LA-UR-15-26499
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Title: LANL Meteorology Program FY15

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Intended for: Presentation to DOE Meteorology Coordinating Council

Issued: 2015-08-18

LANL Meteorology Program FY15

August 2015

Associate Director for ESH; Environmental Protection Division; Environmental Compliance Group; Air Quality Team; Meteorology Program

Chartered to Provide the Laboratory's operational meteorology program

Team Leader: Steve Story

Meteorologists: Jean Dewart,

David Bruggeman

Instrument Technician: Greg Stanton

Data Steward: Melissa Coronado

Quality Assurance: Dave Webster

Primary Job Assignments

- maintaining calibrated instrumentation and quality assured data to support regulatory compliance, DOE Order compliance, and operational needs

- providing meteorology data analysis and weather forecasting support to routine LANL operations, and

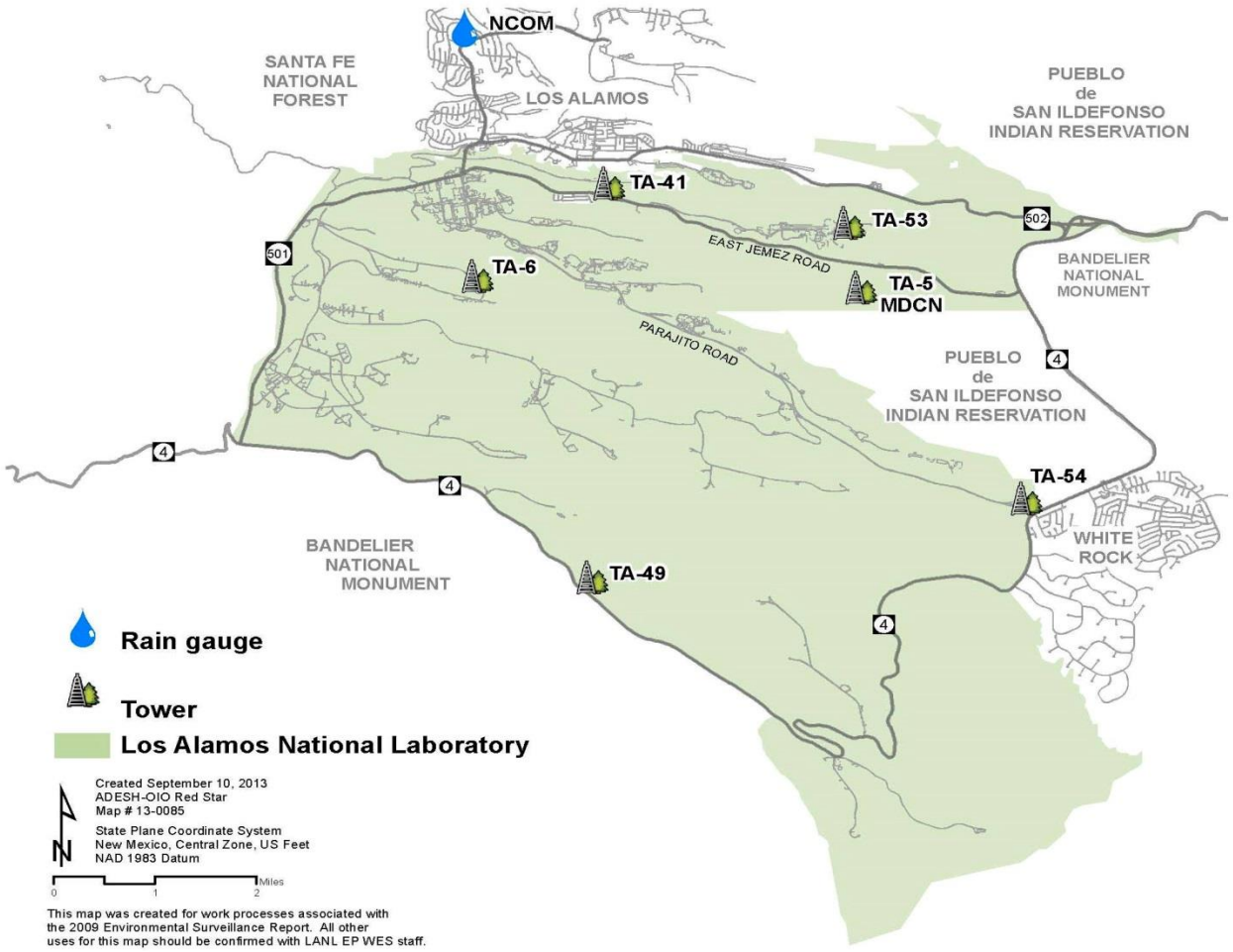
- providing emergency response dispersion modeling and weather forecasting.

