



# **“WAMS”**

**The World Association of Marine Stations**

**A Network of Marine Stations and Institutes  
for the 21st Century**

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on behalf of

Mike Thorndyke (slides) and

Carlo Heip (words, thoughts...)

# "WAMS"

## The World Association of Marine Stations

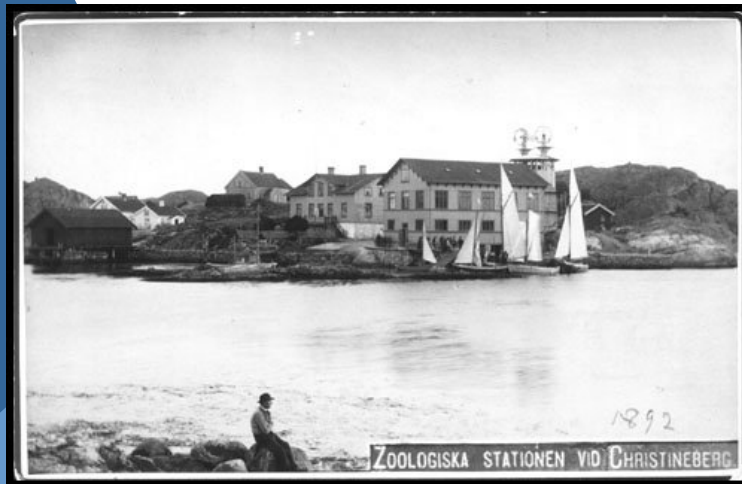
Yet another network, why???



Africa



# Since the 1800's.....



MOLANDER, ANIMAL COMMUNITIES ON SOFT BOTTOM AREAS. 83

Species: Stations (italicized figures denote large number of individuals):

<i>Aricidea proboscidea</i>	5.
<i>Aricidea obliqua</i>	6, 30 III.
<i>Aricidea aspera</i>	6, 16, 30 II, 32, 38 B, 55, 69.
<i>Aricidea longicornis</i>	41.
<i>Astarte elliptica</i>	43.
<i>montguyi</i>	43, 56.
<i>Asterias rubens</i>	2 B, 23 B, 42 B, 42 C, 56.
<i>Athanas nitescens</i>	12 B.
<i>Bathyporeia pelagica</i>	57.
<i>Bittium reticulatum</i>	2 B, 4, 12 B, 30, 39, 42 B.
<i>Brada villosa</i>	4, 5, 30 II, 25, 38, 40, 41, 42, 43, 51, 53, 60.
<i>Brissopsis lyrifera</i>	5, 6, 8, 9, 18, 24, 27, 28, 29, 31, 32, 37, 38, 40, 41, 42, 45, 48, 50, 54, 55, 58, 60, 61, 62.
<i>Calocaris macandreae</i>	7, 8, 10, 11, 41.
<i>Capitella capitata</i>	42 C.
<i>Ceratonereis acronotus</i>	42 C.
<i>Corbula fasciata</i>	5, 12 B, 12 C, 16 B, 42 B, 61.
<i>minimum</i>	1, 8, 4, 5, 13, 17, 19, 20, 25, 26, 29, 31, 33, 34, 40, 45, 48, 52, 54, 55, 58, 62.
<i>Costalis punctata</i>	10, 14, 18, 20 III, 21, 21 B, 22, 24, 27 B, 28 B.
<i>Ceratocephale loveni</i>	10, 18, 19, 21, 22, 23, 24, 26, 27 B.
<i>Chaetozoa setosa</i>	6, 7, 9, 10, 11, 14, 18, 19, 21, 21 B, 22, 23, 26, 27, 27 B, 31, 50, 53, 54, 55, 58, 62.
<i>Chironomus intermedius</i>	54.
<i>sundewalli</i>	30, 37, 56.
<i>Chironomus nanus</i>	25, 54.
<i>Chironomus digitatus</i>	21.
<i>Cirrus interstitialis</i>	2 B, 12 B.
<i>Cirratulus longistylis</i>	46, 52.
<i>Corbula gibba</i>	1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 12 B, 12 C, 13, 15 B, 16, 17, 27, 30, 32, 33, 38, 39, 40, 41, 42, 43, 45, 48, 52, 55, 58, 60, 61.
<i>Corolla parallelogramma</i>	16, 20 II, 30, 57.
<i>Crangon alpinus</i>	49.
<i>Cumma elongata</i>	48.
<i>Cyllaea pelagica</i>	2, 5, 12 C, 15, 44, 46, 50, 53, 54, 57, 61, 62.
<i>Cyllaea cylindrica</i>	4, 5, 40, 42, 45, 54, 56, 62.
<i>Cylloniscus aculeatus</i>	56.
<i>Cyprina islandica</i>	1, 5, 37, 42, 53, 55.
<i>Dendalium catenale</i>	20 II, 23, 33, 37, 41, 43, 44, 46, 48, 50, 52.

