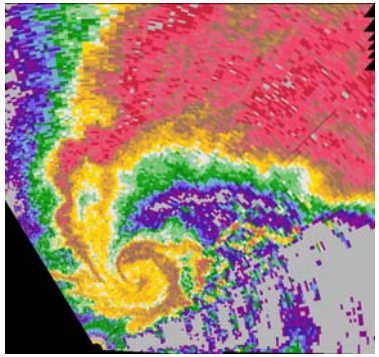
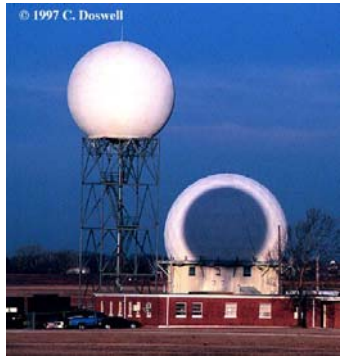




NEXRAD
A R2O Success Story

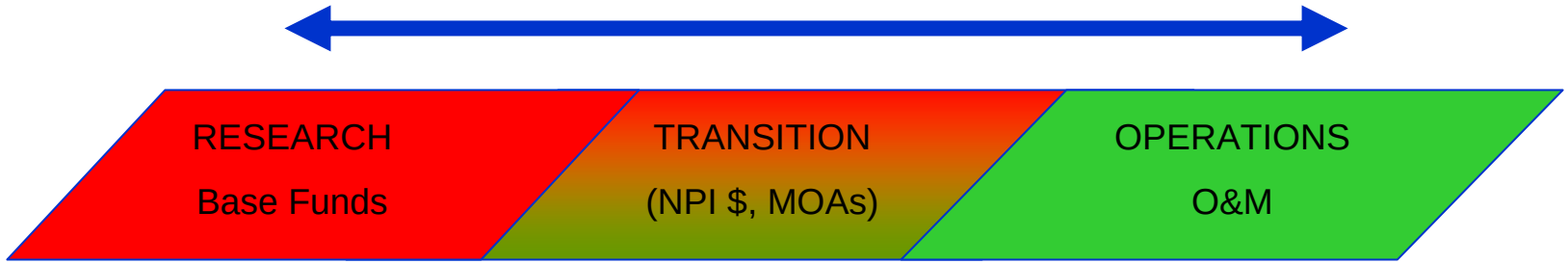
J.C. Duh (NWS/OST)

Jeff Kimpel (OAR/NSSL)

NEXRAD R2O Recognitions

- Listed as an excellent example of R2O in the NOAA Research Review Team's final report (Berrien Moore, et al., 2004).
- One of "Top 10 Breakthroughs" in NOAA's 200 year history.
- Requested briefing to the NOAA Transition Board as best example of R2O, 2006.
- Instrumental in increasing tornado warning lead times from 6 to 13 minutes and flash flood warning lead times from 17 to 45 minutes.
- NEXRAD reduced deaths from tornadoes by 45% and personal injuries by 40% (Sutter and Simmons, 2007).

R2O/O2R PATH



NSSL

Basic and Applied R&D

- Doppler Radar
- Real Time Velocity Displays
- Dual-polarization
- Spectral Processing
- Phased Array

NPI*

Transition Activities

- JDOP, JPOL
- Algorithm Development
- Prototype System Enhancements
  - Open Systems
  - Super Resolution

NWS OOS/ROC

System Integration

- Test and Evaluation
- Assume Support for Contractor Delivered Upgrades
- Test and Evaluation
- Centralized Maintenance and Repair

* and precursors

NEXRAD Funding

PROJECT ACTIVITY	RESPONSIBLE ORGANIZATION	FUNDING ENTITY
Research	NSSL	OAR
Concept Exploration	NSSL	OAR/NPI
Development	Acquisition Contract, NSSL, OHD, Other Lab	NPI
Implementation	Product Development Team	NPI
Integration	ROC	NEXRAD O&M
Deployment	Contractor, ROC	NPI/O&M
O&M	ROC	NEXRAD O&M

NPI Governance Processes

- Three triagency processes are key to success in NPI
  - Technical Advisory Committee (TAC)
    - Comprised of research labs, academia, operational community
    - Peer reviews new science to validate operational benefit before presented for implementation and integration
    - Prioritizes technical needs to ensure science addresses most pressing needs of the operational community
  - System Review and Evaluation Committee (SREC)
    - Plans and recommends release date and content of software releases
  - Program Management Committee (PMC)
    - Monitors Program health (Cost, Schedule, Performance)
    - Approves significant modifications and release content

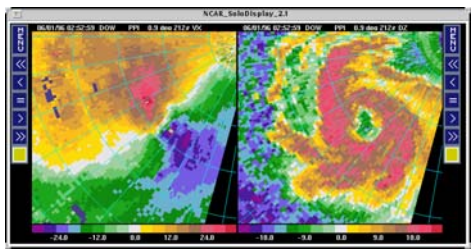
Efforts coordinated across NEXRAD community

Lessons Learned From NEXRAD

- Transition plan links new science and technologies with operational needs.
- Operational benefit is validated prior to implementation.
- Transition funds are budgeted and used to “pull” research into operations (NPI).
- Governance structure, including SMEs external to NOAA, helps insure quality and efficiency.

Ideal Pre-Transition Environment

- Research Push
  - Preeminent scientists and engineers
  - New science
  - New technologies
  - Research vision/plan*
  - Creative approach to problem solving



- Application Pull
  - Dedicated personnel
  - Future Concept of Operations* ~20 years out (CONOPS)
  - Specific requirements to meet CONOPS objectives*
  - Gaps identified*
  - Creative approach to problem solving

*Aligned