Meteorology Program Drivers

- Regulations, Orders, Permits, Agreements
  - DOE Order 151.C, Emergency Management Systems
  - NM & Federal Clean Air Act (rad & non-rad permits and reporting)
  - 10 CFR 830 Nuclear Facility Safety (accident analyses)
  - NPDES permits (rainfall measurements)
  - RCRA permits (dispersion modeling of waste processing)
  - NMED/DOE Consent Order (environmental restoration)
  - DOE Order 458.1 Radiation Protection of the Public and the Environment

Meteorology Program Drivers

- Programs/Services
  - LANL construction standards
  - Inclement weather forecasting
  - LANL research support (weapons testing, high energy experiments, climate change, etc.)
  - Outdoor work scheduling (HE destruction, construction, tower/roof operations, etc.)
  - OSHA safety support (e.g. exhaust duct testing)
  - Site Sustainability/Climate change adaptation planning


NCOM
SANTA FE
NATIONAL
FOREST
LOS ALAMOS
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de
SAN ILDEFONSO
INDIAN RESERVATION
TA-41
TA-53
502
501
EAST JEMEZ ROAD
TA-6
TA-5
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SAN ILDEFONSO
INDIAN RESERVATION
4
TA-54
WHITE
ROCK
BANDELIER
NATIONAL
MONUMENT
TA-49
Rain gauge
Tower
Los Alamos National Laboratory
Created September 10, 2013
ADESH-OIO Red Star
Map # 13-0085
State Plane Coordinate System
New Mexico, Central Zone, US Feet
NAD 1983 Datum
N
0
1
2
Miles
This map was created for work processes associated with
the 2009 Environmental Surveillance Report. All other
uses for this map should be confirmed with LANL EP WES staff.

Towers/Instrumentation

- TA-6: 300 ft
  - ground station (temperature, RH, dew point temperature, pressure, SW & LW radiation, rain, snow, fuel moisture)
  - Instrument booms at 4 levels (ws, wd, w, temp)
- TA-54: 150 ft
  - ground station (temperature, RH, dew point temperature, pressure, SW & LW radiation, rain)
  - Instrument booms at 3 levels (ws, wd, w, temp)
- TA-41: scheduled for decommissioning
- TA-49 & TA-53: 150 ft
  - ground station (temperature, RH, dew point temperature, SW radiation, rain)
  - Instrument booms at 3 levels (ws, wd, w, temp)
- TA-5 MDCN: 10 m
  - ground station (temperature, SW radiation)
  - Instrument booms at 3 levels (ws, wd, w, temp)
- NCOM:
  - ground station – rainfall only