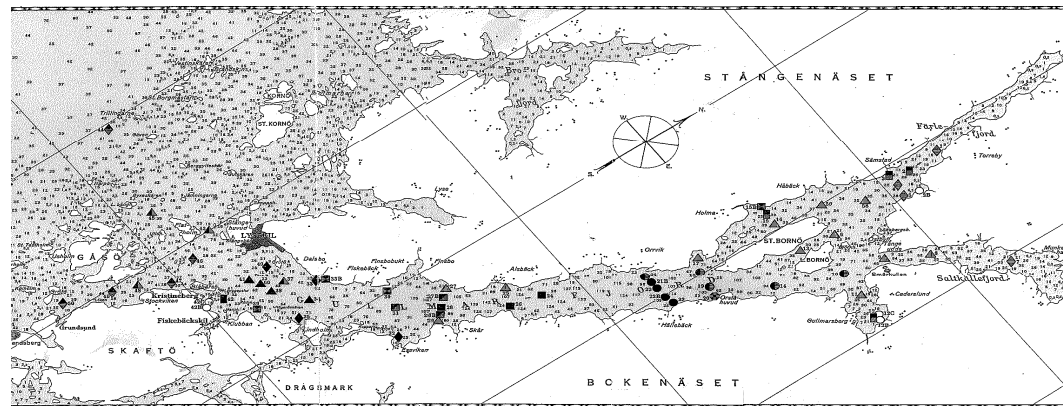
MOLANDER, ANIMAL COMMUNITIES ON SOFT BOTTOM AREAS. 79

Table 21. *B. ch. + Mal.*

Station	Depth	Date	S ‰	T°	O <sub>2</sub> ccm/L
G. 34	60	21/5 1923	34.54	6.40	—
" 38	48	25/5 "	34.54	6.40	—
" "	"	27/5 1925	33.40	12.22	—
" 41	52	29/5 1923	34.65	6.38	—
" "	"	27/5 1925	33.70	11.40	—
" 60	48	17/5 1923	32.22	12.30	5.17
" "	"	27/5 1925	33.40	12.22	—

Table 22. *B. ch. + T.*

Station	Depth	Date	S ‰	T°	O <sub>2</sub> ccm/L
G. 37	39	25/5 1923	32.58	6.90	—
" 43	66	" "	34.48	6.40	—
" "	"	21/5 "	34.14	7.50	4.54
" "	"	20/11 1924	33.90	10.30	—
" 45	38	29/5 1923	32.15	7.78	—
" 48	45	" "	33.66	6.70	—
" "	"	25/11 1924	33.36	11.90	—
" "	"	21/5 1926	30.40	14.46	—
" 53	51	27/5 1923	32.72	8.90	—
" 54	56	" "	34.30	7.10	—
" 55	41	" "	31.70	9.65	—
" 62	50	17/5 1926	33.50	11.40	—



<sup>1</sup> According to PALMQUIST's earlier figures.

<sup>2</sup> The organisms indeed also precipitate carbonates from the sea-water, but this process in water rich in CO<sub>2</sub> goes on more slowly than the dissolution (cf. KROGH, 1904, p. 397). Why the skeletons of living animals are not dissolved depends upon their being protected by covering membranes. Where, for instance, the periostracum has been injured in molluscs one can, in water rich in CO<sub>2</sub>, prove corrosion. (KROGH, p. 387).



