Table 2: Current status and risks of some long-term time-series instruments and performance goals

Mooring	*Device*	*Abbrev.*	*Endurance**	*Measurements/Activity*	*Status in 2010*	*Needs*	*Risks in 2012*	*R&D Funding*	*Status in 2017*
A	Incubation Productivity System	IPS	12	Time-series primary production via robotic multi-isotopic phytoplankton incubation	Used in field operations: Publications	More field tests	small risk	Mass spec. techniques	Routine 9-tracer incubation
A	Rapid Repetition Rate Fluorometer/Particle Transmissometer	FRR/PTM	12	Time-series primary production via advanced optical scattering/particle transmissometry	Used in field operations; Publications	Final development	small risk	Biofouling prevention for optimization	Early stage OOI data collection
B	Time-Series Sediment Trap	TS-trap	12	Export Flux	Stable technology: multiple publications	Accessory devices	no risk	No Additional	Video/still imaging in the cone
C	Environmental Sampler	ESP	12	In situ autonomous time-series micro-fluvial DNA/RNA assay collection	Successful field tests; publications	More field tests	some risk	Miniaturization; add PCR	PCR capacity; miniaturization
D	Remote Access Sampler/Water Transfer Sampler	RAS/WTS	12	Time-series discrete water/particle collecting device	Stable technology: multiple publications	Accessory devices	no risk	Perfection of bio-molecule preservation	Multiple adsorption columns
D	Autonomous microbial sampler	AMS	12	Uncontaminated samples of Eukarya/Bacteria/Archea	Used in field operations	sample preservation	modest risk	long-term preservation	Time-series sampling
A	Moored Profiler	MMP	12	Continuous profiling of water-column by CTD, vectors, optics.	Semi-stable technology; publications	Higher power	small risk	User specifications	Video plankton recorder
B	Euphotic Zone Micro-Profiler	EMP	12	Profiling of upper 200 m by CTD, optics, O2.	Under development	Under R&D	some risk	More sensors	Risk-free profiling up to 4 times/day
C	MicroGrid Buoy/Communication Tower	MG-Buoy	>24	Advanced, power-generating, communications bouy	Apply existing technology	More R&D w. EOM-MRL	small risk	More comms. capacity	More power
C	Communications	COM	12	Irridium statelite phone system to transmit ESP assay and other sensor data once a day	Apply current OOI exisiting technology	Fast development	small risk	More experts' participation in GBF	Radically improved
A, C	Automated Depth Adjuster	ADA	>24	Allows IPS and ESP to stay at 15-20 m.	Prototype testing; Patent application	High reliability	small risk	R&D for bi-directional depth	Bi-directional depth adjustment capacity

* months