

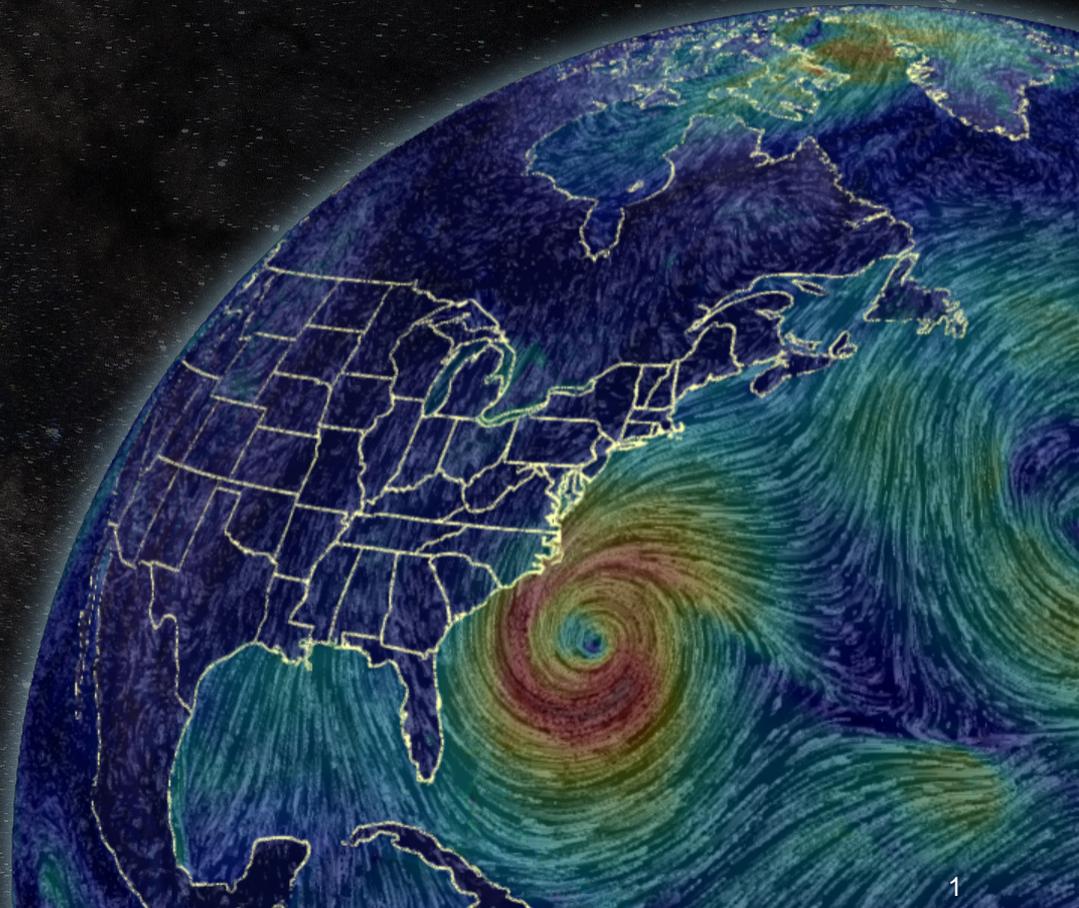
Advanced Technology: *Making Forecasts Better*

