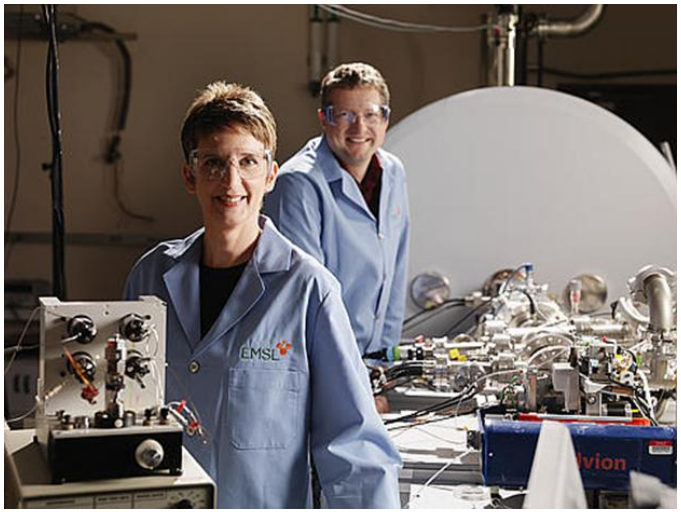
EMSL

ENVIRONMENTAL MOLECULAR SCIENCES LABORATORY

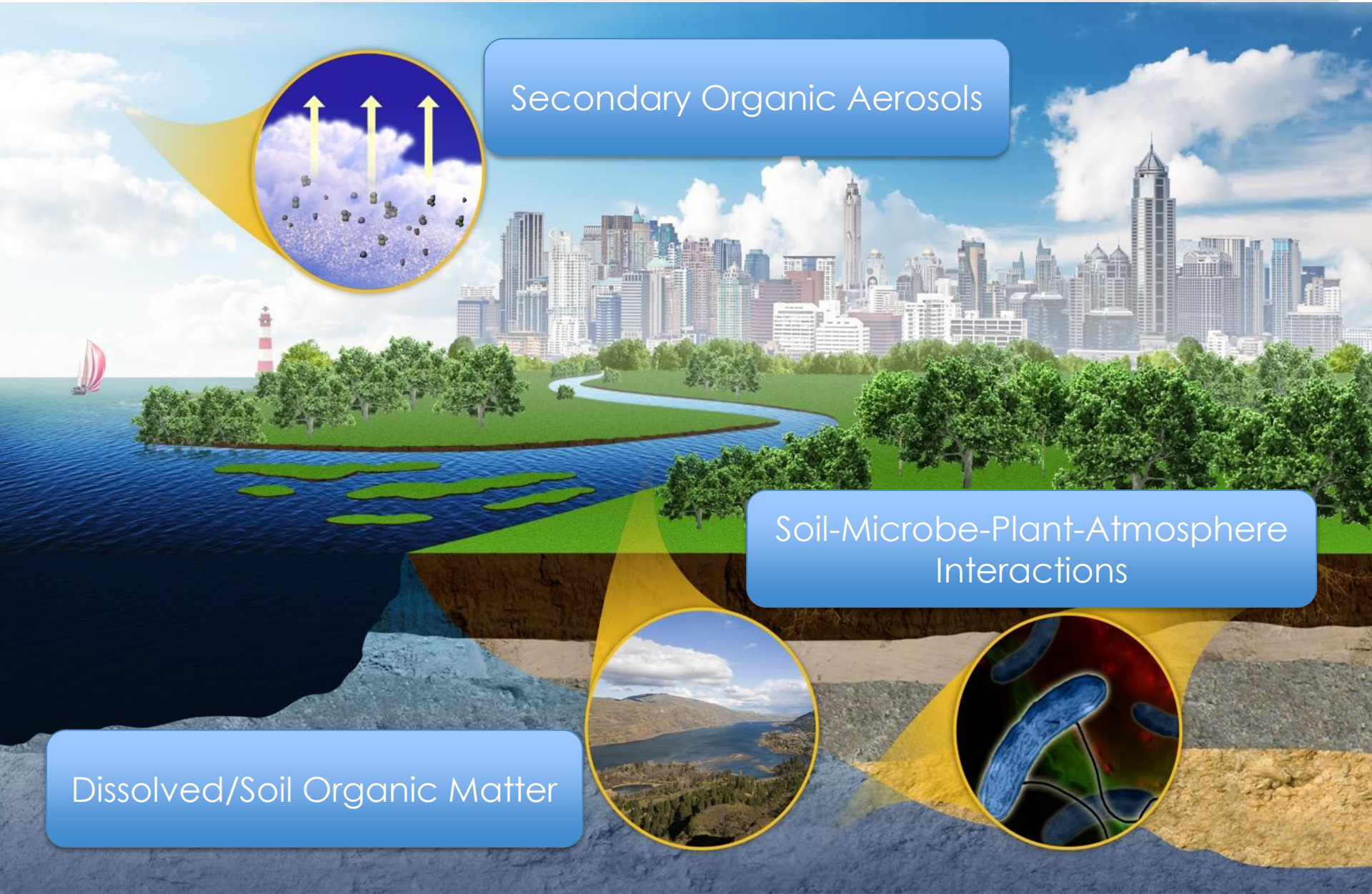
Our vision is to pioneer discoveries and mobilize the scientific community to provide the molecular science foundations for BER research priorities and our nation's critical biological, environmental and energy challenges

