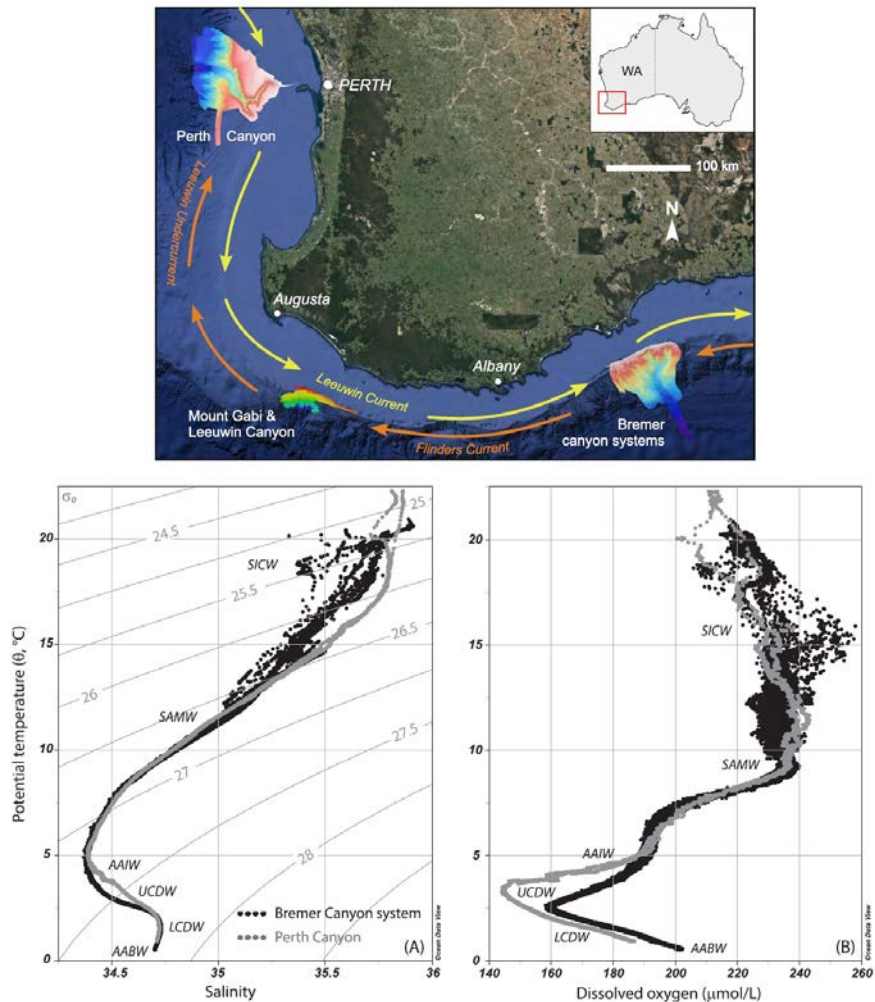


ANNUAL REPORT ON GEOTRACES ACTIVITIES IN ITALY

May 1st, 2022 to April 30th, 2023

New *GEOTRACES* or *GEOTRACES* relevant scientific results

- A new study reporting some of key physico-chemical seawater parameters (T, salinity, dissolved oxygen, TA, DIC, pH, dissolved inorganic nutrients, Ba concentration) of the major water masses flowing along the Bremer and Perth canyons in the southwestern Australia has been recently published in *Progress in Oceanography* (Trotter et al., 2022). The CTD-Rosette data were acquired during the cruise FK200126, from January 26th to February 26th 2020 aboard R/V *Falkor* (now *Gaia Blu*), the former research vessel of the Schmidt Ocean Institute that was donated to CNR (Italy) in March 2022. The major water masses identified were SICW (South Indian Central Water), SAMW (Subantarctic Mode Water), low salinity AAIW (Antarctic Intermediate Water), low oxygen UCDW (Upper Circumpolar Deep Water), LCDW (Lower Circumpolar Deep Water) and AABW (Antarctic Bottom Water). The AAIW, UCDW and LCDW in the Perth Canyon have distinctly lower dissolved oxygen concentrations than the Bremer canyon systems (DO minimum ~145 $\mu\text{mol/L}$ at 1320 m vs ~160 $\mu\text{mol/L}$ at 1650 m), where the low-oxygen UCDW (defined by the DO minimum) shoals and becomes warmer as it flows northward into the SE Indian Ocean. The dissolved inorganic nutrients (DIC, N-NO_x, P-PO₄, Si-SO₃, Ba) measured across our SW Australian sites are very consistent, although, concentrations in the more northern Perth Canyon are slightly higher (or at the upper range) than in the Bremer canyon systems. This is likely due to the progressive aging of these water masses as they leave their Southern Ocean source and flow northwards.



