

Hanford Site Meteorological Support

**14th Meeting of the DOE
Meteorological Coordinating
Council**

May 7, 2007

Presented by Ken Burk

Organizational Structure

The Meteorological and Climatological Services Task

- ▶ Provides meteorological support to the Hanford Site
- ▶ Is part of the Public Safety and Resource Protection Project (PS&RPP), which includes
 - Hanford environmental oversight
 - surface environmental surveillance
 - ecological monitoring and compliance
 - cultural resources

Task Scope

Provide meteorological and climatological services support to DOE-RL and Hanford Site contractors so that activities that might be severely affected by adverse meteorological conditions (e.g., strong winds, severe heat or cold, thunderstorms and lightning, snow storms) can operate in a safe and efficient a manner.

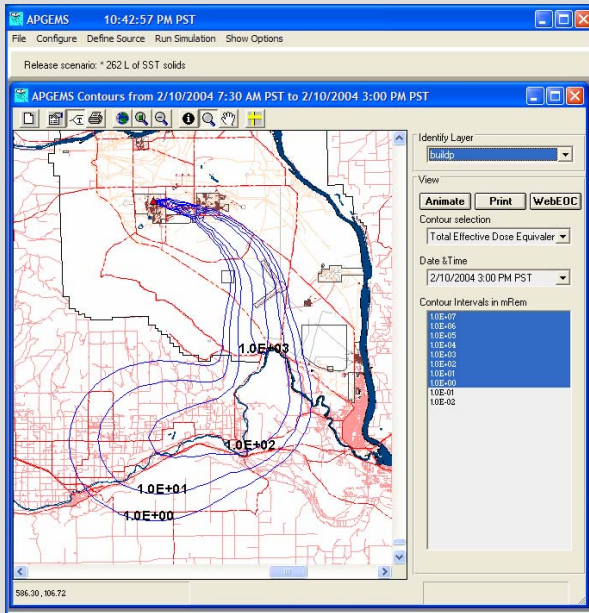


Hanford Met. Station Operations

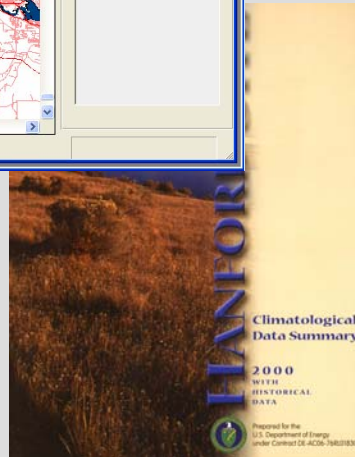
- ▶ Provide weather forecasts in support of routine and special Site operations.
- ▶ Detect adverse weather (heat stress, thunderstorms) that may affect safety of Site workers.
- ▶ Provide specialized support to Site cleanup (e.g., building demolition).



Hanford Met. Station Operation (cont)



- ▶ Provide data for annual potential radiological exposure assessment.
- ▶ Provide data for interactive atmospheric models in support of emergency response activities.
- ▶ Publish Hanford Site Climatological Data monthly summaries.