John P. Schneider

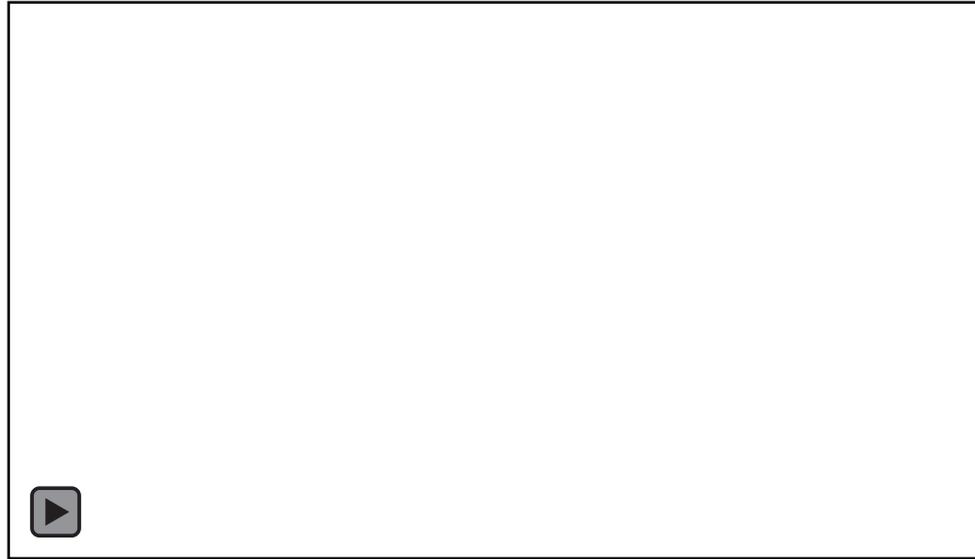
NOAA/ESRL/GSD



GSD Science Review
3-5 Nov 2015



Finding & Delivering Technologies

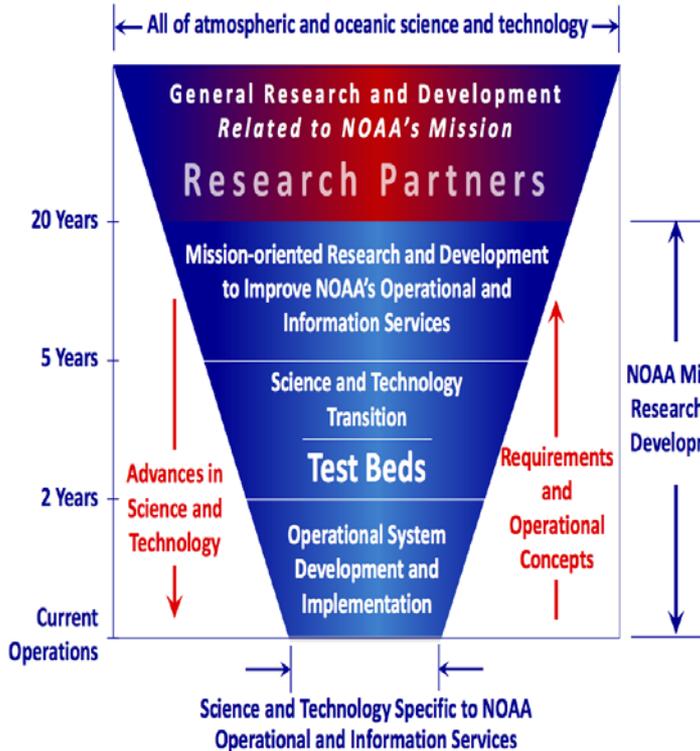


Session 6: Advanced Technology Investigation

Session 7: Research to Applications and Outreach

Advanced Tech and the NOAA Funnel

NOAA Research and Development Funnel



Session 6: Advanced Technology Investigation

Session 7: Research to Applications and Outreach

Relevance – *Demanding* GSD to

