

Appendix 2

Matrix of Acoustic Capabilities of Existing Observing Systems

Table 1 (on three pages) presents cabled systems.

Table 2 (on three pages) presents fixed autonomous systems

Table 3 (on three pages) presents mobile autonomous systems

The following descriptions apply to the columns in the table:

Time synch/precision relates to time synchrony between elements and between the GPS time.

Data download specifies the time interval between data downloads.

Depth is the depth at which the sensors are located.

Calibration” indicates whether or not the acoustic system is calibrated.

Ancillary Data highlights other data available or planned from the same region of the acoustic sensors.

Data Availability conveys how accessible the data are to the public.

Sponsor refers to the original and/or current sponsor providing funding support for the system.

Society Value indicates the societal purpose for which the system was originally designed

Installation & Life Expectancy reports the years of system installation and projected life expectancy of the system.

Table 1 - Cabled Systems

System	Geographical Scale	Location	Coordinates	Human Activity	Natural Activity	Projected Change	Acoustics Operational
CTBTO	basin	Wake Island					yes
		Cape Leewin Ascension Diego Garcia Juan Fernandez Crozet Island		low low			yes yes yes yes yes
ALOHA	100 km	Hawaii					yes
NEPTUNE	100 km	Juan de Fuca British Columbia		shipping	whales, geophysical		yes
VENUS	50 km	Strait of Georgia British Columbia		shipping	whales, fish, geophysical		yes
ANTARES	50 km	Ligurian Sea	43.0846N, 5.2115E	shipping, Navy, seismic	whales, geophysical		yes
OBSEA	10 km	Northwest Mediterranean Sea	41.1819N, 1.7523E	shipping	whales, fish		yes
NEMO	25 km	East Sicily	37.3211N, 15.3625E	shipping, Navy, seismic	whales, geophysical		yes
JAMSTEC	100 km	Hatsushima, Japan	35.0031N, 139.2247E	shipping	whales		yes
	100 km	Kushiro 1, Japan	41.6870N, 144.3945E	shipping	whales		yes
	100 km	Kushiro 2, Japan	45.9408N, 145.0562E	shipping	whales		yes
	100 km	Kushiro 3, Japan	49.2528N, 144.8107E	shipping	whales		yes
	50 km	DONET					yes
OOI RSN	1000 km	Juan de Fuca Plate (Oregon/ Washington USA)		shipping, fishing, some Navy	whales, odontocetes, pinnipeds, hydrothermal vents	climate changes in animal distributions possible	yes, but limited - opportunity for expanded capabilities
SOSUS	~3000 km ²	Northeast Pacific	various	shipping	whales		yes/no
AUTEC	~1250 km ²	Bahamas		military	beaked whale, odontocetes		yes
SOCAL	~1350 km ²	Southern California		military/shipping	beaked whale, odontocetes, mysticetes		yes
PMRF	~2500 km ²	Hawaii		military/shipping	beaked whale, odontocetes, mysticetes		yes
PALAOA	100s km	Antarctica		low/none	whales, geophysical		yes
ARGOMARINE	regional	Ligurian Sea		shipping			yes
GOOS							no
IOOS							no
OOS							no
PLOCAN	coastal	Canary Islands	27.9833N 15.3667W	ocean renewable energy, shipping	beaked whale, odontocetes, mysticetes	ocean renewable energy	none planned (2012-2013)

Table 1 - Cabled Systems (continued)

