

NSF Lower Atmosphere Observing Facilities Update

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NSF-Sponsored Lower Atmosphere Observing Facilities

Guiding principles:

- **Research facilities are available to NSF-funded PIs at no additional cost to their grants**
- **Projects reviewed by Observing Facilities Assessment Panel (OFAP) semi-annually**
- **Deployment pool (~\$5.5M/yr) supports NSF-funded science in all disciplines**
- **Deployment possible worldwide**
- **Facilities available to other agencies on reimbursable cost and non-interference basis**



NSF-Sponsored Lower Atmosphere Observing Facilities

- **NCAR Operated and Maintained:**

- **C-130Q:**

- Avionics upgrade
 - Electronic propeller control
 - Looking at 8-bladed props



- **Gulfstream G-V:**

- Highly requested
 - Certifications for optical ports
 - Supplemental O₂ system





NSF-Sponsored/NCAR-Operated

– S-Pol radar:

- Dual wavelength (S and K_a bands)
- Dual polarimetric
- Deployable

– ELDORA radar:

- X-band, dual beam
- Deploys on NRL P-3
- Future uncertain

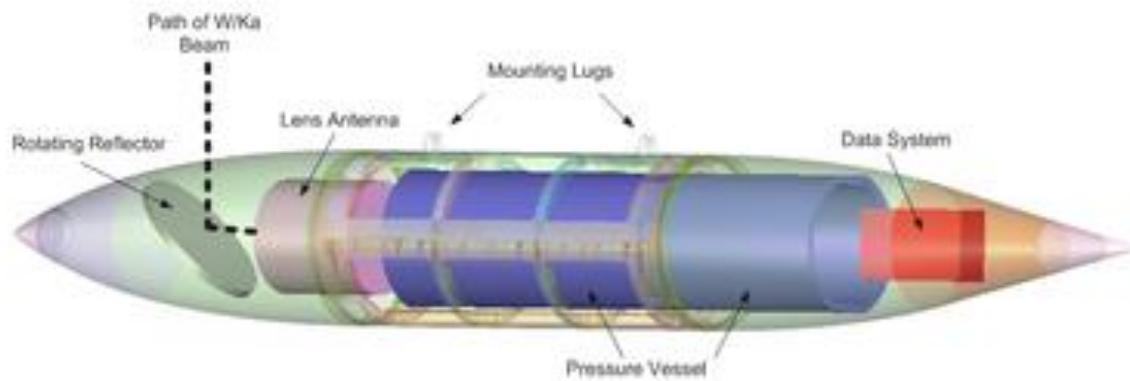




NSF-Sponsored/NCAR-Operated

Remote Sensors:

- **High Spectral Resolution Lidar (HSRL)**
 - Based on University of Wisconsin design
 - First airborne mission (TORERO) in early 2012
- **HIAPER Cloud Radar (HCR)**
 - W-band, doppler
 - Test flights later this year

