

An Overview of GEO Infrastructure Investments: Status and Timelines

National Science Board

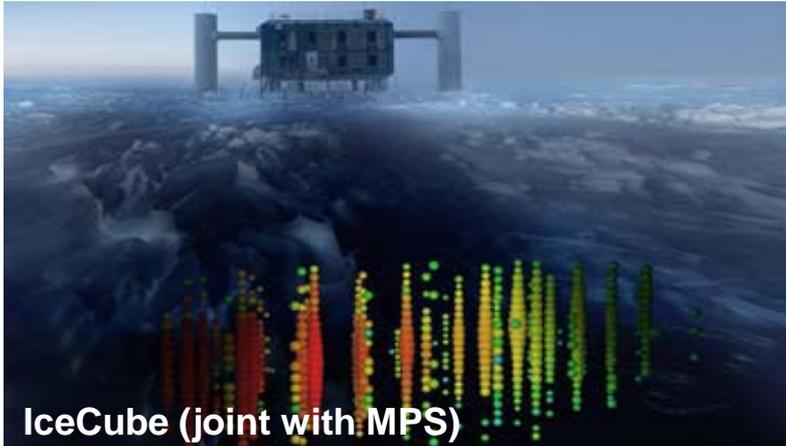
November 18, 2015



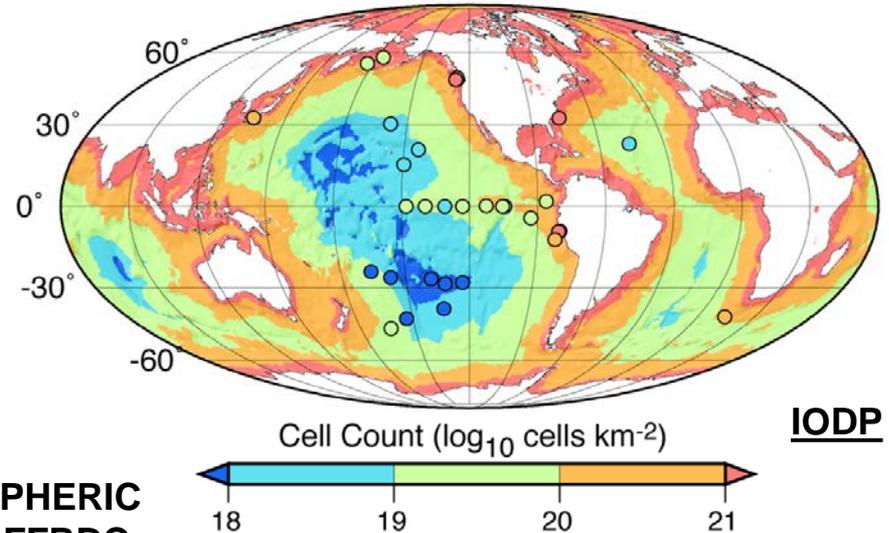
GEO Research

Some Highlights that Depend on Infrastructure

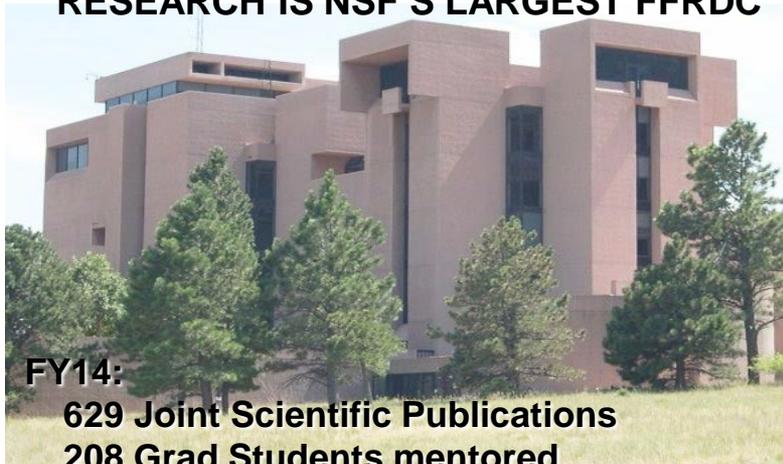
NEUTRINOS FROM POWERFUL ASTROPHYSICAL EVENTS OUTSIDE OUR GALAXY CONFIRMED!



AS MANY CELLS LIVE IN THE SEDIMENT BENEATH THE SEAFLOOR AS IN THE GLOBAL OCEAN



NATIONAL CENTER FOR ATMOSPHERIC RESEARCH IS NSF'S LARGEST FFRDC



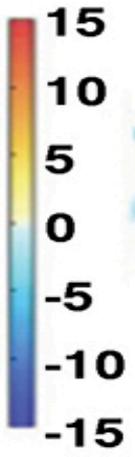
FY14:

629 Joint Scientific Publications

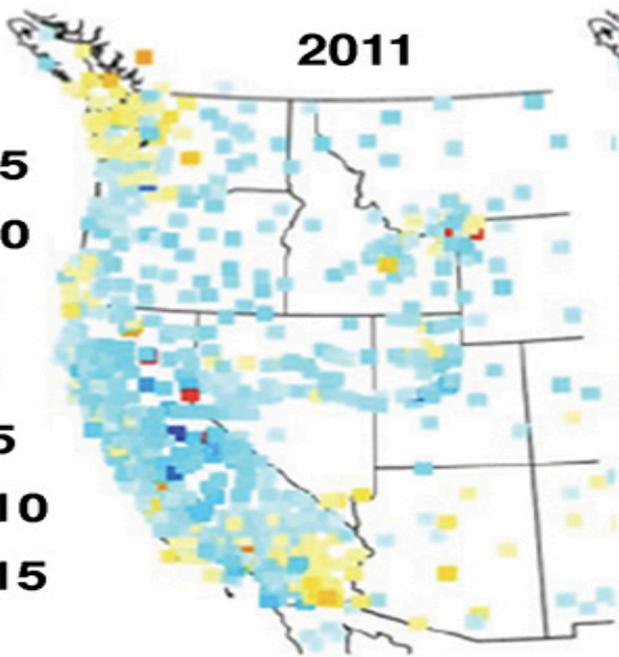
208 Grad Students mentored

66 NCAR staff taught in universities

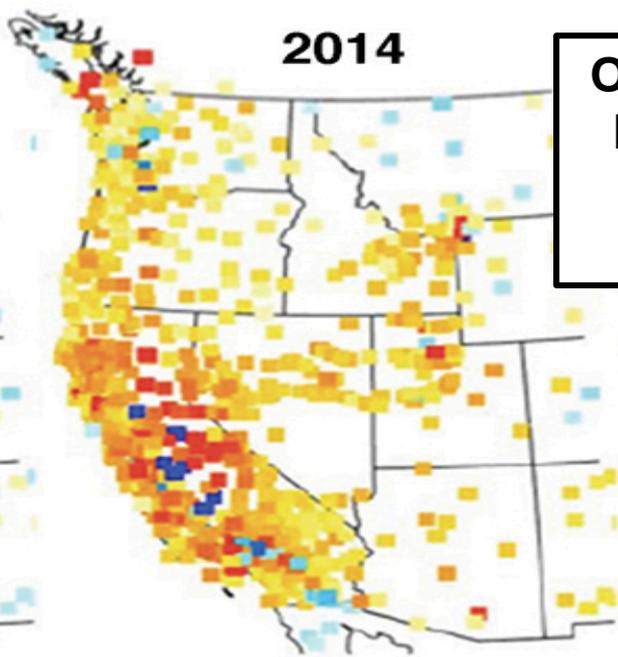
vertical displacement (mm)



2011

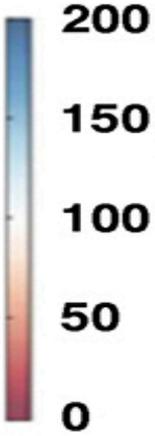


2014

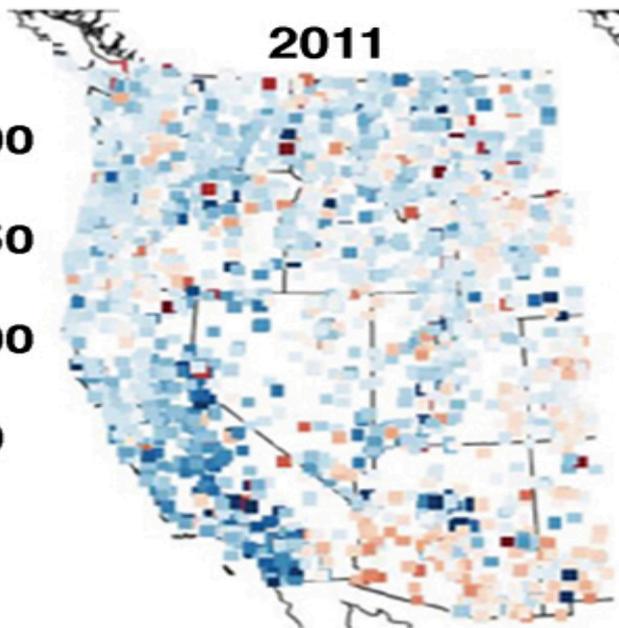


ONGOING DROUGHT-INDUCED CRUSTAL UPLIFT IN THE WESTERN U.S.

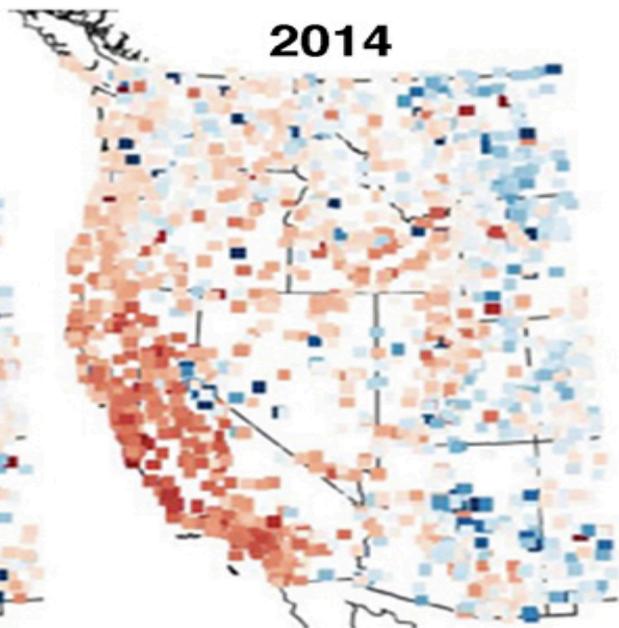
Rainfall (%2003-2014 mean)