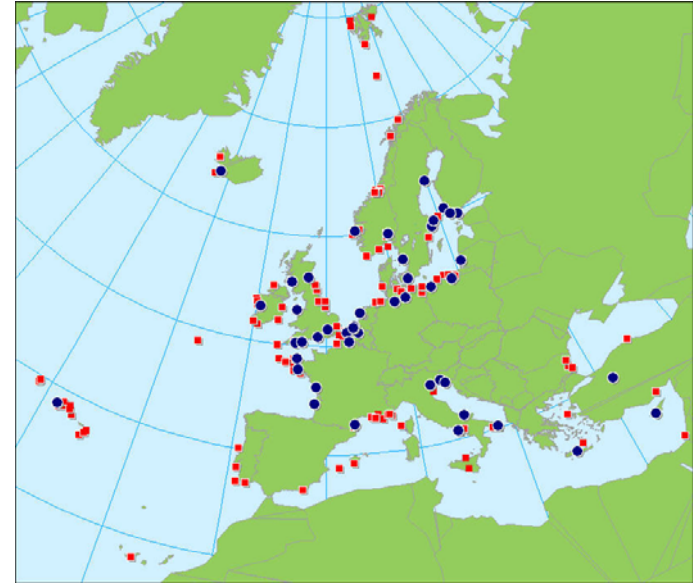
# Europe



SZN, Italy



SLC, Sweden



SAMS, UK



MBA, UK



SOI, UK



SARS, Norway



CCMAR, Portugal



AWI, Germany



SBR, France



OOVS, France



OOBS, France



HMRC, Greece

# Australia

## Tropical Marine Network

- Affiliation of Six Research Stations belonging to three universities and the Australian Museum
- Based largely on the Great Barrier Reef
- Delivers co-operative education programs and Joint infrastructure developments





# USA

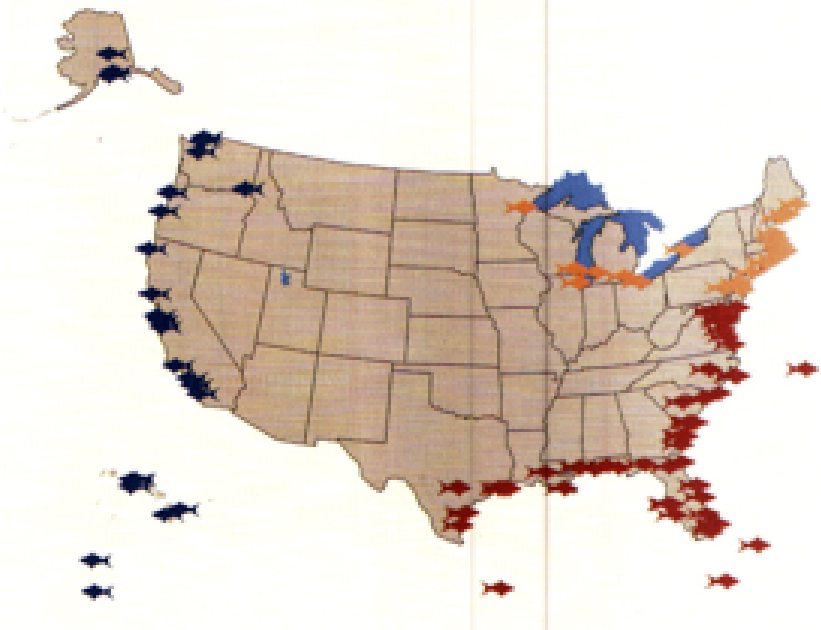


## Regional Associations of NAML:

**NEAMGLL**, Northeastern Association of Marine and Great Lakes Laboratories, includes the Mid-Atlantic, New England, and the Great Lakes states;

**SAML**, Southern Association of Marine Laboratories, includes coastal states from Maryland to Texas, and Bermuda, Puerto Rico, Panama and the Antarctic;

**WAML**, Western Association of Marine Laboratories, includes the states of the West Coast, Hawaii, Guam and Palau.



# Japan



## Organization of Marine Stations in Japan

Hokkaido Honshu  
Shikoku Kyushu  
Okinawa



### ◆ Marine Station - National University

#### Science

Graduate School of Science,  
Field Science Center, University Institute (total 21)

#### Directors Congress

#### Agriculture/Fisheries

Graduate School of Agriculture/Fisheries,  
Field Science Center, University Institute (total ~25)

#### Directors Congress

### ◆ Marine Station

- Prefectural or Private University (~10)

### ◆ JAMSTEC

(Japan Agency for Marine-Earth Science and Technology)

