

**14-15 November  
Planning Meeting  
Saint Louis University  
St. Louis, Missouri**

Allocated:

NOAA P-3 Aircraft (148 hours)  
Microphysical Probe on P-3  
ELDORA on NRL P-3 (135 research hours)  
High Level Jet (100 hrs/450 dropsondes)  
MIPS

In Question:

Ground-Based Mobile Sounding System (2) (450 sondes)  
Mobile Mesonet (2) (Texas Tech?)  
Ground Based Mobile Radar SMART Radars (2)

XPOW recently submitted proposal within university system

High Level Jet (Dirks)

- Looking at five vendors
- Wyoming King Air out due to inability to fly under certain conditions (lightning)
- SatComms on jet are they 1 or 2 channel?
- PI's would like 5 seats

BAMEX Logo (Davis) (work in progress)

Finalization of airport for operations (Davis/Dirks/Jorgensen)

- Lambert (serious concern due to air traffic control hang-ups/delays, specifically in evening and especially when weather is an issue. Departure patterns/corridors out of Lambert are always to the West which may result in longer travel times.)
  - Spirit of St. Louis (run-way too short for P-3)
  - MidAmerica (attached to Scott AF Base – no problems – international terminal has been guaranteed to us – lots of space available. Security much less of an issue than at Lambert. Departures are open – no specified pattern. Problems: limited lodging and food facilities).  
Need to confirm UPS capabilities, wiring and computer system (T-1 Line).
  - Bi-State Airport – Cahokia, Illinois - has an airport – confusion as to length of run-way (7K ft (FAA listing) or 8K ft (airport management report)) and located on flood plain.
- Overwhelming support to base aircraft operations out of MidAmerica Airport.

Daily Operations Schedule (Dirks/Moore)

Operations Center Functions

- Daily Planning Meetings
- Facility Status
- Forecasting
- Nowcasting
- Field Catalog
- Research Flight Planning

- Operations Coordination (Aircraft, ATD, GBOS)
- Logistics
- Data/Products Display System
- LAN

#### Daily Planning Process (Dirks)

##### Daily Planning Meeting

- Previous mission summary
- Instrument and platform status
- Today's update
- Tomorrow's forecast and outlook
- Proposals and discussion
- Tomorrow's mission decision
- Special observations
- Administrative announcements

##### Mission Plan

- Scientific objectives and alternatives
- Type of flight plan and alternatives
- Alert sequence
- Takeoff time
- Airborne mission scientists
- GBOS movements
- Sounding launch schedule

#### Daily Timeline for Operations (Dirks)

- Daily Planning Meeting - time will be flexible (~12:30 pm)

#### Operations Center Staff (Moore)

- Operations Director - Dirks, Moore, Strossmeister
- A/C Coordinator - Meitin, Moore, Jorgensen, Smull
- GBOS Coordinator – Dowell, Trapp
- GBOS Logistics Coordinator - ??
- Dropsonde Coordinator Knievel, Bartels, Ahijevych
- Status Coordinator - ??
- Site Coordinator - Dirks, Moore
- System Administrator - Daniels, Burghart
- Administrative Assistant - Tignor, MMM, JOSS
- Data Coordinator - Roberts, Williams
- Nowcast/Forecast Coordinator - Weisman, Bosart, Przybylinski
- Forecast Team - 8-12 people – 2 wks each
- Nowcast Team - 18-22 people – 2 wks each
- Student Assistants - UCLA, UI, SUNYA, MU, NCAR, ??
- Mission Scientist – Davis, Jorgensen, Wakimoto, Lee, Van de Har?

#### Forecasting/Nowcasting (Morris)

##### Long-term forecaster:

- 1-2 forecasters, located at NWS?
- 7:00am – 3:00pm shift
- primarily responsible for generating next day forecast

- will there be significant convection
- what mode....bow echo or mcv
- approximate location
- approximate time (early, late...critical for aircraft)
- issues initial several-day outlook
- updates current-day forecast
- confers with Ops center (~11:00am)
- contributes to daily briefing (~12:30pm)

#### Current Day Forecasters:

- 1-2 forecasters, located at Ops Center
- 7:00am – 3:00pm shift
- primarily responsible for updating current day forecast
- offers initial update for GBOS movements (~9:00am)
- presents primary weather briefing (~12:30pm)

#### Nowcast Shift 1:

- 2 Nowcasters, located at Ops Center
- 11:00am - 7:00pm shift
- attends daily briefing
- updates weather scenario relevant to proposed days activities
- monitors current weather
- issues short-term (0-3 hr) forecast updates
- projects location and propagation of MCS's, bow echoes

#### Nowcast Shift 2:

- 2 Nowcasters, located at Ops Center
- 6:00pm through end of Ops shift
- same responsibilities of Nowcast Shift 1

#### Operations Center Layout (Moore)

All individuals (Operations and Analysis Centers) will be located together with workstations around the international terminal and briefings held in the larger baggage claim area. A kitchen will be set-up in corner office that contains a sink area. Smaller separate closed office spaces will be used by Forecasters/Nowcasters. In baggage handling area - near ramp - will be space for aircraft crews. Upstairs, in the passenger waiting areas will be space for time alone and weather watching, but as of now, no specific wiring or workstations set-up. Logistics Questionnaire will be posted soon for folks to complete on how many people they will be bringing, number of computers, space needs, etc.