Hanford Meteorological Monitoring Network

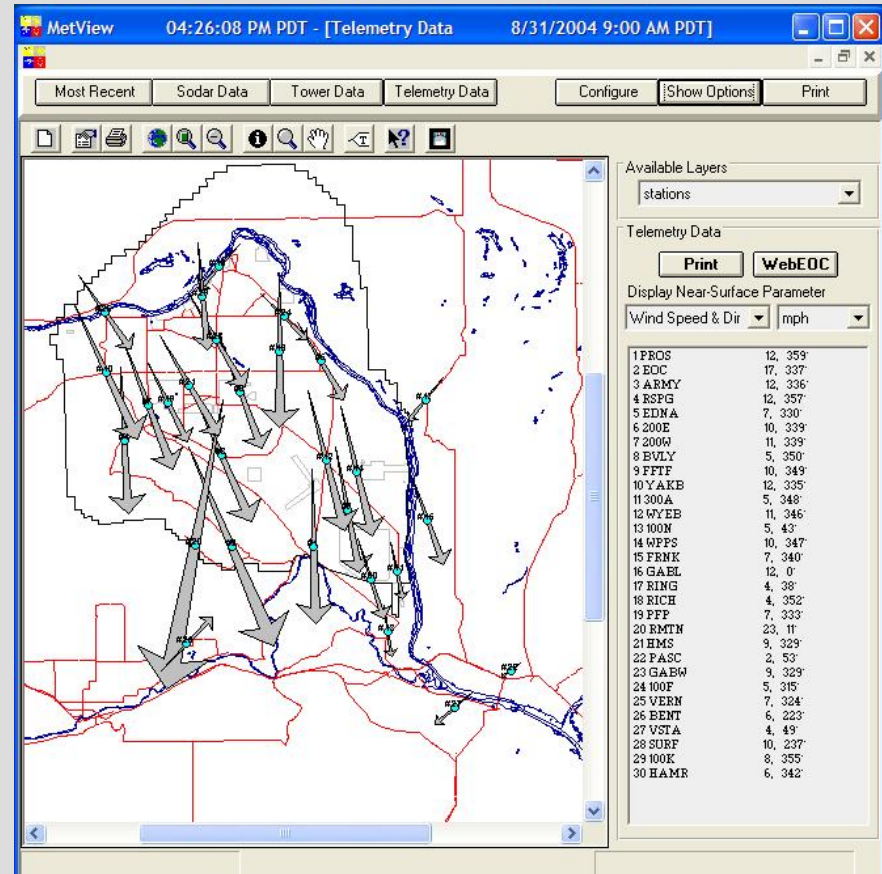
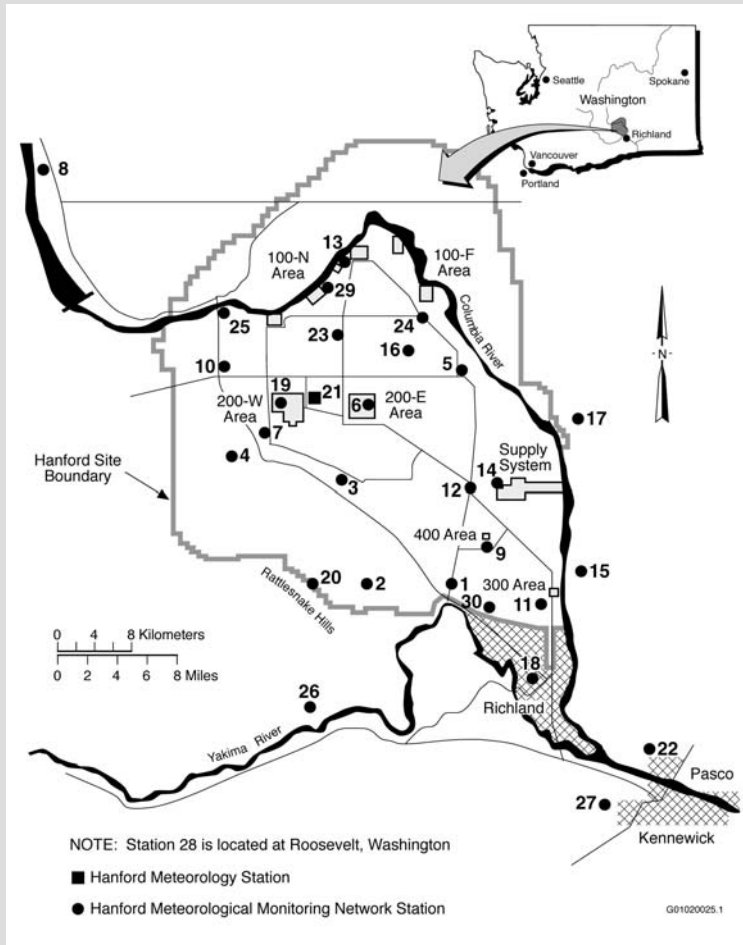
- ▶ Network composition
 - twenty-six 9-m towers
 - three 61-m towers
 - one 124-m tower