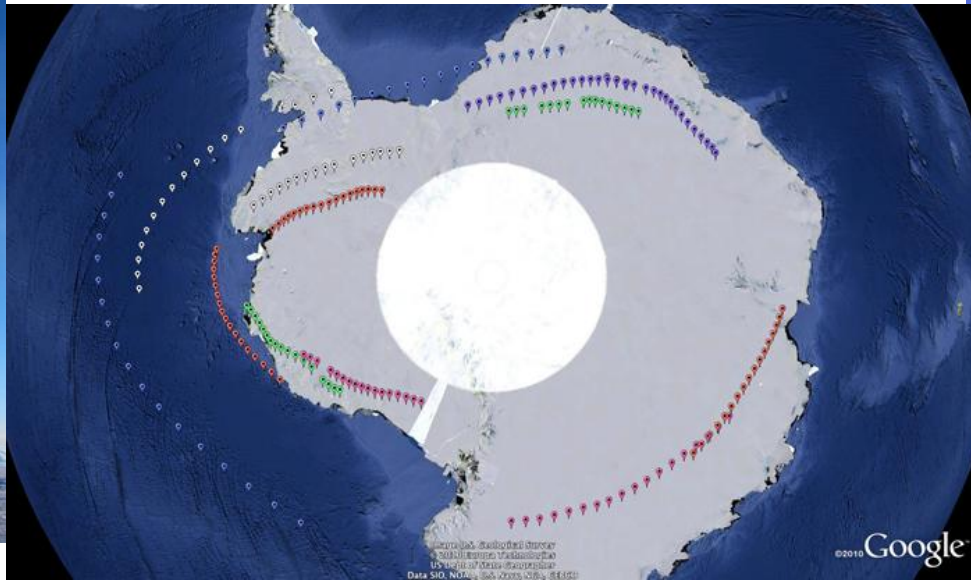




NSF-Sponsored/NCAR-Operated

Sounding systems:

- Surface and tower systems (fluxes)
- Wind profiling radars
- GPS upper-air soundings (GAUS)
- Dropsondes & driftsondes





Other NSF-sponsored Facilities

- **CHILL radar**
 - Operated by Colorado State University
 - Dual-polarization, dual-band (S and X)
 - State-of-the-art
 - Educational work through VCHILL
 - FRONT – network of radars along Colorado's Front Range (CHILL, S-Pol, WSR-88Ds)





Other NSF-sponsored Facilities

- **University of Wyoming King Air**
 - State-owned and operated
 - Cloud lidar (WCL) and cloud radar (WCR)
 - Extensive suite of aerosol/cloud instrumentation
 - Recent avionics upgrade for international operation
 - Recent deployments to Finland, Dominica





