Parameter Naming Conventions

All of the GEOTRACES parameter names that are used in the Intermediate Data Products are sorted into Domains; these are used to separate different types of datasets and to cluster different sets of parameters:

1.   **Aerosols** - all measurements associated with aerosols, with different collection and analytical methods.

2.   **BioGEOTRACES** - Biological measurements (including pigments, DNA parameters, cell quotas and proteins).

3.   **Dissolved TEIs** - dissolved trace metals and their isotopes, ligands, radionuclides, rare earth elements..

4.   **Hydrography and Biogeochemistry** - Including temperature, salinity, oxygen, major nutrients and their isotopes and noble gases.

5.   **Particulate TEIs** - particulate trace metals and their isotopes, ligands, radionuclides and major phases.

6.   **Rain** - all measurements associated with rain, with different collection and analytical methods.

7.   **Ligands** – dissolved and particulate ligands (cross listed with "Dissolved TEIs" and "Particulate TEIs" to facilitate locating this information).

GEOTRACES Intermediate Data Products employ the following parameter naming scheme. Standard hydrographic parameters, such as temperature, salinity and oxygen use names as defined in the WOCE/CLIVAR naming convention (CTDTMP, CTDSAL and CTDOXY for temperature, salinity and oxygen from CTD sensors; https://exchange-format.readthedocs.io/en/latest/parameters.html). Other hydrographic and biogeochemistry parameters use names defined intuitively. Examples are PRESSURE for the CTD pressure at the bottle sample depth, SALINITY, PHOSPHATE, NITRATE, and SILICATE for salinity, phosphate, nitrate and silicate measured on bottle samples. Biogeochemistry parameters use names defined by SCOR naming.conventions (e.g., HPLC pigments; Roy et al., 2011) or names that intuitively define the parameters (e.g., nifH_UCYN-A_DNA_P_CONC_BOTTLE; concentration of nifH genes from uncultured unicellular cyanobacteria (UCYN-A) particles (P) in a bottle sample).

All other trace elements and isotope names are composed of up to six separate tokens as shown below. Tokens 2 and 3 are optional, while all other tokens are mandatory.

1	2	3	4	5	6
Element/	**[_Oxidation State]**	**[_Atomic Mass]**	**_Phase**	**_DataType**	**_Sampling System**

Compound

Explanations

#	Explanation	Example
1	Element or compound (mandatory)	Fe, Th, DIC, NITRATE, L1Fe
2	Oxidation state as roman number (optional)	_II, _IV, _III_V_ where III and V are combined
3	Atomic mass (optional); two entries for isotope ratios	_228, _208_204
4	Phase on which element or compound was measured (mandatory); may include two components (e.g., _R_TD_ refers to the Total Dissolvable concentration of a constituent in Rain; _MM_D_ refers to the dissolved concentration of the monomethyl form of a constituent)	_A (aerosol) _C (colloidal) _D (dissolved) _DL (dissolved labile) _F (free (un-complexed)) _LPT (large particulate, total (unleached)) _R (rain) _S (soluble) _SMLH2O (soluble mild leach with ultrapure water) _SMLSW (soluble mild leach with seawater) _SSLNH4AC (soluble strong leach with ammonium acetate) _SSLHAC (soluble strong leach with acetic acid) _SP (small particulate) _SPL (small particulate, labile fraction) _SPR (small particulate, refractory fraction) _SPT (small particulate, total (unleached)) _T (total) _TD (total dissolvable) _TP (total particulate) _TPL (total particulate, labile fraction)

