WORLD METEOROLOGICAL ORGANIZATION

CBS-CIMO Remote Sensing/ Doc. 6(7)

(19.XI.2009)

Joint Meeting of
CBS Expert Team on Surface-based Remotely-Sensed Observations
(First Session)
and
CIMO Expert Team on Remote Sensing Upper-air Technology and Techniques
(Second Session)

ITEM: 6

Geneva, Switzerland, 23-27 November 2009

Original: ENGLISH ONLY

DEVELOP GUIDANCE AND METHODOLOGY FOR SURFACE BASED REMOTE SENSING MONITORING

Report from USA

(Submitted by Russell D. COOK)

Summary and Purpose of Document

The document presents a brief overview of the methods used for surface-based remote sensor monitoring in USA.

ACTION PROPOSED

The meeting will be invited to develop the methodology and standard guidance material that can be used for the monitoring of surface-based remote sensor systems.

Monitoring Surface Based Remote Sensing Systems

Presented to ET-SBRSO
and ET-RSUATT
November 23-27, 2009
by Russell Cook
NOAA/National Weather Service

Systems Covered in this Brief

- WSR-88D Doppler Weather Radar
- Terminal Doppler Weather Radar
- Surface Weather Observation Stations
- Wind Profiler

WSR-88D

- Network is monitored with System Status Monitor (SSM) from Radar Operations Center in Norman, Oklahoma
- Each WSR-88D is accessed once per hour by computer to retrieve general status message (GSM)
- Data protocol is X.25
- System is represented in one of three colors to based on status
  - Green – no alarms
  - Yellow – an alarm has been set
  - Red – no products generated (not online)
    - could be communications problem or system may be in standby
- Each site is also monitored by nearest NWS or FAA office with control responsibility for that radar
- Base data products from all CONUS radar sites are archived at National Climatic Data Center (NCDC) in Asheville, North Carolina

WSR-88D

- Anticipated improvements
  - ROC will retrieve general status messages from central data server in Silver Spring, MD over internet using TCP/IP protocol
  - Radar sites in South Korea, Japan, and Lajes will be accessed via dial-up TCP/IP
  - Will also access new archive status product
    - Product will include RDA calibration info and alarms

Terminal Doppler Weather Radar

- Radar data is processed by supplemental product generator (similar to RPG)
- Data then flows through AWIPS network and is monitored just like WSR-88D network
- Radars are monitored from ROC in same manner as WSR-88D network
- Data is archived at NCDC