National Strategic Computing Initiative

OMB Science & Tech Priorities FY17

NOAA Enterprise Objectives

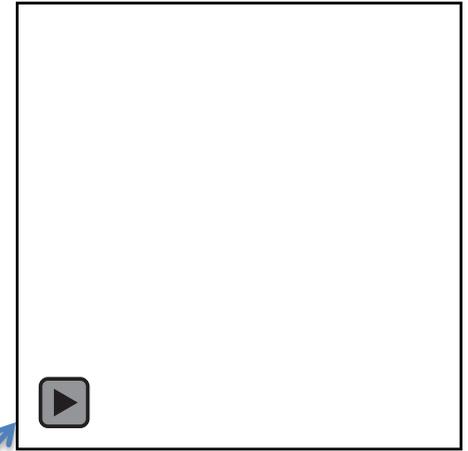
NOAA's Education Strategic Plan

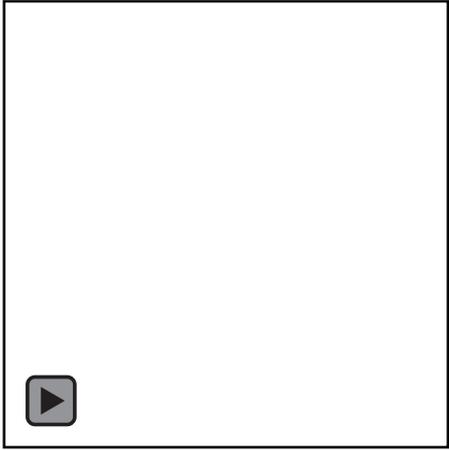
NOAA FY16 Budget Priorities

OAR Annual Operating Plan

2010 Review

Transition/Strategic
Plans





Opportunities for Advancement

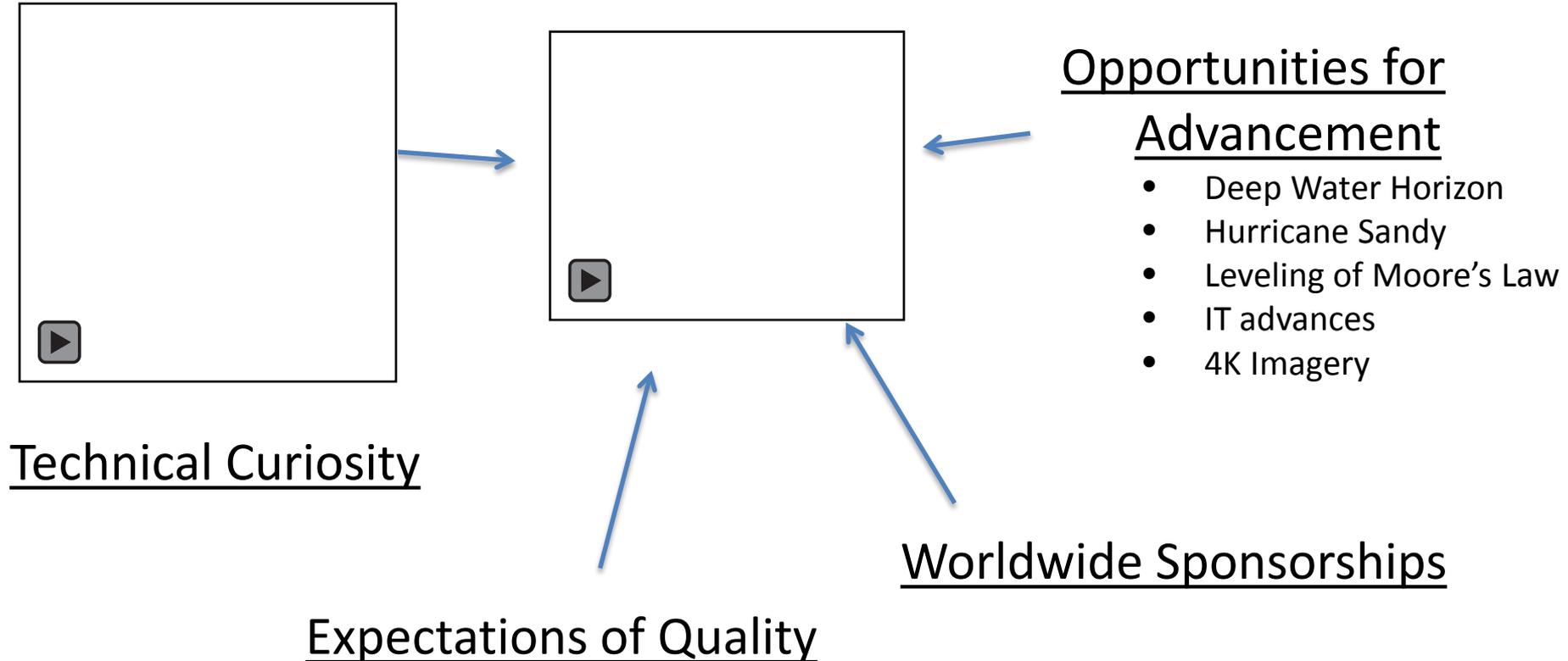
- Deep Water Horizon
- Hurricane Sandy
- Leveling - Moore's Law
- IT advances
- 4K Imagery