System	Units (Auto Mode (Mobile))	Frequency Bandwidth	Directionality	Time synch/ Precision	Duty Cycle	Data Downloads	# Elements	Depth	Calibrated
CTBTO		<100 Hz	H		continuous	continuous	6 (2 triads)	sound channel	yes
		<100 Hz	H		continuous	continuous	3 (1 triad)	sound channel	yes
		<100 Hz	H		continuous	continuous	6 (2 triads)	sound channel	yes
		<100 Hz	H		continuous	continuous	6 (2 triads)	sound channel	yes
		<100 Hz	H		continuous	continuous	6 (2 triads)	sound channel	yes
ALOHA		broadband	omni		continuous	continuous	1	4750 m (bottom)	yes
NEPTUNE		10 Hz-50 kHz hydrophones 1 - 200 Hz seismometers 360 s - 50 Hz seismometers	omni	ms in use 10 μs capable	continuous	continuous	5 4 5	100-3000 m (bottom)	no
VENUS		10 Hz-50 kHz	H	ms	continuous	continuous	9	100-300 m (bottom)	no
ANTARES		100 Hz-125 kHz	omni	ms	continuous	continuous	36	2000 m (bottom)	yes
OBSEA		10 Hz-200 kHz	omni	ms	continuous	continuous	1	20 m	yes
NEMO		10 Hz-96 kHz	omni	ms	continuous	continuous	2 x 4	2500 m	yes
JAMSTEC		1-50 Hz	omni	ms	continuous	continuous	1	2500 m	yes
		1-50 Hz	omni	msec	continuous	continuous	1	2500 m	yes
		1-50 Hz	omni	msec	continuous	continuous	1	2500 m	yes
		1-50 Hz	omni	msec	continuous	continuous	1	2500 m	yes
OOIRSN	7 planned nodes - each with seismic sensors and broadband phones	5 Hz-1 kHz (seismic); 100 Hz-90 kHz (two overlapping broadband phones sampled 250 kHz)	omni	1s	continuous	real-time (data transmission rate 10 kB/s)	notionally 7 nodes each with multiple sensors on each	variable (4 on shelf in 500-1000 m, 1 mid-plate in >3000 m and 2 on JdF Ridge in ~3000 m)	yes - broadband phones
SOSUS		10 Hz - 500 Hz	omni	1s	continuous	semi-annual	1	deep bottom, exact N/A	yes, legacy
AUTEC		~50 Hz-45 kHz	N	500 μs	continuous	continuous	91	~1200-2000 m	mixed
SOCAL		~50 Hz-45 kHz	N	501 μs	continuous	continuous	170	~1100-2500 m	mixed
PMRF		~50 Hz-45 kHz	N	502 μs	continuous	continuous	200	~150-4000 m	mixed
PALAOA		10 Hz-198 kHz	H	ms	continuous	continuous	2	200 m	yes
ARGOMARINE		10 Hz-70 kHz	tetra array		continuous	continuous	4	20 m (bottom)	yes
GOOS									
IOOS									
OOS									
PLOCAN		under definition	under definition	under definition	continuous	continuous	under definition	100m	yes

Table 1 - Cabled Systems (continued)

System	Ancillary Data	Data Available	Integration Possibility	Sponsor	Society Value	Installation Life Expectancy
CTBTO	no	approval needed	no	CTBTO	nuclear monitoring	early 2000s + decades
	no	approval needed	no	CTBTO	nuclear monitoring	early 2000s + decades
	no	approval needed	no	CTBTO	nuclear monitoring	early 2000s + decades
	no	approval needed	no	CTBTO	nuclear monitoring	early 2000s + decades
	no	approval needed	no	CTBTO	nuclear monitoring	early 2000s + decades
ALOHA	HOT site	open	yes	NSF	exploration	2011 + decades
NEPTUNE	CTD, ADCP, echo, cameras, chemical, BPR, fluorometer	open	yes	CFI/Canada	ecosystems, biodiversity	2009 + decades
VENUS	CTD, ADCP, echo, sediment, irradiance, fluorometer	open	yes	CFI/Canada	ecosystems, biodiversity	2006 + decades
ANTARES	telescope	upon request	yes	ANTARES collaboration	Neutrino Observatory	2000 + decades
OBSEA	CTD, video, meteorology	upon request	yes	UPC	meteorology	2009 + decades
NEMO	HOT site	upon request	no	LFN/INGV	geo-hazards	2005 + decades
JAMSTEC	seismometers	open	no	JAMSTEC	geo-hazards	2005 + decades
	seismometers	open	no	JAMSTEC	geo-hazards	2005 + decades
	seismometers	open	no	JAMSTEC	geo-hazards	2005 + decades
	seismometers	open	no	JAMSTEC	geo-hazards	2005 + decades
						2012
OOI RSN	various oceanographic and geophysical	possible once operational (2013)	yes	NSF - OOI	ecosystem monitoring, research, education	2011-12 laying cables; 2013 operational with possible additional acoustic elements later
SOSUS	no	TBD; request required	no	U.S. Navy / APL-UW	military	1950s - ???
AUTEC	SVP	screened upon request	yes	U.S. Navy		>2020
SOCAL	SVP	screened upon request	yes	U.S. Navy		>2021
PMRF	SVP	screened upon request	yes	U.S. Navy		>2022
PALAOA	CTD, video, meteorology	upon request	no	AWI	ecosystems, biodiversity	2006 + decade
ARGOMARINE	compass	NATO countries	yes	NURC	communication, security	2011 + decade
GOOS						
IOOS						
OOS						
PLOCAN						