2011



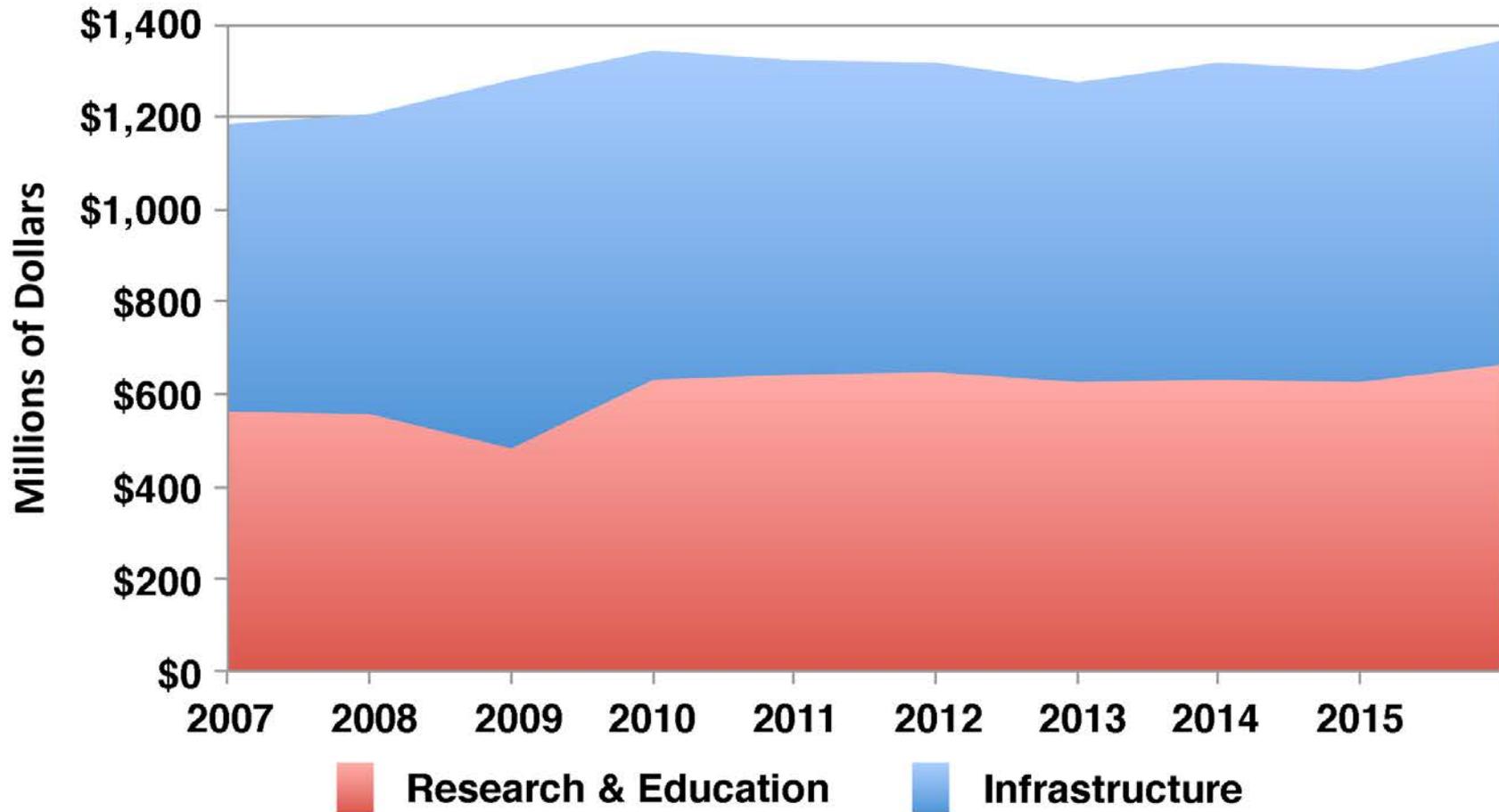
2014



Based on measurements from GPS stations

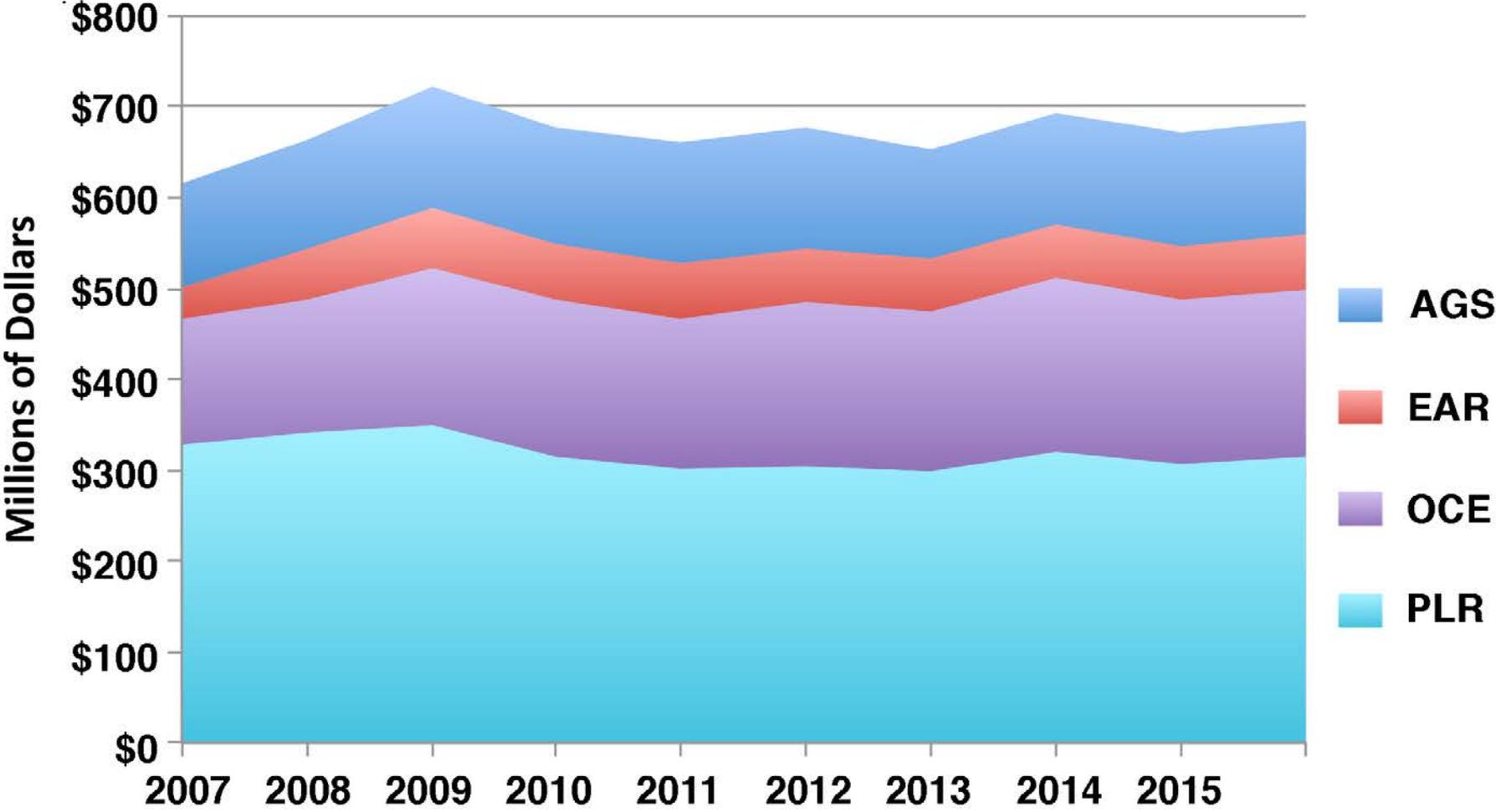
Borsa et al. (2014) Science

Infrastructure Support in GEO



Support for infrastructure stable: 51% - 54% of total, 51.4% in 2016 Request

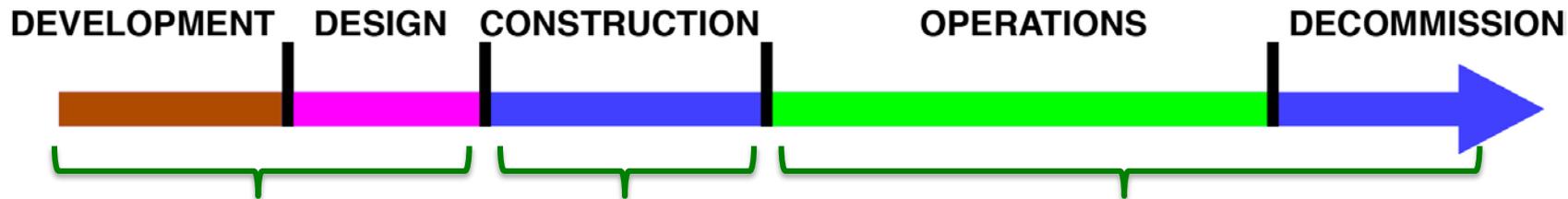
GEO Infrastructure



AGS – Atmospheric & Geospace Sciences
EAR – Earth Sciences

OCE – Ocean Sciences
PLR – Polar Programs

MREFC Timeline



Timeline partitioned into 3 segments in the next slide



RCRV

Regional Class Research Vessel

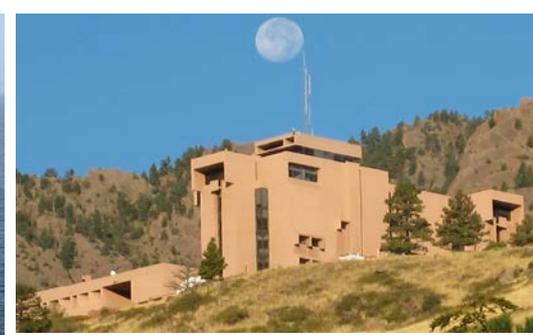


Sikuliaq



IODP

Intern. Ocean Discovery Prog.



NCAR

National Center for Atmos. Res.