Technical Curiosity

Expectations of Quality

Worldwide Sponsorships

Relevance – *Inspiring* GSD to Explore

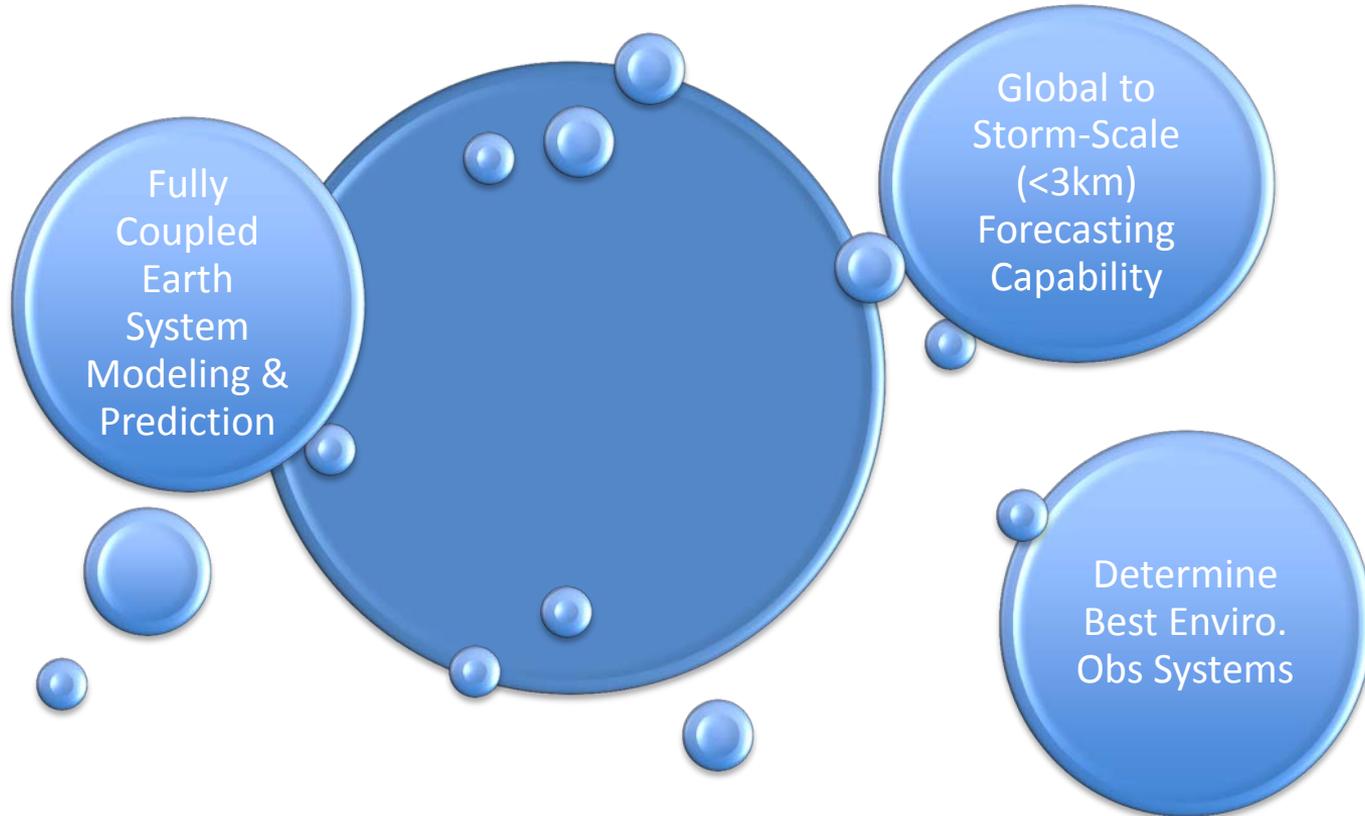


Our Focus – the Hard Technology Problems

- Enough compute at low enough cost
- Right info, right place, right time
- Blending disparate information
- Building science understanding

