CMIP Coupled Model Intercomparison Project
Climate Forcings

Pathway to regular and sustained delivery of climate forcing datasets workshop: 28-31 October 2024, ECMWF Reading

Session 1: Land-Use Data

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Land-Use Forcing Status

- Historical land-use forcing provided by the Land-Use Harmonization dataset
- Dataset developers: Louise Chini and George Hurtt, University of Maryland
- LUH3 V0 available on input4MIPs as of October 3, 2024
- LUH3 V0 based on the historical land-use data produced for the 2024 Global Carbon Budget
- Land-use data is provided annually 850-2024, at 0.25 degrees, with fractional content for 13 land-use types, all transitions between them, as well as land management data layers
- Format remains the same as that provided for CMIP6 (although with one additional land-use type and several new land management layers)

New Features in Land-Use Forcing Data

- New HYDE 3.4 data for historical cropland, grazing land, and urban land
- Focus on improved land-use representation in Brazil, Indonesia, and China:
  - New FAO inputs within HYDE for years 1961-2021
  - New MapBiomas inputs within HYDE for Brazil (for years 1985-2022) and Indonesia (for years 2000-2022)
  - New cropland data within HYDE for China from Yu et al. 2022 (for years 1900-2019)
- New FAO wood harvest inputs for years 1961-2022
- Extension to current year (using trend from previous 5 years)
- Globally, differences between this version and last year's update are small (2-3%)
- Larger differences are seen in China, Indonesia, and Amazonian Brazil

Next Steps

- We are adding as plantation forest land-use state, along with harvest and and intended use of these forests (i.e. products vs BECCS)
- We will update patterns of forest disturbance over the last century (approx) using lidar data from GEDI
- We will add land management layers for Afforestation (added trees), Protected areas, and bioenergy crops
- Harmonization with future scenarios – preparation now, beginning development next year
- On a slower timeframe:
  - Possibly a higher resolution product over recent decades
  - Possibly high/low historical land-use scenarios

Thank You