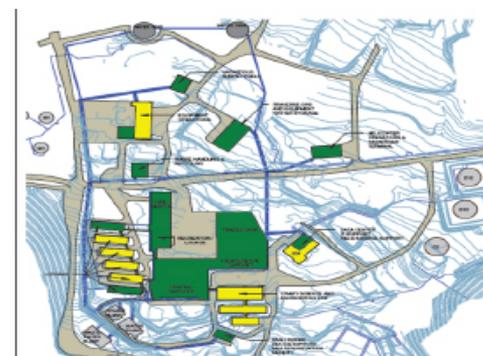
OOI

Ocean Observatories Initiative



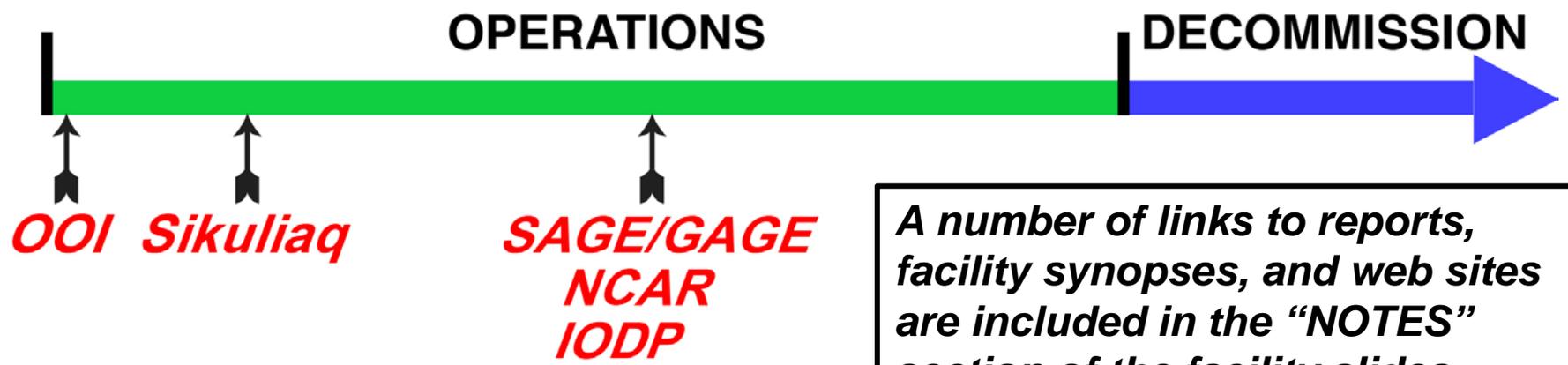
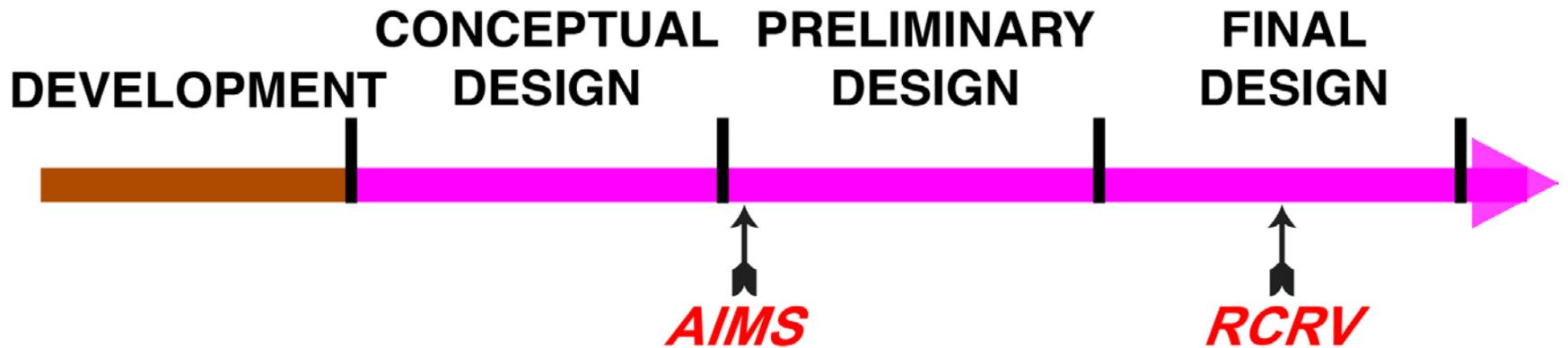
SAGE/GAGE

Seismological Facil. for the Advancement of Geo. & EarthScope
Geodesy Advancing Geo. & EarthScope

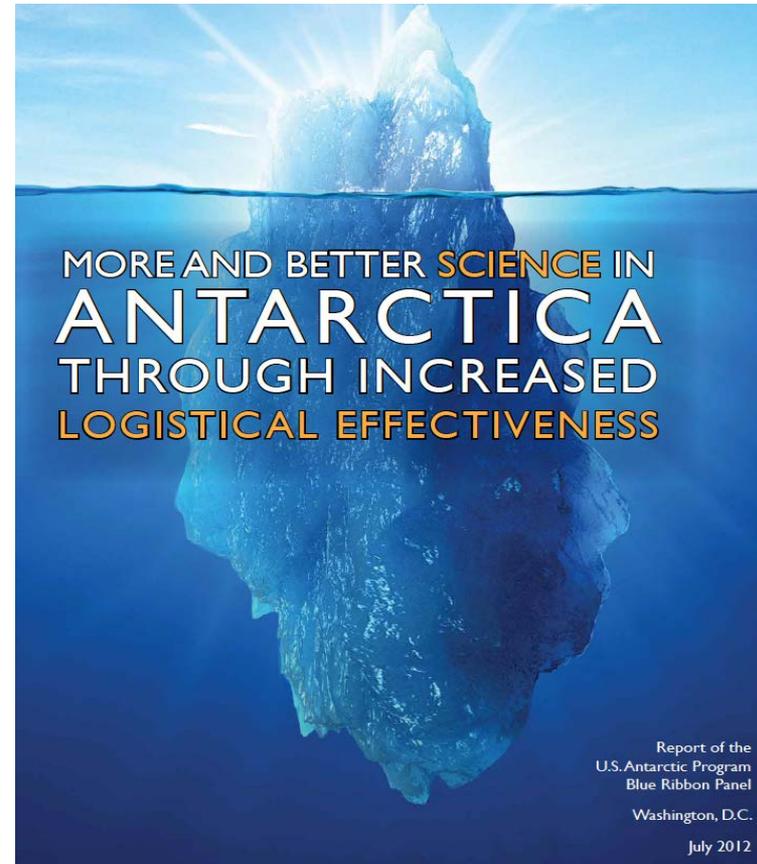
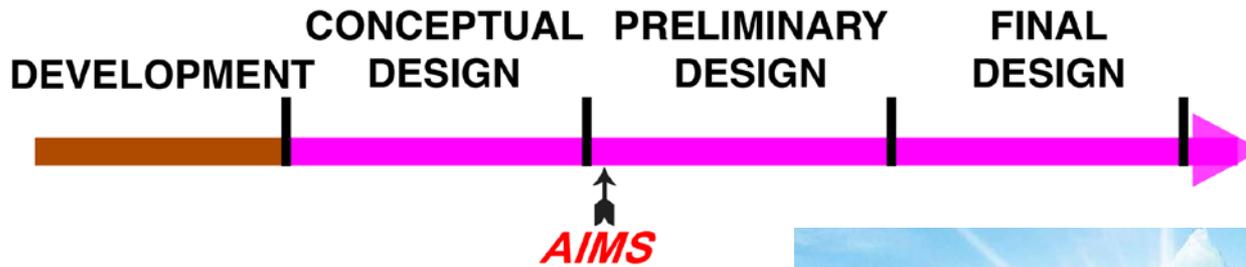


AIMS

Antarctic Infrast. Modernization for Sci.

