



**AVIATION WEATHER CENTER  
NATIONAL CENTERS FOR ENVIRONMENTAL PREDICTION**

***VISITING SCIENTIST  
PROGRAM***

**IN  
AVIATION WEATHER**

NASA Weather Accident Prevention Project

**N  
C  
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P**

**WHERE AMERICA'S CLIMATE AND WEATHER SERVICES BEGIN**



AVIATION WEATHER CENTER

# VISITING SCIENTIST PROGRAM IN AVIATION WEATHER

## OUTLINE

- AWC - A national operational center
- Extramural linkages
- Visiting Scientist Program
- Accomplishments
- Plans for the future



# AVIATION WEATHER CENTER

## A NATIONAL OPERATIONAL CENTER



Figure 1- New facility in Kansas City, MO



# AVIATION WEATHER CENTER A NATIONAL OPERATIONAL CENTER

## THE FORECAST AREA



7X24 Surveillance



Global Graphics



CCFP (Summer 98, 99, 2000)



Area Forecasts



# AVIATION WEATHER CENTER A NATIONAL OPERATIONAL CENTER

## PRODUCT LIST

- **International**

- Global Graphics: High Level SIGWX
- International Flight Folder Documentation
- Area Forecasts: Gulf, Caribbean
- SIGMETs: Gulf, Caribbean, Atlantic, Pacific

- **Domestic (CONUS)**

- Area Forecast
- AIRMETs/SIGMETs: icing, turbulence, IFR, volcanic ash
- Convective SIGMETs & CCFP: thunderstorms
- Low Level SIGWX



