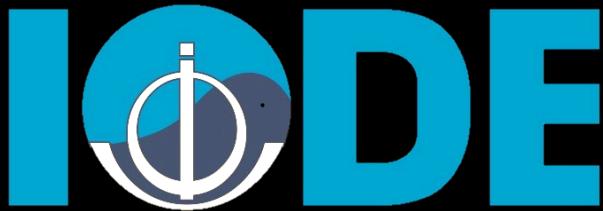




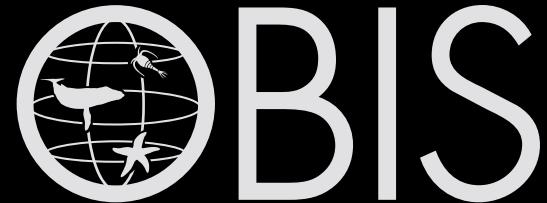
United Nations
Educational, Scientific and
Cultural Organization



Intergovernmental
Oceanographic
Commission



International Oceanographic
Data and Information Exchange



OCEAN BIOGEOGRAPHIC
INFORMATION SYSTEM

Expanding OBIS beyond species occurrence data, with an extension for environmental data



Co-authors: OBIS-ENV-DATA
project consortium



Photo credits Molly Timmers - NOAA

w.appeltans@unesco.org



OCEAN BIOGEOGRAPHIC
INFORMATION SYSTEM

Some Statistics

46,000,000 species **observations**

4,600,000 sampling **events**

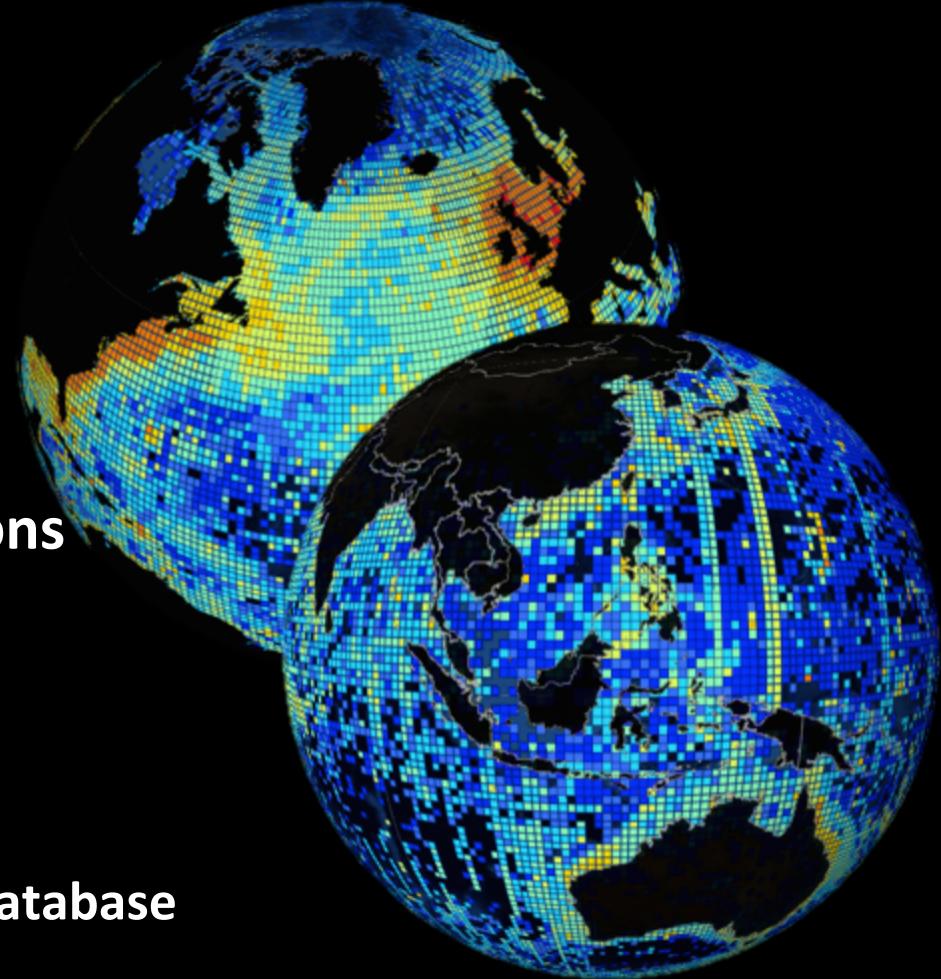
3,200,000 sampling **stations**

117,000 marine species

1,900 databases in **1** central **global database**

500 data providers, **56** countries

1,000 papers have cited OBIS



Science (9)

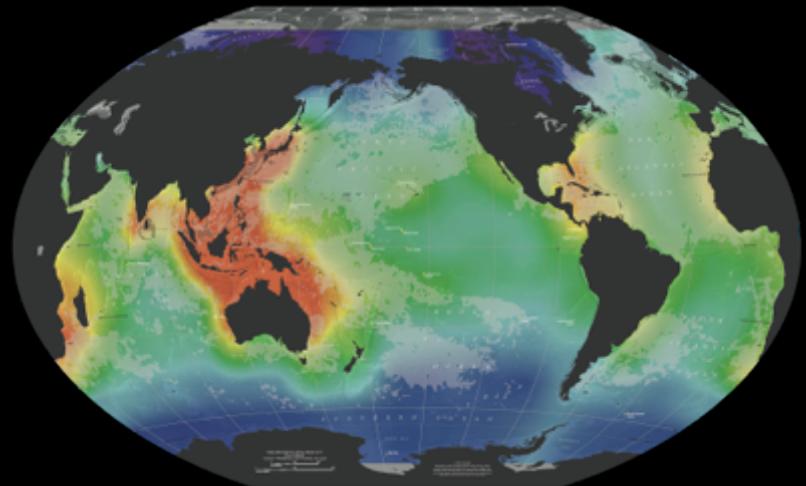
nature (4)



UNGA resolution (A/RES/70) notes with appreciation the contribution of OBIS to marine scientific research.

