BENCHMARK

YOUR ASSET, **YOUR FORECAST**

ITU/WMO Workshop On AI For Natural Disaster Management

Machine Learning applications for Natural Disaster Management - Recent contributions to the AMS AI Conference

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AMBASSADOR™ WRN WEATHER-READY NATION

Quick intro – About us:

Benchmark Labs provides IoT forecasting solutions by delivering asset-specific forecasts for the agricultural sector and beyond, to optimize management strategies, reduce water consumption and improve operational margins.

PLUG AND PLAY

AMS AI COMMITTEE:
MISSION

To ensure that members of the Society are informed about
and encouraged to use modern artificial intelligence
techniques that can contribute meaningfully to their scientific research
and algorithm development activities.

PLUGANDPLAY

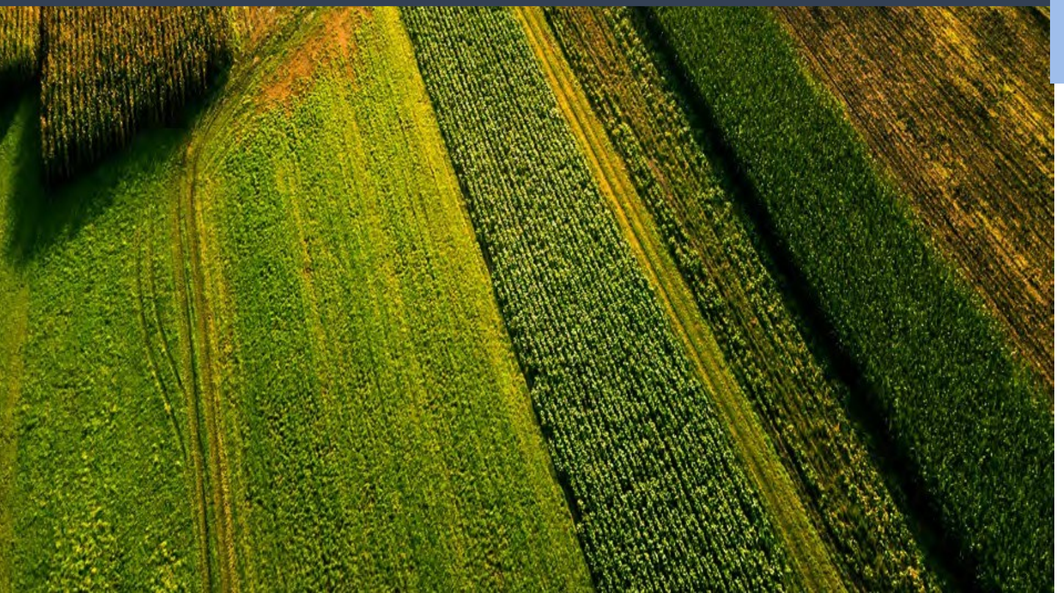
ANNUAL MEETING SESSIONS - 2021

- AI FOR FEATURE DETECTION
- AI FOR CLIMATE APPLICATIONS
- AI FOR APPLIED REMOTE SENSING
- AI, ETHICS AND INCLUSION FOR GEOSCIENCES
- DEEP LEARNING APPLICATIONS FOR ENVIRONMENTAL SCIENCE
- AI FOR HIGH-IMPACT WEATHER
- AI FOR SEASONAL TO SUBSEASONAL PREDICTION
- AI FOR TROPICAL WEATHER
- BLENDING AI WITH NUMERICAL WEATHER AND CLIMATE MODELS
- AI IN RADAR OBSERVATIONS, ANALYSIS AND APPLICATIONS
- CAUSAL DISCOVERY AND INFERENCE IN CLIMATE AND ENVIRONMENTAL SCIENCE
- OPEN DATASETS FOR AI RESEARCH AND APPLICATIONS IN EARTH AND ATMOSPHERIC SCIENCES
- NOWCASTING AND SHORT-TERM FORECASTING APPLICATIONS LEVERAGING AI