# AVIATION WEATHER CENTER NATIONAL OPERATIONAL CENTER

## FEDERAL, COMMERCIAL, PRIVATE COLLABORATION

Airline Dispatchers  
FAA/Flight Service Stations

FAA/Controllers

**Users**

WFOs

NASA/AWIN

Products  
and  
Services

CWSUs

**NWS**

**R&D**

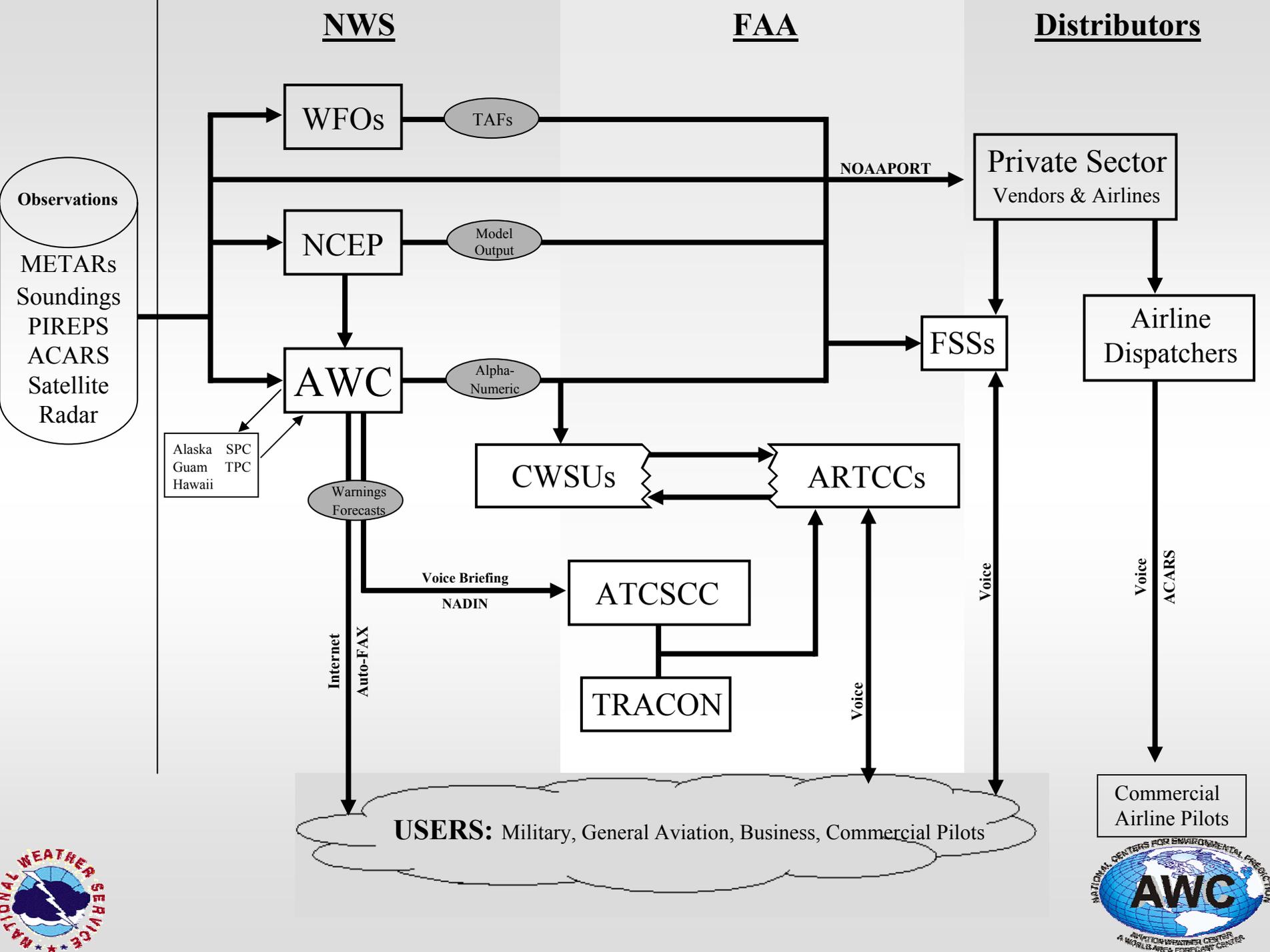
Universities  
NOAA/OAR/FSL  
NCAR

AWC  
AAWU  
PHNL

FAA/ Safer Skies

Pilots





# AVIATION WEATHER CENTER A NATIONAL OPERATIONAL CENTER

## COMMUNICATION SYSTEM



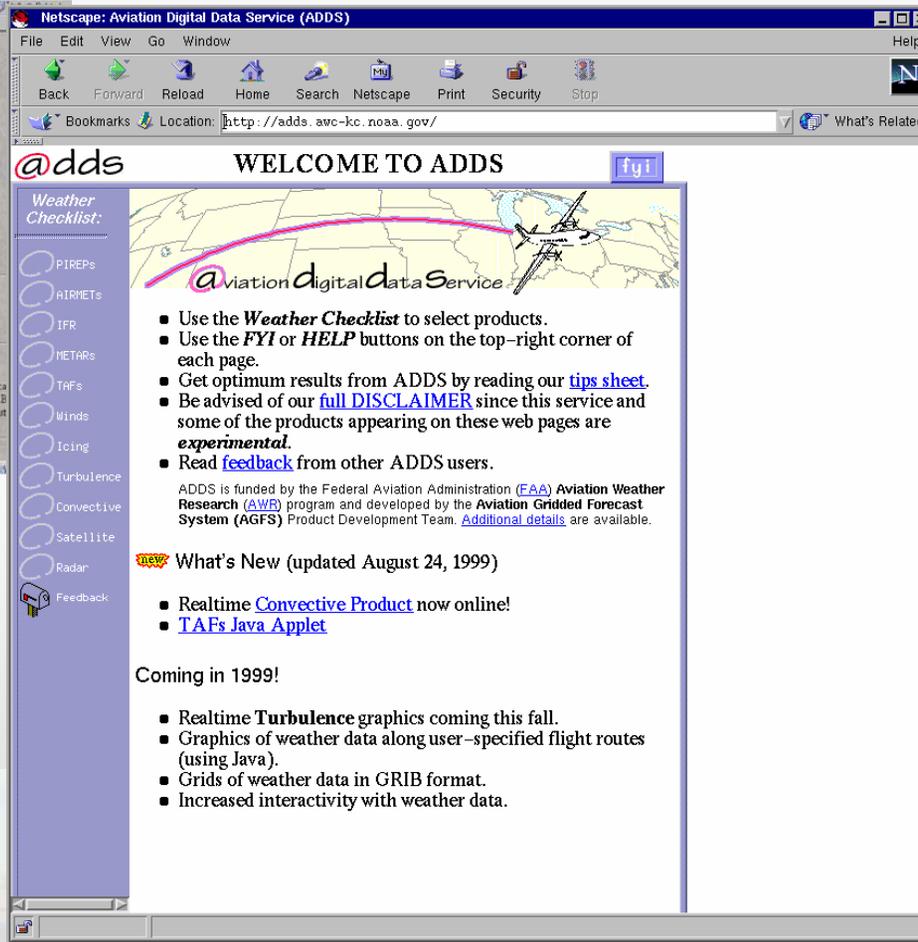