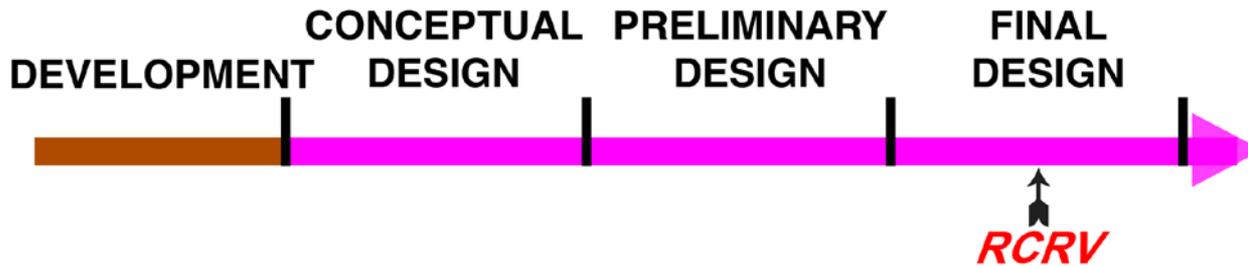


A number of links to reports, facility synopses, and web sites are included in the "NOTES" section of the facility slides



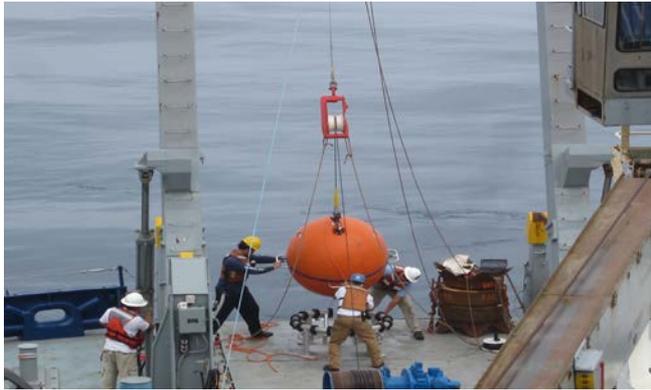
AIMS -

- **Conceptual Design Review April 2015**
- **Preliminary Design Phase October 2015**
- **4 Board members visited Antarctica in early November**
- **Additional discussion in Joint CPP/SCF closed session**

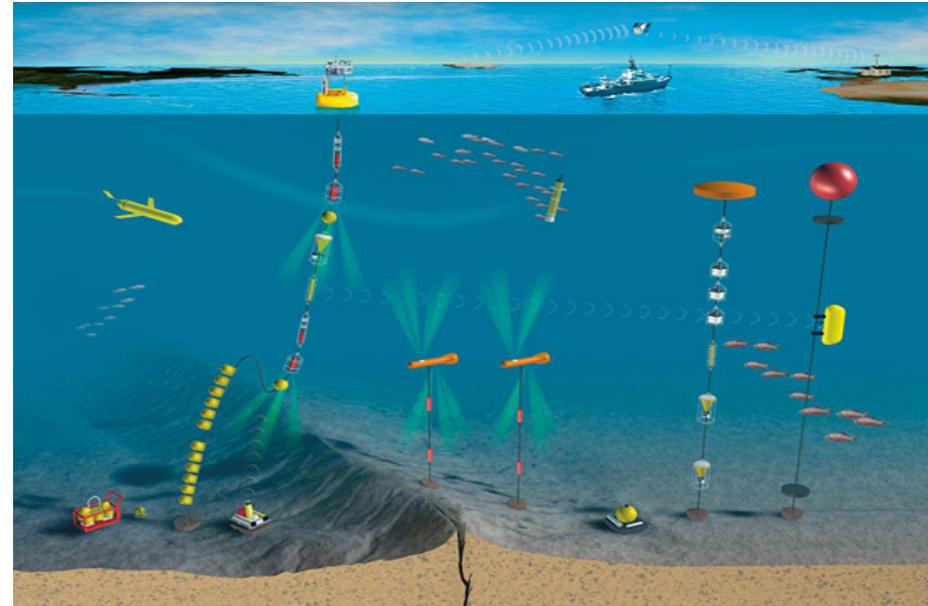


RCRV -

- 2-ship plan consistent with “Sea Change” recommendations
- OSU project team - drawing from the Sikuliaq experience, hiring UAF personnel, and using the same naval architecture firm
- NSF – conducted BSR which includes review of other OSU large construction projects, and has hired a naval architect consultant with large research vessel experience
- NSB approves inclusion in future budget request May 2015
- Final Design Review Oct 2016
- **TBD:**
 - **NSB Action on award for construction**
 - **Construction start**



Networked infrastructure of science-driven sensor systems to measure the physical, chemical, geological and biological variables in the ocean and seafloor.

