence <sup>226</sup>Ra-<sup>210</sup>Pb cannot therefore be used for the calculation of recent sedimentation rates. AMS <sup>14</sup>C provide here the most reliable radiometric ages.
- High detrital dolomite-rich carbonate contents from the Canadian Arctic and Beaufort characterize the westernmost section of the Ridge. This area also depicts a sedimentary gap during the LGM.
- The eastern sector directly under TPD supplies experiences average sedimentation rates orders of magnitude, higher than those of the western sector, more frequently overlain by perennial sea-ice.

## REFERENCES

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Satellite imagery "Sea Ice Minimum and Maximum Extents, 1979 to Present", courtesy of NSIDC-NASA-Terrametrics

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