# AVIATION WEATHER CENTER NATIONAL OPERATIONAL CENTER

**WEBSITES:** <http://www.awc-kc.noaa.gov>  
<http://adds.awc-kc.noaa.gov>

## Aviation Digital Data Service Homepage



AWC Homepage



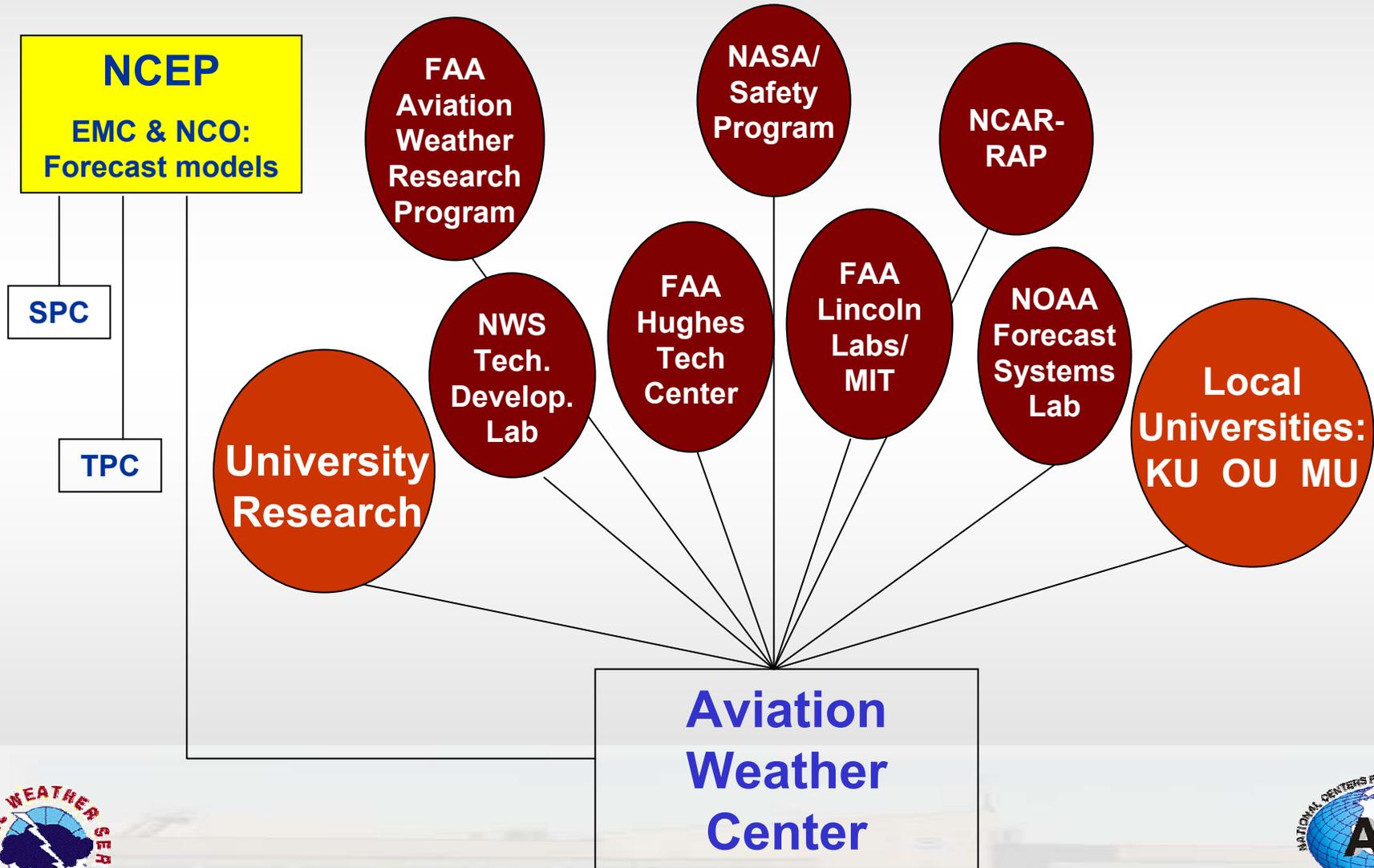
# EXTRAMURAL LINKAGES

- **Between research and operations:**  
***Technology Transfer***
- **The FAA Aviation Testbed**
- **The Visiting Scientist Program**