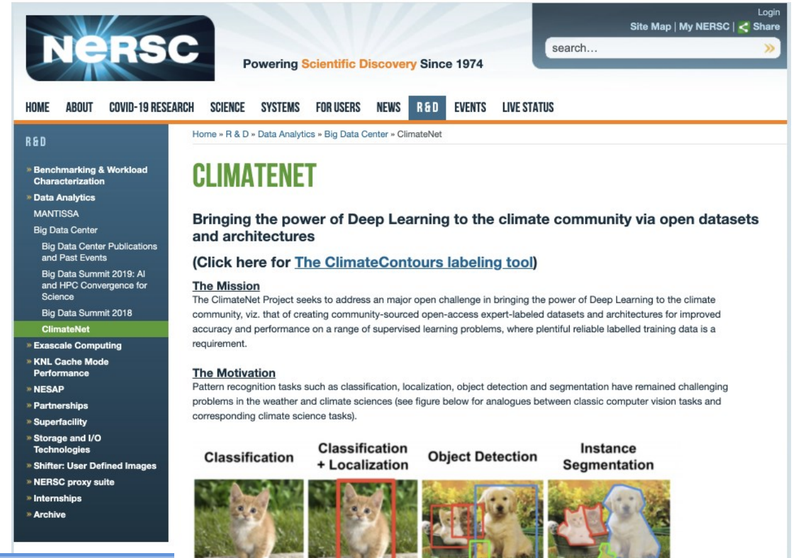
• JOINT SESSIONS

- THE EARTH PREDICTION INNOVATION CENTER (2 SESSIONS).
- USING AI TO EXPLOIT SATELITE EARTH OBSERVATIONS
- HPC TO ACCELERATE MACHINE LEARNING
- AI APPLICATIONS FOR THE ENERGY INDUSTRY
- PYTHON FRAMEWORKS FOR REPRODUCIBLE, COMMUNICABLE AI WORKFLOWS
- APPLICATIONS OF AI TO THE COASTAL ENVIRONMENT
- PHYSICAL INTERPRETABILITY IN ML
- HYBRID ML AND STATISTICS APPROACHES
- WHO DETERMINES THE FORECAST? CHANGING THE MIX BETWEEN HUMAN AND TECHNOLOGY
- ML APPRACHES TO CHARACTERIZE TROPICAL WEATHER
- THE FUTURE OF OPERATIONAL METEOROLOGY: LEVERAGING ML TO ENANCE DECISION-MAKING AND DECISION SUPPORT
- ML APPLICATIONS FOR ATMOSPHERIC CHEMISTRY
- TRANSITIONING AI RESEARCH TO OPERATIONS

AI INITIATIVES



CLIMATENET
with NERSC



NSF AI Institute for Research on Trustworthy AI in Weather, Climate, and Coastal Oceanography (AI2ES)

AI2ES Vision

The vision of AI2ES is to create trustworthy Artificial Intelligence (AI) methods for diverse environmental science (ES) users that will revolutionize our understanding and prediction of high-impact atmospheric and ocean science phenomena and create new educational pathways to develop a more diverse AI and environmental science workforce.

