Climate Science Needs

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STAR Meeting

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Presentation Outline

- CRWG Highest Priority Climate Science Needs - Note that all climate science needs listed are important and information/research is highly needed for all.
- Additional climate science needs identified by CRWG
- Climate science needs being led by other GITs with CRWG support
- Previous climate science needs removed from CRWG list

Highest - CRWG Climate Science Needs

Need	Engaged Resources	Potential Resources	Other Outcomes
Data and research needs for impacts of SLR, storm surge, increased temperatures, extreme precipitation events and saltwater inundation on BMP climate resilience (i.e., maintenance, shelf life, siting and design, etc.)	**BMP Climate Resilience Assessments** Chesapeake Stormwater Network - Urban Stormwater BMPs STAC-Funded/Virginia Tech - Urban, Ag, and natural BMPs NOAA/Virginia Tech - Tidal water BMPs	STAC water temperature workshop	Water Quality, Agriculture, Urban Stormwater, Habitat, Forestry

Highest - CRWG Climate Science Needs

Need	Engaged Resources	Potential Resources	Other Outcomes
Better understanding of sea level rise and subsidence impacts related to wetland loss, marsh migration, and adjacent land use considerations	FY20 GIT-Funded project, **"Synthesis of Shoreline, Sea Level Rise, and Marsh Migration Data for Wetland Restoration Targeting"** (Lead: Wetland Workgroup, Consulting: CRWG)	USGS Chesapeake Bay integrated science project (Neil Ganju, Scott Phillips, Ken Heyer) Marsh migration efforts at VIMS and USGS	Tidal wetlands, SAV, and water quality
Method/metrics to track climate resilience progress related to Chesapeake Bay Watershed Agreement goals	FY19 GIT-Funded project, **"Building a Bay-Wide Scorecard to Track Climate Resilience for Watershed Communities"** (CRWG, RAND Corp.) Climate Indicator Development	EPA ORD Decision Support Tool EnviroAtlas	Water Quality, Habitat, Sustainable Fisheries, SAV, Wetlands, Forestry, Healthy Watersheds

Highest - CRWG Climate Science Needs

Need	Engaged Resources	Potential Resources	Other Outcomes
Changing climate conditions and their impacts on SAV	STAR FY20 GIT-funded project, **"Modeling climate impacts on submerged aquatic grasses (SAV) in Chesapeake Bay"** (Lead: SAV workgroup, Consulting: CRWG) SAV Sentinel Site protocols (SAV Workgroup)	Maryland effort testing SAV module with SLAMM (Rebecca Golden) - evaluating sea level rise impacts to seagrass distribution (studying only one species); looking to expand across MD and VA depending on resources	SAV, Water Quality

CRWG Climate Science Needs

Need	Engaged Resources	Potential Resources	Other Outcomes
Better understanding of green infrastructure (e.g., living shorelines) performance in building resilience to climate change impacts, cost-effectiveness of these strategies, and potential unintended consequences to other restoration metrics (e.g., sediment dynamics)		Lessons learned from Middle Peninsula resilience-related efforts supported by NCBO and partners (i.e., metrics for living shorelines)	Water Quality, Wetland, SAV
Evaluation of science needs to implement blue carbon financing strategies	FY19 GIT-Funded Finance Coaching hours	Climate C-Stream Internship Position - background/literature review to identify science and monitoring needs

Potential Blue Carbon STAC Workshop proposal in 2022 | Wetlands, SAV, Sustainable Fisheries |

CRWG Climate Science Needs

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Saltwater inundation impacts on wetland habitats (e.g., brackish waters), SAV, and land use (e.g., ag, forest)		MD Saltwater Intrusion Plan (Jason Dubow, MD Dept of Planning) Projects through the National Estuarine Research Reserve System (NERRS) could help inform this science need	Agriculture, Forestry, Wetland, SAV, Water Quality, Habitat
Effective designs for combining gray-green infrastructure approaches	This need was identified during the LGAC Flood Forum.		Water Quality, Habitat, Sustainable Fisheries, Wetlands, Forestry, Urban Stormwater

Lead: Urban Stormwater Workgroup

Need	Engaged Resources	Potential Resources	Other Outcomes
Better understanding of precipitation changes with regards to intensity, annual amounts, seasonal impacts, storm events and stormwater management	Many - refer to spreadsheet E.g., FY19 GIT-Funded project, **"Piloting the development of probabilistic intensity duration frequency (IDF)curves for the Chesapeake Bay watershed"**		CRWG, Stream Health

Lead: Fisheries GIT

Need	Engaged Resources	Potential Resources	Other Outcomes
Climate impacts to key aquatic fish species abundance, life cycle and habitat	FY20 GIT-Funded project, "Forage Indicator Development: Using Environmental Drivers to Assess Forage Status" (Lead: Forage Team) - includes analysis of seasonal shifts on forage species (warming) "Vulnerability of oyster aquaculture and restoration to ocean acidification and other co-stressors in the Chesapeake Bay" (Marjorie Friedrichs - VIMS project through NOAA OAP grant) NOAA Northeast Habitat Climate Vulnerability Assessment (Bruce Vogt on scoring committee)	STAC water temperature workshop	CRWG, Habitat

Lead: Stewardship GIT

Need	Engaged Resources	Potential Resources	Other Outcomes
FY20 GIT-Funded project, "Chesapeake Bay Program Social Science Assessment and Integration Road Map Development"	FY20 GIT-Funded project, **"Chesapeake Bay Program Social Science Assessment and Integration Road Map Development"**		CRWG, Communications

Removed

- Changing climate conditions and their impacts on invasive species
  - Currently not a CRWG priority
- Detailed list of specific science/data needs for citizen science programs
  - Not really a science need - more fitting for a work plan action
  - Is a topic that the CRWG is still thinking about - there is lack of resources for monitoring - citizen science programs may be able to help.
  - In Maryland, they are working on developing a citizen science protocol based on SAV protocol developed through previous GIT-funding.