Census of Marine Life

2000 - 2010



*OBIS was established as the data repository
and information dissemination system for
CoML*



OBIS @ UNESCO-IOC



Intergovernmental
Oceanographic
Commission

Established in 1960
148 Member States

UN focal point for ocean science, ocean observations and services, data and information exchange and capacity building



UNCLOS: IOC = competent international organization for Marine Scientific Research and Transfer of Marine Technology

In June 2009, the 25th Session of the IOC Assembly decided through Resolution XXV-4 to adopt OBIS as part of IODE, because:

Knowledge of the ocean's biodiversity is of such importance to national and global environmental issues that **the responsibility for its continuing success should be assumed by governments.**

OBIS DATA STANDARD

Darwin Core Archive

Occurrence core

EML

Meta.xml

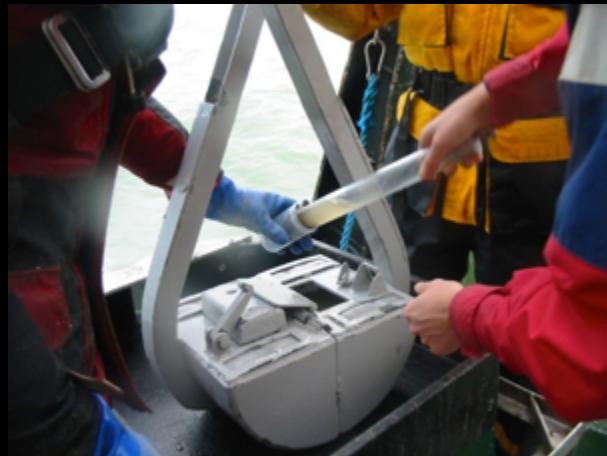
DwC terms managed by TDWG

- | | | |
|---------------------|----------|-------------------------|
| 1. eventDate | WHEN | BY WHO |
| 2. decimalLongitude | | |
| 3. decimalLatitude | WHERE | SAMPLINGPROTOCOL |
| 4. scientificName | | |
| 5. scientificNameID | WHAT | |
| 6. occurrenceStatus | | POINTS, LINES, POLYGONS |
| 7. basisOfRecord | | DEPTH |
| | HOW MANY | |

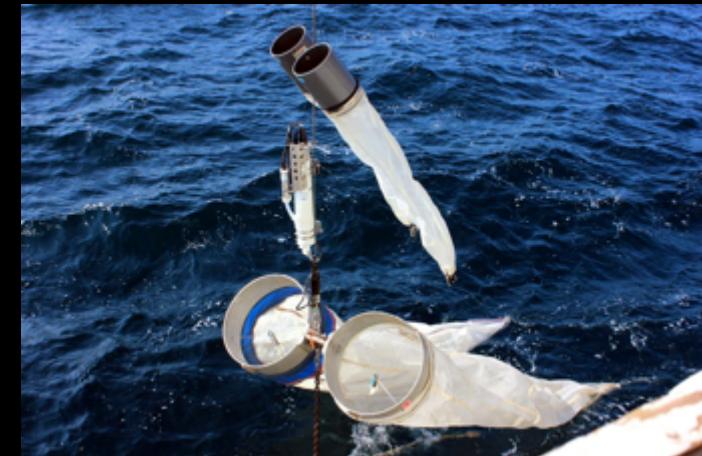
Sampling more data than just species occurrence



Water sample from a Niskin bottle



Core sample from a Van Veen grab



plankton net with CTD



Video plankton recorder

OTN tags



XXIII session of the IOC Committee for IODE, March 2015

Recommendation IODE-XXIII.4

ESTABLISHMENT OF THE IODE PILOT PROJECT EXPANDING
OBIS WITH ENVIRONMENTAL DATA (OBIS-ENV-DATA)



OBIS-ENV-DATA

1st workshop October 2015



In collaboration with **EMODnet**



14 pilot datasets

OBIS-ENV-DATA involves 11 institutions from 10 countries in North-America, South-America, Europe, Africa and Oceania.

14 pilot datasets

SAMPLING GEAR

RMT-1 net:	zooplankton, fish
CTD-Tracker:	marine mammals
Van Veen Grab:	macrobenthos
Sorbe sledge:	hyperbenthos
VPR:	plankton
MOCNESS net:	zooplankton
Throw-trap:	zooplankton
Niskin bottle:	phytoplankton

ABIOTIC READINGS

Environmental:

Light Conditions, Ice Coverage, Secchi Disc Depth, Turbidity, Light Transmission,
Wind Direction, Bottom Temperature, Surface Salinity

Sediment Sample:

Metal Concentrations, Sediment Grain Sizes

Water Sample:

Nutrient (NO₃) and Chlorophyll a Concentration, Temperature, Salinity

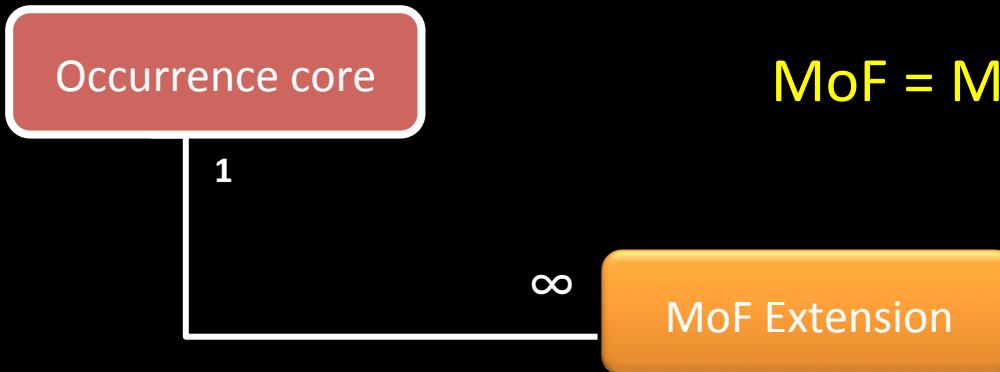
Sensor based:

CTD profiles, tracking data, data derived from sensors attached to the sampling device



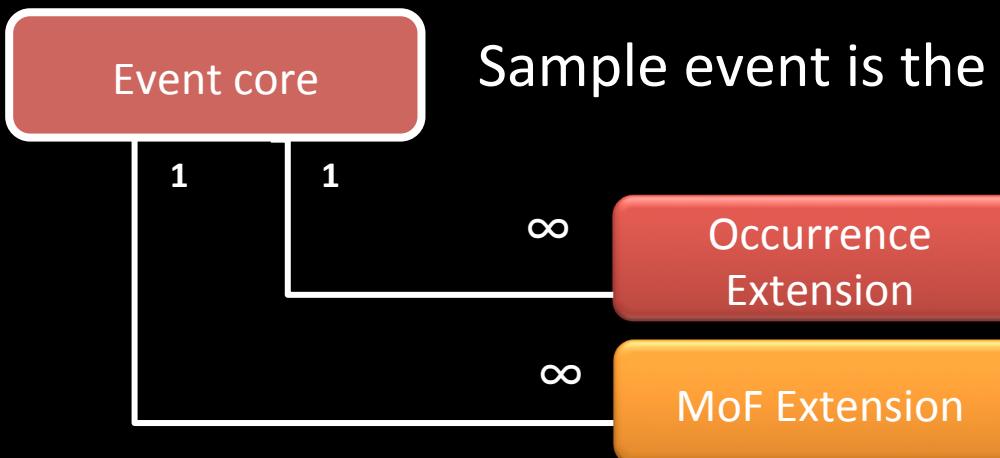
Integrated Publishing Toolkit

Star Schema



MoF = Measurement or Fact

MoF addresses
methods, abiotic and
biological
measurements



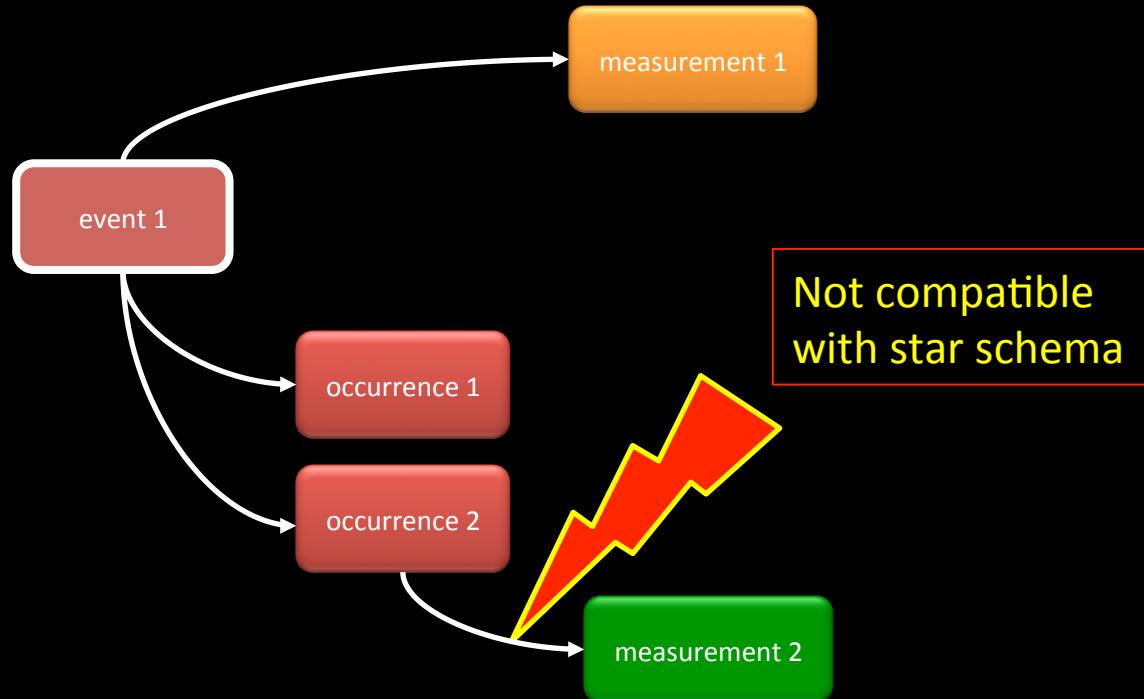
Sample event is the DwC core

What we needed

Event Core