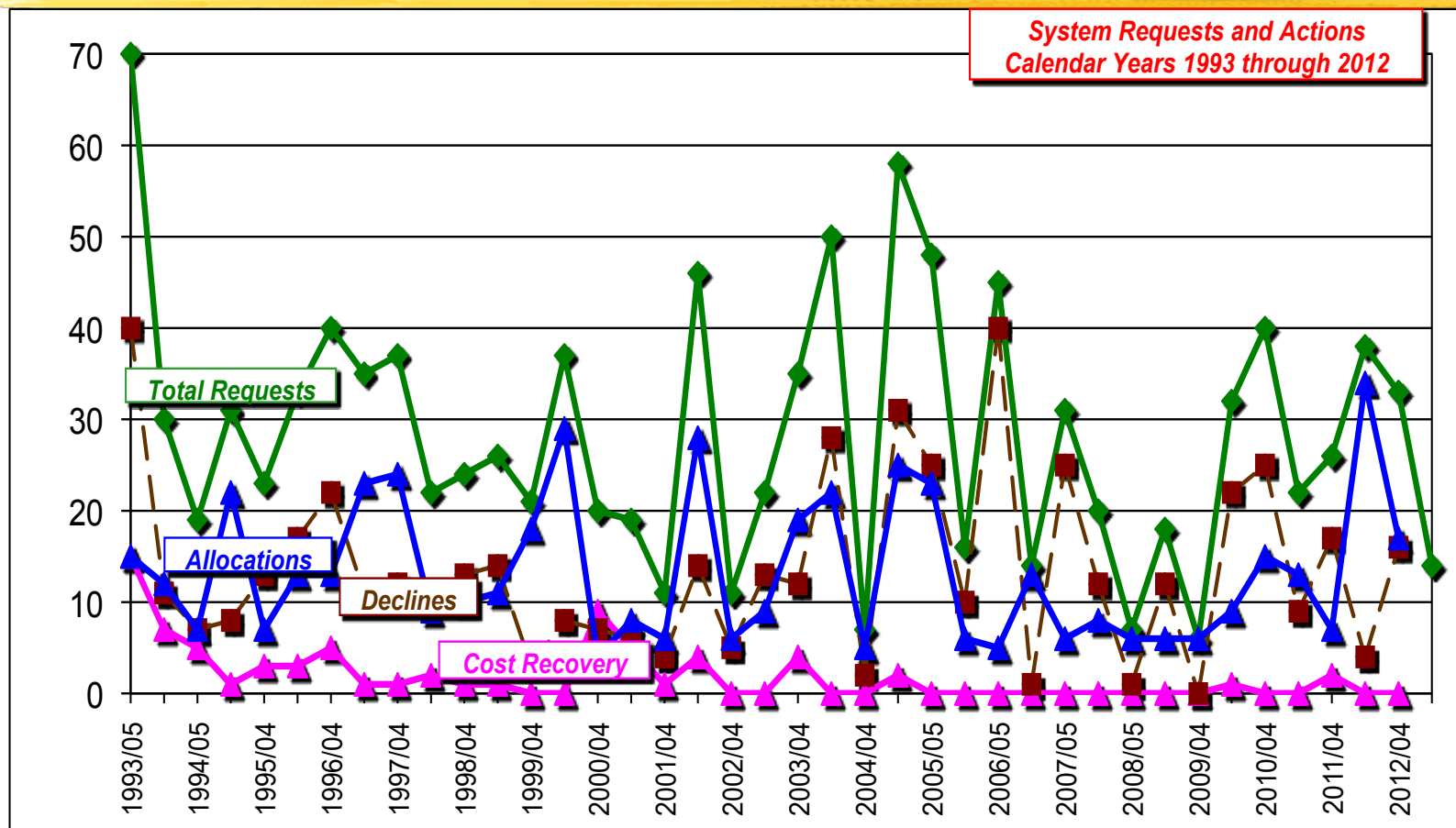
Other NSF-sponsored Facilities

- **Doppler on Wheels (DOWs)**
 - Operated by Center for Severe Weather Research
 - Truck-mounted dual-polarization, dual-frequency (X-band)
 - Also has mesonet vehicles and “tornado pods”
 - Extensive educational deployments