### ◆ Experimental Station

- Prefectural Fisheries Station (~100)

### ◆ Company; Corporation, etc



## JAMBIO: Japanese Association for Marine Biology



- ◎ Core-center for Japanese Marine Biology Network
- ◎ Cooperative management by Univ. Tsukuba and Univ. Tokyo
- ◎ Hub for Japanese scientists and organization for marine biology

**Shimoda Marine Research Center, University of Tsukuba: 10 faculty member**



**Main Facility** Proteomics-center, Molecular and Cellular Biology, Transgenic animals, Marine diving, Experimental ecology system, Protein DB, Marine Bio-resource (*Ciona intestinalis*)

**Misaki Marine Biological Station, University of Tokyo: 5 faculty member**

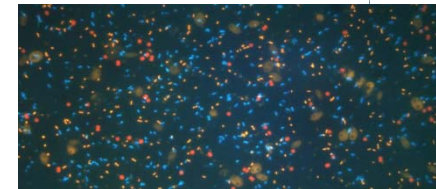


**Main Facility** Marine Genomics and Resource, Molecular Phylogeny, Marine diving, Sagami-Bay DB, Marine Bio-resource (*Oxycomanthus japonicus*)



***Marine laboratories are unique and essential for marine research (in partnership with vessels, satellites, remote systems etc.)***

- Providing access to marine ecosystems including valuable (historical) time-series data
- Providing access to marine models for Biomedicine, ecotoxicology, biodiversity, gene discovery
- Providing logistics for ex situ experiments, including modern equipment for biology
- Providing logistics for hosting and catering





## ***Marine Laboratories are:***

- ideal places to study organisms in their habitat and in the lab
- great places for the public to see research happening, and to increase ocean literacy. Marine labs are “windows on the ocean”
- able to host large numbers of students at all stages (K-16+) during the year, often in all seasons (classes, field trips, tours, internships)
- accessible to researchers on a regular basis, short to long term
- places for graduate students to begin independent research
- home to experts in taxonomy, ecology, local natural history
- places to teach small intensive undergraduate/graduate classes

