Cyberinfrastructure for Resilient Research

MS-CC Science and Research Technology Workshop

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Air Quality: A Shared Challenge Across Campuses and Communities

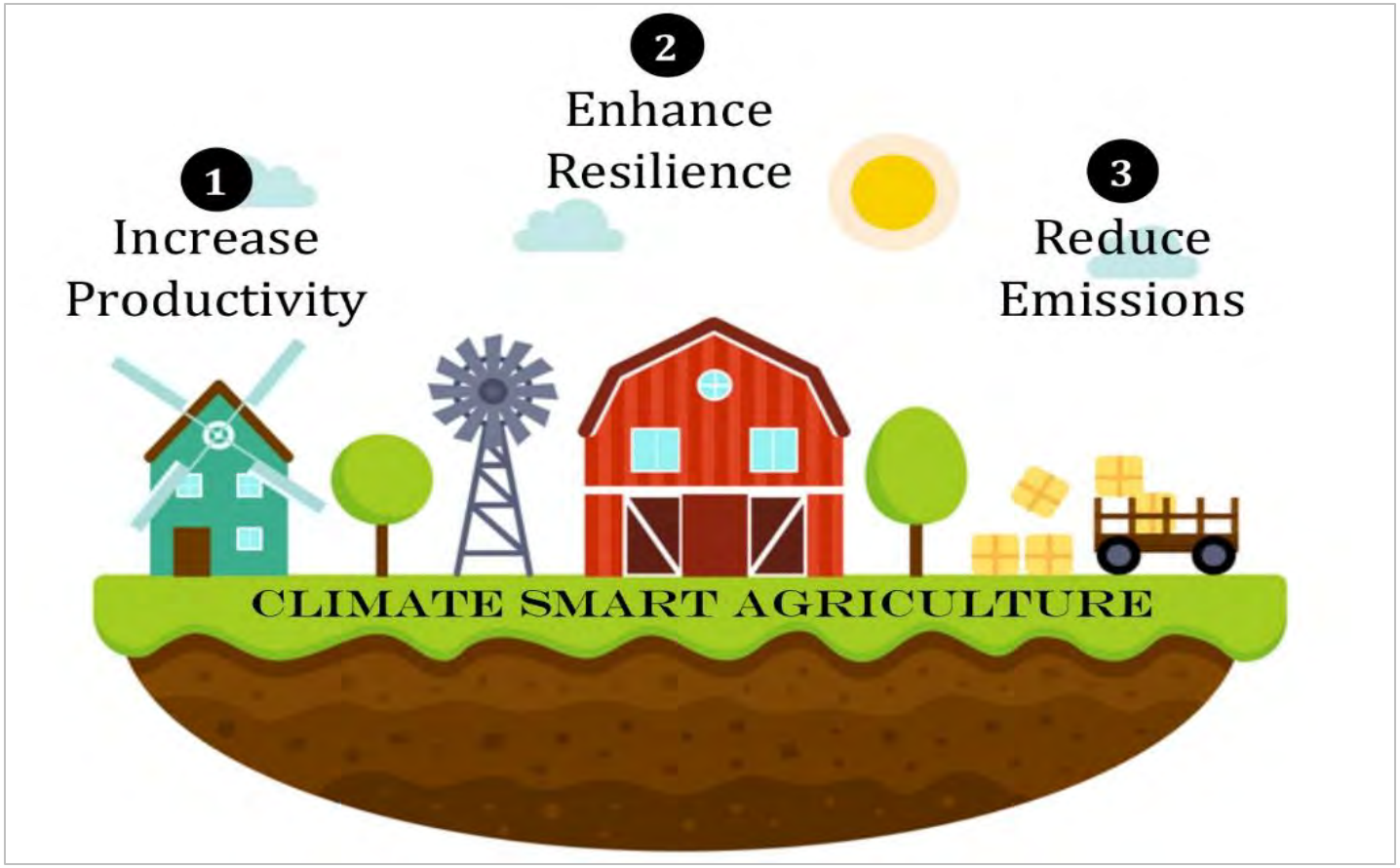
- Cyberinfrastructure Tools I Use: ACCESS and Jupyter accounts which provide scalable computing resources.
- Google Colab with Python: For coding, data analysis, and visualization.
- Handling large datasets over long time periods (e.g., sounding data, surface observations).
- MS-CC Workshops provide exposure to HPC tools, data management strategies, and collaborative platforms.
- Networking with researchers working on similar challenges (e.g., Disperstion models, wildfire modeling, WRF simulations).

Air Quality: A Shared Challenge Across Campuses and Communities

- What do PM2.5, Ozone, NOx, and pesticide drift have in common?

  They all silently shape the air we breathe.

- Meteorology and cybersecurity may seem worlds apart but they're both key to protecting our environment.


2
Enhance
Resilience
1
Increase
Productivity
3
Reduce
Emissions
CLIMATE SMART AGRICULTURE

- Increase Productivity: “It helps farmers grow more food efficiently, even under changing climate conditions.”
- Enhance Resilience: “It strengthens the ability of agricultural systems to withstand climate shocks like droughts, floods, and heatwaves.”
- Reduce Emissions: “And it minimizes greenhouse gas emissions, including those from fertilizers, machinery, and pesticide use.”

By integrating smart practices and technologies, we can improve air quality, reduce environmental impact, and build climate-resilient communities.

Smart Tools for Smart Research

- Integrated Platforms “Tools that combine climate, agricultural, and environmental data helping researchers make informed decisions.”
- Secure Data Sharing “Campus networks and cloud systems that protect sensitive research data while enabling collaboration.”
- Drone Technology + Cyberinfrastructure “ Using drones for precision agriculture, supported by real-time data processing and secure storage.”

Thank you
for your attention!