Air Resources Laboratory

Summary

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Air Resources Laboratory

ARL Laboratory Review
May 3-5, 2011
Science Themes

Dispersion / Boundary Layer

Air Quality    Climate
Integration Among Themes

Dispersion / Boundary Layer

Air Quality
- Modeling for toxics, ash, smoke, dust
- Flows around sound barriers
- Climate-air quality modeling
- Co-location of observing sites

Climate
- Air-land fluxes
- Climatology of the boundary layer
- Urban climate

Planning Process:
Communicate, Assess, Prioritize

- Customers
- ARL Staff
- ARL Mgmt.
- Higher-Level Mgmt.
- Community

ARL...
Priorities
Plans (Indiv. & Org.)
Proposals
Activities
Termination of activities
Lab in Transition

• Motivations
  • Improve value to NOAA and other customers
  • Improve critical mass
  • Respond to/anticipate evolving societal needs
  • Respond to recommendations from last review

• Transitions
  • Greater Integration with NOAA Priorities and Activities
  • Establish Boundary Layer as Another Focus Area
  • Greater Integration Among Divisions
  • Integration of Research and Technical Services

• Significant progress made
Major Ongoing Challenges for ARL

- Continuing to implement transitions
- Maintaining and improving the quality and value of R&D in current fiscal environment
- Increasing investments in key areas for the Nation and NOAA
  - Dispersion—integrated, enhanced NOAA capabilities
  - Boundary layer—wind energy, initiation of convection, etc.
  - Climate—analysis, air-land interactions, regional modeling
  - Nutrients
- NOAA Climate Service—ensuring that ARL climate-relevant activities are appropriately integrated
Highlights of Quality, Relevance, and Performance
ARL Publications Cited More Frequently than Average

% of Pubs in Field’s Top 1%, 10%, and 50% Most Frequently Cited

Source: Belter, NOAA Central Library

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**1%**

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Source: Belter, NOAA Central Library
Quality: Contributions to International and National Data Sets

- Dispersion
  - Tracer data sets widely used by dispersion community
- Air Quality
  - Leadership in WMO intl. precip. chemistry efforts
  - Leadership in national mercury observation network
- Climate
  - Implementation of reference surface observations
  - Leadership in establishing international reference observations aloft
  - Data sets transitioned to NCDC: RATPAC, extreme heat, ...
Relevance & Performance:
Selected contributions to NOAA’s Climate Goals

- Objective: Improved scientific understanding of the changing climate system and its impacts

- Objective: Assessments of current and future states of the climate system that identify potential impacts and inform science, service, and stewardship decisions

Response to volcanic eruptions
Obs.  Mean of 6 models

Free and Lanzante 2008
Relevance & Performance: Selected contributions to NOAA’s Weather Goals

- Objective: Reduced loss of life, property, and disruption from high-impact events

- Objective: Improved transportation efficiency and safety
Relevance & Performance:

Selected contributions to NOAA’s Weather Goals

- Objective: Healthy people and communities due to improved air and water quality services

- Objective: A more productive and efficient economy through environmental information relevant to key sectors of the U.S. economy
Relevance & Performance:
Selected contributions to NOAA’s Coastal Goals

- Objective: Improved coastal water quality supporting human health and coastal ecosystem services

Surface RGM - Grand Bay Intensive (August 2010)

Cumulative Fraction of Hg Deposition

0% 20% 40% 60% 80%

0 5 10 15 20 25

Rank

Coal-fired elec gen
Other fuel combustion
Waste incineration
Metallurgical
Manufacturing/other
Final Thoughts

- ARL founded early in the nuclear age to provide service to other agencies
Final Thoughts

- ARL founded early in the nuclear age to provide service to other agencies
- Retained
  - Strong science
  - Commitment to supporting applications
  - Effective partnerships while evolving to continue to meet society’s changing needs