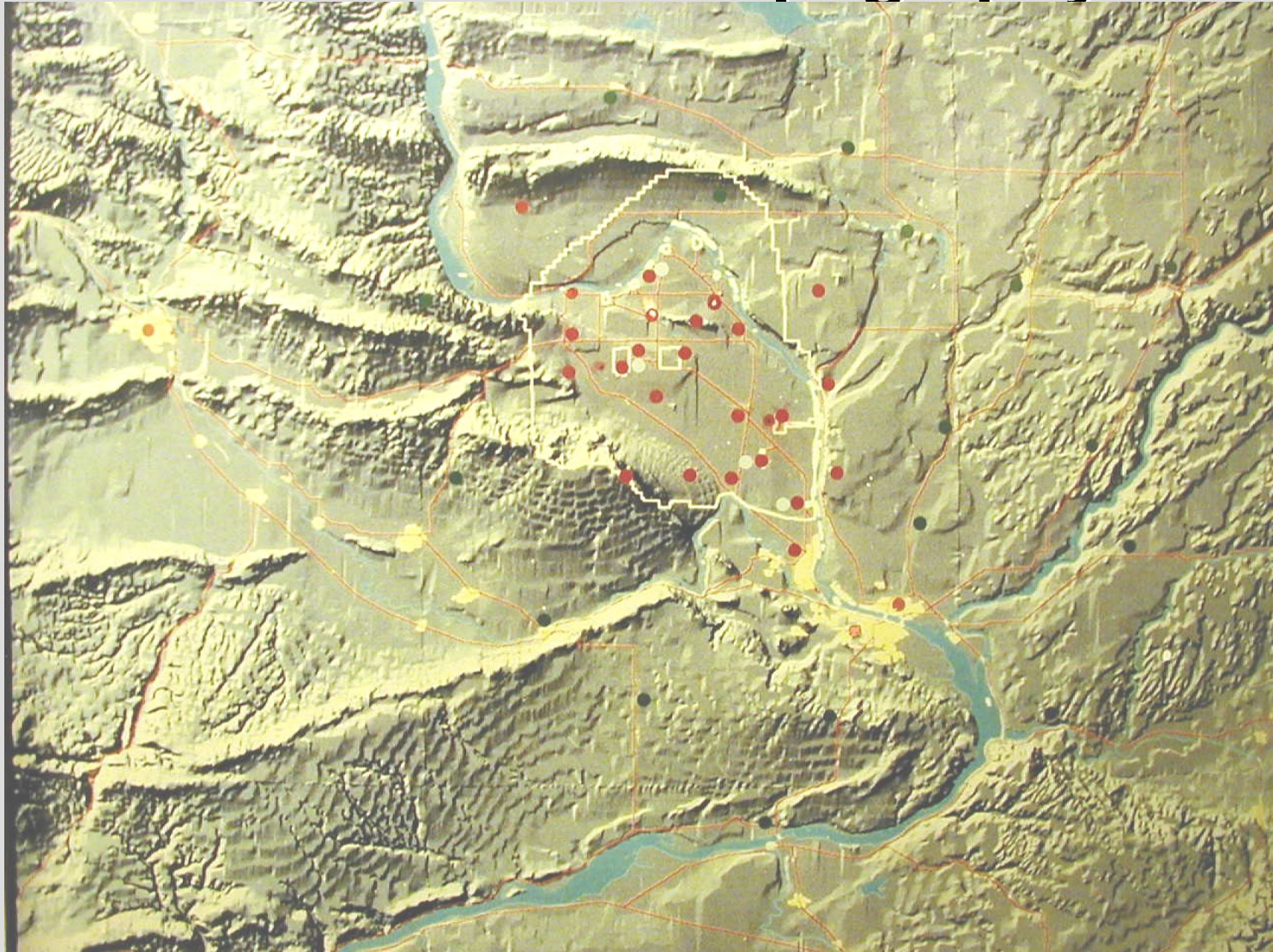
- ▶ Instrumentation
 - wind speed and direction
 - temperature, temperature difference, dew-point temperature and relative humidity
 - precipitation
 - atmospheric pressure



Hanford Meteorological Monitoring Network Station Locations



Hanford Site Topography



Forecasting Services

▶ Duty Forecaster available

- Monday through Friday, 24 hours except from 8:00 p.m. to 11:00 p.m.
- weekends and holidays, 6:00 a.m. to 2:00 p.m.

▶ General weather

- temperature, wind, and weather (rain, snow, fog)
- Used primarily for daily work scheduling.

Forecasting Services (cont)

- ▶ Adverse weather advisories
 - high winds, thunderstorms, dense fog, frozen precipitation
 - identified call list with notification via telephone and e-mail
- ▶ Heat stress readings (wet bulb globe temperature)
 - Based upon air temperature, radiant heat exchange, air movement and water vapor pressure
 - Used for work scheduling during summer months, taking into account work type and protective clothing type
- ▶ Special forecasts as requested

HMS Telemetry Data Collection System

- ▶ Completed conversion to Campbell Scientific, Inc.
 - Data loggers; CR10XTD & CR23XTD
 - Narrow band radio



HMS Telemetry Data Collection System (cont)

- ▶ System software – LoggerNet 3.1
 - Calls stations
 - Runs processes

The screenshot shows a Windows XP desktop with the LoggerNet 3.1.5 application running. The Status Monitor window is open, displaying a table of station data. The table has the following columns: Network Map, Last Data Coll, Next Data Coll, Vols Last Coll, Avg Er %, Cell State, and Comm Status. The data is organized by station ID, with each row representing a station's status and collection schedule.

