Take urgent action to combat climate change and its impacts
What is AI for Earth?

AI for Earth

Empowering people and organizations to develop innovative solutions to the way we monitor, model, and ultimately manage Earth’s natural systems.
Grants program – aka.ms/ai4egrants

Who
Any individual or organization, anywhere in the world

What
Access to Microsoft Cloud and AI technologies through Azure credits

How
A project proposal defining the problem and how AI will be used

When
Proposals are accepted on a rolling basis four times a year, next deadline July 5, 2021
Our progress

700+ Projects

100+ Countries
Building planetary insight

Contributors:
- Conservation Organizations
- Data Scientists
- App Developers
- Academia, Research
- Environmental Scientists
- Startups & Companies

Applications:
- APIs
- Datasets
- Models

Consumers:
- Education
- Citizen Scientists
- Local Governments
- Consumers
- Policy & Advocacy
- Business & Industry
A Planetary Computer for a Sustainable Future
Planetary Computer Data

...hosting geospatial data sets on Azure that are critical to sustainability and environmental science

Remote sensing data
- Landsat 4, 5, 7, 8
- Sentinel-1, -3, -5P
- GOES-16, -17
- MODIS, NAIP, ASTER

Weather/climate data
- CMIP6, ERA5, GFS, ISD, NEXRAD, GHE

Land cover data
- CCI, Corine, CCAP, NLCD, CDL, USGS GAP

External data sources
- Esri Living Atlas

User-contributed data
Planetary Computer APIs

...facilitating discovery and access for large geospatial data catalogs

- Spatiotemporal queries for images
- Spatiotemporal queries for stitched pixels
- Data discovery via a public STAC catalog
- Tiling/visualization services
- Change notifications
- Resampling to new grids
Planetary Computer Computing Environment

...abstracting away the complexity of distributed processing for global-scale analysis

Jupyter front-end

Compute provisioning

Synchronous processing

Asynchronous batch processing and job management

Single login/auth for Microsoft-hosted data, user-provided data, and Esri Living Atlas data

Data export to blob storage
Planetary Computer Applications and Services

...putting geospatial data to work in our four key sustainability application areas

**Classification**
What is where, and how much is there?
...or, in engineering-speak: what exists at (x/y/t), for t <= 0?

**Forecasting**
What will be where, and how much will there be?
...or, in engineering-speak: what will probability exist at (x/y/t), for t > 0?

**Planning**
What should be where?
...or, in engineering-speak: what is the optimal response to a change in f(x,y)?

**Diagnostics**
What was the outcome of the plan?
...or, in engineering-speak: what is causing f(x,y) to change or not change?
Planetary Computer Application Area: Classification

What is where, and how much is there?

Example application: land use and land cover assessment
Accelerating geospatial image analysis with cloud-based AI, in partnership with Development Seed

Example application: human modification evaluation
Mapping the footprint of human land use, in partnership with Conservation Science Partners

Example application: accelerating biodiversity surveys
Leveraging AI to help conservation biologists spend more time planning conservation, and less time annotating data
Planetary Computer Application Area: Forecasting
What might be where in the future?

Example application: flood risk mapping
Leveraging historical data and modeled climate data to assess flood risk zones, in partnership with Deltares

Example application: deforestation prediction
Leveraging remote sensing data to facilitate rapid response to expected tree canopy loss, in partnership with Imazon

Example application: water availability prediction
Leveraging weather imagery and ground station data to predict surface water availability, in partnership with Upstream Tech and WWF
Planetary Computer Application Area: Planning

What land planning policies will optimally protect natural carbon sinks and global biodiversity?

Example application: conservation spatial planning
Using global biodiversity data and remote sensing data to plan conservation policy in critical ecosystems, in partnership with The Nature Conservancy and Vizzuality.

Example application: prioritizing carbon offset projects
Leveraging climate and fire risk models to inform decisions about forest protection projects, in partnership with CarbonPlan.
Planetary Computer Application Area: Diagnostics

What was the actual impact of intentional or unintentional human intervention on ecosystems and climate?

Example application: carbon offset credit retrospective analysis
Reviewing carbon offset programs in light of new data, to quantify the true utility of individual programs, in partnership with CarbonPlan

Example application: GHG emissions monitoring
Attributing GHG emissions responsibility to operators in the global shipping industry, in partnership with the Ocean Data Foundation
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