Table 2 - Fixed Autonomous Systems

System	Geographical Scale	Location	Coordinates	Human Activity	Natural Activity	Projected Change	Acoustics Operational
HAFOS	basin	Weddell Sea		low/none	whale migration	no	yes
HARP	regional	Pacific Ocean, Atlantic Ocean, Gulf of Mexico, Gulf of Alaska, Hawaiian Islands, Chukchi Sea, etc.	30 deployments, see http://cet.uscd.edu/projects_Main.htm	shipping, sonar, oil & gas exploration	marine mammals fish, ice, wind, rain, earthquakes	biological and human sound sources	yes
SBNMS	regional	SBNMS Arctic		shipping	whales		yes
EARS	regional	Ligurian Sea		shipping	whales		yes
NOAA EcoFOCI	regional	Bering Sea		low	seasonal ice	climate, shipping, fishing	yes
	regional	Bering		low	seasonal ice	climate, shipping, fishing	yes
PAL	regional	Station PAPA, Pacific Ocean		low			yes
	regional	Ionian Sea		shipping	whales		yes
POI	100 km	Sakhalin Island (Russia)		oil exploration/production	whales	increased industrial activity	yes
Hydra	regional	Ligurian Sea		shipping	whales		yes
IOPAS	regional	Baltic Sea		shipping, oil platform	fish migrations		yes
		Spitsbergen Fjord		shipping	diving birds		yes
BIMET	coastal	N. Atlantic (Spain)		shipping, geophysics	whales		yes
SEAWAYS	regional	St. Lawrence Seaway	Lower St. Lawrence Estuary	shipping	whales	shipping	yes
ARCTIC-NET+	regional	Eastern Beaufort Sea Canadian Archipelago Hudson Strait, Hudson Bay		none to occasional shipping and airgun seismic	whales, Arctic marine life	climate, shipping, fishing	yes
PMEL	large scale	Pacific Ocean, Atlantic Ocean, Davis Strait			whales	climate, shipping	
DASAR	regional	Arctic Ocean	Beaufort Sea	oil & gas	whales	climate, shipping, fishing	
AURALs	regional	Arctic Ocean	Beaufort Sea, Chukchi Sea	oil & gas	whales	climate, shipping, fishing	
ESTOC-PLOCAN	regional	Central-Eastern Atlantic (ESTOC site)	29.1667N, 15.3000W	shipping, volcanic tremor	whales (migratory and permanent)		no, but planned
IMOS Perth Canyon	regional	Perth Canyon, Western Australia		shipping, seismic surveys	whales	shipping, increase from whales	yes
IMOS Portland	regional	shelf break south Portland		shipping, seismic surveys	whales, fish, ocean noise		yes
IMOS NSW Australia	regional	shelf break west Cape Howe		shipping	fish, whales	unknown	yes
IMOS Northwest WA	regional	northwest shelf, Western Australia		shipping, seismic surveys	fish, whales	unknown	yes
JASCO-AMARs	regional	Chukchi Sea	8-160 km offshore	oil & gas exploration	mysticetes, odontocetes, pinnipeds		yes
ABB (SIO RAS)	regional	Black and Baltic seas		climate, shipping, fishing			yes
AUSOMS	regional	Andaman Sea, Okinawa Island		variable	variable		yes
PAMBUOY	100 to 100s kms	Sakhalin Island variable	n/a	shipping, oil platform, shipping, sonar, pile driving, seismic	whales and other marine mammals	biological and human sound sources	yes

Table 2 - Fixed Autonomous Systems (continued)