Data Processing

- Campbell Scientific dataloggers

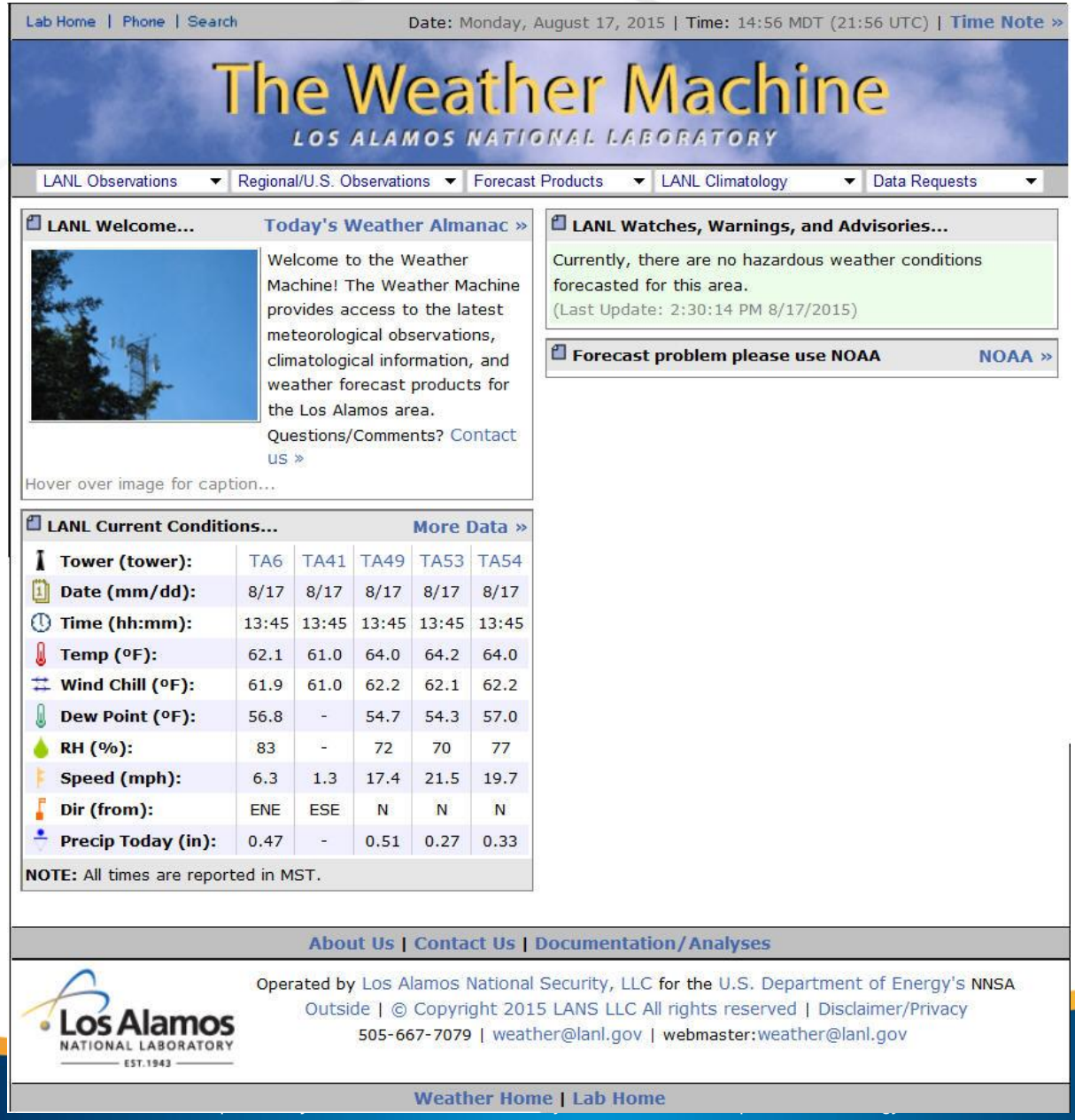
  CR7, CR21X, CR10 (1990s era)
- Conversion of analog/digital signals to meteorology units using CSI programs
- Generate 15 minute averages and standard deviations
- Generate 24 hour summaries – max/min values and daily averages/totals
- Datalogger upgrade project to CR3000 units

Meteorology Calibration Program

- S&CL or outside vendors
  - Pressure, relative humidity, SW/LW radiation instruments and CS dataloggers
  - Meteorology program calibration equipment

- Meteorology calibration program for temperature and wind sensors – approved by LANL S&CL
  - Temperature sensors calibrated in-house annually, following manufacturer's guidelines and in-house experience
  - Wind sensors are calibrated in-house every 6 months and ANSI guidance

Data Delivery: yellow & green web



Lab Home | Phone | Search — Date: Monday, August 17, 2015 | Time: 14:56 MDT (21:56 UTC) | Time Note »

The Weather Machine

LOS ALAMOS NATIONAL LABORATORY

LANL Observations | Regional/U.S. Observations | Forecast Products | LANL Climatology | Data Requests

LANL Welcome... Today's Weather Almanac »

Welcome to the Weather Machine! The Weather Machine provides access to the latest meteorological observations, climatological information, and weather forecast products for the Los Alamos area. Questions/Comments? Contact us »

Hover over image for caption...

