NOAA Climate Mission Goal

Ocean Acidification: a Cross-Goal Strategy and PPBES Case Study

Krisa Arzayus
Climate Program Office/Climate Goal Team
Have you participated in the PPBES process
- Which Phases?
- Which Goal/Program?

What do you expect to learn?

What do you want me to address during this session?
Objectives

- To increase understanding of:
  - Climate Goal
  - Planning, Programming, Budgeting, Execution System (PPBES) process
  - How internal/external influences impact each phase

- Provide tips on how to succeed using PPBES

- Examine Real World Example: Ocean Acidification
  - Coordination
  - Collaboration
  - Challenges

- Lessons Learned
**NOAA Climate Goal Overview**

*Mission: understand climate variability and change to enhance society’s ability to plan and respond*

<table>
<thead>
<tr>
<th>Program</th>
<th>Performance Objective</th>
<th>Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Climate Observations and Monitoring</td>
<td>Describe and understand the state of the climate system through integrated observations, monitoring, and data management</td>
<td>A Predictive understanding of the global climate system on time scales of weeks to decadal to centennial with quantified uncertainties sufficient for making informed and reasoned decisions</td>
</tr>
<tr>
<td>Climate Research and Modeling</td>
<td>Understand and predict climate variability and change from weeks to a centuries</td>
<td>Climate-sensitive sectors and the climate-literate public effectively incorporating NOAA’s climate products into their plans and decisions</td>
</tr>
<tr>
<td>Climate Services Development</td>
<td>Improve the ability of society to plan for and respond to climate variability and change</td>
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</tbody>
</table>
NOAA’s Climate Goal
Climate Observations & Monitoring Program

Describe and understand the state of the climate system through integrated observations, analysis, and data management.

Two capabilities:

1. Climate System Observations (oceans, atmosphere, forcing)
   - Understand the earth’s climate system
   - Monitor climate variation
   - Support climate information products and services
   - Improve climate research and modeling

2. Data Management and Information
   - Data management services
   - Data stewardship
NOAA’s Climate Goal
Climate Research & Modeling Program

Understand and predict climate variability and change from weeks to decades to a century with quantified uncertainties sufficient for making informed and reasoned decisions on issues related to drought, water resources, ecosystems, health, energy, and extreme events.

Three capabilities:

1. **Understanding climate processes**
   1. Research and development
   2. Non-CO₂ radiative forcing agents
   3. Ozone layer recovery

2. **Earth System modeling, predictions, and projections**
   1. Operational forecasts and assessments
   2. Making use of observations
   3. Understanding past and present climate change
   4. Projections and predictions of climate change

3. **Climate analysis and attribution**
   1. Attribution of past and present climate variations and change
   2. Improving estimates of climate forcings and understanding their causes
Climate Service Development (CSD) represents the element where input from decision makers and risk managers, with the aid of social science, drives the process of producing NOAA climate data, information, outlooks, and applications that are easily understood, useful, and operationally delivered.

Two capabilities:

1. Assessing climate, impacts, and adaptation
   - Regional Integrated Sciences and Assessments (RISA)
   - North Pacific Climate Regimes and Ecosystem Productivity (NPCREP) Program
   - International Institute for Climate and Society
   - Sectoral Decision Support

2. Climate services development and delivery
   - Transition of Research Applications to Climate Services (TRACS)
   - National Integrated Drought Information System (NIDIS)
   - Operational Climate Services
   - Climate Test Bed
   - Precipitation Frequency Estimates
   - Regional Climate Centers
Links to Other Programs

- Climate Observations and Monitoring Program
- Climate Research and Modeling
- Climate Information, Products, and Applications
Goal and Sub-Goal Leads Responsibilities:

- Provide leadership and coordination across the goal
- Serve as the principal coordinating body to ensure a consistent NOAA message to external partners and stakeholders
- Assist with the update of the NOAA Strategic Plan and the development of the Annual Guidance Memorandum
- Lead the development of Program Plans coordinating with program managers, Line and Staff Offices and councils
- Assist with Line and Staff Office budget preparation
- Represent the goal in budget reviews
- Recommend any needed changes in the distribution of resources based on decisions through the PPBES cycle
- Work with the PPI, PA&E, and Chief Financial Officers/Budget Chiefs throughout the PPBES to develop sound fiscal budget requests and executable programs/projects
## NOAA Planning, Programming, Budget, and Execution System (PPBES)