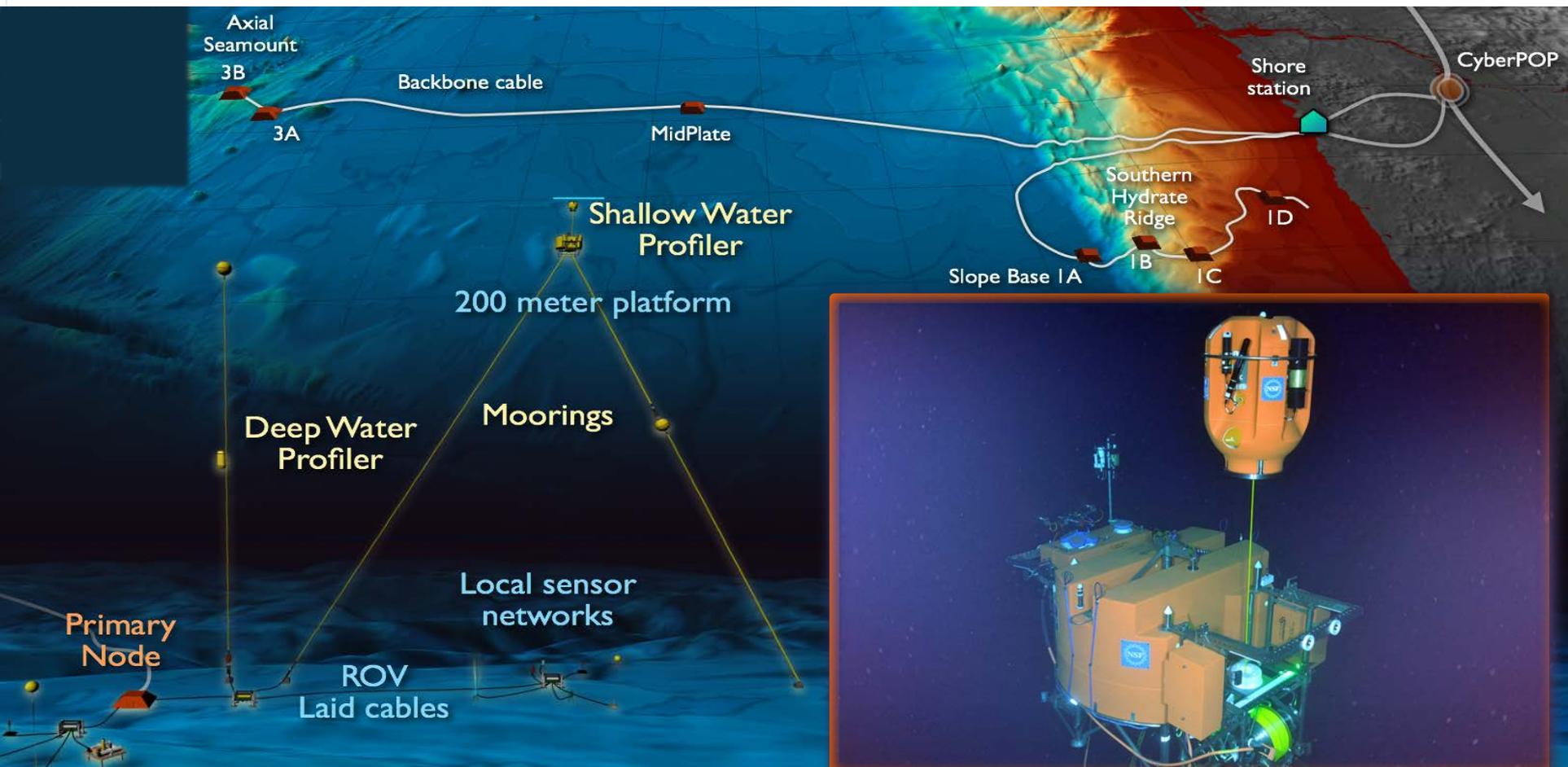
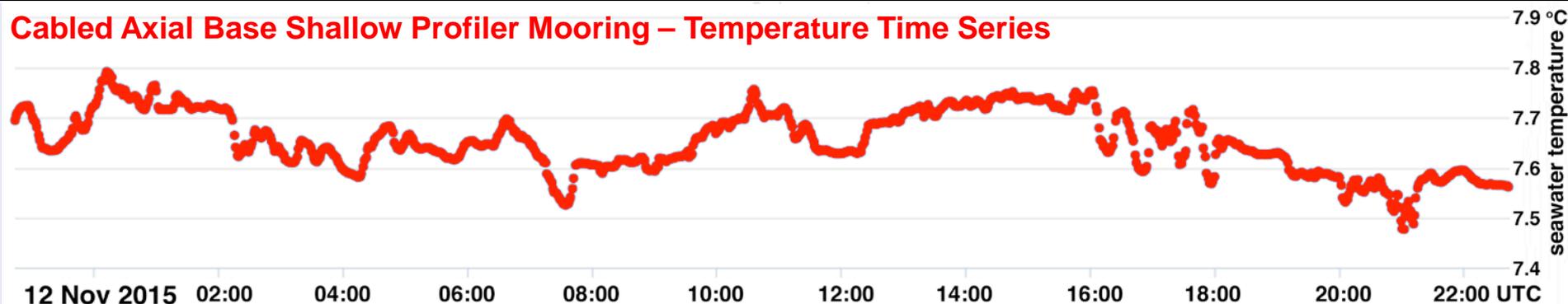