Occurrence Extension

MeasurementOrFacts Extension

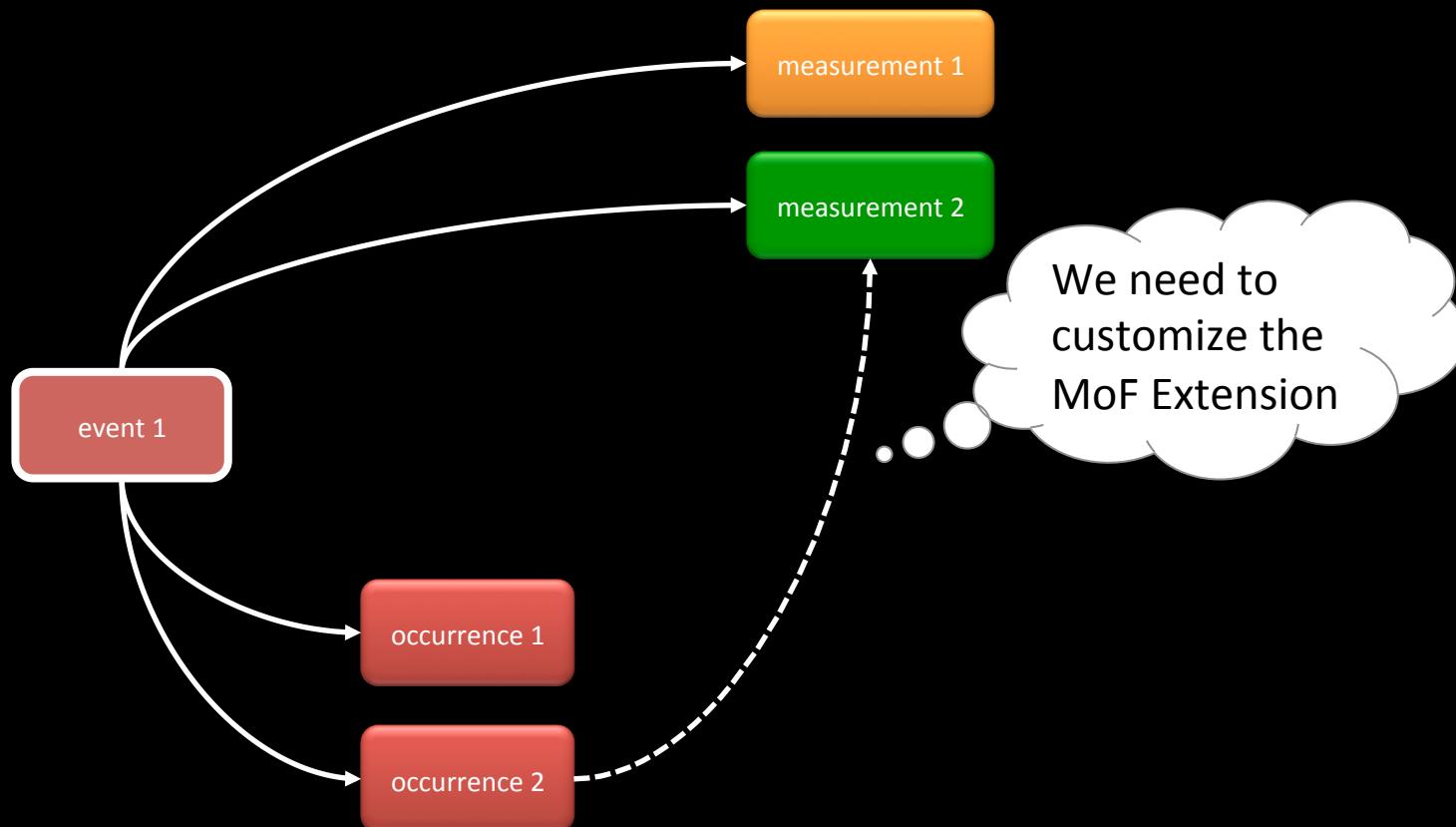


OBIS-ENV-DATA

Event Core

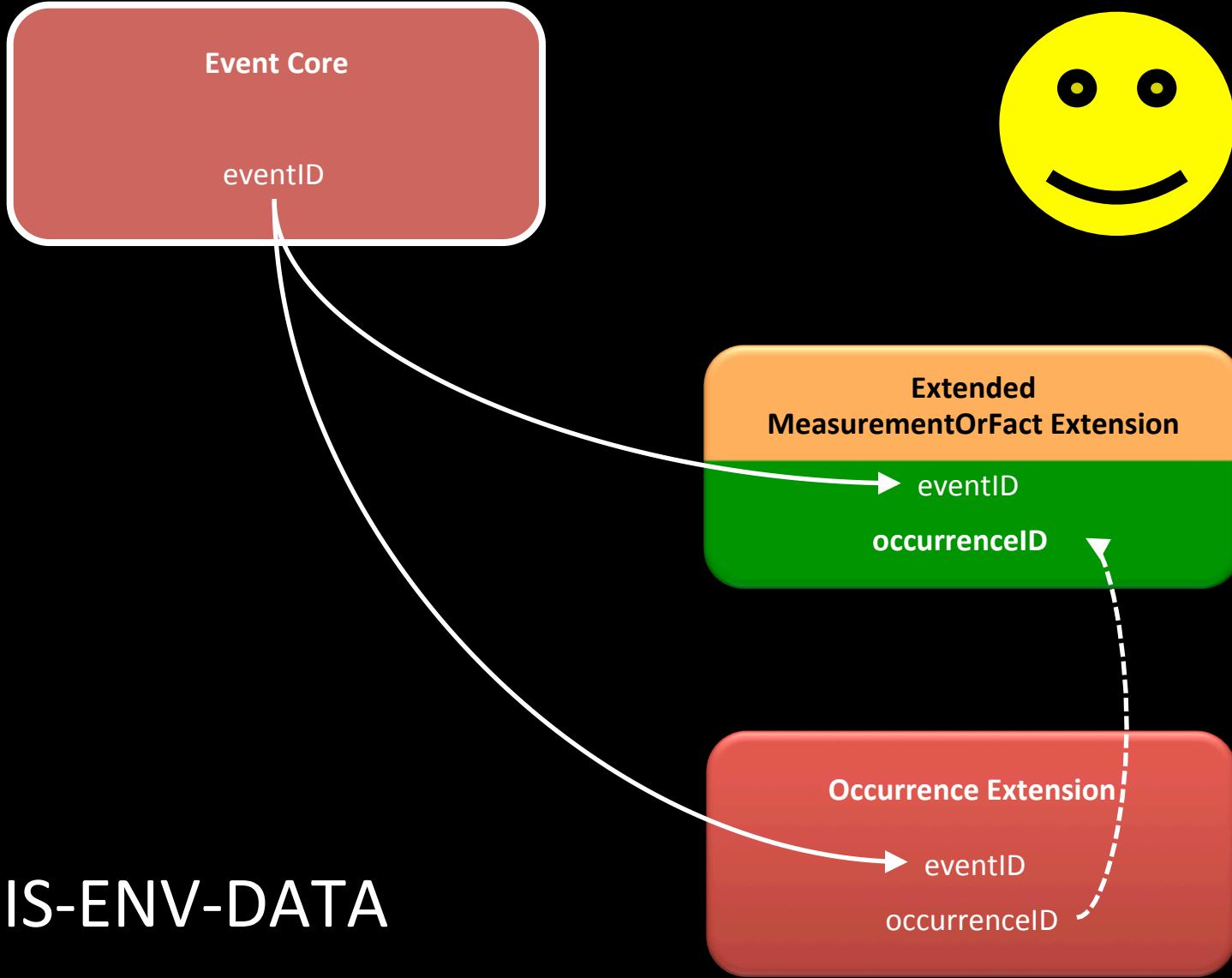
Occurrence Extension

MeasurementOrFacts Extension



OBIS-ENV-DATA

Option 6



OBIS-ENV-DATA

Extended MeasurementOrFact(s) Extension

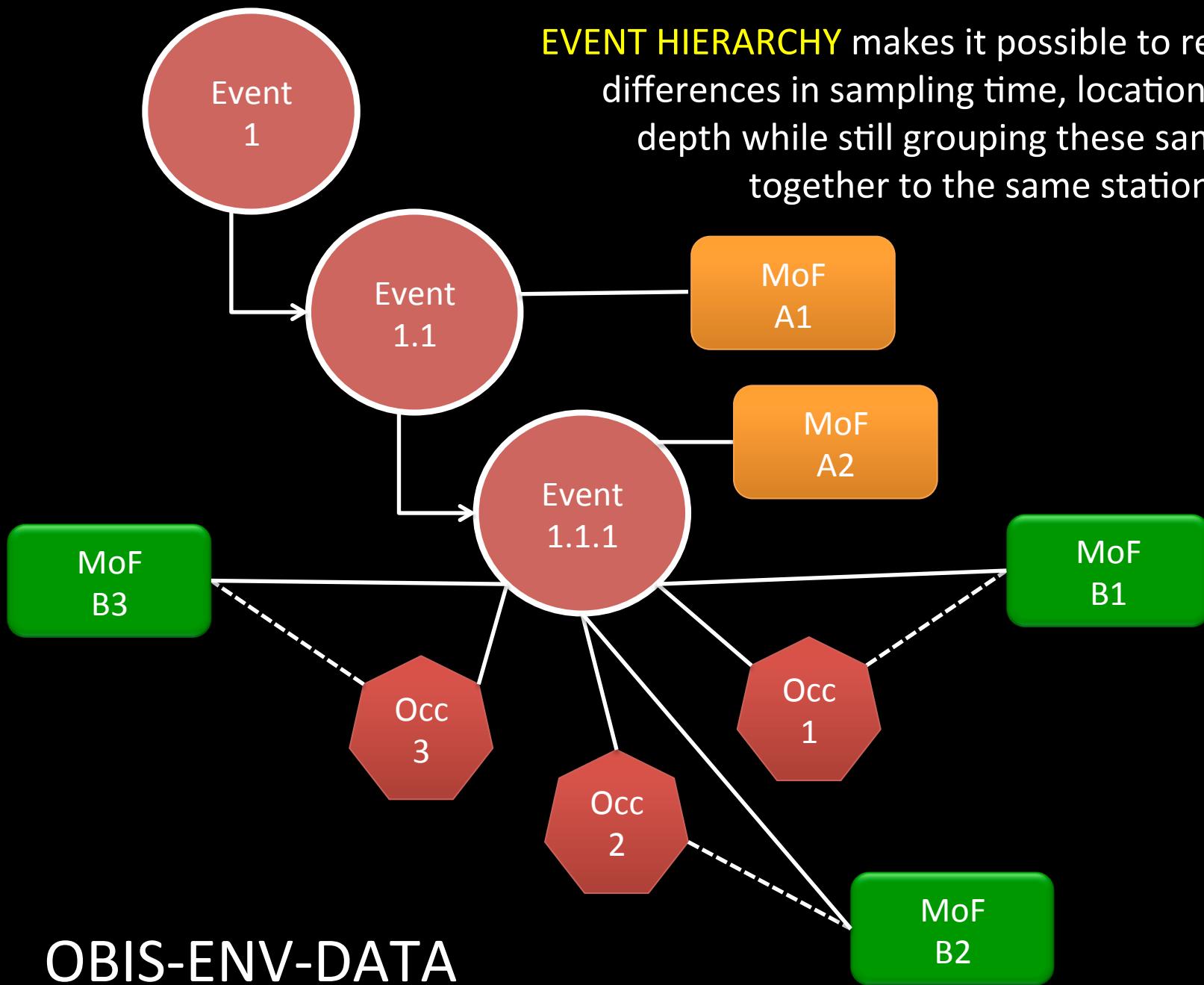
EXAMPLE benthic sample Van Veen grab

Event-ID	Occurrence-ID	MoF-Type	MoF-Value	MoF-Unit
1		Sampling device name	Van-Veen grab	
1		Area sampled	0.112	m ²
1		Sample volume	20	L
1		Sieze mesh size	250	µm
1		Biological entity size sampled	250-1000	µm
1	1	Ash-free dry weight biomass	0.2	Kg/m ²
1	1	ObservedindividualCount	112	individuals
1	1	Abundance	1000	individuals/m ²
1	1	lifeStage	juvenile	

