

EERL / Univ. of Texas

## **ACTS DATA CENTER STATUS REPORT**

**ALI SYED  
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**PRESENTED AT ACTS MINI-WORKSHOP  
PASADENA, CA 14 JUNE 1993**

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## **ACTS Data Center Functions**

- **Archive Raw and Pre-processed Data from Stations**
- **Audit Pre-processed Data**
- **Create and Maintain a Database**
- **Distribute Archived Data to Propagation Community**
- **Distribute Monthly Audit Reports to Stations**

## D.C Development System

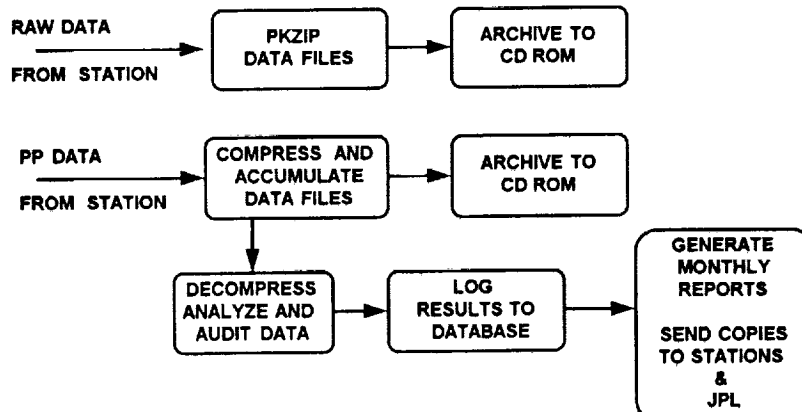
### HARDWARE

- ☐ 486DX 66MHz  
16MB RAM  
1.7GB Hard Drive
- CD Writer/Reader  
340KB/sec Write rate  
ISO 9660 Compatible
- ☑ 120 MB Tape Drive

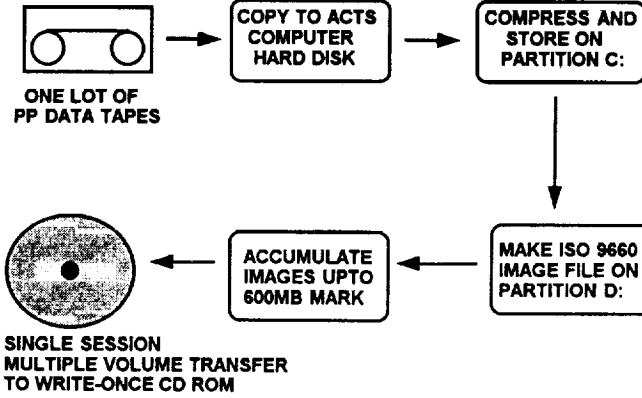
### SOFTWARE

- ☑ Microsoft C++ 7.0
- ☐ Paradox for Windows
- ☑ PKZIP 2.04g

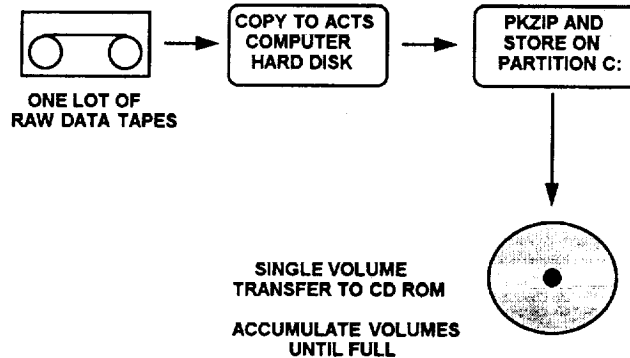
## Data Flow Overview



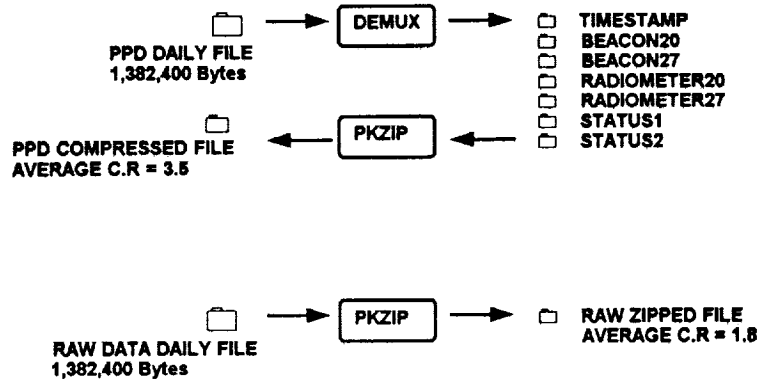
### PPD Flow



### RAW Data Flow



## Data Compression



## PPD Distribution

*PPD DATA VOLUME IN 6 MONTHS:*  
**(44MB/Month/Station)(7Stations)(6 Months) ~ 1.8 GB**