		_TPR (total particulate, refractory fraction)
5	DataType (mandatory)	_CONC (concentration)
		_DELTA (isotope ratio in delta notation)
		_EPSILON (isotope ratio in epsilon notation)
		_LogK (log of binding constant of ligand)
		_RATIO (atomic abundance ratio of isotopes)
6	Sampling system (mandatory)	_BOTTLE (Niskin or similar water sampling bottle)
		_FISH (trace-metal clean towed surface sampler)
		_PUMP (either in-situ pump or on-deck pump)
		_UWAY (ship's underway surface seawater)
		_HIVOL (high-volume aerosol sampler)
		_LOWVOL (low-volume aerosol sampler)
		_FINE_IMPACTOR (size-fractionated aerosols, small fraction)
		_COARSE_IMPACTOR (size-fractionated aerosols, large fraction)
		_AUTO (automated aerosol sampler)
		_MAN (aerosol sampler with manual on-off controls)

Examples

Parameter Name	Parameter description
Fe_D_CONC_BOTTLE	Concentration of dissolved Fe
Fe_II_D_CONC_BOTTLE	Concentration of dissolved Fe(II)
Fe_II_TP_CONC_BOTTLE	Concentration of total particulate Fe(II) determined by filtration from a water sampling bottle
Fe_TPL_CONC_BOTTLE	Concentration of labile particulate iron determined by filtration from a water sampling bottle
Nd_143_144_D_RATIO_BOTTLE	Atom ratio of given isotopes for dissolved Nd
Nd_143_144_D_EPSILON_BOTTLE	Atom ratio of dissolved Nd isotopes expressed in

	conventional EPSILON notation
Cd_114_110_D_DELTA_BOTTLE	Atom ratio of dissolved Cd isotopes expressed in conventional DELTA notation
Cu_Cu'_D_CONC_BOTTLE	Concentration of dissolved inorganic Cu
Pb_206_204_D_RATIO_BOTTLE	Atom ratio of given isotopes for dissolved Pb
DIC_13_12_D_DELTA_BOTTLE	Atom ratio of given isotopes for dissolved C as DIC in delta notation
DIC_14_12_D_DELTA_BOTTLE	Atom ratio of radiocarbon as dissolved C in DIC in DELTA notation
NITRATE_15_14_D_DELTA_BOTTLE	Atom ratio of given isotopes for dissolved N as nitrate in delta notation
L1_Fe_D_CONC_BOTTLE	Concentration of dissolved L1 Fe-binding ligand
L1_Fe_D_LogK_BOTTLE	Log of the stability constant of L1 Fe
HOMOCYS_D_CONC_BOTTLE	Concentration of dissolved homocysteine
Chl a_HPLC_P_CONC_BOTTLE	Concentration of particulate Chlorophyll a measured using HPLC method
nifH_UCYN-A_DNA_P_CONC_BOTTLE	Abundance nifH Uncultured unicellular cyanobacteria (UCYN-A)
Al_A_T_CONC_HIVOL	Total aerosol Al concentration, high-volume sampler
Al_A_SMLH2O_CONC_HIVOL	**S**oluble aerosol Al concentration, **M**ild **L**each with ultrapure water, high-volume sampler
Al_A_SMLSW_CONC_HIVOL	**S**oluble aerosol Al concentration, **M**ild **L**each with seawater, high-volume sampler
Al_A_SMLH2O_CONC_COARSE_IMPACTOR	**S**oluble aerosol Al concentration, **M**ild **L**each with ultrapure water, coarse fraction, impactor sampler
Al_A_SMLH2O_CONC_FINE_IMPACTOR	**S**oluble aerosol Al concentration, **M**ild **L**each with ultrapure water, fine fraction, impactor sampler
Al_A_SSLNH4AC_CONC_HIVOL	**S**oluble aerosol Al concentration, **S**trong **L**each with ammonium acetate, high-volume sampler
Al_A_SSLNH4AC_CONC_COARSE_IMPACTOR	**S**oluble aerosol Al concentration, **S**trong **L**each with ammonium acetate, coarse fraction, impactor sampler

Al_A_SSLNH4AC_CONC_FINE_IMPACTOR	**S**oluble aerosol Al concentration, **S**trong **L**each with ammonium acetate, fine fraction, impactor sampler