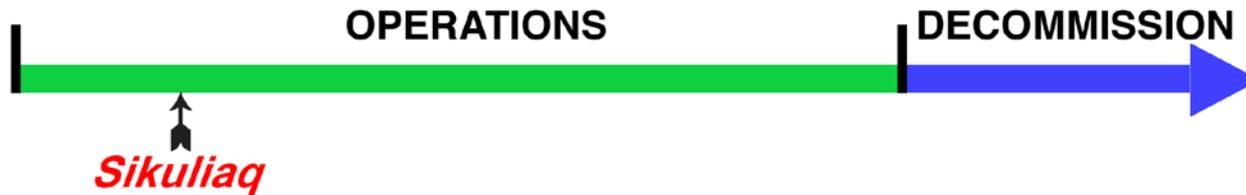
OOI -

- Commissioning and Science Trials in November 2015
- On budget (\$386.4M) & 8 months behind schedule. CI issues addressed and will fully function as a network by the end of the year
- 99% hardware delivered (sans one buoy system)
- Release re-compete solicitation Spring 2016/Proposals due Fall 2016
- **NSB action item May 2017 for a new O&M award**
- New award June 2017
- “Sea Change” – Reduce O&M \$55M ➡ \$44M will be specified in the solicitation

OOI Cyberinfrastructure Enables Ocean Data Access

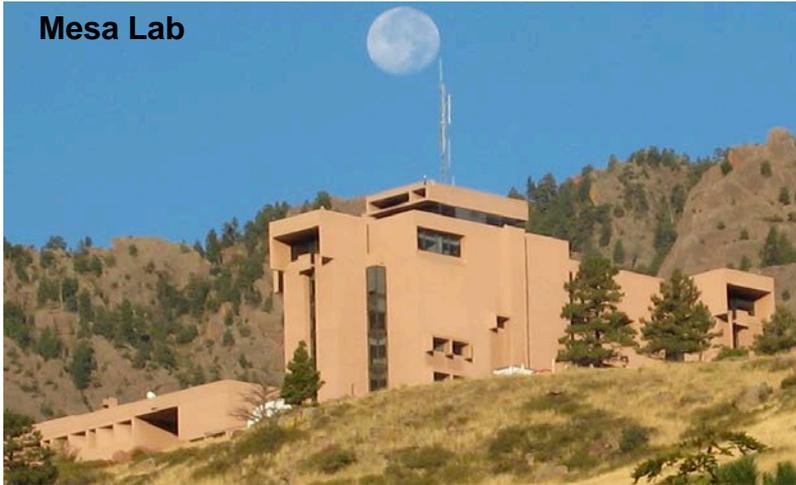
Cabled Axial Base Shallow Profiler Mooring – Temperature Time Series





Sikuliaq -

- **Delivered and Accepted June 2014**
- **First research cruise Nov 2014**
- **Early transition to operations cruises has been highly successful with no serious issues identified**
- **Completed 3 science cruises in the Arctic July-November 2015**
- **Cruises in Hawaii-Guam region and in the Arctic Marginal Ice Zone**



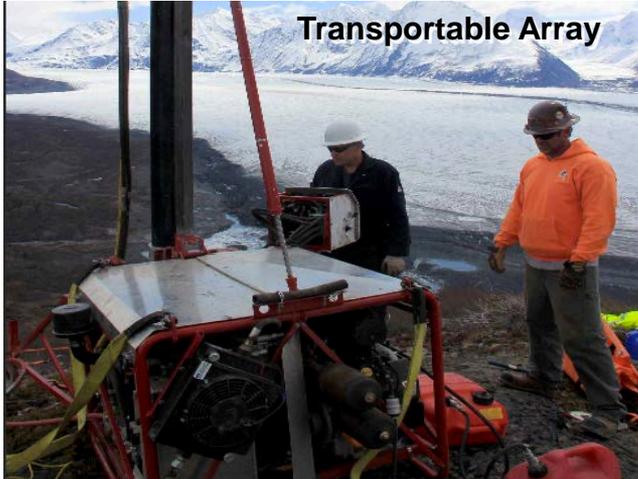
FFRDC

Mission: Understand the behavior of the atmosphere and related Earth and geospace systems; to support, enhance, and extend the capabilities of the university community; to foster the transfer of knowledge and technology.

FY15 - \$98.2M

NCAR -

- UCAR, the managing entity, is currently searching for a new President
- Science and Management reviews May - Aug 2016
- Recompensation in 2017-2018
 - Solicitation released May 2017
 - Proposals due October 2017
 - **NSB action item anticipated May 2018 for a new O&M award**
 - New award in place October 2018



GAGE Facility managed by UNAVCO and the SAGE managed by IRIS - providing geodetic, seismic, and related geophysical instrumentation, data, and educational capabilities to the community. FY15 SAGE - \$25.2M (EAR & PLR), GAGE - \$13.98M (EAR, PLR, & NASA)

SAGE/GAGE -

- **Community workshop June 2015**
- **NAS review Oct 2015**
- **RFP released March 2016/Proposals due Dec 2016**
- **Science & Management review in July 2017**
- **Suite of facilities supported will rely primarily on community input and will be articulated in the solicitation**
- **NSB action item Nov 2017 for a new O&M award**



The International Ocean Discovery Program (IODP) is an international marine research collaboration that explores Earth's history and dynamics using ocean-going research platforms to recover data recorded in seafloor sediments and rocks and to monitor subseafloor environments.



IODP -

- **Current award extends through end of FY 2019**
- **Mid-award review March 2017**
- **“Sea Change” recommended 10% reduction in O&M which has been achieved and proceeded ahead of schedule**
- **Discussion with international partners on increasing their contribution to program costs for 2018 and beyond**

Anticipated NSB Actions through 2018



2016

2017

May – OOI action to make new O&M award

Nov – SAGE/GAGE action for new O&M award(s)

2018

May – NCAR action for new O&M award

TBD – NSB action on award for RCRV construction

TBD – AIMS timeline not sufficiently defined at this time

Questions?

Look forward to debriefing this presentation

5/31/13

El Reno, OK