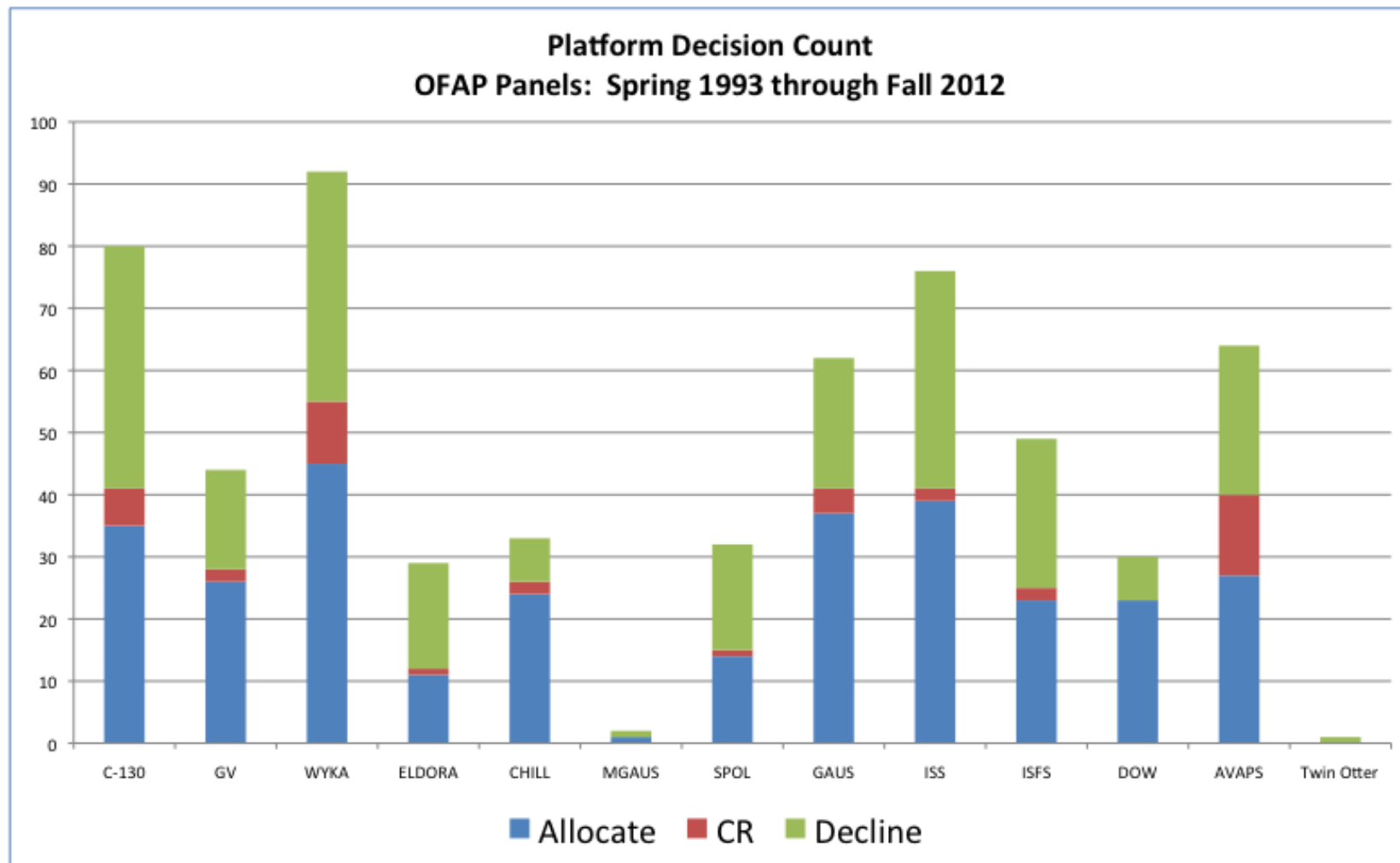


Facility Utilization: Requests





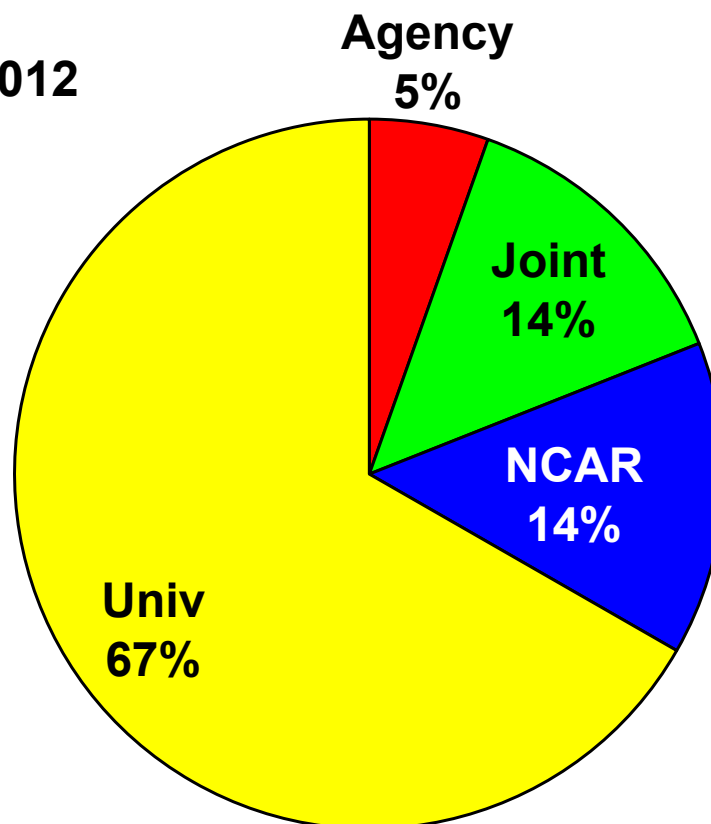
Facility Utilization: Requests & Decisions