System	Units (Auto Mode (Mobile)	Frequency Bandwidth	Directionality	Time synch/ Precision	Duty Cycle	Data Downloads	# Elements	Depth	Calibrated
HAFOS	sonovault, AURAL, cPOD	10-5000 Hz	omni		continuous	3 years	10	850 m	no
HARP	bottom mounted, mooring, WaveGlider	10 Hz-160 kHz	omni and 4-sensor directional array	5-10 ms	continuous and programmable	4-18 months	1-4 sensors per deployment	100-1000 m	yes
SBNMS	MARU								yes
EARS		0-40 kHz	omni		up to 50%	40 days	5	850 m	yes
NOAA EcoFOCI	PAL	20 Hz-50 kHz	omni	10s s	adaptive (2-5 min)	6-12 months	2	70 m	yes
	AURAL		omni		16%	6-12 months	3-4	70 m	
PAL		20 Hz-50 kHz	omni	10s s	adaptive (2-5 min)	2 years	1	500 m	yes
		20 Hz-50 kHz	omni	10s s	adaptive (2-5 min)	6 months	1	500 m	yes
POI	AUR	2 Hz - 15 kHz	omni		continuous	weeks to months	15-20	10 & 20 m (up to 100 m)	yes
Hydra		10 Hz-70 kHz	tetra array		continuous	53 days	4	1000 m	yes
IOPAS		100 Hz-50 kHz	V, H	ms	adaptive	6 months	up to 8	150 m	yes
		100 Hz-50 kHz	V, H	ms	adaptive	6 months	up to 8	150 m	yes
BIMET		10 Hz-120 kHz	omni	ms	continuous	continuous	1	100 m	yes
SEAWAYS	AURAL + cabled/shore	1 Hz-100000 kHz	omni +H	µs to s	programmable to continuous	3 to 12 months per year	up to 10	75-300 m	yes
ARCTIC-NET+	AURALS	1Hz-16 kHz	omni	s	programmable to continuous	3 to 12 months per year	up to 8	50-250 m	yes
PMEL	PMEL autonomous hydrophone		omni H	s					
DASAR	DASAR	1-500 Hz	directional				~40	50-100 m	
AURALS	AURAL	1 Hz-16 kHz	omni		programmable		~30	50-100 m	
ESTOC-PLOCAN	under definition	under definition	under definition	under definition	under definition	6 months	under definition	sound channel	
IMOS Perth Canyon	Curtin Univ. Loggers CMST-DSTO	1 Hz - 6 kHz	omni	ms	200 to 500 s / 900 s	12 months	4	430-500 m	yes
IMOS Portland	Curtin Univ. Loggers CMST-DSTO	1 Hz - 6 kHz	omni	ms	200 to 500 s / 900 s	12 months	4	130 - 160 m	yes
IMOS NSW Australia	Curtin Univ. Loggers CMST-DSTO	1 Hz - 6 kHz	omni	ms	200-500 s / 900 s	12 months	4	150-190 m	yes
IMOS Northwest WA	Curtin Univ. Loggers CMST-DSTO	1 Hz - 6 kHz	omni	ms	200-500 s / 900 s	12 months	4 + 2	250-300m	yes
JASCO-AMARs	JASCO-AMARs	5 Hz - 8 kHz	omni & synchronised arrays	ms	continuous & 17%	every July & Oct	35 AMARs & 9 AURALS	20-50 m	yes
ABB (SIO RAS)	AURAL	1 Hz-32 kHz	omni+V	ms	programmable and continuous	3-4 months	2	6000 m	yes
AUSOMS	bottom mounted and mooring	20 Hz-22 kHz, max: 20 Hz-96 kHz	stereo	22 µs	programmable and continuous	15 days	2	60 m	
PAMBUOY		10-150 Hz	omni		continuous	continuous	1	5-50 m	yes

Table 2 - Fixed Autonomous Systems (continued)