#### Operations Center Displays (Moore)

- FX-Net FSL workstation (operational weather products)
- BAMEX Field Catalog (research data products, documentation)
- Aircraft position/data display system (satellite/radar overlay (RDCC?))
- Radar display system (RDCC?)
- Assorted participant web access/email workstations
- Workstations for other "specialized" products (e.g. SUDS)

#### Operations Center Products to be received from Research Facilities (Moore)

GBOS (including SMART-R, MM, Sondes, MIPS)

- Armada position
- Mobile Mesonet data (time series, maps)
- Low resolution radar image product from SMART-R
- Mobile CLASS soundings (data)
- Time/height profiles plots, ceilometer products, temperature, water vapor, cloud water (MIPS)

#### Aircraft

- Position
- Low-resolution radar images
- Dropsonde profiles

#### Model Products

- MM5, WRF, RAMS

#### RDCC Presentation (Daniels)

- Presentation is posted on line  
[http://atd.ucar.edu/dir\\_off/OFAP/panels/Oct02/presentations/daniels\\_files/v3\\_document.htm](http://atd.ucar.edu/dir_off/OFAP/panels/Oct02/presentations/daniels_files/v3_document.htm)

#### FX-Net Presentation (Moore)

FX-Net is a request based, client server system intended to be an extension of the AWIPS D2D capability over the Internet. NWS folks will be contacted regarding costs involved for an application during BAMEX.

#### Forecasting Convective Mode (Weisman)

The range is broadscale for MCV's and Bow Echo's, and Morris described his interpretation of the evolution of events related to MCV's and Bow Echos.

#### Proposed take off times:

- ~6pm for MCV
- ~3/4pm for Bow Echo events.

#### Aircraft Strategies (Jorgensen)

- NOAA P-3 140 research hrs ~15 events @9.5 hrs/event; map circulations with rear of bow echo – MCV's.
- NRL P-3 135 research hrs ~15 events 8.5 hrs/event; map leading edge structure with ELDORA;
- Dropsonde aircraft: Thermal structures in front and in the rear of Bow Echos. MCV documentation; synchronize with Doppler measurements; ~100 ft hours & 450 dropsondes.
- Airborne Doppler Radar Scanning for NOAA & NRL P-3.
- Flight Director Strategies:
  - NOAA P-3 – Jorgensen, Ziegler, Smull
  - NRL P-3 Wakimoto/ Wen-Chau
  - Dropsondes, Bartels/Knieval.

**Must have reliable sat com for info exchange.**

#### Aircraft Staffing, Operations and Communications (Jorgensen)

- Global-Star, 9600 baud
- PPP link; ftp, e-mail
- Observation reports
- Radar Images
- Flight track guidance
- Hourly Nowcast and short-term forecasts
- Satellite and radar images

## NOAA/NRL Aircraft Ops Limitations (Jorgensen)

- ❖ Crew duty day (16 hr) window for completion of each mission.
  - Starts at report time
  - ~9hr flight
  - 3hr preflight
  - 1 hr post-flight
  - Implies a ~3hr maximum delay without impacting length of maximum duration mission.
- ❖ 6 "up" consecutive "up" days requires "down" day
  - "up days include "no-fly" days (e.g. required aircraft maintenance, 50 hr inspections, etc)
- ❖ 12 crew rest from the time the last person leaves the airplane to the time the first person reports for next mission pre-flight
- ❖ Implies a 16 hour period between previous mission landing and next mission takeoff
- ❖ 3 consecutive maximum duration mission *may* require a down day for aircrew safety reasons
- ❖ Switching from a day flight schedule (TO<6pm) to a night schedule (TO>6pm) requires 24 hour notice

## Flight Patterns (Jorgensen)

Objective: Cover as much of bow echo life cycle as possible yet have at least 3 hours of dual-aircraft coverage. Implies a 3 hour staggered takeoff