Facility Utilization: Requestors

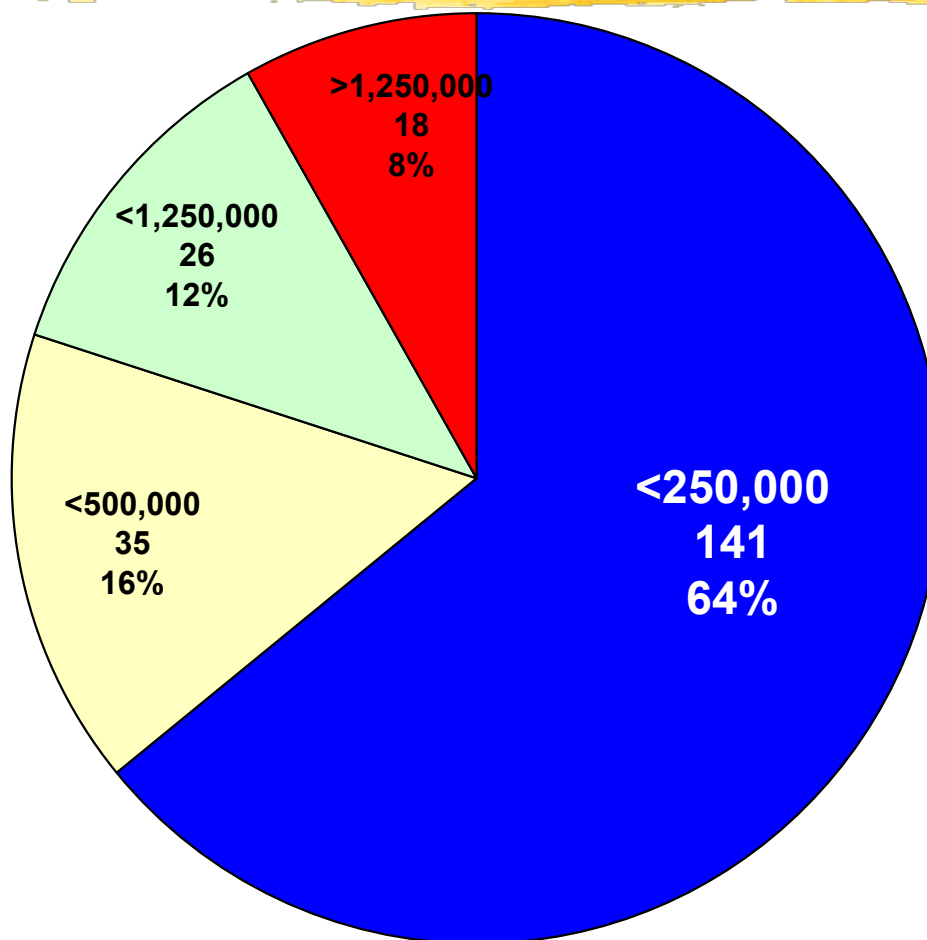
Requests by User Type
Calendar Years
1993 through 2012





Facility Utilization: Project Size

Awarded Projects Calendar Years 1993 through 2012
Count and Percentage by Dollar Value