Linking to external URI of a controlled vocabulary for parameter standardization

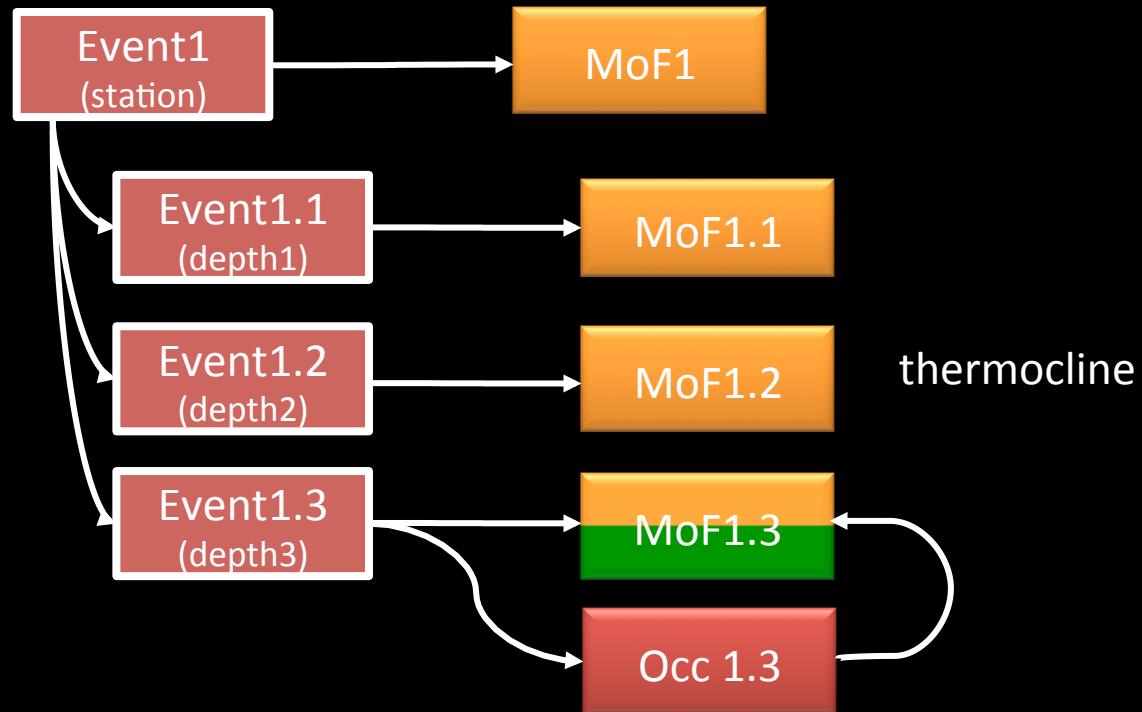
ID	Occurrence-ID	MoF-Type	MoF-TypeID	MoF-Value	MoF-ValueID	MoF-Unit	MoF-UnitID
1		Sampling device name	L19/current/SDNKG01/	Van-Veen grab	L22/current/TOOL0653/		
1		Area sampled	P01/current/AREABEDS/	0.112		m ²	P06/current/UMSQ/
1		Sample volume	P01/current/VOLXXXXX/	20		L	P06/current/ULIT/
1		Sieze mesh size		250		µm	P06/current/UMIC/
1		Biological entity size sampled		250-1000		µm	P06/current/UMIC/
1	1	Ash-free dry weight biomass	P01/current/SDBIOL03/	0.2		Kg/m ²	P06/current/KMP2/
1	1	ObservedindividualCount	P01/current/OCOUNT01/	112		individuals	
1	1	Abundance	P01/current/SDBIOL02/	1000		individuals/m ²	P06/current/UPMS/
1	1	lifeStage	S11/	juvenile	S11/current/S1127/		

EVENT HIERARCHY makes it possible to record differences in sampling time, location, and depth while still grouping these samples together to the same station visit



