CLIMATE FORCING RESEARCH Supported by NOAA Climate Program Office

NOAA/CPO's Mission: *To advance Earth system and social science, integrated information systems, and climate services to build a Climate-Ready Nation.*

AC4 funds research on carbon and methane forcing

7 projects in FY13-15 to support development of NOAA Global Monitoring Laboratory's CO_2 measurement and modeling system **CarbonTracker.**

CarbonTracker Development

3 projects in FY19-21 on CarbonTracker applications to **long-term trends in atmospheric composition observations**

CarbonTracker Applications

2 projects in FY23-25 incorporating better **spatial resolution** of emissions and **full interactive atmospheric chemistry** into CarbonTracker-CH4

CarbonTracker-CH_4

ERB funds research on the impacts of aerosol injections on radiative forcing

6 projects in FY22-24 on **impacts of aerosols on Earth's radiative balance** to assess potential solar climate intervention

Atmospheric Aerosols

CVP, COM, and MAPP fund climate attribution research using climate forcing data

6 projects in FY20-22 on developing an experimental capability to **rapidly assess and explain extreme climate events**

Explaining Extremes

Jin Huang, Chief of CPO/ESSM Division

(with Inputs from Ryan Kramer and others)

BROADER NOAA CONTRIBUTIONS

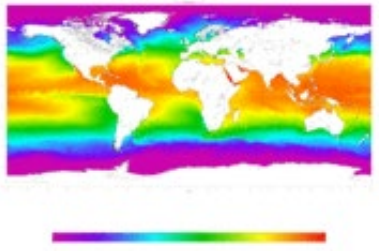
NOAA Labs and centers have contributed to development and maintenance of climate forcings. For example,

GHGs - Predominantly uses NOAA GML's CO2, CH4 and N2O data

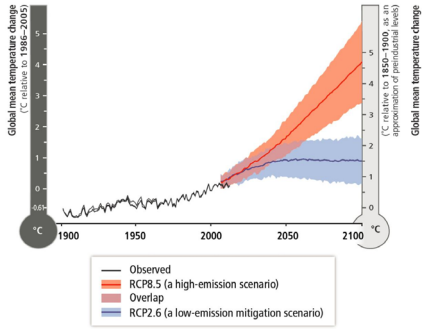
Volcanic aerosol properties - NOAA Lidar data from Mauna Loa used for Pinatubo eruption

Biomass burning emissions - Uses NOAA's visibility data from the NOAA/NCEI Integrated Surface Database

Solar- NOAA/POES MEPED satellite data is a major source of information, and GOES data and solar irradiance



Sea Surface Temperature - NOAA OISST serves as backbone of this product



CMIP: NOAA GFDL processes and analyzes the climate forcing data in preparing for CMIP

KEY NOAA MESSAGES

- NOAA produces key data, large and small, some are merged, that contribute to climate forcing datasets

- NOAA/CPO will continue to support forcing science research as part of the NOAA/CPO's mission.

- Providing funding and programmatic support seems important
  - Need to work with NOAA leadership to get their support: importance and impacts of the forcing data; needs, cost and potential mechanisms to sustain
    - Consistent messages from the Team will be helpful
  - Expanding climate services (e.g. NOAA's Climate Ready Nation Initiative) require regular dataset updates, which could be a justification for funding
  - U.S. Global Change Research Programme (USGCRP) could help inter-agency and international coordination