# AVIATION WEATHER CENTER EXTRAMURAL LINKAGES

## CONNECTIONS TO EXTRAMURAL RESEARCH





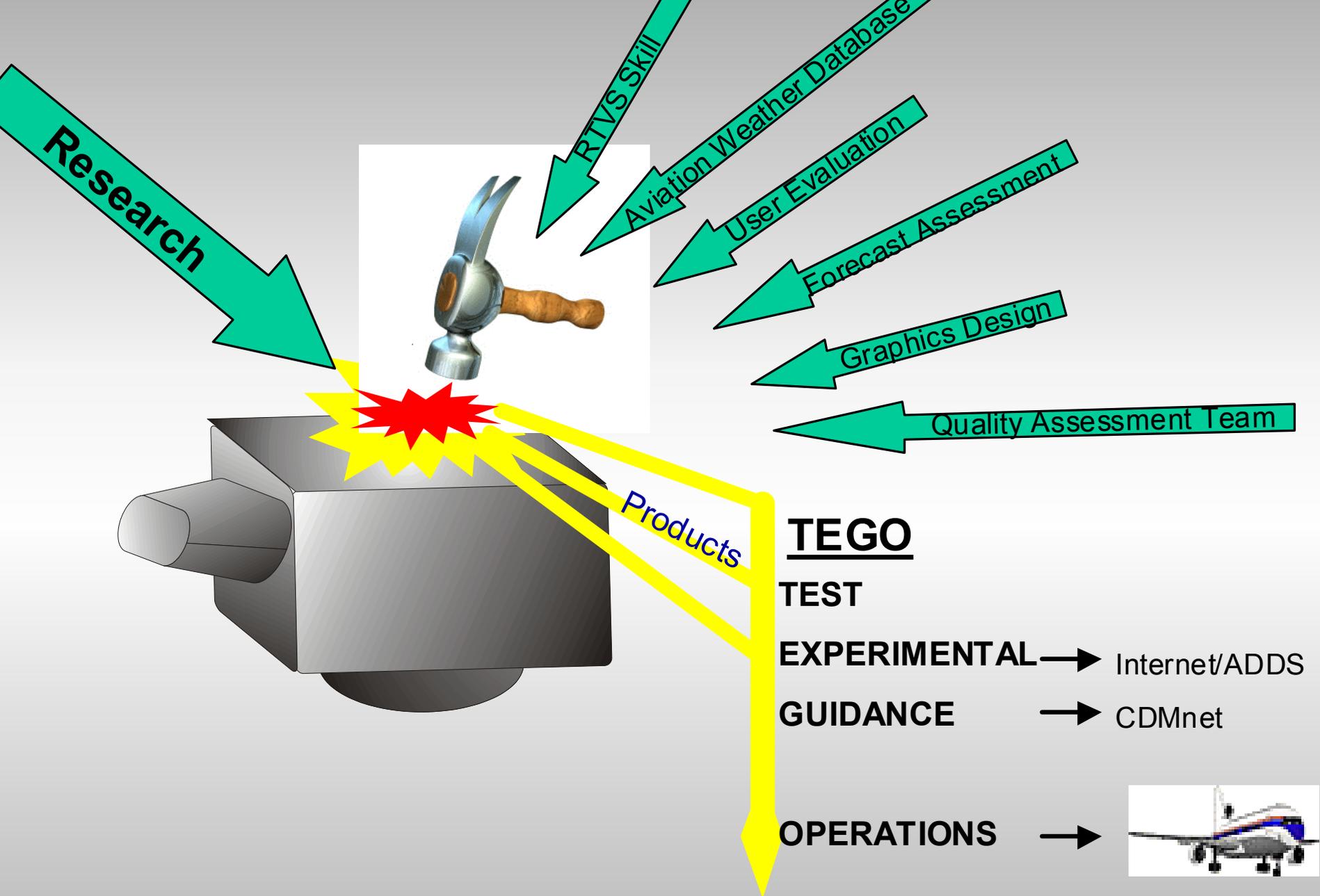


Fig. 3 - The Aviation Testbed is the ANVIL on which research products are evaluated and prepared for operational application