Total # of Projects = 220



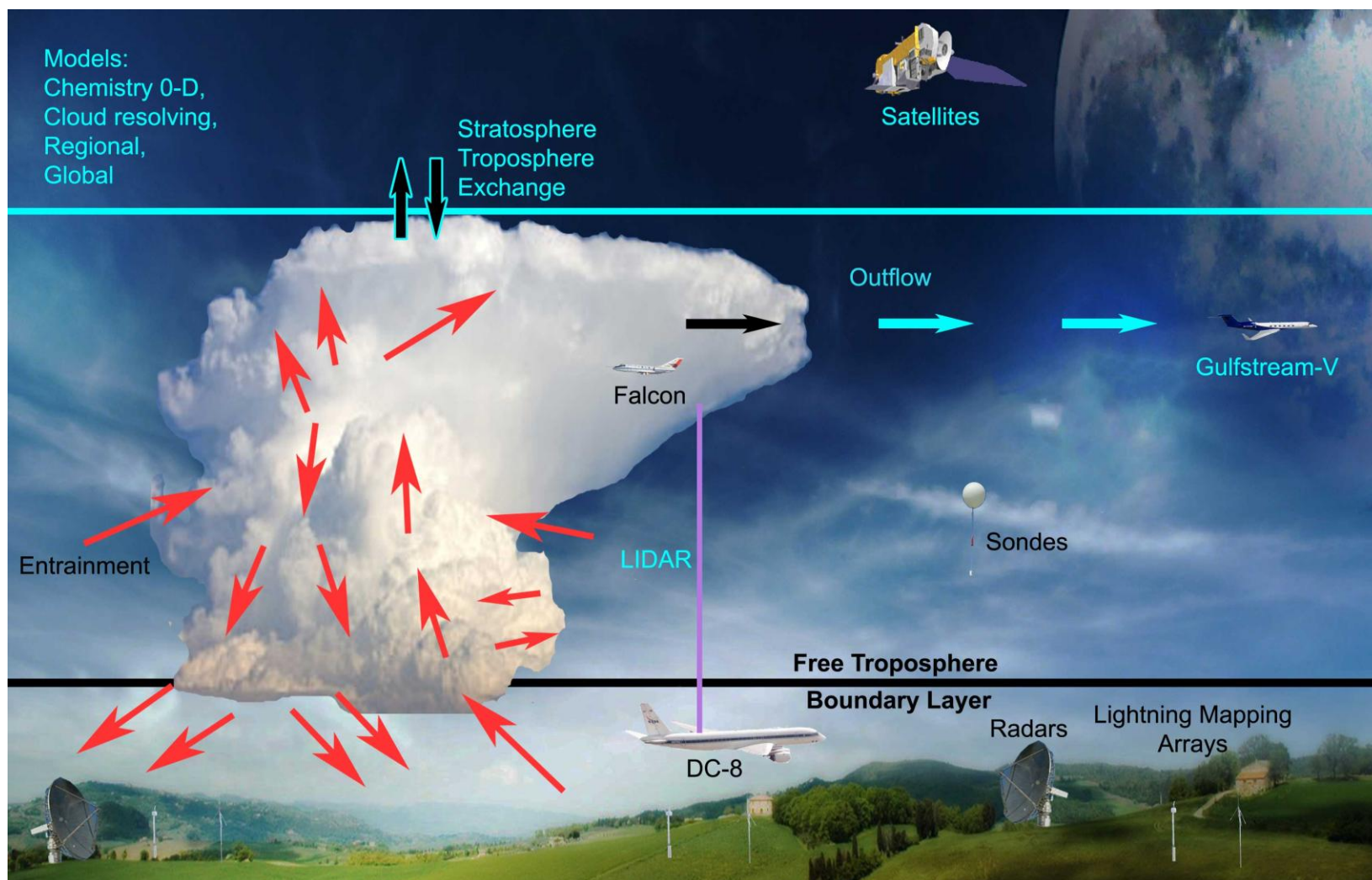
News and Achievements

- **International Standard for Business Aircraft Operations (IS-BAO) Certification**
 - Critical for international flying; meets requirements for certified safety management systems (SMS)
 - NCAR RAF certificate recently awarded (Stage 1)
 - University of Wyoming certified at Stage 3
- **Climate Facilities Observing Workshop**
 - Held in June 2012, ~ 150 attendees
 - Identifying gaps and observing needs for various areas of climate science
 - UTLS, free troposphere, tropical clouds & cyclones, ocean interface, cryosphere, terrestrial interface



Recent Interagency Projects

Deep Convective Clouds and Chemistry (DC3)





NASA DC-8 from the NSF/NCAR G-V during DC3



Recent Interagency Projects

Ice Bridge – Antarctica 2011 and 2012

National Science Foundation





Upcoming Events

- **Storm Penetration Aircraft**

- Air Force A-10 to be transferred to Navy
- Modifications at Zivko Aeronautics under subcontract from CIRPAS
- Also anticipated to be useful for boundary layer work

- **Community Radar Workshop**

- 27 – 29 November 2012
- Center Green (NCAR), Boulder, CO
- Review current and emerging technologies, develop recommendations on needs for the next decade's science