The Need for AI2ES

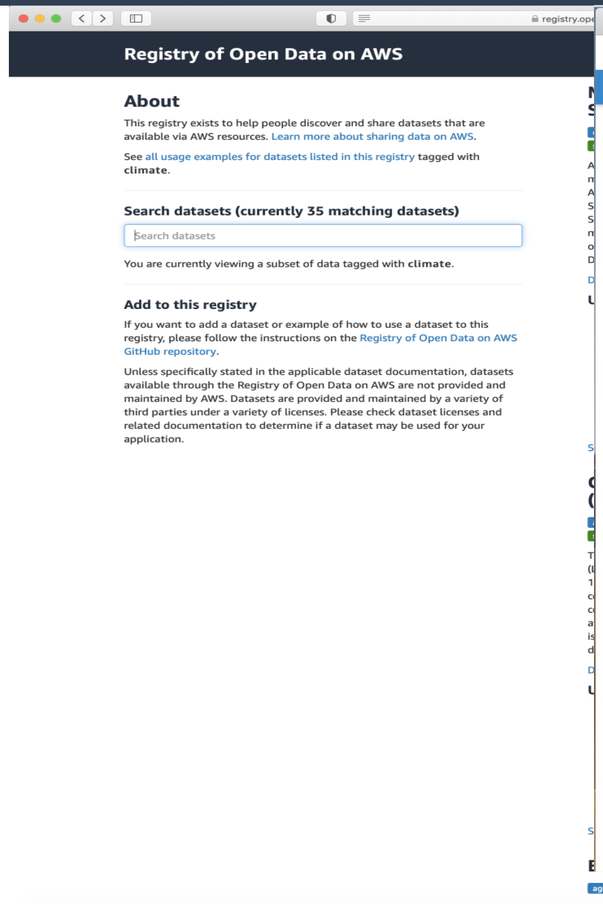
Changes in weather patterns, oceans, sea level rise, and disaster risk amplify the need for accelerated AI research in the environmental sciences. AI2ES is a convergent, multi-sector NSF Trustworthy AI institute led by the University of Oklahoma that brings together researchers in AI, atmospheric science, ocean science, and risk communication.