LANL Watches, Warnings, and Advisories...

Currently, there are no hazardous weather conditions forecasted for this area.
(Last Update: 2:30:14 PM 8/17/2015)

Forecast problem please use NOAA NOAA »

LANL Current Conditions... More Data »

	TA6	TA41	TA49	TA53	TA54
Tower (tower):					
Date (mm/dd):	8/17	8/17	8/17	8/17	8/17
Time (hh:mm):	13:45	13:45	13:45	13:45	13:45
Temp (°F):	62.1	61.0	64.0	64.2	64.0
Wind Chill (°F):	61.9	61.0	62.2	62.1	62.2
Dew Point (°F):	56.8	-	54.7	54.3	57.0
RH (%):	83	-	72	70	77
Speed (mph):	6.3	1.3	17.4	21.5	19.7
Dir (from):	ENE	ESE	N	N	N
Precip Today (in):	0.47	-	0.51	0.27	0.33

NOTE: All times are reported in MST.

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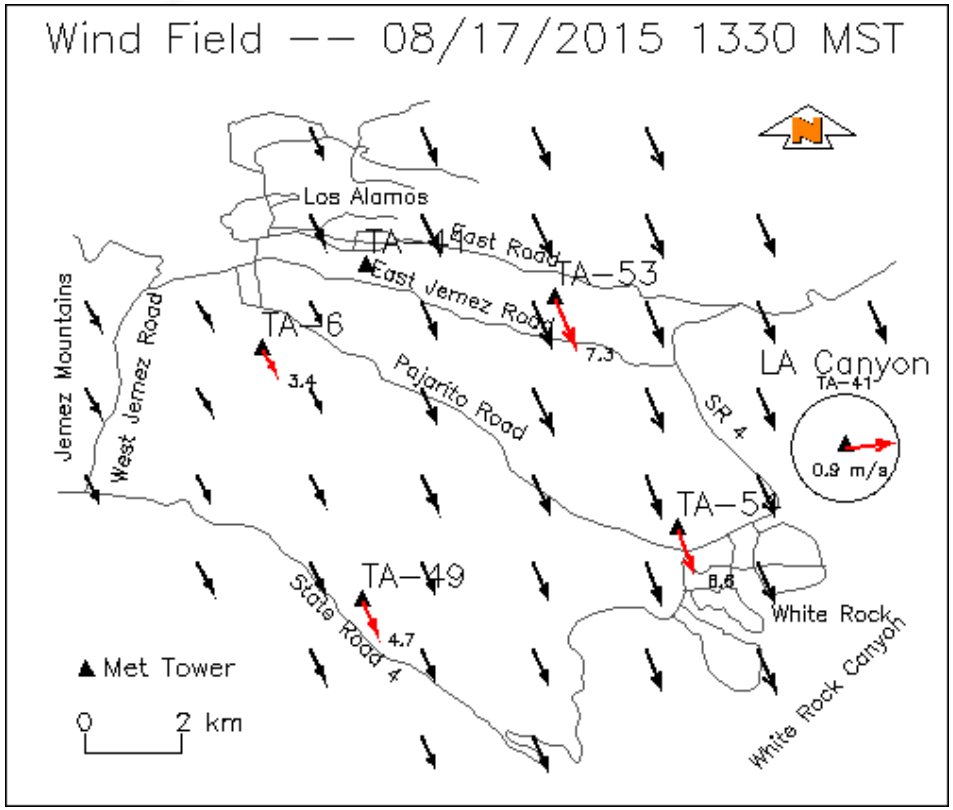
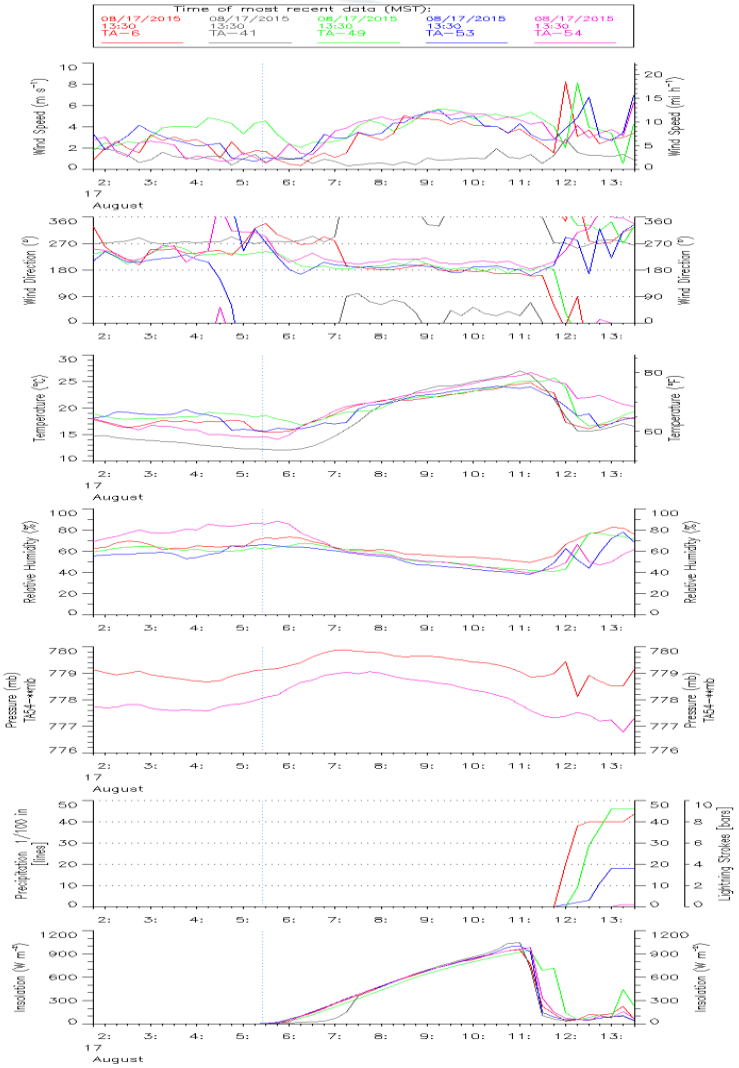
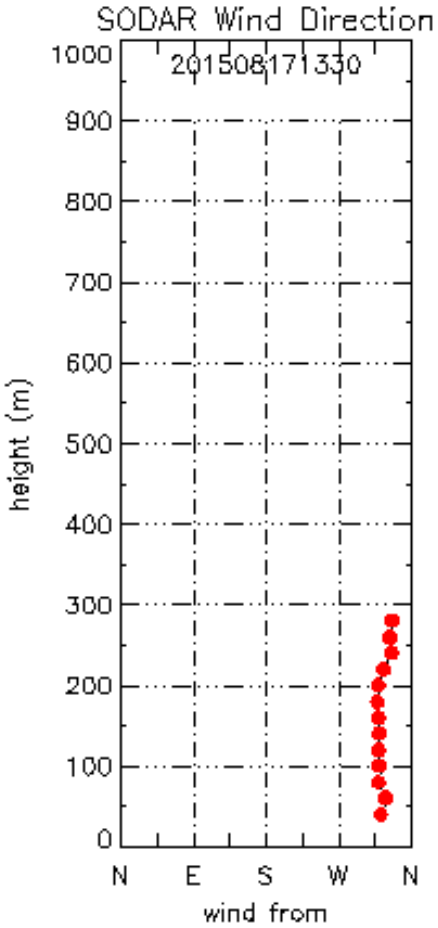
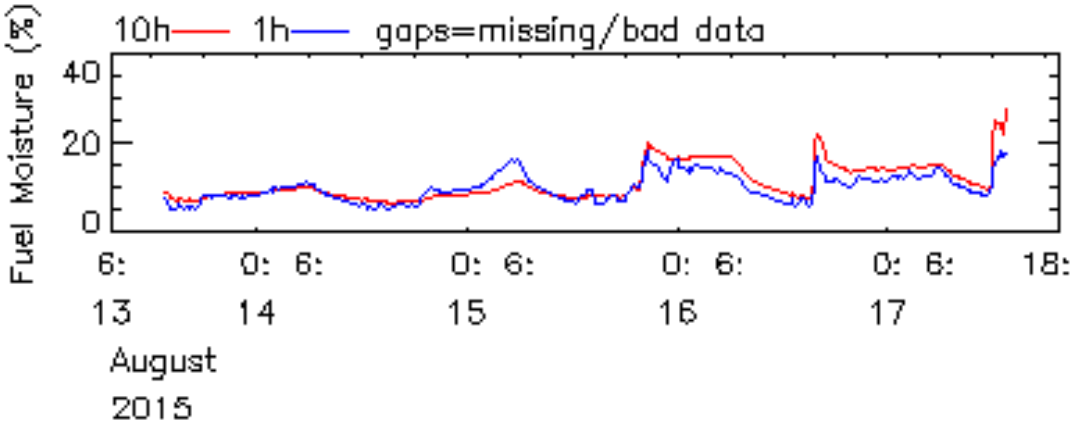
Products