# AVIATION WEATHER CENTER TESTBED

## NEW PRODUCTS

- Tropical Desk      March 6
- CCFP                      April 1

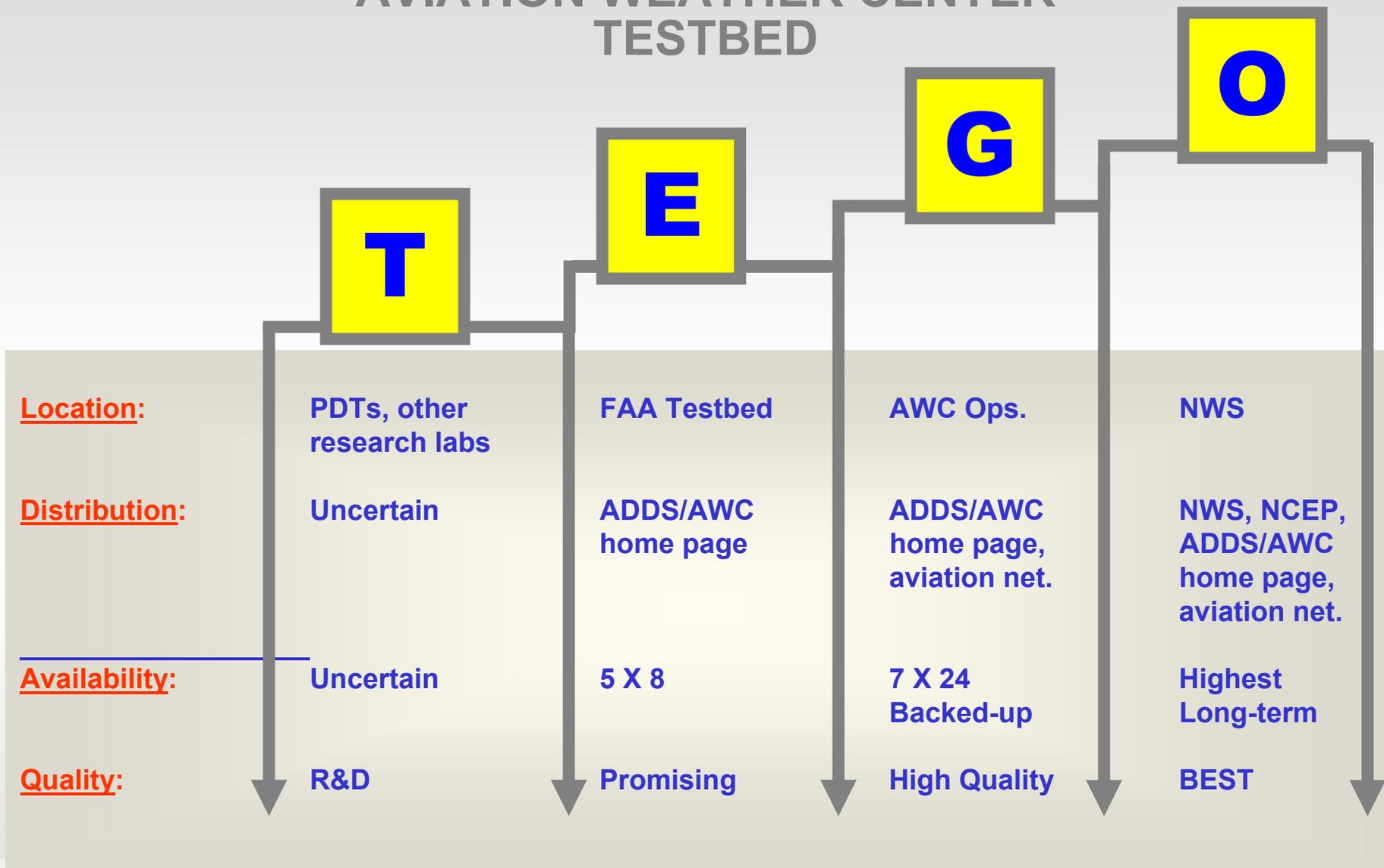
## TESTBED PRODUCTS

- NCWF                      Guidance May 1
- IIDA                      Experimental (Jan 00)  
