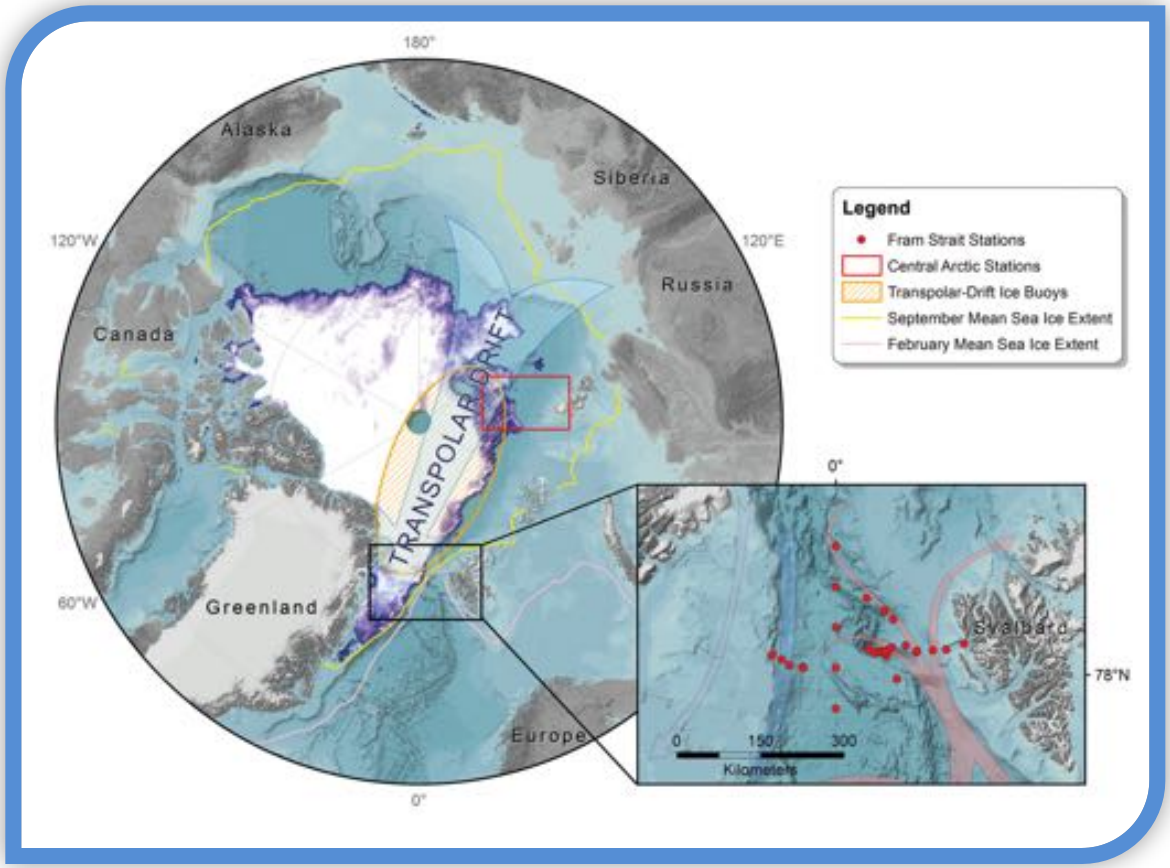
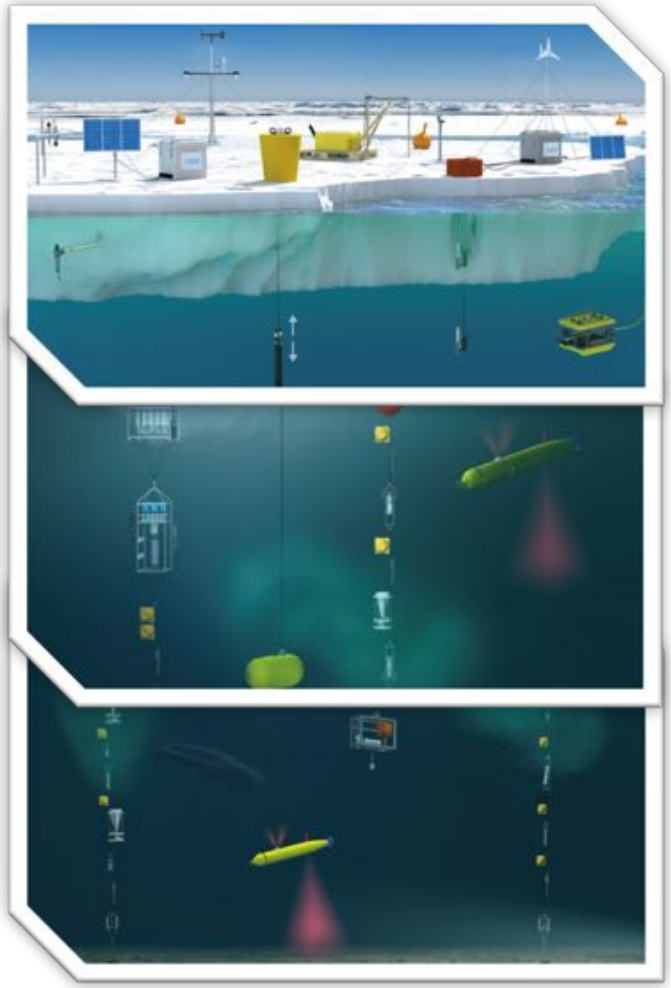
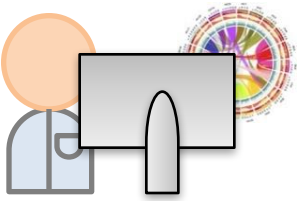
Frontiers for Arctic Marine Monitoring (FRAM) programme

