

## Editorial

# Increasing Risk of Droughts and Floods in Changing Environment

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Recent decades witnessed widespread increases in heavy precipitation and decreases in light and moderate rain over entire globe. These changes are attributed to increase in atmospheric water vapor as a result of global warming. Water holding capacity of boundary layer over ocean increases by about 7% for a unit degree increase in global temperature following Clausius-Clapeyron equation. Increase in precipitation intensity of rainy system must follow the same rate as environmental moisture. Rate of precipitation increment could even be more because extra latent heat released from the increased water vapor could invigorate the rain storm. This intensified rainy system depletes the atmospheric moisture available for light rain events. As a result of which, both increase in heavy precipitation events as well as decrease in light rain events can be expected in warming environment. Extreme rainfall presents the severe risk of soil erosion, landslides and flooding, which can have major impacts on agriculture and infrastructure that poses serious threats to human living.

Light precipitation permits water more time to soak into the soil, resulting in little surface runoff. It is very crucial to sustaining soil moisture during rainy season. So reductions in light precipitation can increase the risk of drought.

Global food requirement is highly dependent on the agriculture which in turn is greatly affected by increased flood and drought events. Drought is a natural hazard that can have adverse impact on water resources and the environment. Droughts cause decline in flow of streams and rivers, fall in water levels in lakes and reservoirs and increase the depth to water in wells. Decline in water levels affects the livelihood of global population. Persistent dry conditions can lead to major changes in an area's vegetation that may cause areas barren and unsuitable for agriculture. A scar-

city of water can also trigger conflict as different users (such as farmers) compete for access to limited supplies. Large-scale floods and droughts can trigger mass movements from affected areas, and such refugees face many additional health threats even when they are far from the scene of the disaster

Impacts of extreme events on human welfare are likely to occur disproportionately in Asia countries with low adaptation capacity. The World Meteorological Organization (WMO) cite Asia as the region that suffers the most by natural disasters due to droughts and floods. Since Asia hosts about 60% of the global population, the extent destruction in the form of property damage and loss of life is even greater when weather is further aggravated by fast industrialization. Thus Asian continent experience majority of the extreme events. Increase in damage costs from such extreme weather events is attributed to land use change, increases in population, economic wealth and human activities in hazard-prone areas.

Increasing risk of floods, droughts and increase in ground water depth is attributed to increase in global temperature. However, these changes can also be due to natural forcing like El Nino, and internal monsoon variability. According to Intergovernmental Panel on Climate Change report of 2007, there is a rise of about 0.74 K increase in global temperature during 1906-2005. These increase in global temperature is going to have an adverse impact on environment. Given the inaction of mitigating anthropogenic global warming adaptation actions against floods and droughts are required. Few of these actions include building dams to control river flow, engineering schemes to divert waterways away from urban areas, creating reservoirs that can hold excess water during heavy rainfall, rain water harvesting and water recycling.