- Will attempt to coordinate NOAA and NRL P-3 flight legs to achieve "quad –Doppler" passes
- Microphysics modules by NOAA P-3 will be attempted in suitable regions
- Dropsonde aircraft deploys at least 2 sondes "ahead" (i.e. to the east) of the convective line
- Pattern completion times for a ~300 ft system:
  - NOAA P-3: ~90 min (~10,000 ft MSL)
  - NRL P-3: freelance (as low as allowable ~2000 ft AGL)
  - Dropsonde jet: ~50min (~40,000 ft MSL)

## Microphysical Modules (NOAA P-3)

- ~22-45 min flight pattern modules in well developed stratiform rain regions

## GBOS (Biggerstaff)

### Deployment/Ops

- Important to remember that mobile deployment decisions are made much earlier than aircraft deployment decisions.
- Scouts needed to establish site selection during day (by dusk) – so that set-up can occur for night operations.
- Max Drive of 400 miles (which assumes a 45mi/hr for scouts and 40mi/hr for mobile armada).
- Need 8 hr rest every day (defined as check-in to check-out)
- After 3 hard days "on" would like to consider 1 "down" day to follow.
- On the road – Ham radios and cell phones, and always pay-phones. Some satellite phone backup.

- On Site – Hamm, cell and then SatCom. Comms check every 30 minutes with team leader and every hour or prn with BOC.
- At hotel – TL/BOX debrief and likely scenario for next day ops.
- With AC - through BOC – Direct comms with AC are desired, therefore VHF will need to be purchased/installed. Also to be purchased: Ten ham radios, every GBOS member will need a cell phone (old clunky type works better than the Spok communicator type), and seven more satellite phones.
- 25 positions are needed to fill staffing needs for GBOS.

#### Site Selection

- Initial area selected by ~11am based on forecast
- County-map used to narrow choices.
- Airport database used to focus candidates.
- Topographic and aerial photography used to direct scouts to potential area.
- Scouts report suitability of target and look for better places.
- Set-up by dusk

#### Group Science/Ops Discussion:

MCV-producing systems vs. bow echoes

Day-night switch

Modeling vs. observing

Determining criteria for calling down days

Sampling scenarios for both GBOS and Aircraft Ops

Bob Johns – discussed CIMMS/CAPS needs for BAMEX (Mike Daniels has this info)

Jim Moore – JOSS Catalog and other data components/sites that could be included in the archive if desired (GOES, GPS, ARM MWR/AERI, ASOS, AWOS, WSR 88-D, various profiler and radiosonde sites, ABLE RASS/Sodar, Mesonets, etc.)

#### Logistics (John Daugherty)

- Per Diem: \$55/\$35 (Illinois side of river); \$90/\$50 (St. Louis)
- Rentals: Furnished apartments are limited in availability, but none willing to commit in advance (4-6 weeks is common for reservations).
- Hotels: Numerous hotels rooms at per diem or less, but very few suites (i.e. kitchens). Limited in pool/exercise facilities. Most hotels will only rent a limited number of rooms at the government rate. Bed & Breakfast might be option for those who will be staying for an extended stay, as they will only reduce their rates for those attending the entire project. NOTE: the last week in June is an annual youth league sporting event and may inhibit room rental and peace & quiet.
- Restaurants: Large supply of restaurants, but only 24 hr is Denny's in O'Fallon (exit 16). Mascoutah has McDonalds, Subway, Tony's, Ice Cream Parlor, and bar & grill type places.
- YMCA: SW Illinois organization of six YMCA's in the area; olympic size pool, equipment, etc.; \$30/month adult + \$100 joining fee; if you have a membership elsewhere you can use it for small transfer fee.

#### Ops Plan (Jorgensen)

Tentative Outline:

- Intro

- Principal Investigation
- Primary Objectives
- Project Facilities
- Forecasting and Daily Operations
- Ground Based Operations
- Mobile Operations
- Aircraft Operations (including flight tracks)
- Instrumentation
- Communication
- Job Description of key personnel
- Data management and documentation
- Project forms

Outline to be finalized and posted soon along with chapter assignments. Rough draft of document needs to be completed prior to spring meeting.

#### Airport Security (Moore)

Every individual will need to obtain a security badge from MidAmerica Airport.

This will involve:

- Completion of official request forms – forms will be supplied by JOSS (do not complete the forms yet - airport is revising security process and will be providing instructions soon) (\$15 to be included with each form)
- Digital fingerprints (~\$15/ea)
- Background checks (~\$15/ea)
- There will also be a half day security course class for everyone obtaining a badge.
- Rental and private vehicles will be limited on the tarmac – vehicle will be searched on each entry. Airport vehicles can be used if each individual attends a half day training course. Parking out front will be readily available and individuals are encouraged to use the public parking.

#### MISC:

Media Day on 19 May?

Spring Planning/Science Mtg. (one full day) – To be held at SLU in March?

Quote of the meeting, "it would be nice..."