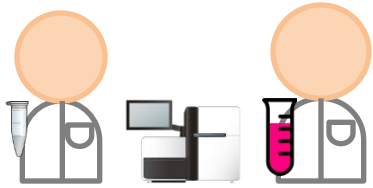




human and
'has role'
'bioinformatician'



human and
'has role'
'laboratory researcher'



Ice sheet

human and 'has role'
'field sampler'

DNA extraction and sequencing

functional diversity analysis

water sampling

monitors

ocean health indicator

has output

evaluates

human
and 'has role'
'policy analyst'

device and 'has role'
'ocean health monitoring server'

reports on

PL Buttigieg
@ AWI

Envo

includes

An OWL-based community ontology handling the semantics of environmental entities using OBO best practices

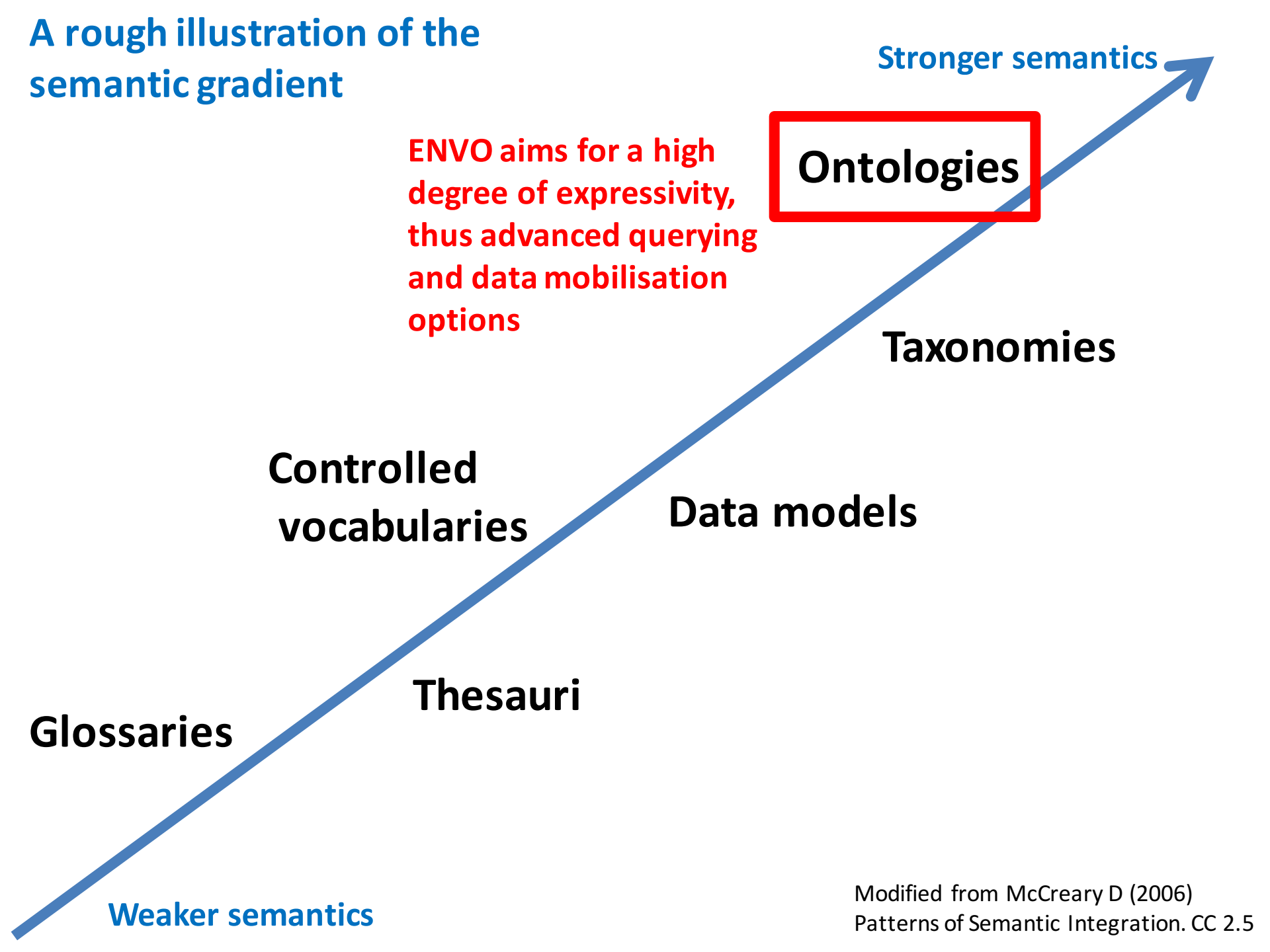
environmentontology.org

envoCryo

bundling cryosphere semantics

partly seeded by the NSIDC sea ice ontologies

A rough illustration of the semantic gradient



Modified from McCreary D (2006) Patterns of Semantic Integration. CC 2.5

Defined in the Basic Formal Ontology

RELATION TO TIME / GRAIN	CONTINUANT					OCCURRENT	
	INDEPENDENT			DEPENDENT			
ORGAN AND ORGANISM	Organism (NCBI Taxonomy)	Anatomical Entity (FMA, CARO)	Environments (ENVO)	Organ Function (FMP, CPRO)	Phenotypic Quality (PATO)	Biological Process (GO)	Environmental processes (ENVO)
CELL AND CELLULAR COMPONENT	Cell (CL)	Cellular Component (FMA, GO)		Cellular Function (GO)			
MOLECULE	Molecule (ChEBI, SO, RnaO, PrO)			Molecular Function (GO)		Molecular Process (GO)	