Telecoms support … radar central server

NWS WSR-88D Transmit/Receive Status as of Mon Mar 5 03:54:58 CUT 2007

Radar Sites - Last receipt of data

KABR 03:50:58	KABX 03:51:10	KAKQ 03:47:17	KAMA 03:46:11	KAMX 03:49:37	KAPX 03:52:30	KARX 03:48:28	KATX 03:54:50	KBBX 03:48:28	KBGM 03:50:58	KBHX 03:54:09	KBIS 03:52:49	KBLX 03:53:02	KBMX 03:52:00	KBOX 03:48:48	KBRO 02:16:29	KBUF 03:50:11	KBYX 03:54:33
KCAE 03:47:17	KCBW 03:51:10	KCBX 03:47:17	KCCX 03:53:59	KCLE 03:50:18	KCLX 03:50:49	KCRP 03:50:26	KCXX 03:50:11	KCYS 03:45:48	KDAX 03:54:33	KDDC 03:47:49	KDFX 03:52:49	KDGX 03:53:32	KDIX 03:51:38	KDLH 03:50:37	KDMX 03:50:18	KDOX 03:47:49	KDTX 03:51:50
KDVN 18:05:58	KDYX 03:48:39	KEAX 03:51:38	KEMX 03:47:58	KENX 03:45:48	KEOX 03:49:37	KEPZ 03:46:28	KESX 03:46:59	KEVX 03:54:22	KEWX 03:53:22	KEYX 03:46:37	KFCX 03:54:33	KFDR 03:51:50	KFDX 03:45:38	KFFC 03:53:22	KFSD 03:48:28	KFSX 03:45:18	KFTG 03:47:30
KFWS 03:52:21	KGGW 03:49:18	KGJX 03:53:02	KGLD 03:47:08	KGRB 03:54:22	KGRK 22:39:27	KGRR 03:49:06	KGSP 03:52:08	KGWX 03:50:11	KGYX 03:52:00	KHDX 03:47:30	KHGX 03:47:30	KHNX 03:51:38	KHPX 03:52:49	KHTX 03:50:37	KICT 03:53:10	KICX 03:49:37	KILN 03:52:39
KILX 03:47:36	KIND 03:46:37	KINX 03:51:50	KIWA 03:52:30	KIWX 03:52:30	KJAX 03:45:48	KJGX 03:52:30	KJKL 03:52:21	KLBB 03:54:40	KLCH 03:47:08	KLIX 03:50:26	KLNX 03:48:39	KLOT 03:53:51	KLRX 03:52:21	KLSX 03:48:58	KLTX 03:47:30	KLVX 03:54:33	KLWX 03:45:28
KLZK 03:53:51	KMAF 03:50:49	KMAX 03:53:02	KMBX 03:53:02	KMHX 03:47:49	KMKX 03:52:30	KMLB 03:49:37	KMOB 03:52:08	KMPX 03:46:59	KMQT 03:54:22	KMRX 03:49:37	KMSX 03:48:39	KMTX 03:46:59	KMUX 03:54:50	KMVX 03:54:50	KMXX 03:46:28	KNKX 03:46:37	KNQA 03:51:19
KOAX 03:47:58	KOHX 03:52:08	KOKX 03:54:40	KOTX 03:51:38	KPAH 03:49:18	KPBZ 03:52:00	KPDT 03:46:37	KPOE 03:53:39	KPUX 03:54:33	KRAX 03:53:02	KRGX 03:48:07	KRIW 03:46:28	KRLX 03:51:19	KRTX 03:46:11	KSFX 03:45:38	KSGF 03:46:47	KSHV 03:53:10	KSJT 03:52:30
KSOX 03:46:11	KSRX 03:45:28	KTBW 03:46:11	KTFX 03:49:48	KTLH 03:45:38	KTLX 03:53:59	KTWX 03:49:37	KTYX 03:51:28	KUDX 03:48:19	KUEX 03:54:33	KVAX 03:52:21	KVBX 23:01:06	KVNX 03:48:48	KVTX 03:54:40	KVWX 03:48:39	KYUX 03:54:22	PABC 03:45:57	PACG 03:50:37
PAEC 03:45:57	PAHG 03:50:11	PAIH 03:52:49	PAKC 03:49:27	PAPD 03:53:02	PGUA 03:50:11	PHKI 03:53:10	PHKM 03:52:08	PHMO 03:50:49	PHWA 03:53:39	TJUA 03:53:10							

151 sites up (97.4%) of 155 radar sites monitored

Site Free Text Messages

Free Text Messages received within the previous 24 hours.

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NOUS64 KFWD 040559
FTMGRK
Message Date:  Mar 04 2007 05:59:10
KGRK RADAR IS DOWN DUE TO AN EQUIPMENT FAILURE.  TECHNICIANS HAVE BEEN NOTIFIED.□□
NOUS64 KFWD 041428
FTMGRK
Message Date:  Mar 04 2007 14:28:44
KGRK RADAR AVAILABILITY WILL BE INTERMITTENT TODAY. FORT HOOD TECHNICIANS HAVE B
EEN NOTIFIED OF THE PROBLEM. WE APOLOGIZE FOR ANY INCONVENIENCE THIS MAY CAUSE.
JAS/FWD.
NOUS64 KFWD 042340
FTMGRK
Message Date:  Mar 04 2007 23:40:33
KGRK IS DOWN DUE TO AN EQUIPMENT FAILURE.  TECHNICIANS HAVE BEEN NOTIFIED.      □□
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ASOS

- Data is transmitted over FAA and NWS data networks
- Data and hourly reports are monitored by ASOS Operations and Monitoring Center (AOMC) in Silver Spring, Maryland
- Stations also monitored by NWS forecast office
- Self-detected maintenance issues will prompt insertion of '$' symbol in the hourly report
- AOMC monitors each station for maintenance symbols and missing observations

ASOS

- Anticipated improvements
  - Internet-based data transmission

Wind Profiler

- Communications over leased lines and GOES communications system
- Data is monitored at Profiler Control Center (PCC) in Boulder, Colorado
- Profilers send wind data and status info to the Hub at six minute intervals

Wind Profiler

- Anticipated improvements
  - Radars will migrate to NOAANet
  - Each radar will be assigned to a WFO
    - WFO responsible for monitoring and maintenance
  - Each radar will also be monitored by ROC