<table>
<thead>
<tr>
<th>What NOAA… When:</th>
<th>Planning</th>
<th>Programming</th>
<th>Budgeting</th>
<th>Execution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Purpose:</td>
<td>Should do</td>
<td>Can do</td>
<td>Will do</td>
<td>Does</td>
</tr>
<tr>
<td></td>
<td>JAN-JUN</td>
<td>JUN-JAN</td>
<td>NOV-APR</td>
<td>OCT-SEP</td>
</tr>
<tr>
<td>Includes:</td>
<td>Plan to accomplish NOAA's long-term and annual priorities</td>
<td>Program NOAA resources to yield the greatest results</td>
<td>Budget for and ensure the financial management of NOAA Program</td>
<td>Execute NOAA Program to deliver NOAA products and services in an efficient and effective manner</td>
</tr>
<tr>
<td></td>
<td>Stakeholder Meetings</td>
<td>Program Guidance Memos from PA&amp;E</td>
<td>Line Office Program Adjustment Narratives</td>
<td>Enacted Budget</td>
</tr>
<tr>
<td></td>
<td>NOAA Strategic Plan</td>
<td>Goal Program Plan</td>
<td>Budget Submissions:</td>
<td>Annual Operating Plans</td>
</tr>
<tr>
<td></td>
<td>Annual Guidance Memo</td>
<td>Program Decision Memo</td>
<td>- Line Offices to NOAA</td>
<td>Executing Line Offices and Project Managers</td>
</tr>
<tr>
<td></td>
<td>Program Guidance Memos from PPI</td>
<td>Program Decision Memo with Budget Adjustment</td>
<td>- NOAA to Dept of Commerce</td>
<td>Implement Program Project Activities (PPA) Plans</td>
</tr>
<tr>
<td></td>
<td>Program Operating Plans (POP)</td>
<td></td>
<td>- Dept of Commerce to OMB</td>
<td></td>
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</tbody>
</table>
Planning Phase

**Goal Team Math**

100% Requirement

- Current Program

Capability Gap

Alternatives to Fill the Gap

Planning

<table>
<thead>
<tr>
<th>Should do</th>
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<tbody>
<tr>
<td>JAN-JUN</td>
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</table>

Plan to accomplish NOAA's long-term and annual priorities

- Stakeholder Meetings
- NOAA Strategic Plan
- Annual Guidance Memo
- Program Guidance Memos from PPI
- Program Operating Plans (POP)
- Goal Strategic Portfolio Analysis (SPA)
Programming Phase

- Fiscal guidance provided
- Integrated Priority Lists
  - Line Offices and Regional Collaboration Teams identify critical unfunded requirements
- Program Plans
  - Goal synthesis and prioritization of alternatives
  - Justify adjustments to existing programs and new programs
Budgeting Phase

- Elements of a Budget Narrative
  - Title of Program Change
  - Proposed Cost
  - FTE positions
  - One sentence description
  - Proposed Actions/Activities
  - Requirements: Statement of Need, Justification
  - Schedule and Milestones
  - Deliverables
  - Performance Measures
  - Multi-year Program Information

Budget for and ensure the financial management of NOAA Program

- Line Office Program Adjustment Narratives
- Budget Submissions:
  - Line Offices to NOAA
  - NOAA to Dept of Commerce
  - Dept of Commerce to OMB
  - President to Congress

Will do
NOV-APR
Execution Phase

- NOAA satisfies statutory and regulatory duties
- Products and services that have been planned, programmed, budgeted and approved are delivered
- Annual Operating Plans (AOPs)
  - Program Information/Planned Accomplishments
    - Objectives
    - Performance Measures and Milestones
  - Budget Resource Information
    - Proposed Funds Realignment
    - New Starts/Terminations of Programs
    - Extramural Research Budget
    - Financial Audit Action
  - Transition of Research to Applications