Adapted from the Open Biomedical Ontology (OBO) Foundry proposal

is concerned with…

…systems

- biomes
- ecoregions
- ecozones
- habitats …

…planetary parts

- coral reefs
- cryconite holes
- holothurian guts
- melt ponds…

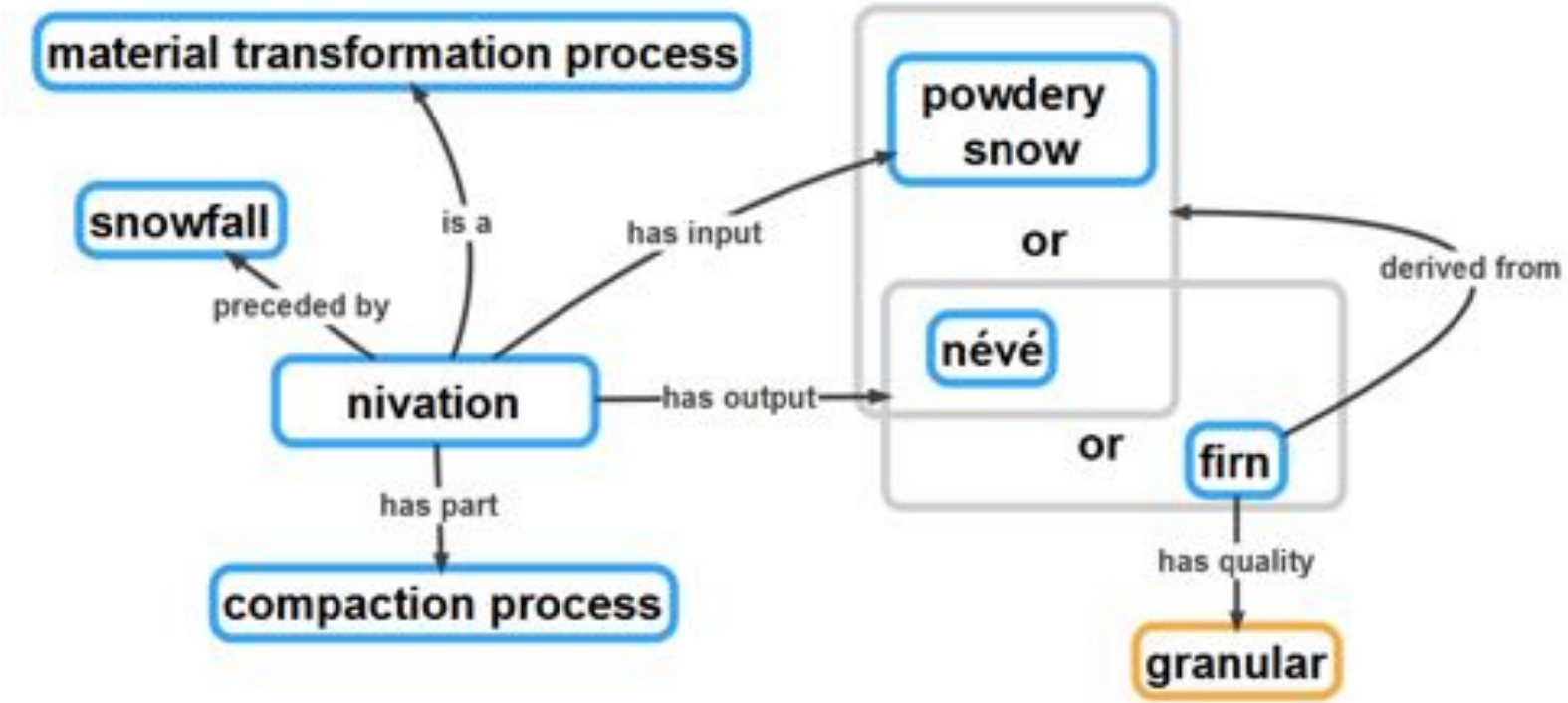
…processes

- glacial ablation
- nivation…

…materials

- névé
- brine
- permafrost…

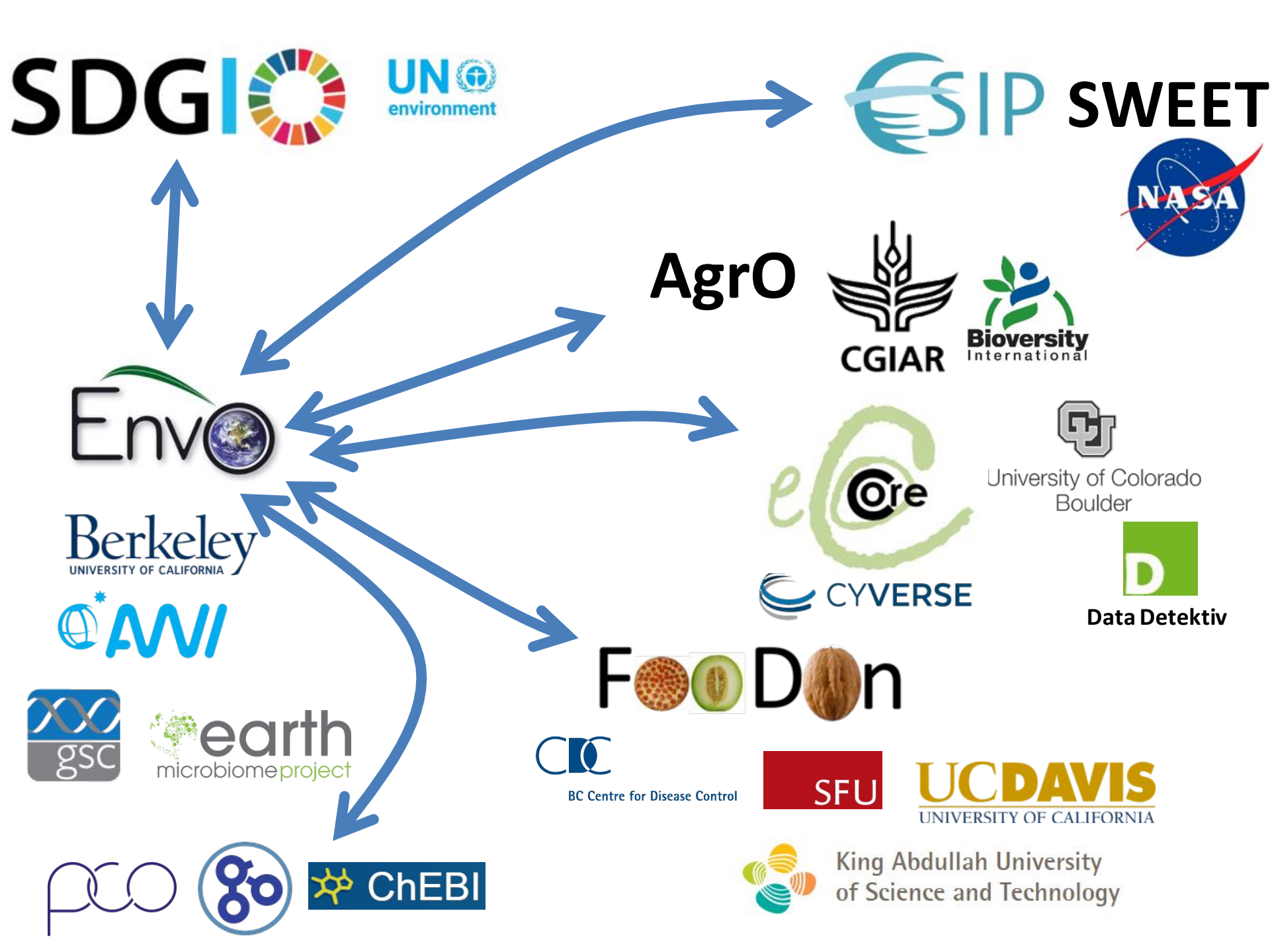
A fragment of envoCryo's nivation semantics



envoCryo

PATO

Each node links to many others in ENVO and other interoperating ontologies


SDG IO
UN environment
ESIP
SWEET
NASA
AgrO
CGIAR
Bioversity International
Envo
Berkeley
UNIVERSITY OF CALIFORNIA
eCore
CYVERSE
University of Colorado Boulder
Data Detektiv
AWI
FoodOn
gsc
earth microbiome project
BC Centre for Disease Control
SFU
UCDAVIS
UNIVERSITY OF CALIFORNIA
ChEBI
King Abdullah University of Science and Technology

UN environment

SDG|

A semantic interface for the Sustainable Development Goals

"Ecosystem services"
"Healthy environments, healthy people"
"People, Planet, Profit"
"Planetary life-support systems"

environment live

Science and data for people

Data and Statistics

Assessments | World Data | Sustainable Development Goals

Get Involved

Log In

Select Language

Sustainable Development Goals | Multilateral Environmental Agreements | Synergies | Ontology | Statistics | SDG Policy Brief | Web Intelligence