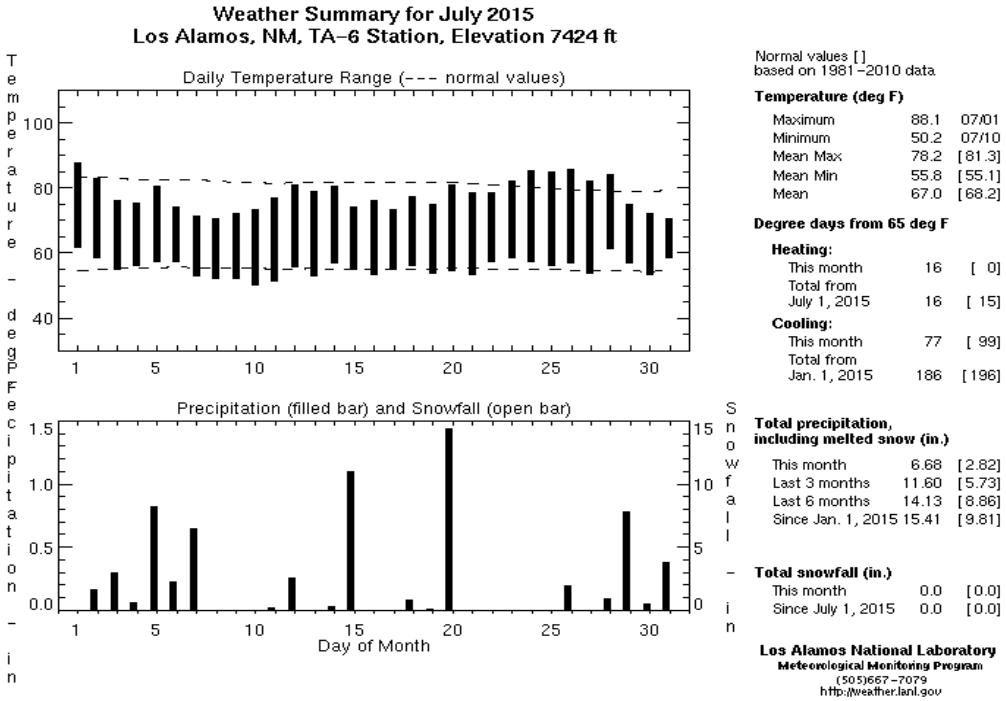