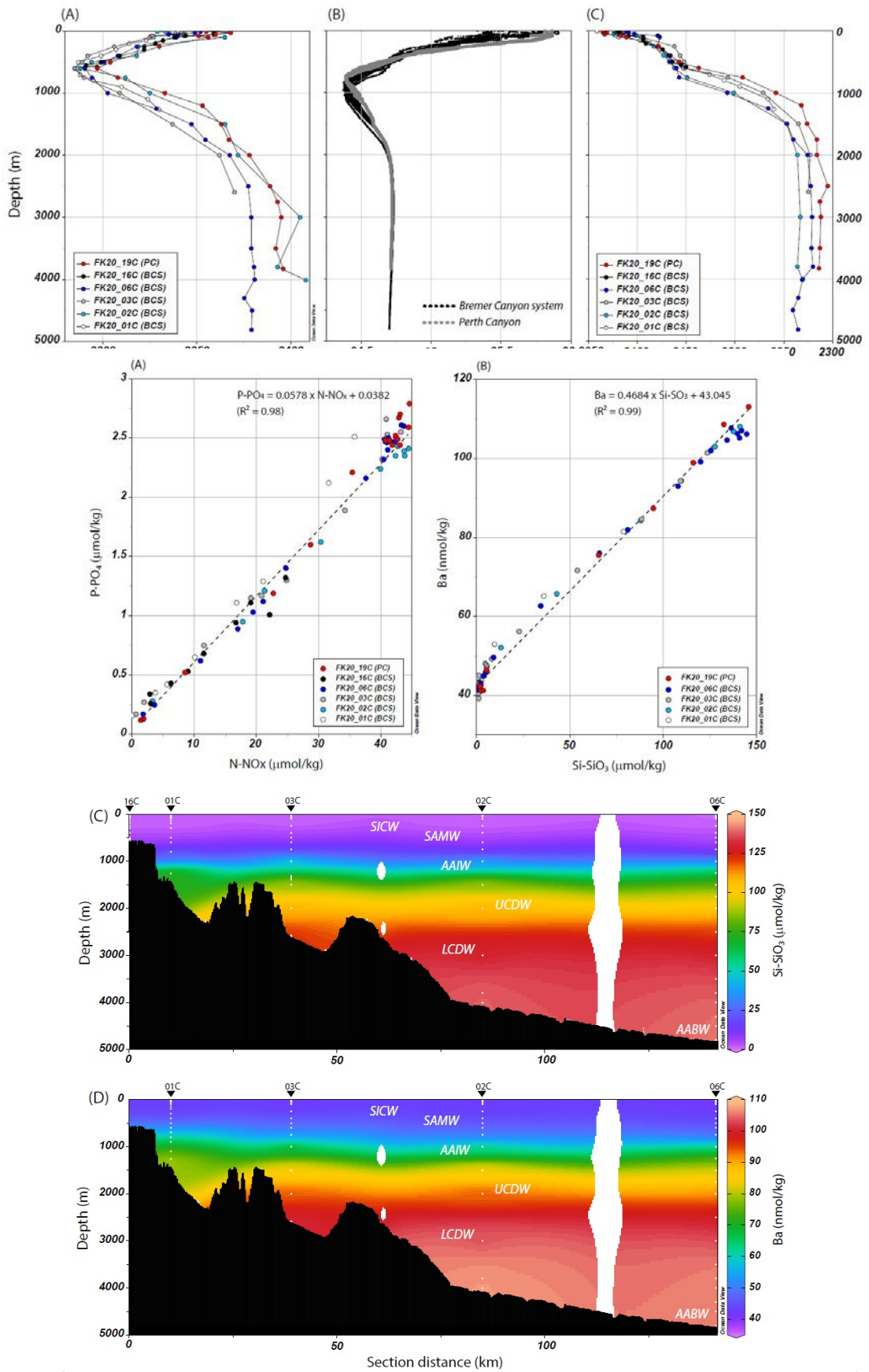


Figure IT-1. Trotter J., Taviani M., Fogliani F., Sadekov A., Skrzypek G., Mazzoli C., Kemia A., Santodomingo N., Castellan G., McCulloch M., Pattiaratchi C., Montagna P. (2022). Unveiling deep-sea habitats of the Southern Ocean-facing submarine canyons of southwestern Australia. *Progress in Oceanography*, 209, 102904.

New GEOTRACES or GEOTRACES-relevant publications (published or in press)

- Trotter J., Taviani M., Foglini F., Sadekov A., Skrzypek G., Mazzoli C., Remia A., Santodomingo N., Castellan G., McCulloch M., Pattiaratchi C., Montagna P. (2022). Unveiling deep-sea habitats of the Southern Ocean-facing submarine canyons of southwestern Australia. *Progress in Oceanography*, 209, 102904.

Submitted by Paolo Montagna (paolo.montagna@cnr.it)