Sustainable Development Goals

SDG Methodology

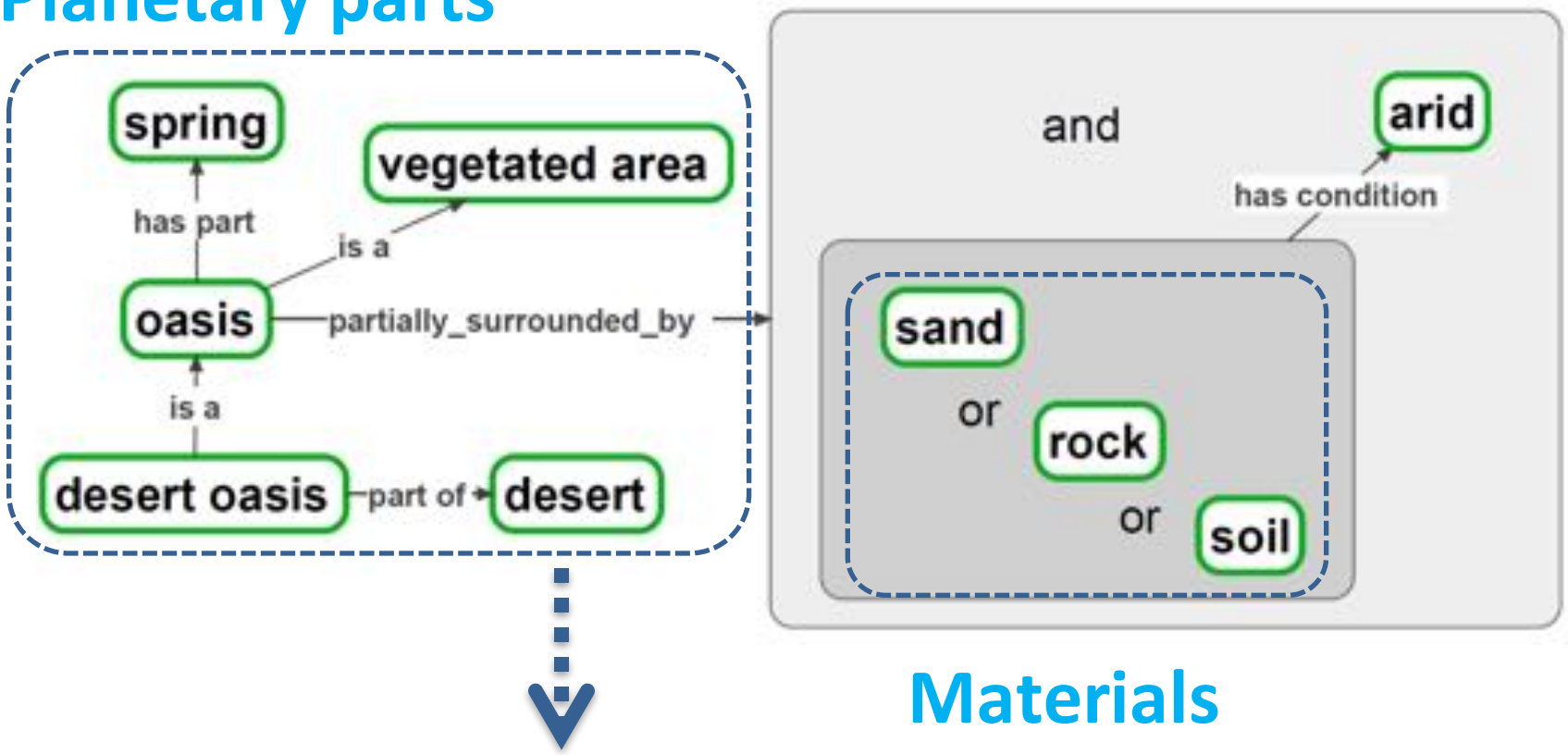
Sustainable Development Goals

CBD CITES CMS MINAMATA CONVENTION ON MERCURY Ramsar KYOTO PROTOCOL

Multilateral Environmental Agreements

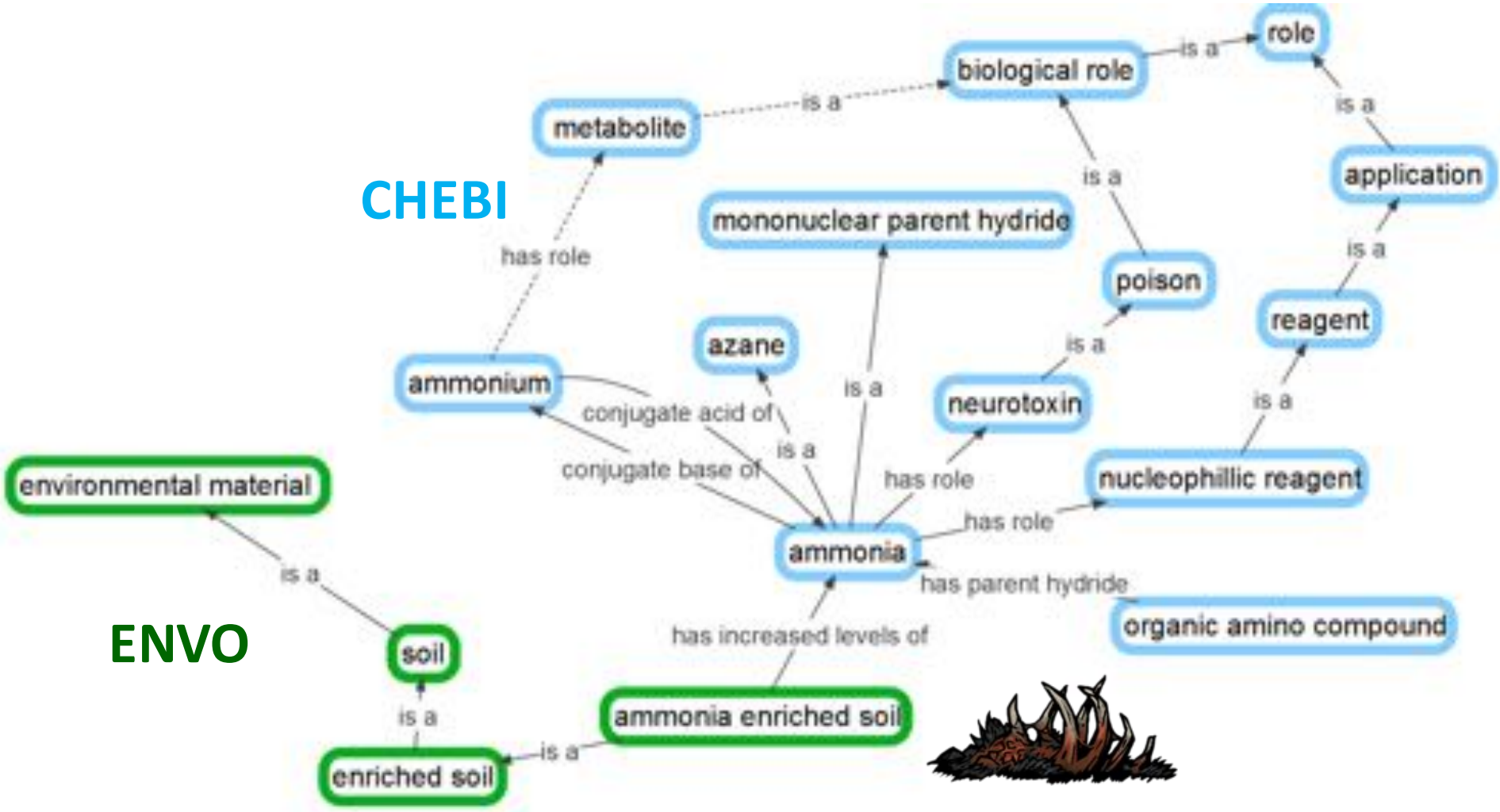
Supplementary slides

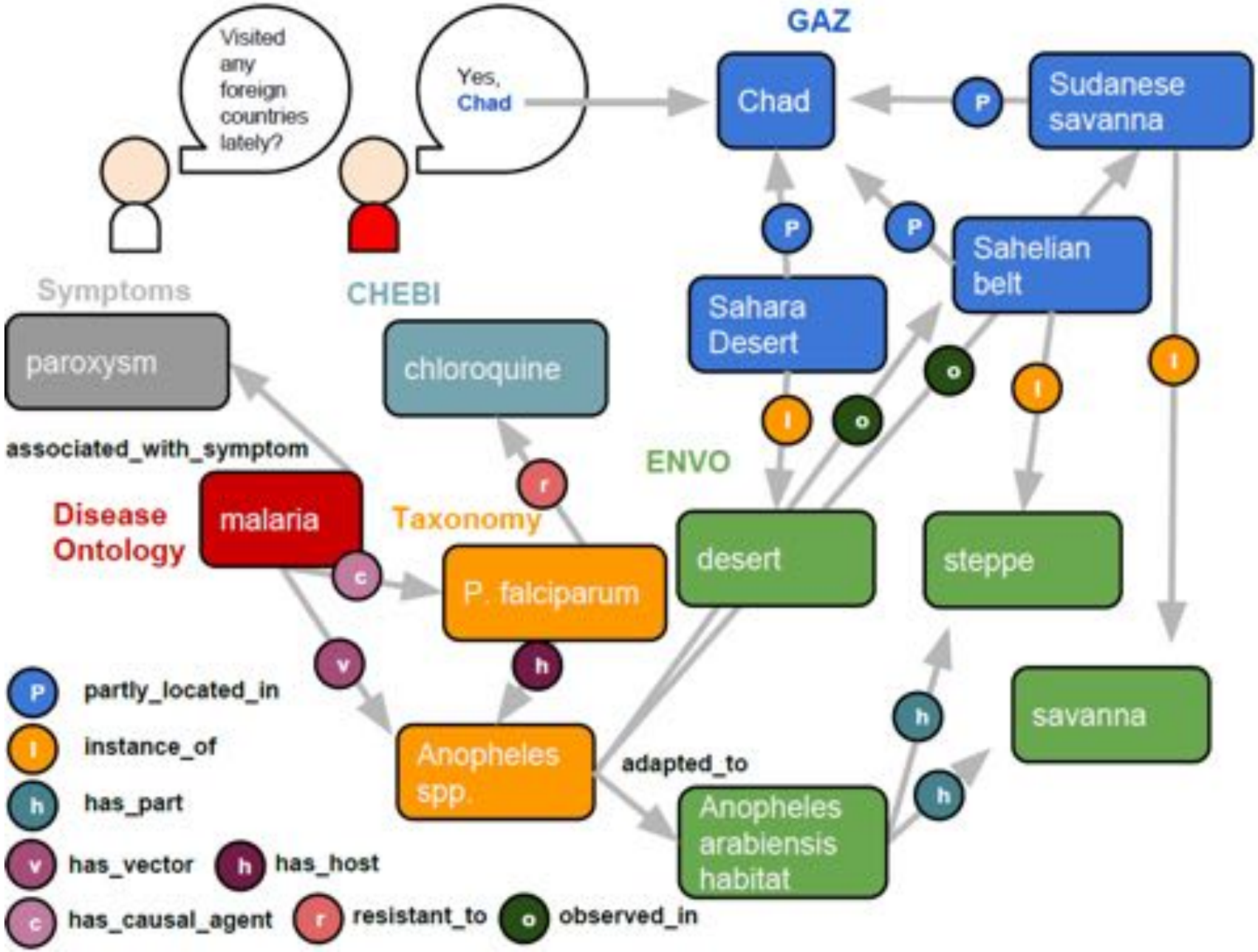
Planetary parts



Materials

Biome


CHEBI
ENVO
role
biological role
is a
metabolite
is a
application
is a
mononuclear parent hydride
is a
poison
has role
reagent
is a
azane
is a
ammonium
is a
neurotoxin
conjugate acid of
is a
conjugate base of
environmental material
has role
nucleophillic reagent
has role
ammonia
has parent hydride
organic amino compound
is a
has increased levels of
soil
is a
ammonia enriched soil
is a
enriched soil


Visited any foreign countries lately?
Yes, Chad
GAZ
Chad
Sudanese savanna
Sahelian belt
Sahara Desert
Symptoms
CHEBI
paroxysm
chloroquine
associated_with_symptom
ENVO
Disease Ontology
malaria
Taxonomy
P. falciparum
desert
steppe
savanna
Anopheles spp.
adapted_to
Anopheles arabiensis habitat
partly_located_in
instance_of
has_part
has_vector
has_host
has_causal_agent
resistant_to
observed_in