MB Response to STAC AI Publication

The Management Board appreciates the Scientific and Technical Advisory Committee's publication *Leveraging Artificial Intelligence and Machine Learning to Advance Chesapeake Bay Research and Management: A Review of Status, Challenges, and Opportunities*. The publication highlights the critical potential role artificial intelligence and machine learning have in expanding our understanding of environmental change, system dynamics, and predicting conditions in areas with limited monitoring. As STAC pointed out, Artificial Intelligence (AI)/ Machine Learning (ML) represent a potentially transformative tool in environmental research to assess patterns from large, complex datasets that traditional analysis methods cannot.

The Management Board acknowledges STAC's recommendations: strengthening data infrastructure and integration for AI/ML applications; leveraging AI/ML for restoration of Chesapeake Bay tidal and nontidal regions and decision support; promoting transparency and engaging managers and stakeholders; and building collaboration and capacity. While some of the recommendations, such as investing in communication strategies and training and literacy programs for scientists and others, reflect broader socioeconomic efforts to better integrate with AI/ ML, the Management Board recommends that the STAC further investigate the following items as they related to AI/ML and Chesapeake Bay research and restoration:

1. *Leverage diverse datasets, including satellite, in-situ, and high-frequency data, for use in modeling and monitoring applications and filling water quality data gaps* – The Management Board recommends that STAC provide advice on how to expedite the approval process for innovative methods using these data sets and how AI/ ML and leveraging satellite data can allow for a greater efficiency in BMP verification in agricultural and developed land uses.
2. *Enhance watershed and estuarine models by integrating AI/ML model outputs and insights* – The Management Board recommends that STAC provide advice as to how AI/ ML can provide greater precision between modeling, land use/land cover, and monitoring data, especially in communities where data on BMPs remains incomplete.
3. *Build harmonized response and predictor datasets and develop exemplar use cases to guide widespread AI/ML applications* – The Management Board recommends that STAC provide advice and greater specificity on data structures and relationships that need greater attention or improvement to better support AI/ ML models.

The Management Board appreciates this initial review and looks forward to hearing from STAC as they pursue how to understand these issues and how the partnership can leverage AI/ ML to better support Chesapeake Bay research and restoration.