<table>
<thead>
<tr>
<th>Execution</th>
<th>Does OCT-SEP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Execute NOAA Program to deliver NOAA products and services in an efficient and effective manner</td>
<td></td>
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<tr>
<td>• Executing Line Offices and Project Managers Implement Program Project Activities (PPA) Plans</td>
<td></td>
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<tr>
<td>• Enacted Budget</td>
<td></td>
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<tr>
<td>• Annual Operating Plans</td>
<td></td>
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</tbody>
</table>
Case Study: Ocean Acidification

Collaboration between Climate and Ecosystem Goals
Today’s atmospheric CO$_2$ concentration is 40% higher than anytime in the last 400 thousand years.
Fate of anthropogenic CO$_2$ emissions

7.5 Pg C y$^{-1}$

1.5 Pg C y$^{-1}$ + 

4.2 Pg C y$^{-1}$ Atmosphere 46%

2.6 Pg C y$^{-1}$ Land 29%

2.3 Pg C y$^{-1}$ Oceans 25%

Canadell et al. 2007, PNAS (updated)
Oceanic uptake of atmospheric CO$_2$

- Climate change at 25% “discount”.
  This is a huge subsidy to the global economy --- worth $250B annually if an equivalent sink had to be created using other climate mitigation options.

- This valuable “discount” comes at a steep ecological cost.
  The ocean is acidifying and this is threatening the marine ecosystem.
pH of the ocean

- pH has decreased by 0.1 unit since the beginning of the Industrial Revolution.

- This increase is 100 times faster than any change in ocean acidity for at least the last 20 million years.

- By 2100, the pH will drop by an additional 0.3 unit.
Ecosystem impact of ocean acidification

Malformed coccoliths and incomplete coccospheres increased in relative numbers with increasing CO₂ concentrations.

At pCO₂ 740 ppm:
- 25% decrease in calcification for mussels
- 10% decrease in calcification for oysters

Planning Phase: Ocean Acidification

- FY08: First alternative proposed by Ecosystem Goal for sensor development
- FY09: Multiple alternatives in Climate and Ecosystem Goals for monitoring and research
- FY10: Climate and Ecosystem alternatives improved and re-requested, integrates and links multiple Goal programs for a truly integrated initiative
- FY11: New Climate Goal alternatives proposed for Earth System Modeling, Ecosystem Goal alternatives support programs from 4 Line Offices

Planning

<table>
<thead>
<tr>
<th>Should do</th>
</tr>
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<tr>
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Plan to accomplish NOAA’s long-term and annual priorities

- Stakeholder Meetings
- NOAA Strategic Plan
- Annual Guidance Memo
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- Program Operating Plans (POP)
- Goal Strategic Portfolio Analysis (SPA)
Programming Phase: Ocean Acidification

- FY09: Climate Ocean Acidification alternative request of $1.8M in above core*
- FY10: Climate Ocean Acidification alternative for monitoring for $3M within core*
- FY11: Climate Program Plan included Ocean Acidification modeling in Earth System Modeling alternative, Ecosystem Goal integrated alternative for $2.5M within core* and $10M above core*

**”Above core” is an alternative that is above/outside of the fiscal guidance provided by PA&E.  
“Within core” is an alternative that is within fiscal guidance (i.e. within the allotted budget guidance).**
Budgeting Phase: Ocean Acidification

- **FY09**: Ocean Acidification not requested in budget
- **FY10**: Climate alternative for $4M in President’s Budget (now in Congress). Companion $1.5M under Ecosystems (Fisheries)
- **FY11**: Ocean acidification early warning system included in DOC Budget request for $3M; Earth System Modeling piece remains. Ecosystem’s integrated alternative included in DOC budget request for $12.5M
## Budget Phase: Ocean Acidification

<table>
<thead>
<tr>
<th>Climate Research</th>
<th>FY 2009 Omnibus</th>
<th>Terminations</th>
<th>Total ATBs</th>
<th>Program Change</th>
<th>FY 2010 Request</th>
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</thead>
<tbody>
<tr>
<td>Competitive Research Program</td>
<td>$132.0</td>
<td>$0</td>
<td>$0.4</td>
<td>$11.8</td>
<td>$144.2</td>
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<tr>
<td>Ocean Acidification Monitoring</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$4.0</td>
<td>$4.0</td>
</tr>
</tbody>
</table>