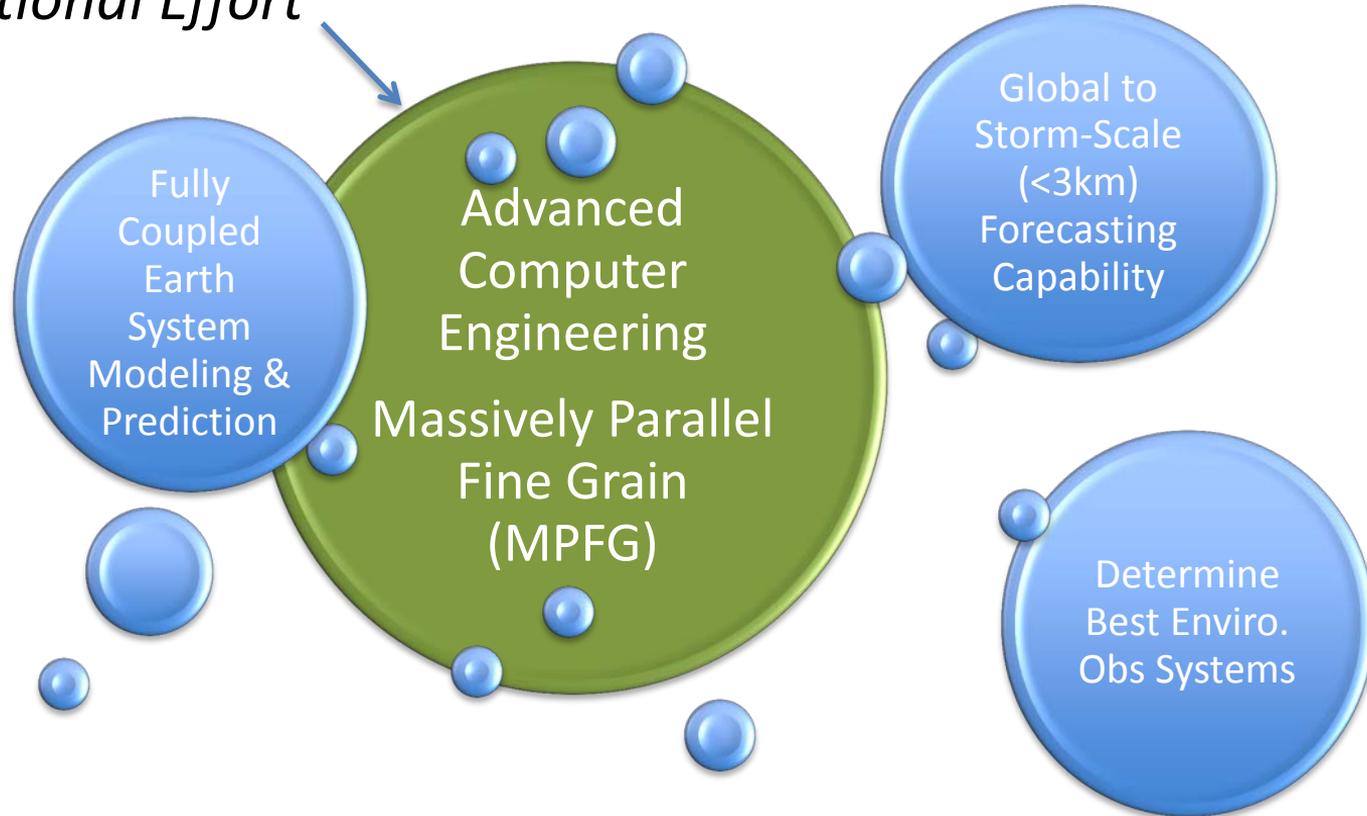


3 of 5 GSD's Grand Challenges

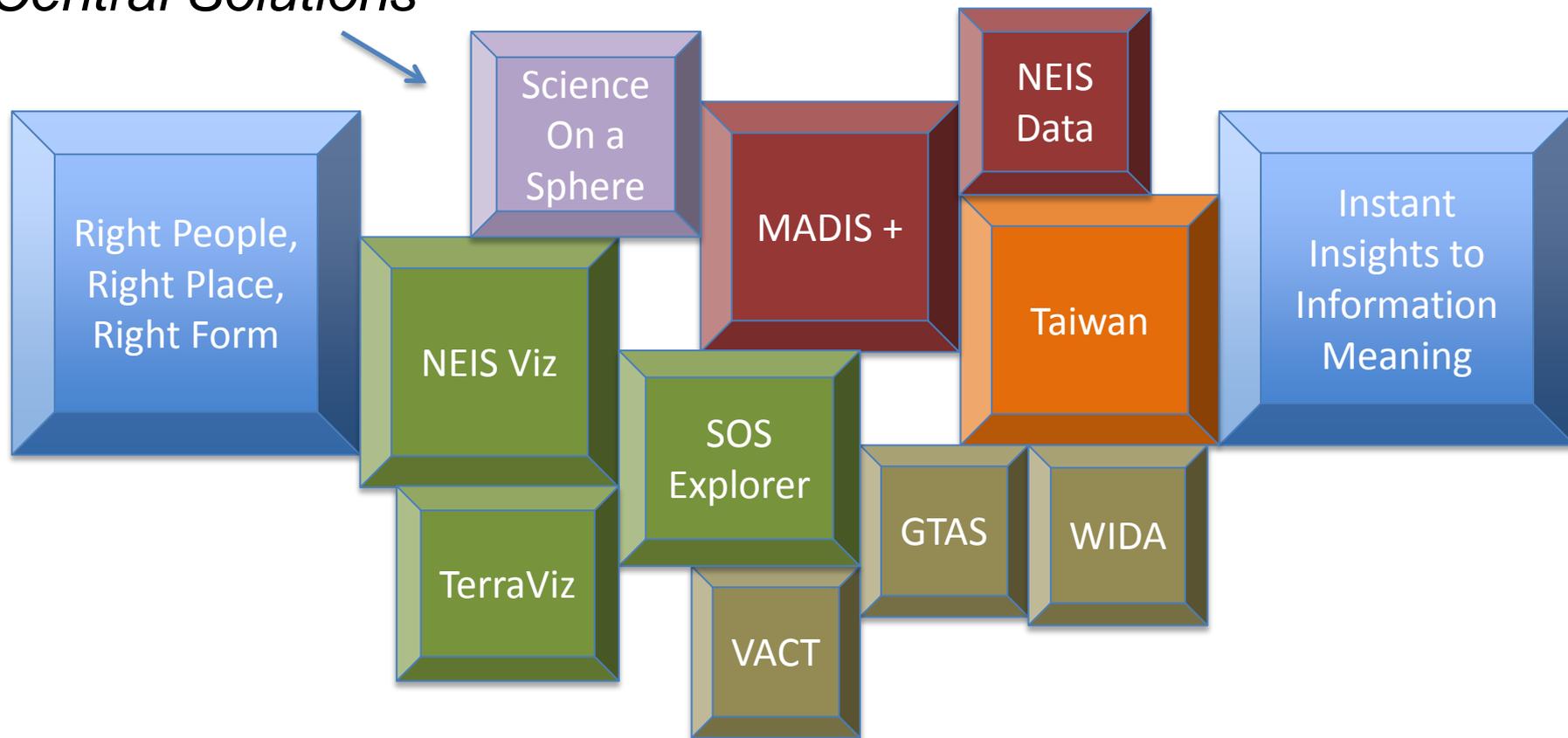


3 of 5 GSD's Grand Challenges

Foundational Effort



Central Solutions



The 5 year Trajectory

2010



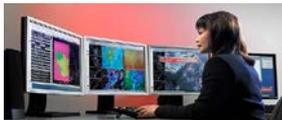
CPU



Segregated, Specialized,
Limited



Specialized and
Regional



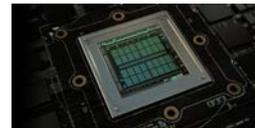