EMSL has worked to develop a new instrument to enable new science

- **H**igh **R**esolution **M**ass **A**ccuracy **C**apability (**HRMAC**) built an ultra-high resolution 21T FTICR mass spectrometer



High performance mass spectrometry for characterization of complex Earth systems



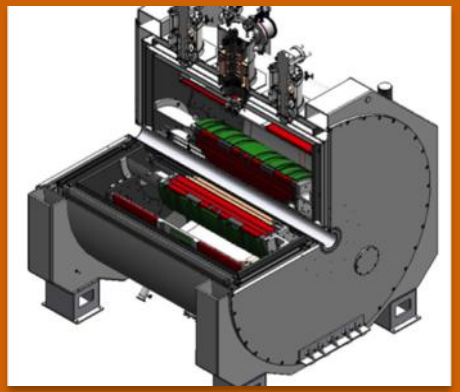
HRMAC – what was accomplished?

Ultra-high resolution mass spectrometer

Spectrometer

- Sample ionization and transfer, with compositional integrity
- Detect, measure ion cyclotron frequencies

21 T magnet



- Induce ion motion in cyclotron field

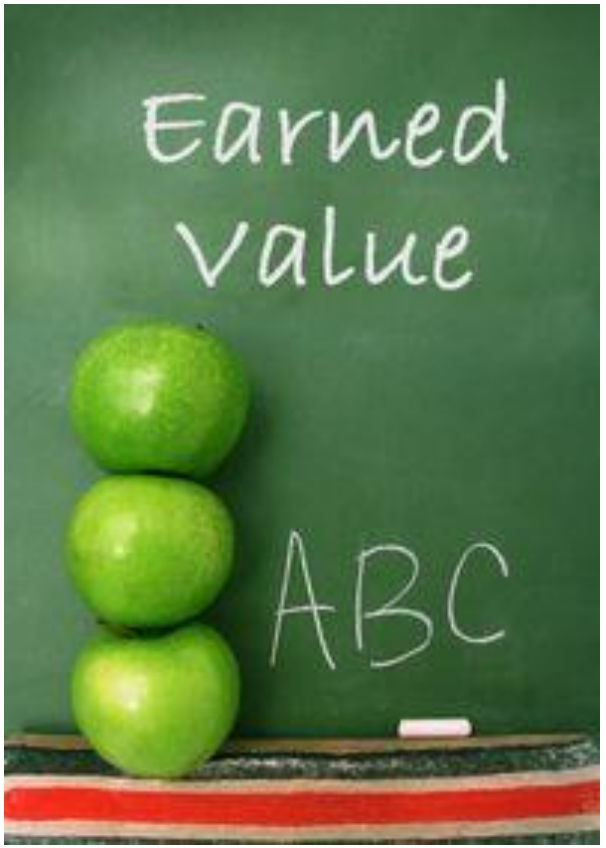
Data/control system

- Instrument control
- Data acquisition, frequency, m/z conversion

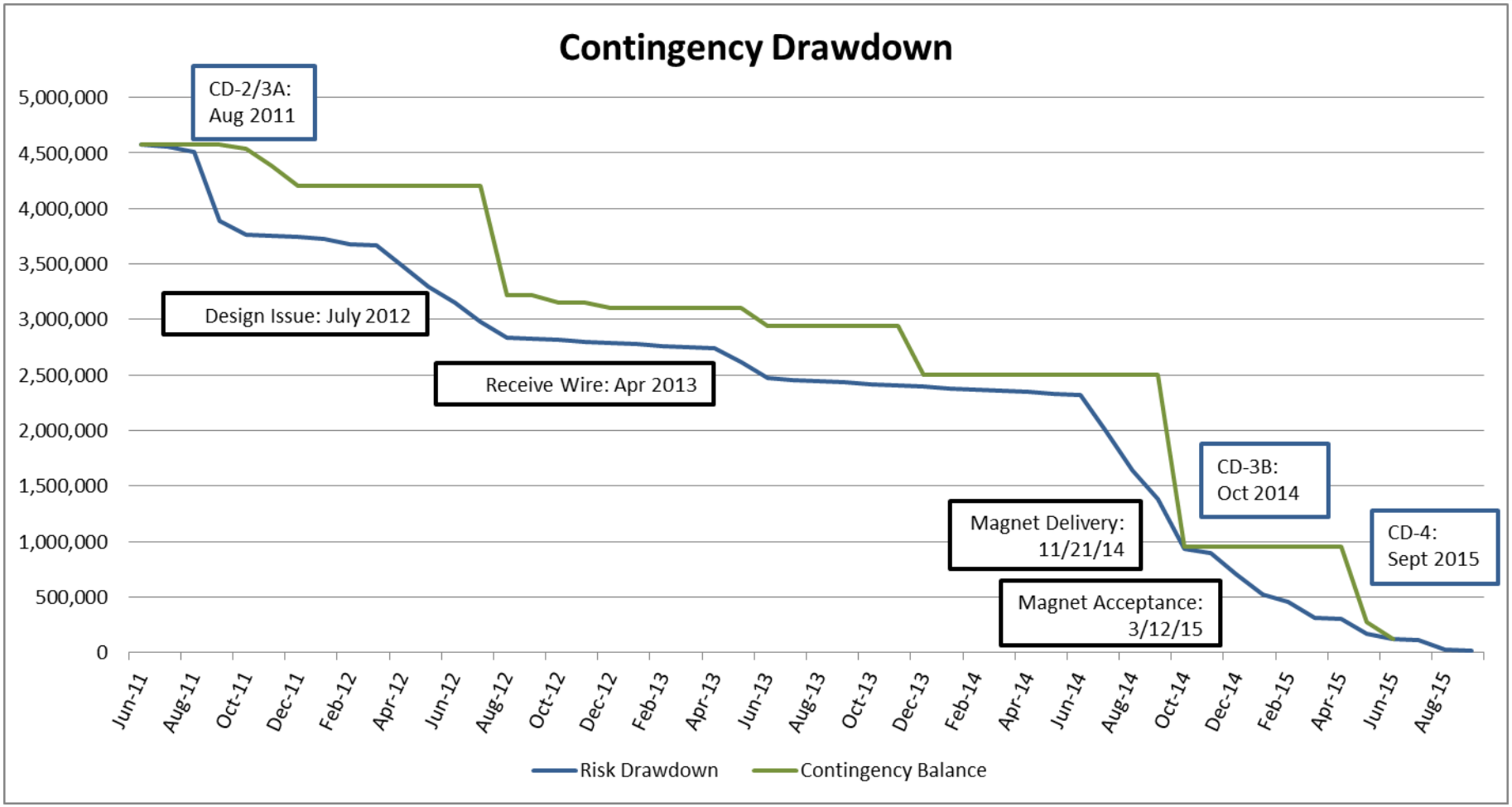
$17.5 M budget, 2009-2015 project period

Disciplined Approach to Project Management

- Critical Path Scheduling
- Monte Carlo Analysis
- Risk Based Contingency
- Disciplined Change Control
- Earned Value Management
- Detailed Monthly and Quarterly Reporting



Contingency - Plan vs. Actual



Baseline Project Cost Contingency:	**$ 4.578M**
Contingency Applied to Date:	**$ 4.454M**
Remaining Contingency:	**$ 0.124M**
Contingency Available for Conversion:	**$ 0.124M**

Best Practices & Lessons Learned

- Fixed Price Contract for High Dollar High Risk Procurements
- Building Strong Relationship with Vendor:
  - Weekly Calls
  - On-site Visits
  - Recovery from Issues
    - Helium shortage
- Project Manager/Principle Investigator Model
- Planning for Fluctuations in Base Materials