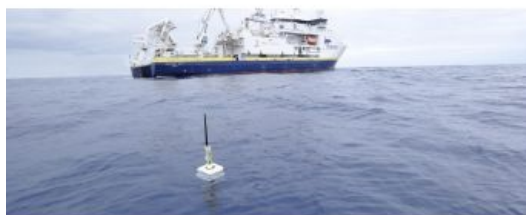


COVID-19 Threatens to Create Failings in Understanding Climate Change



Networks		Deployment 2020			Deployment required to maintain array	Predicted status of array Dec 2020	
		Mar	Apr	May		50% normal deployments	No deployments
	Global surface drifters	58	41	25	80	-20%	-40%
	Argo floats	51	21	10	81	-10%	-15%
	Underwater gliders	10	1	5	20	-50%	-100%

Governments and oceanographic institutes all around the world have recalled nearly all of their oceanographic research vessels to home port due to COVID-19, and the impact on the ability to observe the ocean has been dramatic. According to the International Oceanographic Commission (IOC), this disruption in observation creates an ocean-data blind spot that could disrupt

weather forecasts and hamper our understanding of climate change. Even where autonomous equipment such as moored buoys (fixed instruments that scan the whole water column from seafloor to the sea surface to provide a wide array of ocean data) or Argo floats (free-drifting floats that provide information about ocean temperature, salinity, currents and biological properties) are used, maintaining the equipment in the absence of regular scientific missions is a challenge.

"There is a real risk that equipment will fail, resulting in the loss of both data and potentially the equipment itself, like the moorings," explains Dr Johannes Karstensen, co-lead of the OceanSITES time-series network. The loss of even a single one of the over 300 operational moorings could mean a gap of two to five years of data. Dr Karstensen said that "30 to 50% of moorings will be impacted by the pandemic, and some have already ceased to send data. Considering that this equipment not only monitors vital information for the ocean economy but also monitors long-term climate change, it is clear that maintenance missions need to be prioritized as an essential activity in the context of COVID-19 regulations."

Dr Emma Heslop, programme specialist at the Global Ocean Observing System (GOOS) Secretaria, warns: "We need to act collectively if we want to maintain critical function and data flow for weather, climate and ocean health services on a global scale." Dr Heslop is part of the team within the GOOS that conducted a survey to assess the impacts of and forecast the pandemic's risk to global ocean observations. She said that "the survey went out to the 11 global ocean observing networks of GOOS – each focused on different ways of observing the ocean". This global ocean data is essential to develop reliable weather forecasts as well as to understand and predict climate change. A wide range of industries rely on a daily basis on these data, from farming to global shipping.

"The results of the survey and the issues uncovered are a key part of the learning and sharing processes between countries that we support," said Vladimir Ryabinin, executive secretary of UNESCO's Intergovernmental Oceanographic Commission, the UN's main ocean science body that also coordinates the GOOS. "This will allow us to pivot towards having leaders in ocean science engage in common priorities and cooperative action to sustain key observations and flows of data."

Even as countries start to ease quarantine and confinement restrictions, ocean science may not necessarily be at the top of decision-makers' lists of priorities. Among countries planning to restart research vessel operations in July (Australia, Finland, Belgium, the Netherlands, New Zealand, Germany and the US), important restrictions will still apply – such as the requirement that vessels leave and return through the same home port – which largely diminishes the area covered by research vessels. There is a real concern that research vessel operations in some regions may not resume at all in the coming months, with impacts extended to the end of 2020 and possibly into 2021, when also considering related impacts on the supply chains for some of the observing instruments.



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