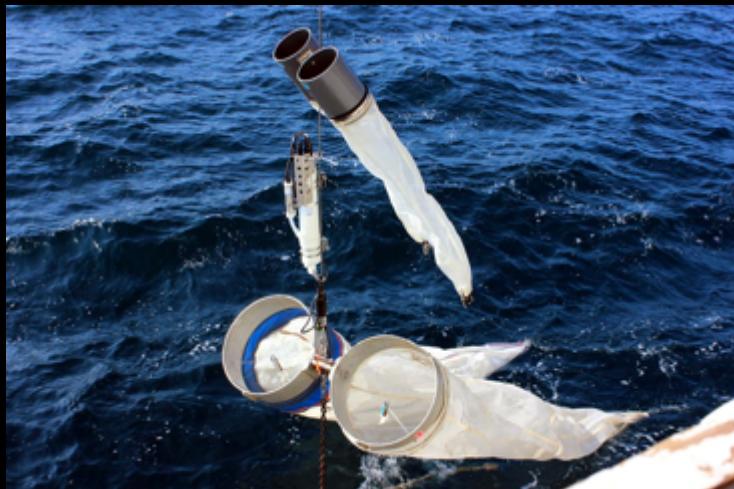
OBIS-ENV-DATA

CTD and Niskin bottles

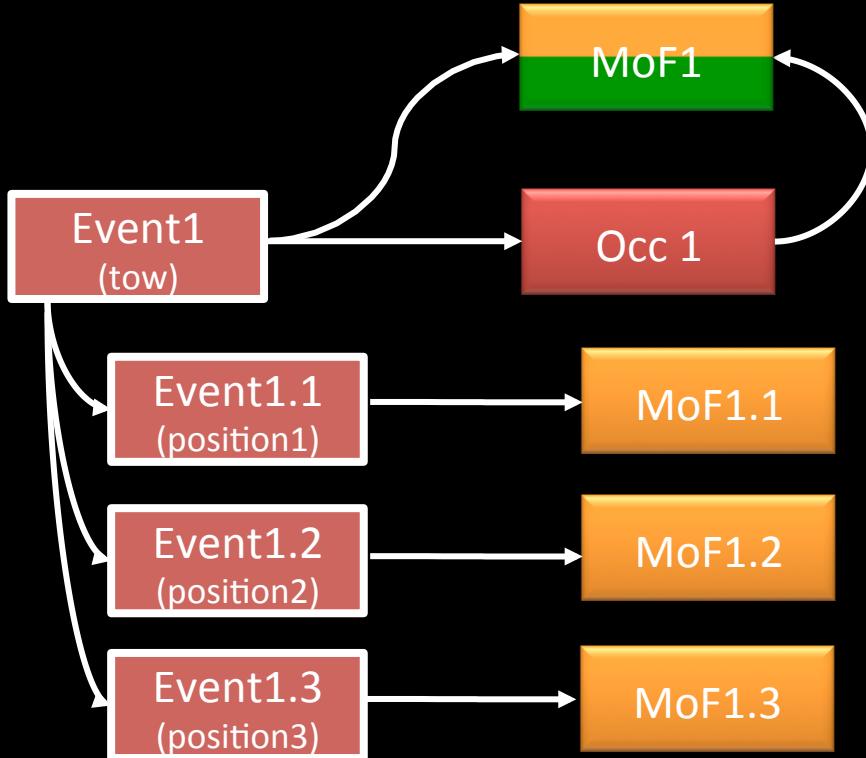


Each separate sensor reading can be considered a sub-event of the CTD cast. The Niskin bottle with the biological sample can be linked to the subevent of the CTD cast.

CTD and plankton net



Bongo nets and CTD unit being deployed from the Henry Bigelow. (Photo by Sammi Ocher, Northeastern University)

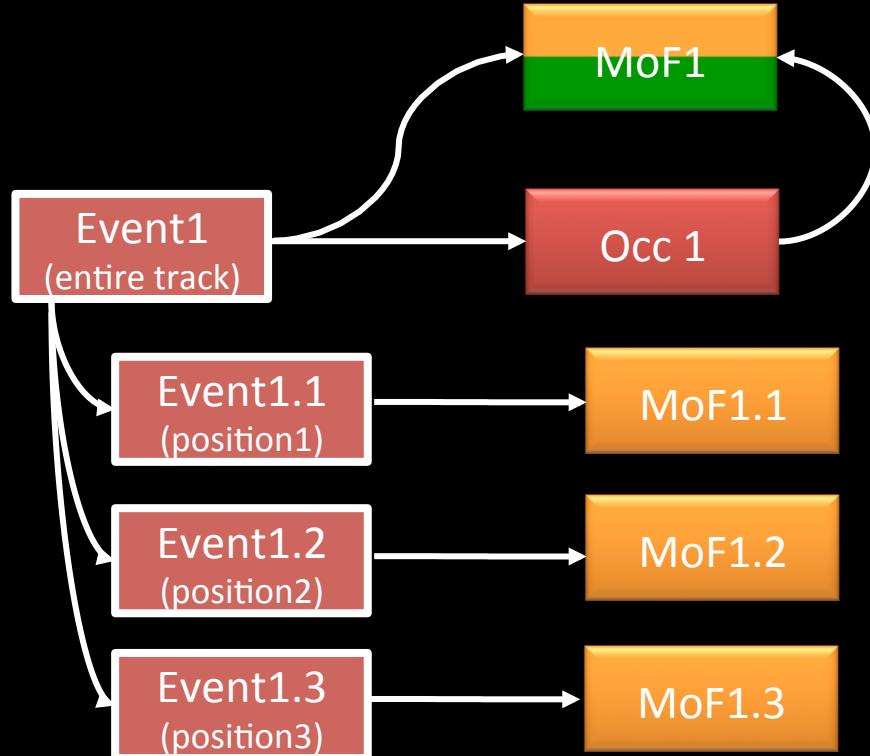


If a CTD sensor was placed on a sampling net, the parentEventID to which the sensor readings are linked may represent the deployment of this net, so biological data can be linked directly to this parentEventID.

