

Science and Technical Working Group

Summary of September STWG Meeting (virtual)

September 17, 2021

Attendees

Members: Peter Goodwin (Chair), Paulinus Chigbu, Russ Dickerson, Jonah Erlebacher, Jane Kirschling, Adel Shirmohammadi, David Vanko

Agencies: Suzanne Dorsey, Susan Casey, Vimal Amin, Erick Thunell, Jim George, Rachel Lamb, Cindy Osorto, Josh Foster

Others: John Brandau, Chunlie Fan, Matt Fitzpatrick, Treasurer Kopp

Staff: Tassew Mekuria, Dave Nemazie

Objectives

The major objectives of this meeting were to discuss implications of IPCC AR6 to MCCC, discuss S&T recommendations for MCCC 2021 Annual Report, and develop ideas for the 2022 STWG Workplan.

Meeting summary of July STWG were approved.

Introduction

The Scientific and Technical Work Group (STWG) is responsible for updating and informing the MCCC on the science of climate change.

2021 IPCC AR6 Report

The Intergovernmental Panel on Climate Change (IPCC) is the United Nations body for assessing the science related to climate change. The 2021 IPCC Physical Science Basis was released in August. The report was compiled by 234 authors participated using reference materials from all over the world. They received 23,462 comments from reviewers for the first draft. The authors then prepared the second-order draft and received 51,387 comments. For the final draft, 3,158 reviewers participated and commented. The 2021 IPCC AR6 report provides high-level information to understand the current state of the climate, how climate is changing, and the role of human influence on climate-relevant regions and sectors.

The report highlighted that human influence has unequivocally warmed the atmosphere, ocean, and land. There are rapid changes in the atmosphere, ocean, cryosphere, and biosphere reported. According to the IPCC report, China, the United States, and India are the current leading countries in carbon dioxide emissions. The current 10 top countries in total CO₂

emissions are China (9,300 Mt), the United States (4,800 Mt), India (2,200 Mt), Russia (1,500 Mt), Japan (1,100 Mt), Germany (718.8 Mt), Korea (600 Mt), Iran (567.1 Mt), Canada (547.8 Mt), and Saudi Arabia (532.2 Mt).

The report also provides a summary of what climate changes might be expected in the Northeast US. Although not as precise as the numerous downscaling analyses performed for Maryland, it does provide general expectations of the changes anticipated. There is an increase in mean and extreme precipitation (very likely), an expected increase in the river and pluvial flooding (medium confidence), and expected greater incidence of heatwaves (virtually certain).

Ocean Acidification Plan

Maryland's ocean acidification plan is being developed in association with the International Commission that's looking at ocean acidification.

STWG convened a small group to assess what is currently known about acidification of Chesapeake Bay. The process is complex and additional study and monitoring is required. Efforts to reduce acid rain and nutrient reduction programs have helped to reduce the overall impact of ocean acidification on the bay. One recommendation for the Annual Report will be to evaluate what additional monitoring is required. Current data indicates that the Lower Bay is acidifying but parts of the upper bay has seen an increase in pH.

Blue Carbon Plan

Dr. Lamb emphasized that the topic of blue carbon and the potential for carbon sequestration is going to be increasingly important for Maryland.

Dr. Lamb provided a brief update on planned events on (a) the quantification and accounting of different carbon sink categories, (b) Innovative financing of coastal habitat restoration, and (c) highlighting Maryland's projects for nature-based solutions that often have multiple benefits including carbon sequestration and coastal protection.

This three-part webinar/workshop series will occur later this year and into 2022.

Discussion

STWG discussed the challenges of implementing projects at a scale that make significant impact. Dr. Dickerson highlighted the importance of methane and the need to gain a better understanding of the quantity of methane being released from landfill sites.

Dr. Dickerson pointed out the challenge of increasing electric vehicles or zero-emission vehicles in Maryland. Bicycles and other transportation modes are being explored by MDOT. Josh Foster stated that electric cars can be charged and recharged from the house battery or grid. Jonah Erlebacher stated that hydrogen fuel cells need significant investment before it is viable at scale.

A draft version of the science section for the MCCC Annual Report, draft science recommendations for the 2021 report will be distributed prior to the next STWG meeting.