*72 MINUTE CD ROM STORAGE CAPACITY:*  
**(4320 Seconds)(75 Frames/Second)(2048 Bytes/Frame) ~ 630 MB**

*AVERAGE COMPRESSION RATIO:*  
**C.R OF SIMULATED PPD ~ 3.5**

*COMPRESSED PPD ON CD ROM:*  
**(1.8GB / 3.5) ~ 520MB**

**! BIENNIAL DISTRIBUTION OF PPD ON CD ROM IS POSSIBLE**

## RAW Data Archival

*RAW DATA VOLUME IN 3 MONTHS:*  
**(44MB/Month/Station)(7Stations)(3 Months) ~ 924 MB**

*72 MINUTE CD ROM STORAGE CAPACITY:*  
**(4320 Seconds)(75 Frames/Second)(2048 Bytes/Frame) ~ 630 MB**

*AVERAGE COMPRESSION RATIO:*  
**C.R OF SAMPLE RAW DATA ~ 1.8**

*COMPRESSED RAW DATA ON CD ROM:*  
**(924MB / 1.8) ~ 513MB**

**! QUARTERLY RAW DATA ARCHIVAL TO CD ROM IS POSSIBLE**

## PPD Audit

- ? Scan Data Files from Station for BAD and MISSING Data
- Write Results to Text file
- 📁 Import Text file into PARADOX Table
- 📁 One Monthly Table for each Station
- 📄 Generate Reports on Table Data and Distribute

## Table Structure

DAY	PARAMETER	STATE	START TIME	END TIME	DURATION
MM/DD/YY	FILE	GOOD	00:00:00	23:59:59	86400
	RECEIVER	BAD	01:00:50	11:00:49	36000
	METEORLG	UGLY	06:00:00	22:00:00	61201
	BEACON20	MISS	21:00:10	23:59:59	10790
	BEACON27				
	RADIOM20				
	RADIOM27				
	RAINRATE				
	AIRTEMP				
	RELHUMID				

**BAD** : MSB IN BEACON/RADIOMETER FIELD IS SET  
**UGLY** : MSB IS NOT SET BUT DATA OUT OF RANGE  
**MISS** : MISSING DATA

## Data Analysis

- ANALYZE STATISTICALLY THE PARAMETERS:  
 BEACONS  
 RADIOMETERS  
 RAIN RATE
- GENERATE HISTOGRAMS:  
 0.1 dB RESOLUTION FOR BEACON AND RADIOMETER  
 1 mm/h RESOLUTION FOR RAIN RATE
- DISTRIBUTE ANALYSIS PROGRAM WITH PPD

## Development Status

- DATA ARCHIVAL*  
90% COMPLETE
- ? *DATA AUDIT*  
80% COMPLETE
- DATA ANALYSIS*  
40% COMPLETE





**ACTS MINIWORKSHOP**

**Session 2**

**EXPERIMENTER REPORTS**

Chairmen:

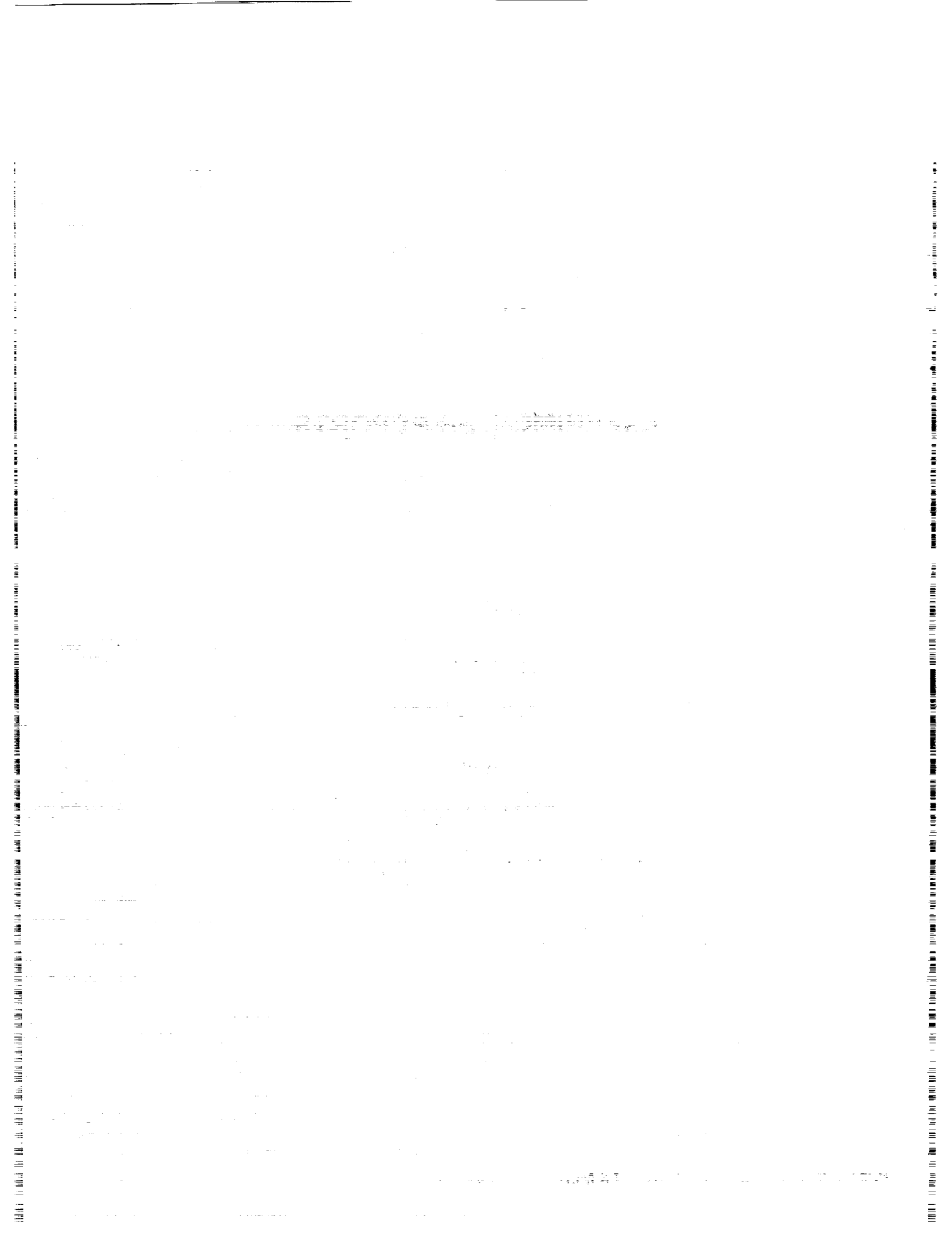
Robert K. Crane

University of Oklahoma

and

David V. Rogers

Communications Research Centre



**Propagation Measurement Requirements  
Beyond the Needs of the CCIR**

**R. K. Crane, OU SOM**

**ACTS Propagation Mini-Workshop**

**Pasadena, CA**

**June 14, 1993**

**CCIR NEEDS:**

- **ANNUAL EDFs** ('70s)
- **WORST MONTH EDFs** ('80s)
- **EVENT DURATION EDFs** ('80s)
- **MONTHLY EDFs** (New)

***NEEDS BEYOND THE CCIR:***

- ***VARIABILITY***
- ***SEASONALITY***
- ***SNOW***

## ***SNOW EFFECTS:***

- ***MELTING LAYER***
- ***RAIN HEIGHT***
- ***EDFs FOR MIXED ICE / WATER  
CONDITIONS***
- ***GRAUPEL / HAIL***

***ACTS MEASUREMENTS:***

- ***OBSERVATION PROCEDURES***
- ***COMPARISONS WITH PREDICTIONS***
- ***SNOW EFFECTS***
- ***FIELD SUPPORT***

**OBSERVATION PROCEDURES:**

- **ACCOUNT FOR ALL PERIODS OF TIME**
- **EDFs ARE SAMPLES FROM A RANDOM PROCESS**
- **"DOWN" TIME**
- **CONTRIBUTIONS TO TOTAL ATTENUATION**
  - > **RAIN**
  - > **CLOUDS**
  - > **SCINTILLATION**
  - > **WATER VAPOR**



**COMPARE WITH PREDICTIONS:**

- ***RADIOMETER vs BEACON***
- ***BEACON vs BEACON***
- ***ATTENUATION vs RAIN RATE***
- ***RAIN RATE vs CLIMATE PREDICTIONS***
- ***RATE \* TIME vs CLIMATE PREDICTIONS***
- ***RATE \* TIME vs ACCUMULATION MEASUREMENTS***

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