(Guidance by Q4, CY00)
- ITFA                      Experimental (Feb 00)  
(Guidance by Q4, CY00)
- MWAVE                  Test  
(Experimental by Q4, CY01)
- IIFA                      Test  
(Experimental by Q3, CY00)

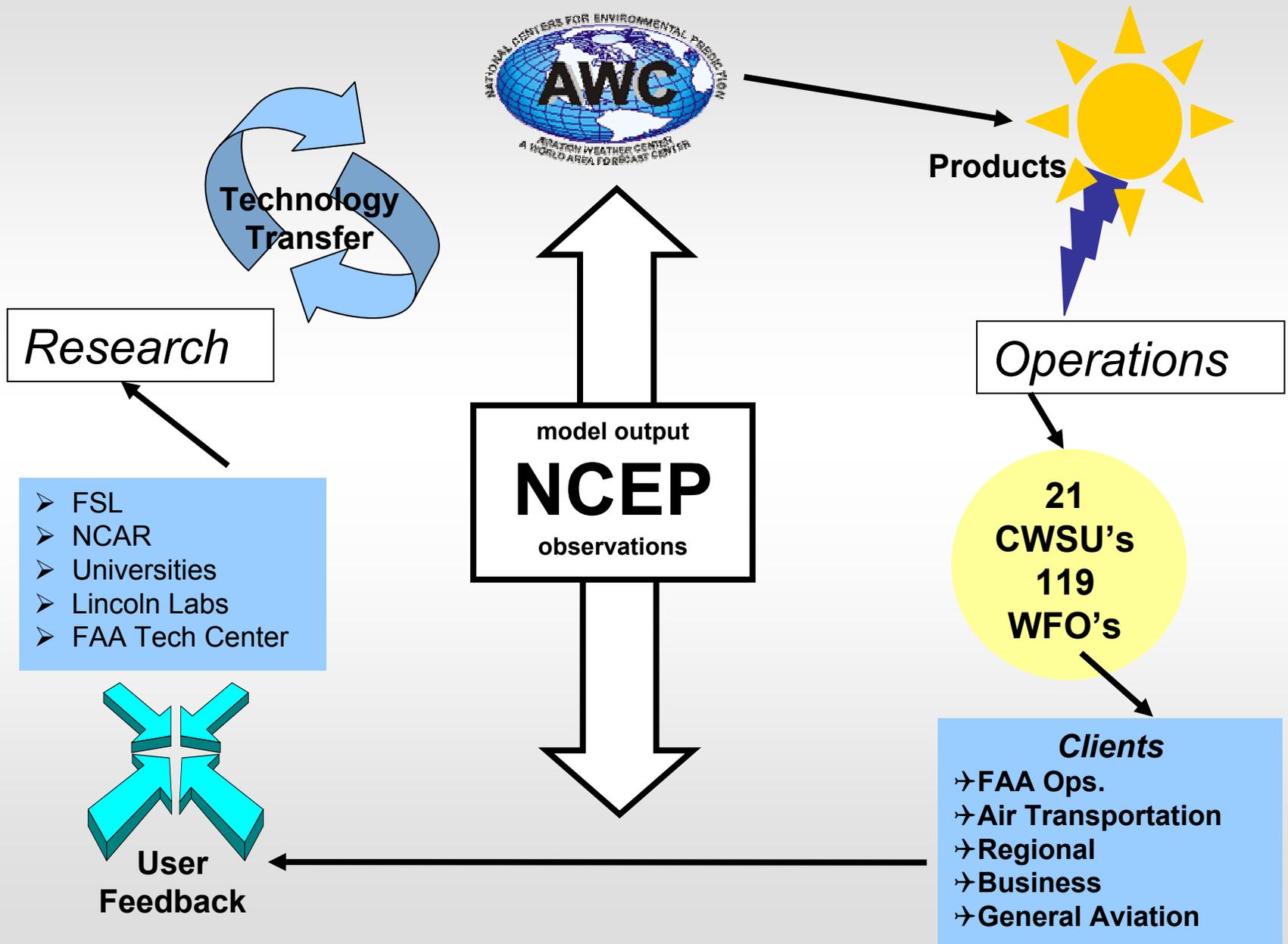
- Others?



