Contribution on behalf of the Global Ocean Oxygen Network for the Preparatory Meeting of the Ocean Conference (15-16 February 2017)

Thank you, co-facilitator, for allowing me to address this meeting.

I am honored to have the opportunity to share some remarks on behalf of the international group of scientists who belong to GO_2NE -the Global Ocean Oxygen Network. GO_2NE is an IOC-UNESCO working group whose goals include providing scientific information on the causes and consequences of the loss of oxygen in the world's oceans to Member States and stakeholders. I speak only for the GO_2NE member scientists in this intervention; this is not an official IOC contribution.

We would like to support the calls of several Member States and stakeholders to broaden the consideration of ocean acidification to include climate change. We would especially like to highlight the loss of oxygen from the world's oceans as an important consequence of climate change to consider in meeting the SDG14 goals of conserving marine resources.

Acidification, warming and the loss of oxygen – called deoxygenation on a global scale and hypoxia or dead zones in coastal waters - are connected. They have common causes, linked effects, and common solutions.

Globally, greenhouse gas emissions cause both acidification and the loss of oxygen, and all 3 stressors – warming, acidification, and deoxygenation co-occur. The same carbon dioxide that dissolves in our oceans and causes acidification also warms our globe and ultimately our oceans. This warming causes our oceans to lose oxygen.

In coastal waters that receive high levels of nutrients, nutrient pollution is often the primary current cause of acidification. Just as we use the oxygen in air and exhale carbon dioxide when we breathe – respiration stimulated by nutrients uses up oxygen in water, causing hypoxia, and releases carbon dioxide, causing acidification. Increasing global temperatures are expected to worsen nutrient-related oxygen depletion.

Warming also increases oxygen requirements of animals at the same time that it decreases oxygen availability. Acidification increases energy required to extract calcium from seawater and to build shells and coral skeletons. Ocean organisms respond to all aspects of the environment to which they are exposed.

Our current scientific understanding suggests that considering acidification, warming and loss of oxygen together will help meet the SDG14 goals. The members of the Global Ocean Oxygen Network stand ready to provide any assistance that would be useful in your work.

Thank you so much for your time.

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