KEYNOTE BY HON. NANA AGYEMANG PREMPEH

DIRECTOR GENERAL OF THE NATIONAL DISASTER MANAGEMENT ORGANIZATION - GHANA

Water quality degradation and water-related extremes are being exacerbated by climate change, putting vulnerable communities in the developing world at risk.

Water, in its various occurrences, management and uses, is an essential component of human development and is a crosscutting factor in current development priorities for almost all nations in the world for achieving sustainable development.

The availability of this vital resource, however, is now heavily dependent on climate change. Experts predict that by the year 2,100, there will be more water available in the moist tropics and high latitudes, with less water available and increasing drought in the mid-latitudes and semi-arid low latitudes.

It has been confirmed that changes in global climate caused by the accumulation of greenhouse gases in the atmosphere will affect freshwater availability patterns and change the frequency of floods and droughts.

The issue is more than just future water availability. The availability of high-quality water is also a major concern. Climate model simulations and other analyses indicate that total flows, probabilities of extreme high or low flow conditions, seasonal runoff regimes, groundwater-surface water interactions, and water quality characteristics may all be significantly affected by climate change over the next few decades.

The Intergovernmental Panel on Climate Change (IPCC) stated in 2008 that "observational records and climate projections provide abundant evidence that

freshwater resources are vulnerable and have the potential to be strongly impacted by climate change, with wide-ranging consequences for human societies and eco-systems."

Heavy rain and flooding are direct consequences of climate change, which has been accelerated by human activity. Rising temperatures are also warming the world, causing ice and glaciers to melt. The end result of these climatic conditions is contamination of water sources – both surface and groundwater. Flooding can have an impact on water quality because large amounts of water can transport contaminants – such as chemicals, heavy metals, or other hazardous substances – into bodies of water, either from landfills or from chemical pesticides, and also overload storm and wastewater systems. Furthermore, where stream flow and lake levels fall, there will be less dilution of pollutants.

Furthermore, sea level rise may have an impact on freshwater quality by increasing the salinity of coastal rivers and bays, causing saltwater intrusion, and the movement of saline water into fresh ground water resources in coastal regions. When drought conditions persist and groundwater reserves are depleted, the residual water that remains is often of poor quality. This is caused by the leakage of saline or contaminated water from the land surface, confining layers, or adjacent water bodies containing highly concentrated amounts of contaminants.

In addition, the health of a water body, such as a river, is dependent on its ability to effectively self-purify through biodegradation, which is hampered when dissolved oxygen levels are low. Because of a species' sensitivity to temperature, when water's ability to hold oxygen decreases, it can have a negative impact on various ecosystem inhabitants. Certain fish, for example, may find temperatures

too warm and migrate to more northern or higher latitude locations with cooler water.

Increased water temperatures can also lead to thriving microbial populations, which can be harmful to human health. Higher temperatures, as well as changes in water supply and quality, may have an impact on recreational lake and river use, as well as the productivity of freshwater fisheries.

As a result, the adage "water is life" is true. Without paying close attention to water resources, we are on a path to extinction. However, human activity in the form of mining has contaminated water bodies in Sub-Saharan Africa to the point where drinking water has become a slow killer chemical. These bodies of water have lost their recreational and tourist appeal, which has social and economic consequences. Clear decisions must be made to protect our water bodies for our own survival and the survival of future generations.

The good news is that space technologies and applications offer solutions for disaster risk response as well as the entire disaster risk cycle. The National Disaster Management Organization wishes to capitalize on the potential of space technologies to help address water resource challenges. As a result of our determination, NADMO supported and threw its full weight behind the establishment of the Earth Observation Unit at the University of Energy and Natural Resources.

The National Disaster Management Organization in Ghana is currently a part of an initiative spearheaded by UNSPIDER under UNOOSA that aims to use products developed by the space community to contribute to the improvement of existing flood early warning systems through the incorporation of impact-based forecasts. This initiative will allow our local governments and emergency responders to act quickly in the event of a flood. Furthermore, products from

space technology will be useful for making decisions on mitigation measures to address the various risks associated with our water bodies.

This conference to promote the use of space technology in water management for the benefit of developing countries is highly commendable, and I applaud The United Nations Office for Outer Space Affairs (UNOOSA), the Government of Ghana, the Prince Sultan Bin Abdulaziz International Prize for Water (PSIPW), and the University of Energy and Natural Resources for putting it together. I encourage all participants to share their experiences, solutions, and challenges so that we can all work together to solve identified problems.

Our ultimate goal is to make the world a safer place for all of us. Only together we can save the world.

On this note, I would like to extend a warm welcome to everyone joining this conference.