System	Ancillary Data	Data Available	Integration Possibility	Sponsor	Society Value	Installation Life Expectancy
HAFOS	CTD, ADCP, echosounder	yes	yes	AWI	whale migration monitoring	2011 + 10 yrs
HARP	CTD	upon request and approval		Navy, NOAA, BP	marine mammals, ecosystem, shipping	2005-2020
SBNMS						
EARS		NATO countries	yes	NURC	MMRM	2011
NOAA EcoFOCI	CTD, ADCP, echo, chl, oxygen, nutrients	yes	yes	ONR/PMEL	ecosystems, biodiversity	2008 + 5 years
	CTD, ADCP, echo, chl, oxygen, nutrients		yes	PMEL/NMML	ecosystems, biodiversity	2008 + 5 years
PAL	meteorology, waves	yes	yes	NOAA	climate	2006 + 5 years
		yes	no	Poseidon	rainfall	2008 + 5 years
POI	SVP measurements, current measurements	very limited	no	SEIC, ExxonMobile	industry monitoring	2005 - deployed annually
Hydra	compass, tilt	NATO countries	yes	NURC	MMRM	2011
IOPAS	pressure, temperature, echo	upon request	yes	Polish national programs	exploration, weather, physical research	2005 + decade
	pressure, temperature, echo	upon request	yes	Norwegian Funds	exploration, weather, physical research	2006-2009, lost
BIMET	no	upon request	no	AZTI	MMRM	2011 + decades
SEAWAYS	hydrography, ADCPs, hydroacoustics, circulation modeling	research program	yes	DFO UQAR	shipping MPA, marine park, whale watching	2003 - + eventual permanent SEAWAYS observatory
ARCTIC-NET+	oceanographic sensors, ADCPs, hydroacoustics	research programs	yes	Arctic-Net DFO UQAR	Arctic pre-industrial background, Inuit communities, climate change, ice melting, whale monitoring	2003-2013+
PMEL		PMEL		PMEL/NMML	earthquakes, whales, ocean basin	
DASAR		oil & gas		oil & gas		2008-2009 +
AURALs		oil & gas		oil & gas		2008-2009 +
ESTOC-PLOCAN	ESTOC station suite of instruments: including current, wind, salinity, CTD profiles, chl, oxygen, nutrients	data policy under definition	in progress	Spain Ministry of Science and Innovation and Canary Islands govt	exploration, weather, physical research	1995 until 2025
IMOS Perth Canyon	temperature	IMOS		Australian govt	various	2008-2013
IMOS Portland	temperature	IMOS		Australian govt	various	2009-2013
IMOS NSW Australia	temperature	IMOS		Australian govt	various	2010-2013
IMOS Northwest WA	temperature & nearby oceanography	IMOS		Western Australian govt	various	2012-2014
JASCO-AMARs	temperature	request approval	yes	Shell, Conoco Phillips, Statoil	marine mammal migration, distribution, density; baseline ambient noise	2006-2016
ABB (SIO RAS)		upon request	yes	Russian Academy of Science	exploration, weather, physical research	2003 + decade
AUSOMS						

Table 3 - Mobile Autonomous Systems

System	Geographical Scale	Location	Coordinates	Human Activity	Natural Activity	Projected Change	Acoustics Operational
WaveGlider HARP	regional	Pacific Ocean, Atlantic Ocean, Gulf of Mexico, Gulf of Alaska, Hawaiian Islands, Chuckchi Sea, etc.	30 existing deployments	shipping, sonar, oil & gas exploration	marine mammals, fish, ice, wind, rain, earthquakes	biological and human sources	yes
Argo	basin	global		variable	variable		no
AQARIUS	basin	global		variable	variable		yes
SPURS	basin	North Atlantic Ocean		variable	variable		yes
CPAM	local	Ligurian Sea		shipping	whales		yes
NURC-Glidors	regional	Ligurian Sea		shipping	whales		yes
PLOCAN-Glidors	basin	global		shipping, volcanic tremor	whales		no, but planned

System	Units (Auto Mode) (Mobile)	Frequency Bandwidth	Directionality	Time synch/ Precision	Duty Cycle	Data Downloads	# Elements	Depth	Calibrated
HARP	WaveGlider	10 Hz-160 kHz	omni and 4-sensor directional array	5-10 ms	continuous and programmable	4-18 months	1-4 sensors per deployment	100-1000 m	yes
Argo	drifting								
AQARIUS	drifting, Argo-like	50 kHz	omni	ms	adaptive	7-10 days	45	1000 m	yes
SPURS	drifting, Argo-like	50 kHz	omni	ms	adaptive	7-10 days	25	1000 m	yes
CPAM	towed	20 Hz-80 kHz			continuous	continuous	6	150 m	yes
NURC-Glidors	gliding								
PLOCAN-Glidors	gliding	under definition	under definition	under definition	under definition	under definition		1000 m	

System	Ancillary Data	Data Available	Integration Possibility	Sponsor	Society Value	Installation Life Expectancy
HARP	CTD	upon request and approval		Navy, NOAA, BP	marine mammals, ecosystems, shipping	2005-2020
Argo	CTD		yes			
AQARIUS	CTD	open	no	NASA	water budget/ salinity/rainfall	2011 + 2
SPURS	CTD	open	no	NASA	water budget	2012
CPAM	pitch, roll, compass	NATO countries	yes	NURC	MMRM	2011
NURC-Glidors						
PLOCAN-Glidors	CTD	data policy under definition	depending on system	Spanish Ministry of Science and Innovation	exploration, weather, physical research	2011-2025