### Why
- Improve understanding of climate-ecosystem interactions and associated impacts on marine ecosystems
- Address the Magnuson-Stevens Reauthorization Act of 2006 requirement to consider climate impacts in living marine resource management decisions
- Address the U.S. Ocean Action Plan, which calls for NOAA to take an ecosystem-based approach to management

### What
- Install 13 open-ocean and 7 coastal moorings with sensors to observe changes in the acidity (pH) of the ocean and the concentration of dissolved carbon dioxide
- Expand in situ observations of sea surface carbonate chemistry in both the Pacific and the Atlantic basin

Dissolving corals at pH 7.7 after Hall-Spencer et al. (2008).
Budget Phase: Ocean Acidification

Schedule
- Establish ocean acidification monitoring and research team (2010)
- Develop ocean acidification data management system (2010)
- Install and maintain new ocean carbon and ocean acidification monitoring sites in the Atlantic and Pacific Oceans (2010-2014)
- Provide data & synthesis products from ocean acidification monitoring system to Geophysical Fluid Dynamics Laboratory to incorporate into Earth system and ecological models (2010-2014)

<table>
<thead>
<tr>
<th>Deliverables</th>
<th>FY10</th>
<th>FY11</th>
<th>FY12</th>
<th>FY13</th>
<th>FY14</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ocean carbon observatory sites (cumulative #)</td>
<td>4</td>
<td>8</td>
<td>12</td>
<td>16</td>
<td>20</td>
</tr>
<tr>
<td>Implementation of ocean acidification information delivery system (cumulative %)</td>
<td>0</td>
<td>12</td>
<td>25</td>
<td>50</td>
<td>100</td>
</tr>
<tr>
<td>Ocean acidification indices developed (cumulative #)</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>

Performance Metrics

**DOC Goal:** Observe, protect, and manage the Earth's resources to promote environmental needs.

**NOAA Performance Goal:** Climate

<table>
<thead>
<tr>
<th>Reduced uncertainty in measurements of changes in ocean acidity (pH)</th>
<th>FY 2010 without increase</th>
<th>FY 2010 with increase</th>
<th>FY 2014 without increase</th>
<th>FY 2014 with increase</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.005 pH units/year</td>
<td>0.002 pH units/year</td>
<td>0.005 pH units/year</td>
<td>0.002 pH units/year</td>
</tr>
<tr>
<td>Execution</td>
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<tr>
<td><strong>Does</strong></td>
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<tr>
<td>OCT-SEP</td>
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Execute NOAA Program to deliver NOAA products and services in an efficient and effective manner

- Executing Line Offices and Project Managers Implement Program Project Activities (PPA) Plans
- Enacted Budget
- Annual Operating Plans

### Key NOAA Players (currently funded)

- Office of Oceanic and Atmospheric Research (OAR)
  - Pacific Marine Environmental Lab (PMEL)
  - Atlantic Oceanographic and Meteorological Lab (AOML)
  - Geophysical Fluid Dynamics Lab (GFDL)
  - Climate Program Office (CPO)
- National Environmental Satellite, Data, and Information Service (NESDIS)
  - Coral Reef Watch
- National Marine Fisheries Service (NMFS)
  - Alaska Fisheries Science Center
  - Northwest Fisheries Science Center
  - Southwest Fisheries Science Center
Current and Proposed OA activities

Long term monitoring of ocean acidification (PMEL in Seattle, WA).

Repeated hydrography of ocean acidification (AOML in Miami, WA).

Physiological response of ocean acidification (Alaska Fisheries Center).

Ocean acidification early warning system (PMEL, AOML, GFDL)
Case Study: Ocean Acidification

- **Climate Goal**
  - Pre-FY08: Ocean monitoring and research
  - FY09: Several alternatives proposed - not funded
  - FY10: Successful monitoring alternative
  - FY11: Successful modeling alternative and early warning system request
  - FY12: In progress

- **Ecosystem Goal**
  - Pre-FY08: Ad hoc physiological impact studies
  - FY08: Sensor development alternative proposed
  - FY09: Several alternatives proposed - not funded
  - FY10: Physiological studies request
  - FY11: Successful integrated alternative
  - FY12: In progress
How You Can Contribute

- **Planning**
  - Program Operating Plans/Alternative Development
  - Next Generation Strategic Plan (every 4 years)
  - Annual Guidance Memorandum

