

Trace Metal-Clean Sampling Systems to support GEOTRACES Research  
Updated: June 2021

An updated status of trace metal-clean sampling systems to support GEOTRACES research is provided in the table below. Scientists interested in developing one of these systems for their own use are encouraged to contact the GEOTRACES IPO or any member of the SSC, who will arrange for contact with an appropriate person to provide technical information about the design, construction and cost of a system.

<b>Nation</b>	<b>Status</b>	<b>System/ Carousel</b>	<b>Bottles</b>	<b>Depth</b>
Australia (Australia National University)	Complete	Powder coated aluminium, autonomous 1018 intelligent rosette system (General Oceanics)	12 x 10-L Teflon-lined Niskin-1010X (General Oceanics)	6000 m; 6 mm Dynex rope
Australia (Marine National Facility)	Complete	Polyurethane powder-coated aluminium autonomous Seabird rosette with CTD and other sensors, auto-fire module, and all titanium housings and fittings	12 x 12-L Teflon-lined OTE external-spring Niskin-style bottles	1750 m 9mm Dyneema rope or 200 m 6 mm Dyneema rope wth coupling to 6000 m CTD wire
Australia (Marine National Facility)	Complete (backup system)	Polyurethane powder-coated aluminium autonomous Seabird rosette with CTD and other sensors, auto-fire module, and all titanium housings and fittings	12 x 12-L Teflon-lined OTE external-spring Niskin-style bottles	1750 m 9mm Dyneema rope or 200 m 6 mm Dyneema rope wth coupling to 6000 m CTD wire
Brazil	Complete	GEOTRACES WATER SAMPLER - 24-bottle sampler for use with modem equipped 911plus CTD	24 X 12-L GO-Flo	3000 m; Kevlar cable
Canada	Complete	Powder coated aluminium with titanium CTD housing, Seabird Rosette	24 X 12-L GO-Flo	5000 m conducting Vectran
China - Beijing	Complete	Seabird Rosette. Powder coated aluminium with titanium pressure housings and fittings	24 x 12-L OTE GO-Flo; 24 X 12-L Teflon-lined Niskin-X	8000 m; conducting Kevlar
China - Taipei	Complete	Teflon coated rosette	Multi- size GO-Flo	3000 m; Kevlar line

France	Complete	Powder coated aluminium with titanium pressure housing for CTD	24 X 12-L GO-Flo	8000 m; conducting Kevlar
Germany (GEOMAR)	Complete	Two titanium rosette frames (built by KUM, Kiel) with titanium pressure housings and fittings	27 x 12-L OTE GO-Flo and 27 x 12-L OTE Niskin	8000 m; conducting Kevlar
Germany (Polarstern)	Partly available (completion expected 2022)	Titanium frame with 911 plus CTD; all sensors with titanium housing	24 x 12-L OTE GO-Flo	8000 m; conducting Vectran cable
India	Complete	Powder coated aluminum with titanium pressure housings and fittings	24 X 12-L Niskin-X	8000 m; conducting Kevlar
Israel	Complete	Powder coated aluminium, SeaBird Rosette	12 X 12-L Niskin; 8 X 12-L GO-Flo (Teflon coated)	2000 m, steel conducting cable
Italy	Complete	Go-Flo bottles on Kevlar line	5 x 20-L Go-Flos	Kevlar
Japan	Complete	Powder coated aluminium	12-L Niskin-X	7000 m; Vectran conducting Cable
Netherlands	Complete	Titanium frame	24 X 24-liter ultraclean polypropylene	10000 m; conducting Kevlar* <i>*There is only one cable for the two systems</i>
Netherlands	Complete	Titanium frame	24 X 24-liter ultraclean PVDF	10000 m; conducting Kevlar* <i>*There is only one cable for the two systems</i>
New Zealand	Complete	Powder coated aluminium	13 X 5-L Teflon-lined Niskin-X; 13 X 5GO-Flo	4000 m; 8 mm Kevlar line

Norway	In development	Standard 12 positions CTD Rosette GO	5-L Niskin-X	
Poland	Complete* (although the steel cable)	Powder coated aluminum, SeaBird Rosette	8x 10L GoFlo	3000m, steel conducting cable
Poland	Complete	Single bottle	10l G-FLO X Teflon coated	300m Kevlar
Republic of Korea	Complete	Titanium frame PRISTINE	24 × 12L PVDF	10,000 m; conducting Kevlar
Russia	Complete* (although the steel cable)	Powder coated aluminium, SeaBird Rosette SBE9p occupied CTD SBE 9+	24 × 12-L Niskin bottles	4000 m, steel conducting cable
Russia	In development (by 2022– 2024)	Powder coated aluminium, SeaBird Rosette and all titanium housings and fittings	GO-FLO, Niskin-X, 24 × 12-L	10000 m, conducting Kevlar
South Africa	Complete	Powder coated aluminium, titanium housing/fittings	24 X 12-liter GO-Flo	6500 m; Kevlar cable
South Korea	Complete	Titanium frame	24 × 12L PVDF	10,000 m; conducting Kevlar
UK	Complete	2 x Titanium frame, Ti pressure housings	24 10-L OTE 24 10-L OTE	2 x 8000m conducting Kevlar
USA - CLIVAR	Complete	Sea-Bird GEOTRACES Powder-coated aluminium	12 X 12-L GO-FLO	1500 m; conducting Vectran cable
USA - GEOTRACES	Complete	Seabird GEOTRACES Powder-coated aluminium with titanium pressure housings and fittings	24 X 12-L GO-FLO	7000 m conducting Vectran cable
USA- University of Alaska Fairbanks	Complete	Sea-Bird GEOTRACES Powder-coated aluminium with Ti parts and pressure housing. Fires at pre-programmable depths	12 X 5-L Teflon-lined Niskin-X	No Kevlar line available yet.

USA – University of South Florida	Complete	Sea-Bird GEOTRACES Powder-coated aluminium with Ti parts and pressure housing. Fires at pre-programmable depths	12 X 12-L OTE Niskin-X	3000 m 0.25” Amsteel wire
USA- Old Dominion University	Complete	Sea-Bird GEOTRACES Rosette. SBE-19plusV2 CTD unit. Powder coated aluminium with Ti parts and pressure housing. Fires at pre-programmable depths	12 X 5-L Teflon-lined Niskin-X	2000 m 0.5-inch Kevlar wire
USA – Polar Programs	Complete	Sea-Bird GEOTRACES Powder-coated aluminium with titanium pressure housings and fittings	12 X 12-L Niskin-X	3500 m; conducting Vectran cable
USA – Scripps Institution of Oceanography	Complete	Sea-Bird painted aluminium with stainless pressure housing (standard system). Fires at pre-programmable depths	12 X 10-L Niskin-X 12 X 5-L Niskin-X	2000 m Amsteel cable and 2000 m Space-Lay coated metal cable
USA – Woods Hole Oceanographic Institution	Complete	Sea-Bird painted aluminium with stainless pressure housing (standard system). Fires at pre-programmable depths	12 X 8-L Niskin-X	4000 m Amsteel cable