Appendix 2

Acronym Definitions

ADCP	Acoustic Doppler Current Profiler	CTD	conductivity-temperature-depth
ABB-SIO RAS	Autonomous Bottom Buoys Shirshov Institute of Oceanology, Russian Academy of Sciences	DASAR	Directional Autonomous Seafloor Acoustic Recorders
APL-UW	Applied Physics Laboratory, University of Washington	DFO	Department of Fisheries and Oceans (Canada)
ARCTIC-NET+	Network of Centres of Excellence of Canada to study the coastal Canadian Arctic	DONET	Dense Oceanfloor Network for Earthquakes and Tsunamis
ARGOMARINE	Automated Oil Spill Recognition and Geopositioning Integrated in a Marine Monitoring Network (European Union Framework 7 Programme project)	EARS	Ecological Acoustic Recorder
ALOHA	Cabled observatory 100 km north of Oahu, owned and operated by the University of Hawaii	ESTOC	European Station for Time Series in the Ocean
AMAR	Advanced Multi-channel Acoustic Recorder (JASCO)	GOOS	Global Ocean Observing System
ANTARES	Astronomy with a Neutrino Telescope and Abyss environmental RESearch (an installation of the EuroSITES European Ocean Observatory Network)	HAFOS	Hybrid Arctic/Antarctic Float Observing System
AUR	Autonomous Underwater Recorder	HARP	High-frequency Acoustic Recording Packages
AURALs	Autonomous Underwater Recorder for Acoustic Listening	HOT	Hawaiian Ocean Time-series
AUSOMS	automatic underwater sound monitoring systems	Hydra	Acoustic telemetry service on the U.S. Pacific Coast
AUTEC	Atlantic Undersea Test and Evaluation Center (U.S. Navy)	IMOS	Integrated Marine Observing System (Australia)
AWI	Alfred-Wegener-Institut (Germany)	IOOS	Integrated Ocean Observing System (U.S.)
AZTI	an expert technology center in marine and food research	IOPAS	Institute of Oceanology, Polish Academy of Sciences
BP	British Petroleum	JAMSTEC	Japan Agency for Marine-Earth Science and Technology
BPR	bottom pressure recorder	JdF Ridge	Juan de Fuca Ridge
CFI	Canada Foundation for Innovation	LFN/INGV	Low-Frequency Noise System of the Istituto Nazionale di Geofisica e Vulcanologia
Chl	chlorophyll	MARU	marine acoustic recording unit
CMST-DSTO	Centre for Marine Science and Technology-Defense Science and Technology Organisation (Curtin University, Australia)	MMRM	marine mammal risk mitigation
CPAM	compact passive acoustic monitor	MPA	marine protected area
cPOD	click detection and passive acoustic monitoring	NASA	National Aeronautics and Space Administration (U.S.)
CTBTO	Comprehensive Test Ban Treaty Organization	NATO	North Atlantic Treaty Organization
		NEMO	NEutrino Mediterranean Observatory
		NEPTUNE	NorthEast Pacific Time-Series Undersea Networked Experiments

NMML	National Marine Mammal Laboratory (U.S.)	PLOCAN	Plataforma Oceánica de Canarias
NOAA	National Oceanic and Atmospheric Administration (U.S.)	PMEL	Pacific Marine Environmental Laboratory (NOAA)
NOAA EcoFOCI	NOAA Ecosystems & Fisheries-Oceanography Coordinated Investigations	PMRF	Pacific Missile Range Facility
NSF	National Science Foundation (U.S.)	POI	Pacific Oceanological Institute
NSW	New South Wales (Australia)	SBNMS	Stellwagen Bank National Marine Sanctuary (U.S.)
NURC	NATO Undersea Research Centre	SEAWAYS	SEAWAYS Ocean Innovation (France)
OBSEA	Expandable Seafloor Observatory (Spain)	SEIC	Sakhalin Energy Investment Company
ONR	Office of Naval Research (U.S.)	SOCAL	Southern California Range Complex
OOI	Ocean Observatories Initiative (U.S.)	SOSUS	Sound Surveillance System (U.S.)
OOI RSN	OOI Regional Scale Nodes	SPURS	Salinity Processes in the Upper Ocean Regional Study
OOS	Ocean Observing System	SVP	sound velocity profile
PAL	Passive Acoustic Listener	UPC	Universitat Politècnica de Catalunya
PALAOA	Perennial Acoustic Observatory in the Antarctic Ocean (AWI)	UQAR	Université du Québec à Rimouski (Canada)
PAMBuoy	Passive Acoustic Monitoring Buoy	VENUS	Victoria Experimental Network Under the Sea (Canada)
Station PAPA	Ocean Station P at 50°N, 145°W	WA	Western Australia