- **Programming**
  - Goal Team Program Plans
  - Line Office Integrated Priority Lists

- **Budgeting**
  - Line Office Budget Justifications

- **Execution**
  - Annual Operating Plans
Lessons Learned

- It can take multiple cycles to get traction: do not get discouraged!
- It is important to have a strong business case, not just a good idea
- Politics/external pressure matter (ex. Ocean Acidification Legislation)
Developing an Alternative

Let’s practice!
Backup Slides
Climate Observations and Monitoring Program

**International Agreements**
- Global Earth Observation System of Systems
  - Integrated Ocean Observing System
  - Global Ocean Observing System
  - World Meteorological Organization Global Atmospheric Watch
- Intergovernmental Panel on Climate Change

**Interagency Agreements**
- National Integrated Drought Information System (NIDIS) (USGEO)
- Architecture Data Management Plan (USGEO)
- Integrated Ocean Observing System (IOOS)
- Scientific Data Stewardship (in progress)

**Program Drivers**

**U.S. Executive Branch**
- Global Change Research Program Strategic Plan for the Climate Change Science Program
  - Strategic Plan for the U.S. Integrated Earth Observing System 2004
- U.S. Ocean Action Plan

**U.S. Legislation**
- U.S. Global Change Research Act of 1990
  - Weather Service Organic Act of 1890
  - National Climate Program Act of 1978
    - Integrated Coastal and Ocean Observations Act of 2009
    - Data Quality Act of 2001
CL-COM Program Project Activities (PPA)

Funding and Execution
CL-COM Program Overview
Capabilities/Projects

- Climate System Observations (OBS)
  - 16 Projects

- Data Management and Information (DMI)
  - 14 Projects

- Analysis of the Climate System Capability (Moved into CL-CRM)
  - 5 of 7 Projects moved to CL-CRM or CSD
**COM Program Description**

*Program Project Activities (PPA)*
*(each has a Project Operating Plan w/Performance Measures (PM))*

<table>
<thead>
<tr>
<th>Climate Observations and Monitoring (COM) Program Manager: Tom Karl</th>
</tr>
</thead>
<tbody>
<tr>
<td>Climate Observations and Monitoring (COM) Program Coordinator/Integrator: John Jensen</td>
</tr>
<tr>
<td>Based on FY 10-14 Climate Goal Restructure</td>
</tr>
<tr>
<td>Capability: Climate System Observations (OBS): OBS Capability Overall Coordinator: John Jensen, NESDIS/NCDC</td>
</tr>
</tbody>
</table>

### Atmospheric (Howard Diamond - NESDIS/NCDC/OCO)

<table>
<thead>
<tr>
<th>Funding LO</th>
<th>Execution</th>
</tr>
</thead>
<tbody>
<tr>
<td>OAR/Climate Data &amp; Info</td>
<td>U.S. Climate Reference Network (USCRN)</td>
</tr>
<tr>
<td>OAR/Climate Data &amp; Info</td>
<td>Global Climate Observing System (GCOS)</td>
</tr>
<tr>
<td>OAR/Lab-CIs</td>
<td>Air Resources Lab (ARL) (includes GEWEX)</td>
</tr>
<tr>
<td>OAR/Lab-CIs</td>
<td><strong>Current:</strong> U.S. BSRN (SURFRAD &amp; STAR) <strong>Future:</strong> Surface Energy Budget Network (SEBN) – SURFRAD, STAR, &amp; GEWEX</td>
</tr>
<tr>
<td>NWS/COOP</td>
<td>U.S. Historical Climatology Network Modernization (USHCN-M)</td>
</tr>
<tr>
<td>NWS/COOP</td>
<td>HPD F&amp;P Paper Recorders Replacement</td>
</tr>
<tr>
<td><strong>TBD</strong></td>
<td>Reference Radiosonde</td>
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</table>
### CL-COM Program Overview