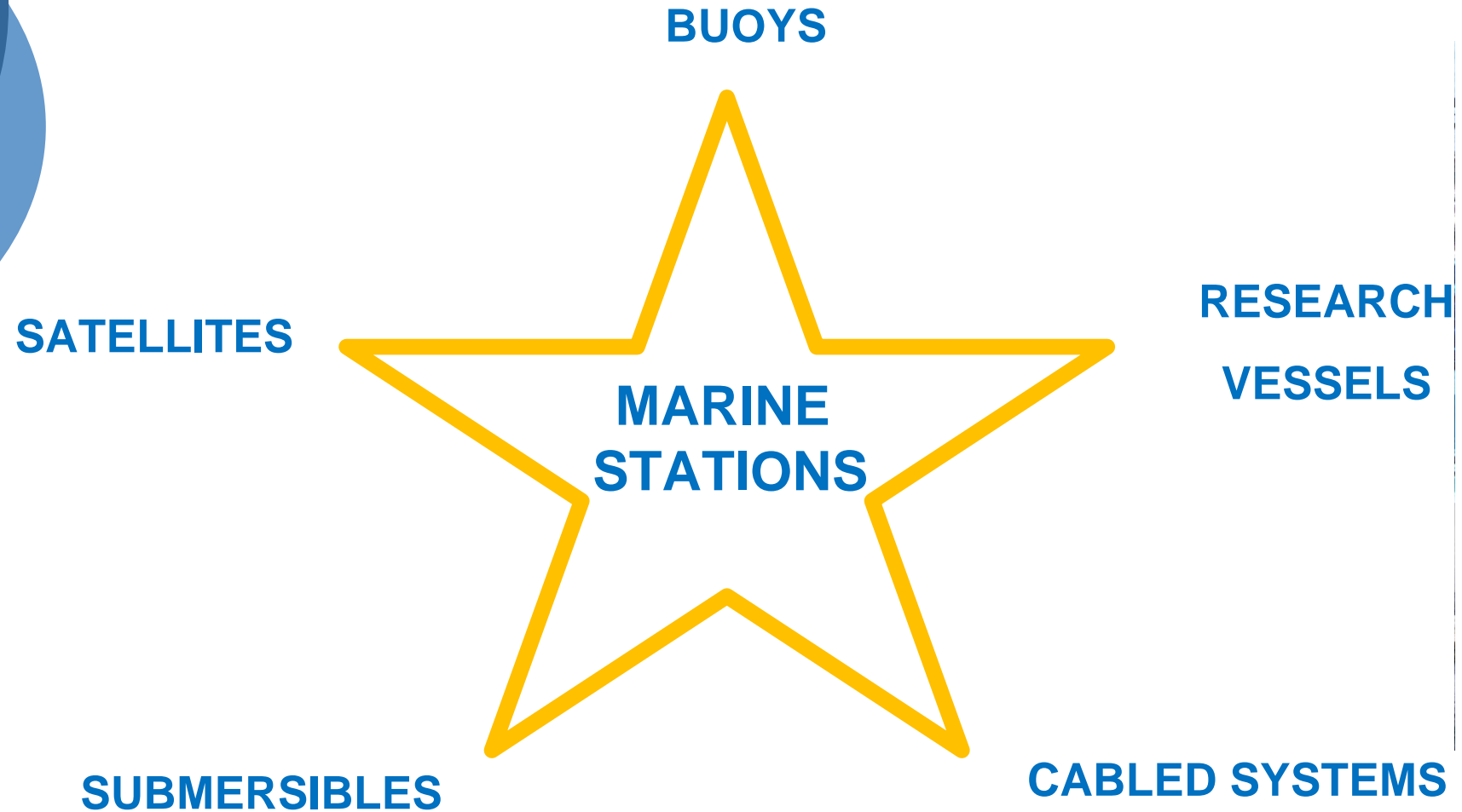


# *Marine Laboratories Are:*

- getting undergraduates excited, and interested in STEM careers
- excellent for research at molecular to ecosystem levels  
(genomics, biomedical, fisheries, development, ecology, neurobiology, physiology, biomaterials)
- ideal for long-term ecological research, real time data collection  
Dissemination, land/ocean margin research, climate/ocean change effects
- places to do research and teach ocean geology, chemistry, physics, engineering etc.
- inexpensive test-beds for new ocean instrumentation
- land base stations for OOS, buoys and cabled arrays, submersibles
- support bases for research vessels, boats, diving research support
- places to integrate social science and natural science research and education



# Infrastructure Needs for Ocean Research for the next Two Decades





## ***WAMS Founding Steering Group:***

- MARS, The European Marine Network of Marine Institutes and Stations
- NAML, The National Association of Marine Laboratories USA,
- AMLC and CARICOMP The Association of Marine Laboratories of the Caribbean,
- JAMBIO, The Japanese Association for Marine Biology , Japan,
- PIMS, The Pacific Institutes of Marine Science,
- POGO
- Tropical Marine Network (Australia)
- GOOS – Africa (representing African Marine Laboratories)
- UNESCO IOC
- UNESCO MAB

The scope of the activities within the WAMS stations will follow the theme:

**“From Genes to Ecosystems”**



## ***WAMS activities and mission***

- Exchange programmes, (e.g. Global ERASMUS programme)
- Training and education,
- Capacity building
- “In kind” sharing of data and access to facilities,
- Joint development and harmonization of techniques and methods,
- Integrated research strategies.
- WAMS fellowships, (WAMS trust fund in cooperation with the IOC).

***Particularly important activities for WAMS in its initial phase should be:***

- Inventory of the WAMS membership marine sites
- Portal site for each marine station





# Where do we stand?

- **WAMS established April 2010.**
- **Steering group formed.**
- **Governance structure formulated**
- **WAMS to become a NGO associated with UNESCO.**
- **Appropriate enabling Statutes under development.**
- **Business and Funding plan in place.**



# *The Time is right for WAMS*

... "Knowledge about marine biodiversity .....is extensive owing to ...centuries of its study in many places and by a variety of enterprises. ....the innumerable academic institutions with shore facilities for study of the marine environment .....have provided foci of research and knowledge...." Fautin et al. (2010) PLoS ONE 5(8)

"Another point of consensus .....is the inventory of threats to marine biodiversity. Indeed, most threats identified ....are true for the entire world."  
Birmingham Science News Examiner August 5<sup>th</sup> 2010