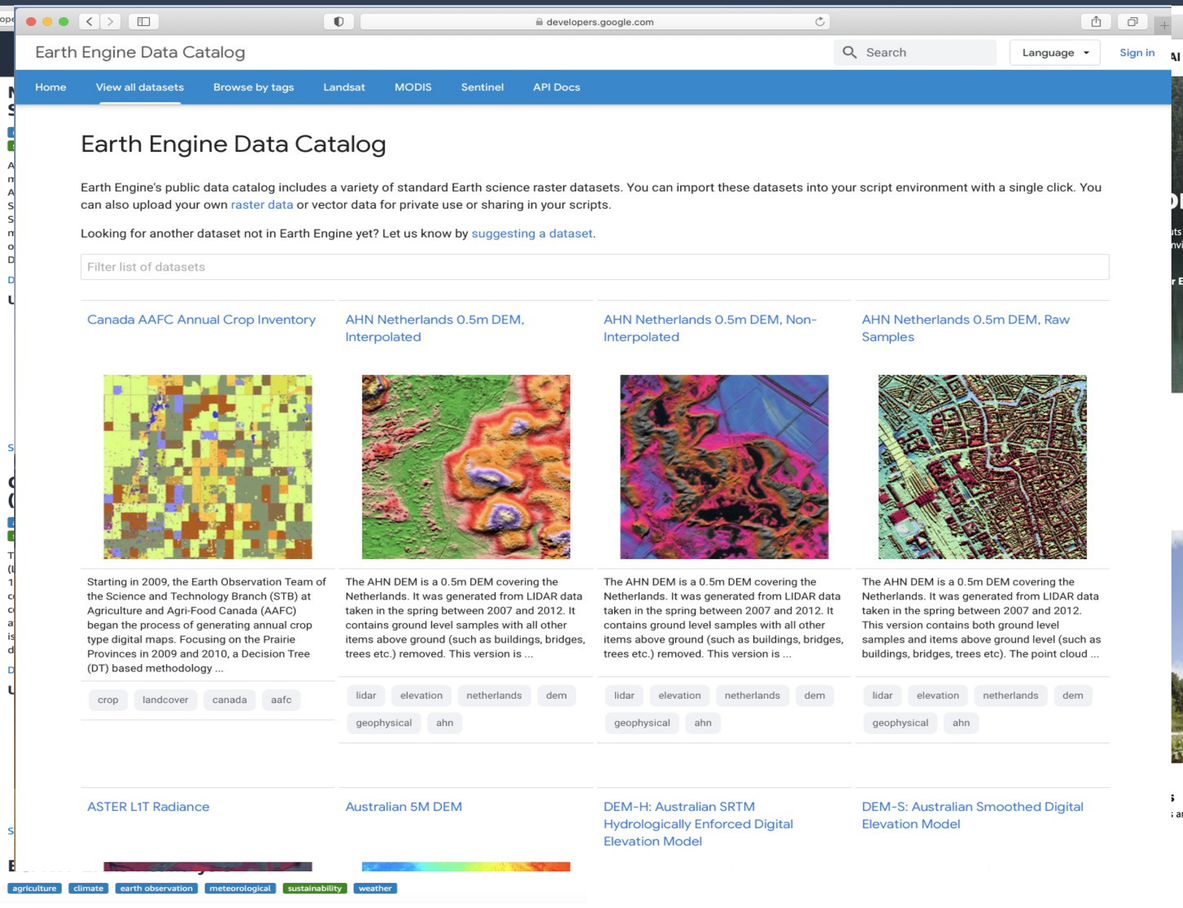
AI2ES WITH NSF

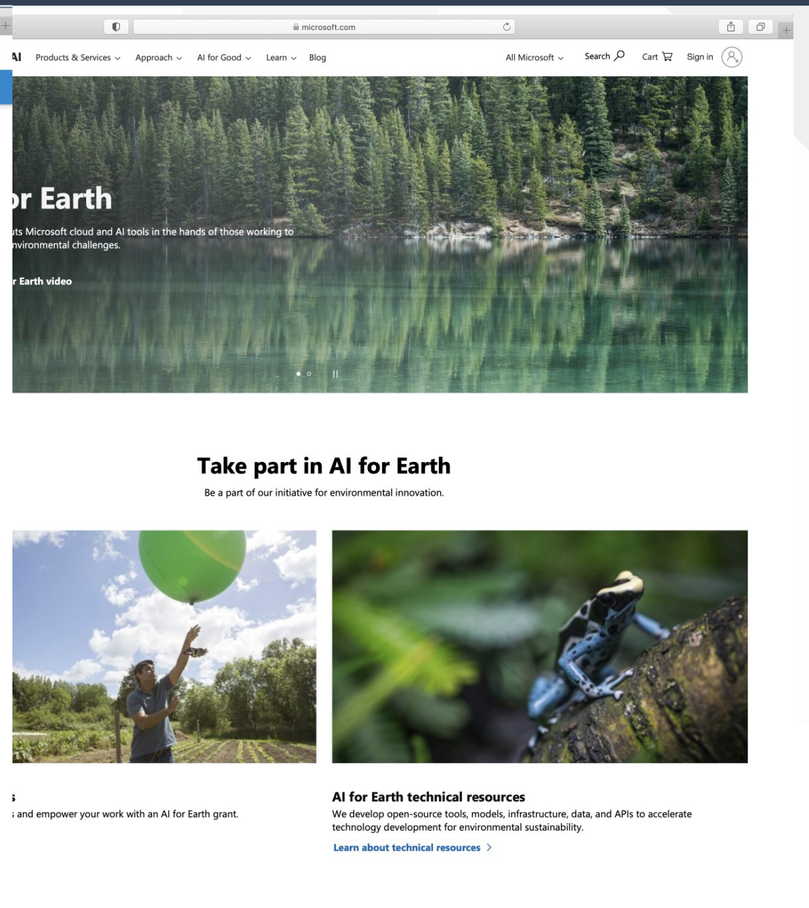
AI FOR EARTH AT
NeurIPS 2020

THE OPEN DATA INITIATIVES

Public – private partnerships between the federal government and leading cloud providers (e.g., Microsoft, Amazon, Google)







Gaps related to the implementation/application of AI within the domain of natural disaster management.

- AI models are perceived as black-box models
- Some practitioners are not aware of the need to validate the models with independent data (not used during training)
- Lack of quality checked / controlled data
- Access to HPCs to develop deep learning models – some models take a long time to train in pcs.
- Datasets come in different formats, grids and timesteps, some are not shared in real-time, or have usage restrictions.