Animal telemetry

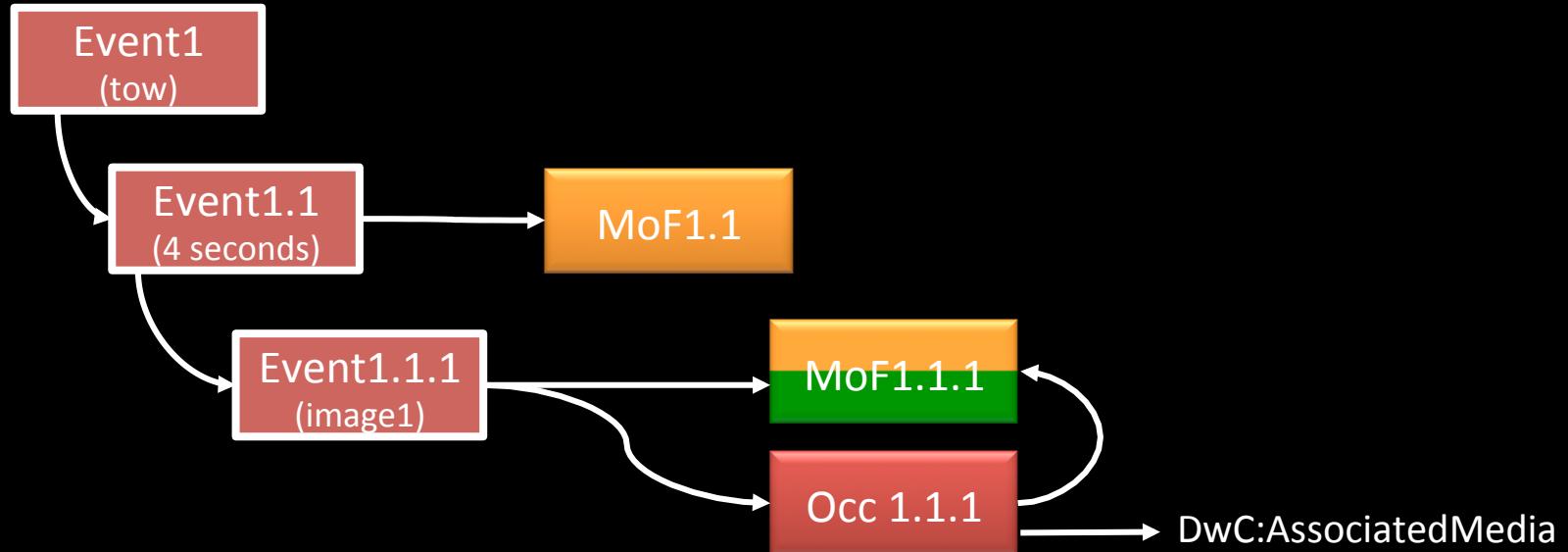


OTN tags



Each separate sensor reading can be considered a sub-event of a parent event which can be linked to an occurrence record for the animal. The parent event may represent the entire tagging sequence of the animal, or a grouping of sorts for readings recorded at the same period and area, which are then grouped to make up the entire sequence.

Video Plankton Recorder



VPR takes 30 images/sec, software groups by 4 seconds

Pilot dataset

PUBLISH

download

versioning

IMOS - AATAMS Facility - Satellite Relay Tagging Program - Near real-time CTD profile data

Rob Harcourt¹, Pieter Provoost², Pieter Provoost³

¹ Department of Biological Sciences, Macquarie University, 2109, North Ryde, Australia; ² IOC-UNESCO, , Belgium; ³

Corresponding author(s): Rob Harcourt (robert.harcourt@mq.edu.au), Pieter Provoost (p.provoost@unesco.org)

Received {date}; Revised {date}; Accepted {date}; Published {date}

Citation: Combination of authors, year of data paper publication (in parentheses), Title, Journal Name, Volume, Issue number (in parentheses), and doi of the data paper.

Abstract

The Australian Animal Tracking And Monitoring System (AATAMS) is a coordinated marine animal tagging project. Satellite Relay Data Loggers (SRDL) (most with CTDs, and some also with fluorometers) are used to explore how marine mammal behaviour relates to their oceanic environment. Loggers developed at the University of St Andrews Sea Mammal Research Unit transmit data in near real-time via the Argo satellite system. The Satellite Relay Data Loggers are deployed on marine mammals, including Elephant Seals, Weddell Seals, Australian Fur Seals, Australian Sea Lions, New Zealand Fur Seals. Data is being collected in the Southern Ocean, the Great Australian Bight, and off the South-East Coast of Australia. Data parameters measured by the instruments include time, conductivity (salinity), temperature, and depth. The data represented by this record are presented in near real-time.

The data is formatted as a draft according to OBIS env guidelines for tracking data. The raw tracking data are included as different subevents. Different Ocurrence records are generated per tracked animal to indicate presence per month in one degree grids. Improvements can be made; including adding instrument information.

Keywords: Occurrence

Data published through GBIF: <http://ipt.iobis.org/obis-env/resource?r=imosrealtimectd>

Datasets

Dataset description

Object name: Darwin Core Archive IMOS - AATAMS Facility - Satellite Relay Tagging Program - Near real-time CTD profile data

Character encoding: UTF-8

Format name: Darwin Core Archive format

ogram - Near real-time

ed marine animal tagging project. meters) are used to explore how ped at the University of St Andrews system. The Satellite Relay Data eals, Australian Fur Seals, Australian n, The Great Australian Bight, and ents include time, conductivity nted in near real-time. The data is tracking data are included as al to indicate presence per month in nation.

:A) or the resource metadata as

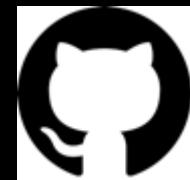
ite frequency: unknown

accessible.

handle	Last modified by

◀ previous next ▶

OBIS 2.0 developments



github.com/iobis/api-docs



github.com/iobis/robis

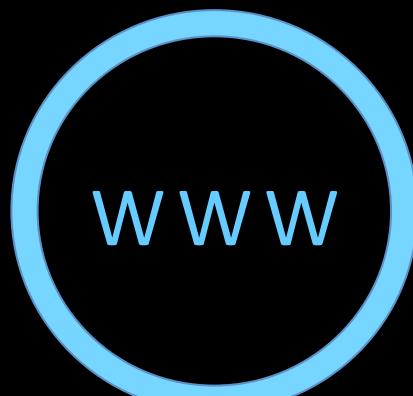


github.com/iobis/pyobis



github.com/iobis/training

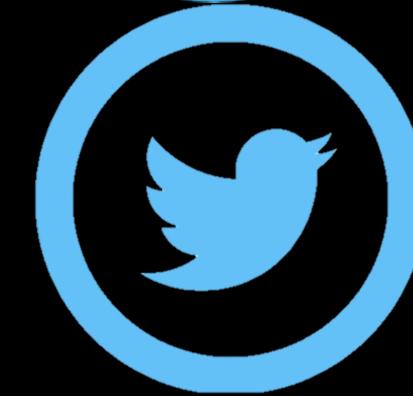
THANK YOU



www.iobis.org



info@iobis.org



[@WrdAppltns](https://twitter.com/WrdAppltns)