Network Map	Last Data Coll	Next Data Coll	Vols Last Coll	Avg Er %	Cell State	Comm Status
S4	5/2/2007 4:01:04 AM	5/2/2007 4:16:00 AM	0	0%	normal	normal
S7	5/2/2007 4:01:10 AM	5/2/2007 4:16:00 AM	8	0%	normal	normal
S21	5/2/2007 4:00:27 AM	5/2/2007 4:15:20 AM	76	0%	normal	normal
S16	5/2/2007 4:01:14 AM	5/2/2007 4:16:00 AM	7	0%	normal	normal
S5	5/2/2007 4:01:21 AM	5/2/2007 4:16:00 AM	7	0%	normal	normal
S24	5/2/2007 4:01:26 AM	5/2/2007 4:16:00 AM	8	0%	normal	normal
S31	5/2/2007 4:01:30 AM	5/2/2007 4:16:00 AM	8	0%	normal	normal
S32	5/2/2007 4:01:35 AM	5/2/2007 4:16:00 AM	8	0%	normal	normal
S120	7/21/2005 8:48:43 AM		0	0%	sched off	unk-norm
S30	5/2/2007 4:01:40 AM	5/2/2007 4:16:00 AM	8	0%	normal	normal
S0	5/2/2007 4:01:56 AM	5/2/2007 4:16:00 AM	11	0%	normal	normal
S12	5/2/2007 4:02:02 AM	5/2/2007 4:16:00 AM	0	0%	normal	normal
S11	5/2/2007 4:02:09 AM	5/2/2007 4:16:00 AM	19	0%	normal	normal
S9	5/2/2007 4:02:15 AM	5/2/2007 4:16:00 AM	19	0%	normal	normal
S17	5/2/2007 4:02:23 AM	5/2/2007 4:16:00 AM	8	0%	normal	normal
S15	5/2/2007 4:02:29 AM	5/2/2007 4:16:00 AM	7	0%	normal	normal
S18	5/2/2007 4:02:35 AM	5/2/2007 4:16:00 AM	11	0%	normal	normal
S27	5/2/2007 4:04:31 AM	5/2/2007 4:16:00 AM	8	0%	normal	normal
S22	5/2/2007 4:02:41 AM	5/2/2007 4:16:00 AM	8	0%	normal	normal
S26	5/2/2007 4:02:47 AM	5/2/2007 4:16:00 AM	11	0%	normal	normal
S10	5/2/2007 4:02:51 AM	5/2/2007 4:16:00 AM	11	0%	normal	normal
S6	5/2/2007 4:02:55 AM	5/2/2007 4:16:00 AM	11	0%	normal	normal
S1	5/2/2007 4:02:58 AM	5/2/2007 4:16:00 AM	8	0%	normal	normal
S3	5/2/2007 4:03:06 AM	5/2/2007 4:16:00 AM	0	0%	normal	normal
S13	5/2/2007 4:03:52 AM	5/2/2007 4:16:00 AM	19	0%	normal	normal
S23	5/2/2007 4:03:56 AM	5/2/2007 4:16:00 AM	7	0%	normal	normal
S14	5/2/2007 4:04:00 AM	5/2/2007 4:16:00 AM	0	0%	normal	normal
S2	5/2/2007 4:04:04 AM	5/2/2007 4:16:00 AM	0	0%	normal	normal
S19	5/2/2007 4:04:09 AM	5/2/2007 4:16:00 AM	10	0%	normal	normal
S28	5/2/2007 4:04:12 AM	5/2/2007 4:16:00 AM	11	0%	normal	normal
S25	5/2/2007 4:04:17 AM	5/2/2007 4:16:00 AM	10	0%	normal	normal
S20	5/2/2007 4:04:21 AM	5/2/2007 4:16:00 AM	12	0%	normal	normal
S400	5/2/2007 4:04:25 AM	5/2/2007 4:16:00 AM	6	0%	normal	normal
S28	5/2/2007 4:00:58 AM	5/2/2007 4:15:30 AM	11	0%	normal	normal

Free space: 140,310,347,264 bytes 130.1 GB Show Stations Only Pause Schedule 4:04:54 AM

HMS Telemetry Data Collection System (cont)

- ▶ Summary of Data Flow
 - Tower – data logger
 - PC – collection software
 - PC – processing software
 - Developed in shop (Visual Basic, Fortran)
 - Intranet server
 - Processes to send data out (FTP)
 - WWW

Future Issues



- ▶ Environmental Monitoring (EM) possibly not continuing as part of PNNL
- ▶ Assessment of changing support needs as Hanford Site cleanup continues and eventually ends.