*Program Project Activities (PPA)*
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<th><strong>Oceans</strong> (Mike Johnson - OAR/OCO)</th>
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</thead>
<tbody>
<tr>
<td>OAR/Lab-CIs &amp; Comp. Research</td>
<td>AOML (associated with GOOS)</td>
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<tr>
<td></td>
<td>OAR/AOML</td>
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<tr>
<td>OAR/Lab-CIs &amp; Comp. Research</td>
<td>PMEL (associated with GOOS)</td>
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<tr>
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<td>OAR/PMEL</td>
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<tr>
<td>OAR/Comp Research</td>
<td>GOOS – global ocean observing systems</td>
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<td></td>
<td>OAR/OCO</td>
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<tr>
<td>NWS Local Warnings &amp; Forecast</td>
<td>TAO Refresh/Transition (associated with GOOS)</td>
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<tr>
<td></td>
<td>NWS/NDBC</td>
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<tr>
<td>OAR Comp. Res. &amp; Arctic SEARCH</td>
<td>Arctic Climate Observations &amp; Monitoring (Atmosphere &amp; Ocean)</td>
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<td>OAR/OCO</td>
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<tr>
<th>Monitoring Carbon Forcing by CO2 and Other GHGs (Jim Butler – OAR/ESRL/GMD)</th>
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<tbody>
<tr>
<td>OAR/Lab-CIs Comp. Research Res.</td>
<td>Carbon Monitoring (Wide range of atmospheric constituents)</td>
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<tr>
<td></td>
<td>OAR/ESRL/GMD</td>
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<tr>
<td>OAR/Lab-CIs Comp. Research</td>
<td>CarbonTracker -Carbon Cycle Atmospheric Observing System</td>
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<td>OAR/ESRL/GMD</td>
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<tr>
<td>OAR/Lab-CIs Comp. Research</td>
<td>Global Carbon Cycle</td>
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<td>OAR/ESRL/GMD</td>
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<tr>
<td>OAR/Lab-CIs Comp. Research</td>
<td>Baseline Observatories</td>
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<td></td>
<td>OAR/ESRL/GMD</td>
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## CL-COM Program Overview

**Program Project Activities (PPA)**
*(each has a Project Operating Plan w/Performance Measures (PM))*

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<th>Capability: Data Management &amp; Information (DMI)</th>
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<tbody>
<tr>
<td>(DMI Capability Coordinator - Pete Steurer, NESDIS/NCDC, Co-lead Margarita Gregg, NESDIS/NODC)</td>
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</table>

<table>
<thead>
<tr>
<th>Agency</th>
<th>Project Description</th>
<th>Responsible Officer</th>
</tr>
</thead>
<tbody>
<tr>
<td>NESDIS/AAA</td>
<td>Archive, Access, and Assessment (Only NCDC)</td>
<td>NESDIS/NCDC</td>
</tr>
<tr>
<td>NESDIS/CLASS</td>
<td>CLASS (PAC) - Development</td>
<td>NESDIS/OSD</td>
</tr>
<tr>
<td>NESDIS</td>
<td>CLASS (ORF) - Operational Components (O&amp;M)</td>
<td>NESDIS Data Center Directors</td>
</tr>
<tr>
<td>NESDIS/CDMP</td>
<td>Climate Data Base Modernization (CDMP) (NOAA $s plus Ear Mark $s)</td>
<td>NESDIS/NCDC</td>
</tr>
<tr>
<td>NESDIS/EDSM</td>
<td>NOAA Virtual Data System (NVDS)</td>
<td>NESDIS/NCDC, NGDC, NODC</td>
</tr>
<tr>
<td>NESDIS</td>
<td>Scientific Data Stewardship/Climate Data Records (SDS/CDRs)</td>
<td>NESDIS/NCDC &amp; STAR + NASA</td>
</tr>
<tr>
<td>NESDIS/AAA-EDSM</td>
<td>Integrated Surface Observations (ISO)</td>
<td>NESDIS/NCDC</td>
</tr>
<tr>
<td>OAR Cli Data &amp; Info/NESDIS AAA</td>
<td>Network Performance Monitoring – Health of the Network (HON)</td>
<td>NESDIS/NCDC</td>
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<tr>
<td>OAR/CGC</td>
<td>Climate Change Data and Detection (C²D²)</td>
<td>OAR/CPO</td>
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<tr>
<td>OAR/Comp. Res.</td>
<td>NOAA Climate Model Portal (NCMP)</td>
<td>NESDIS/NCDC</td>
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<tr>
<td>OAR</td>
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<td>Climate Goal Team Members</td>
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