SOS
– venue based



NOAA TerraViz

2015+

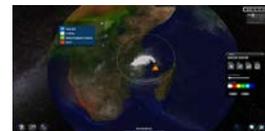
MPFG



Anytime, anyplace,
any platform



Global - NEIS



SOS Explorer
- desktop based

GSD is First in NOAA

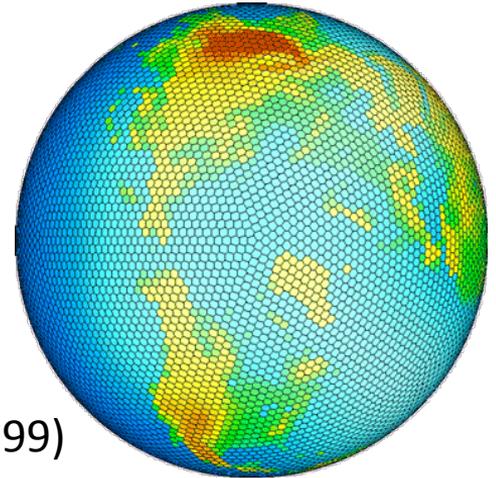
Data Management & IT Systems Firsts:

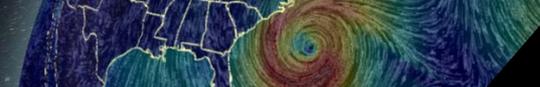
- 4D data cube with single authoritative source
- Consolidation of thousands of global obs into operational usage
- NOAA use of Amazon cloud computing



Computing Firsts:

- Only weather model running on CPU, GPU and MIC (2013)
- Weather model run on GPUs (2009)
- Weather model to run on Linux clusters in (2003)
- Weather model to run on massively parallel processors (1999)





