Recovery Act Instruments: Deployment and Data Processing Plans

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1. Introduction

$60M in capital investments for instrumentation and research infrastructure

Over 120 individual procurement actions and 50 datastreams
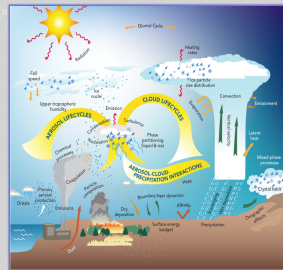
Accelerated procurement and implementation plan

Provide 3-dimensional measurements of cloud scale dynamics, microphysics, and precipitation

Provide enhanced measurements of atmospheric aerosol composition and chemistry

Enhance ARM measurement base to bridge new knowledge into, and improve, the predictive performance of climate models

A list of instruments being purchased is available here: http://www.arm.gov/about/recovery-act

2. Complementing Atmospheric System Research Objectives

Process Research and Modeling - Properties of, and interactions among, aerosols, clouds, precipitation and radiation.

Roles of atmospheric dynamics, thermodynamics, structure, radiation, surface properties, and chemical and microphysical processes in the life cycles of aerosols and clouds.

Identify and quantify the processes among the aerosol-cloud-precipitation continuum that affect the radiative fluxes at the surface to the top of the atmosphere and the radiative and latent heating rate profiles.

Supporting laboratory and field measurements, integrated data products, evaluation, and analysis.

Atmospheric System Depiction from the ASR Science Plan

3. Principal Measurement Groups And Supporting Infrastructure

Scanning Precipitation Radars

Reference Rain Network

Scanning Dual-Frequency Cloud Radars

Lidars for Clouds and Aerosols

Multi-frequency Microwave Radiometers

Infrared and Solar Spectroradiometers

Expanded Surface Flux Network

Atmospheric Aerosols and Chemistry

Atmospheric State

Research Site Infrastructure, Computing, and Networking

4.1 Accelerated Evolution Into 3-Dimensional Measurements of Cloud Life cycle

Volume Represented Cloud Properties, Precipitation, Water Vapor, Dynamics

4.2 Synergistic Aerial Measurements of Aerosols and Cloud Composition

In situ Cloud Particle and Aerosol Composition, Concentration, Size Distribution, and Chemistry

4.3 Enhanced Ground-Based Aerosol and Atmospheric Chemistry

Clouds Properties, Precipitation, Water Vapor, and Dynamics

Mobile Aerosols

Mobile Chemistry

Mobile Facility 2

Darwin
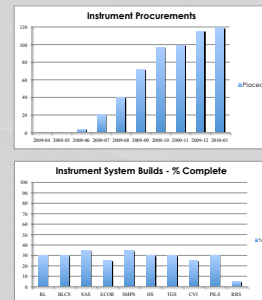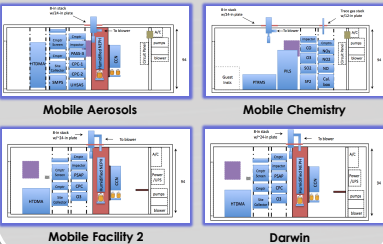
5. Project Status

All tasks are on track

Design Reviews for key tasks completed

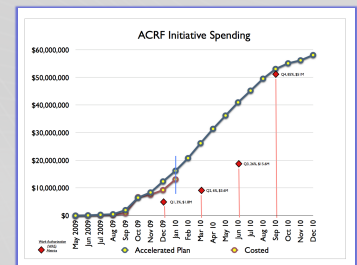93% of the project costs are committed

22% of the project is costed

100% of baseline instruments (120 procurements) are procured

23% of the baseline instruments have been received

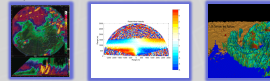Target 85% of project costed by FY2010 end

Project completion by January 1, 2011

6. Datastream Availability and Processing Workflow Improvements

Ingest, Collection, and Delivery
There are approximately 50 different instruments being introduced with a range of requirements.

Integrated Software Development Environment Provides
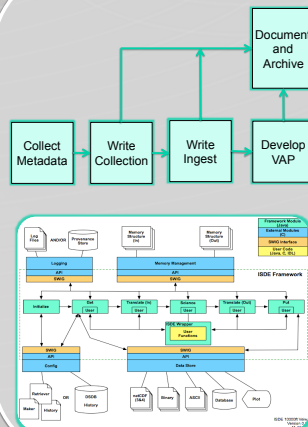
Improved user experience of scientists

Standardized retrieval, translation, and storage

Community approach to code development

Framework to analyze and process large data sets

Capability for external codes to be plugged into the ARM production pipeline

Environment hosted at ARM Archive

7. Near Term Priorities

Radar Site Preparations

Aerosol Enclosure Integration

Instrument Delivery and Integration

Site Infrastructure Enhancements

Computing and Network Infrastructure

Datastream Ingest and Development

Integrated Software Development Environment