# AVIATION WEATHER CENTER TESTBED



# Cooperative Roles of Operations and Research



# VISITING SCIENTIST PROGRAM

## OBJECTIVES:

- To understand operational capabilities and the use of model output at the AWC
- To suggest areas where operational services can be improved

### CURRENT SKILL (PODyes):

- Terminal forecasts (C/V) 0.2
- AIRMETs
  - icing 0.2
  - turbulence 0.3
  - IFR 0.5
  - convection 0.4
- Area forecasts unknown
- Global graphics unknown

- 76% of commercial delays are caused by weather
- WH Gore Commission: Reduce fatal accidents by 80%
- NWS: Increase skill by 50%
- FAA/AWRP: Develop new products

***WE CAN DO BETTER***



# VISITING SCIENTIST PROGRAM

- **Seminars at AWC**
- **Short-term visitors**
- **Summer projects**
- **Collateral visits: AFWA, SPC, EMC, ARTCC**
- **Focus on:**
  - cloud physics
  - boundary layer dynamics
  - gravity wave propagation
  - remote sensing
  - turbulence and flow instabilities



# AVIATION WEATHER CENTER VISITING SCIENTIST PROGRAM

## PROGRAM CONCEPTS

- **Extramural research**
- **Technology Transfer at the AWC and NCEP centers**
- **Operational product delivery**
  - Aviation Weather Center (AWC)
  - Center Weather Service Units (21)
  - NWS Forecast Offices (120)
  - Alaska Aviation Weather Unit (AAWU)
  - Pacific Region: Honolulu & Guam



# AVIATION WEATHER CENTER VISITING SCIENTIST PROGRAM

## ACCOMPLISHMENTS

- **David Knapp** of the U.S. Army Research Laboratory at White Sands Missile Range
  - Topic: *Aviation Hazards Forecasting for the Army and Air Force: A Look at Mesoscale Prediction Techniques of Interest to the AWC*
- **Paul Dallavalle** the Chief of the Synoptic-Scale Techniques Branch in the NWS Techniques and Development Laboratory(TDL)
  - Topic: *The New AVN-MRF MOS System*
- **Dr. Gary Rasmussen**, editor of the Monthly Weather Review and Weather and Forecasting journals of the American Meteorological Society.
  - Topic: *The Runway Winds Forecast Product (from MIT/LL): Concepts and Development.*
- **Prof. Steve Silberberg** of Northern Illinois University, Department of Geography
  - Topic: *Initial Analysis Differences and Systematic Forecast Errors in NCEP Forecast Models*
- **Prof. Patrick S. Market** of the University of Missouri
  - Topic: *Jet Streak Modifications Via Diabatic Heating During Periods Of Intense Cool Season Precipitation*
- **Prof. George Fisher** of the University of Massachusetts Lowell
  - Topic: *Atmospheric Polycyclic Aromatic Hydrocarbons: Pathways to the Great Waters*



AVIATION WEATHER CENTER  
VISITING SCIENTIST PROGRAM

# PLANS FOR THE FUTURE

- **Personal contact and follow-up**
- **Seminar schedule**
- **Short term visitors (Summer 2000)**
- **Collateral visits to EMC, SPC and FAA**
- **Focus on Summer 2001**
- **PDT/Safety Program Coordination**