Extraordinary people with extraordinary skill



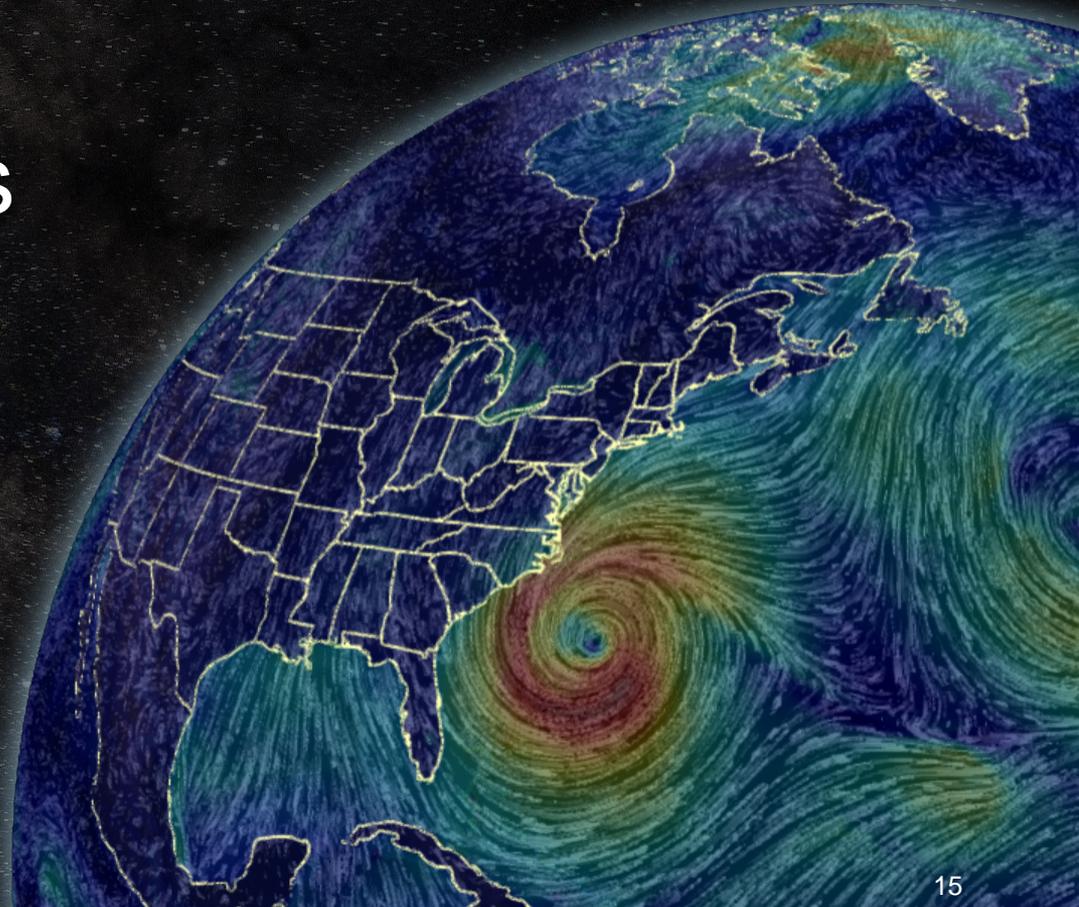
Session 6: Advanced Technology Investigations

John P. Schneider

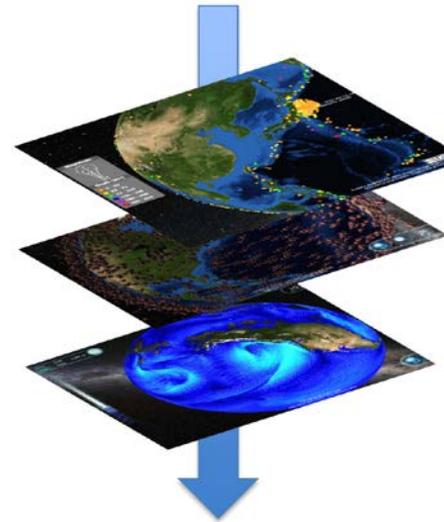
NOAA/ESRL/GSD



GSD Science Review
3-5 Nov 2015



**The NOAA Earth Information System (NEIS)
data discovery, collection, and distribution**
– Jebb Stewart



**Advanced Visualization Development
using Gaming Technology**
– Eric Hackathorn



Massively Parallel Fine Grain (MPFG) Computing

– Mark Govett

Specialized Information and Warning Systems

- Greg Pratt



Science On a Sphere New Technology Innovations Network Growth and Outreach

– Keith Searight & Shilpi Gupta



Presenter	Title	Station
Jebb Stewart	The NOAA Earth Information System (NEIS) Data Discovery, Collection, and Distribution	1
Eric Hackathorn	Advanced Visualization Development Using Gaming Technology	2
Mark Govett	Massively Parallel Fine Grain (MPFG) Computing	3
Greg Pratt	Specialized Information and Warning Systems	4
Keith Searight	Science on a Sphere: Technical Innovation	5
Shilpi Gupta	Science on a Sphere: Network Growth	6