



# Strategic Implementation Plan (SIP) for a Community-based Unified Modeling System



## *Aerosols and Atmospheric Composition Working Group*

*Presented by*

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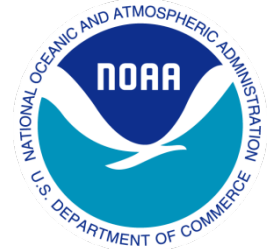
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## *Membership*



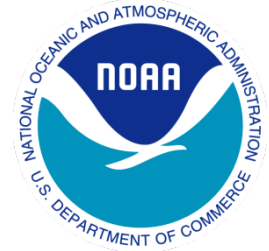
- William Brune (Penn State Univ)
- Gregory Carmichael (U. Iowa)
- *Arlindo DaSilva (NASA/GSFC)\*\**
- David Edwards (NCAR)
- Gregory Frost (NOAA/CSD)
- Steven Ghan (DOE/PNNL)
- Paul Ginoux (NOAA/GFD)
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- Larry Horowitz (NOAA/GFDL)
- Yu-Tai Hou (NWS/NCEP)
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- Daniel Jacob (Harvard Univ)
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- Sim Larkin (USFS)
- Craig Long (NWS/NCEP)
- Stuart McKeen (NOAA/CSD)
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- Rohit Mathur (EPA)
- Steven Pawson (NASA/GSFC)
- Brad Pierce (NESDIS/STAR)
- Kenneth Pickering (U. Maryland)
- *Ivanka Stajner (NWS/STI) \*\**
- *Ariel Stein (NOAA/ARL)\*\**
- Jun Wang (NOAA/NCEP)

*Co-Chair \*\**



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## *Initial Findings*



- Maintain and improve quality of current operational products/services:
  - Global aerosols
  - Global stratospheric ozone
  - National air quality prediction of ozone and fine particulate matter
  - Dispersion: smoke, dust, volcanic ash, radiological, chemical, tracking
- Create a unified interface for coupling of atmospheric composition and chemistry to model physics and dynamics
- Enable flexibility to couple chemistry packages of different complexity for applications of community interest
- Strive for consistent chemical approaches across scales
- Potential role for CCPP and GMTB
- Interest in coordination (e.g. JEDI, JPSS/GOES-R proving ground initiatives, NGGPS, MAP, OWAQ, AC4 and other programs)



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## *Key issues to resolve*



- Challenges:
  - Architecture for coupling of aerosols/composition and meteorology
  - Operational efficiency vs complexity for research applications
- Science issues:
  - Consistent representation of atm. composition across scales (LBCs)
  - Various methods for representing aerosols (modal, sectional)
  - Evaluation protocols for adoption/support of new capabilities
  - Coupling of aerosol, gaseous species with atmospheric model physics and meteorological data assimilation
- Barriers:
  - Limited resources for transition to operations and maintenance of a suite of aerosol-chemistry modules and maintenance of emissions databases
  - Uncertainty in emissions for prediction applications