Products

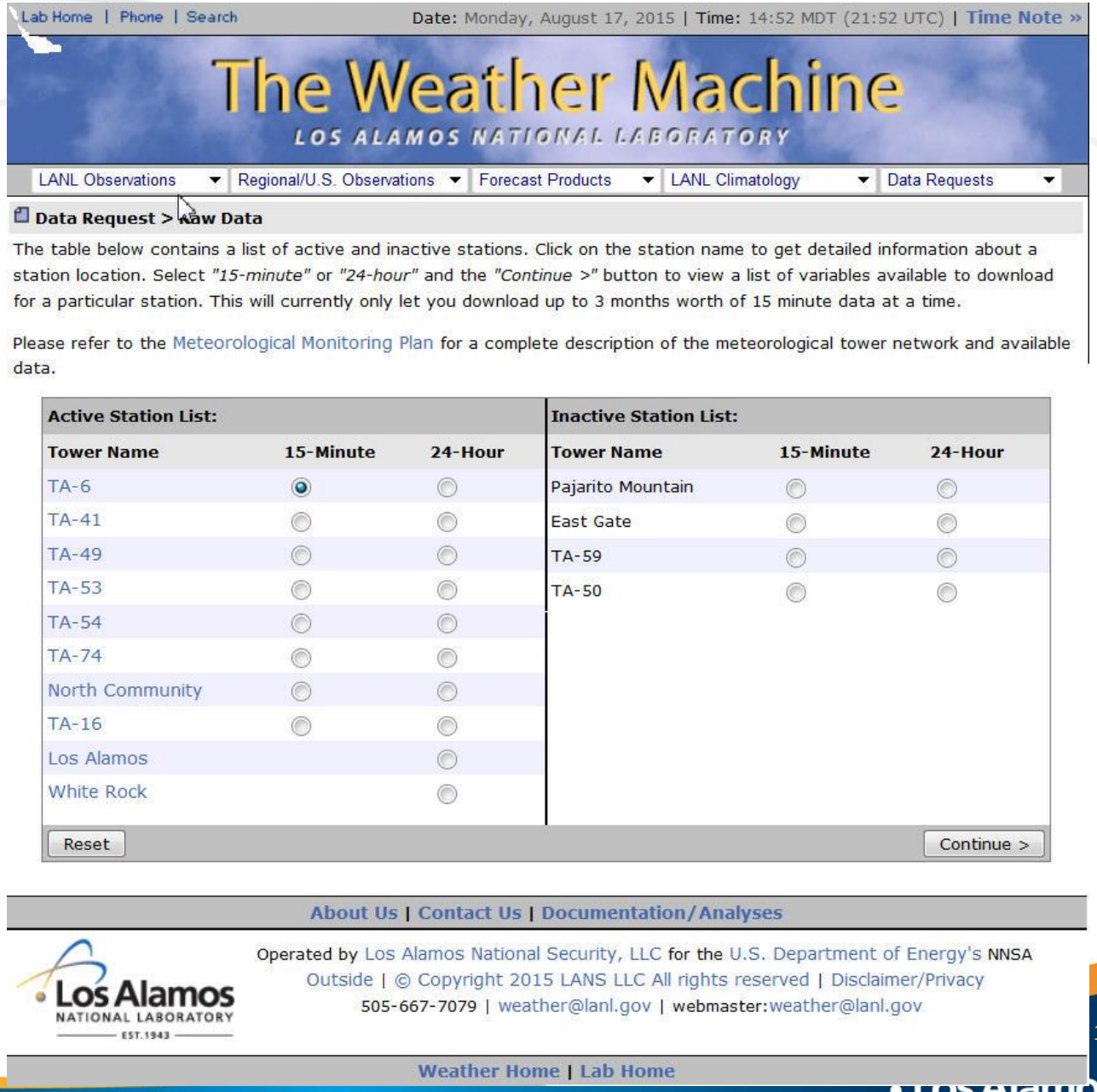




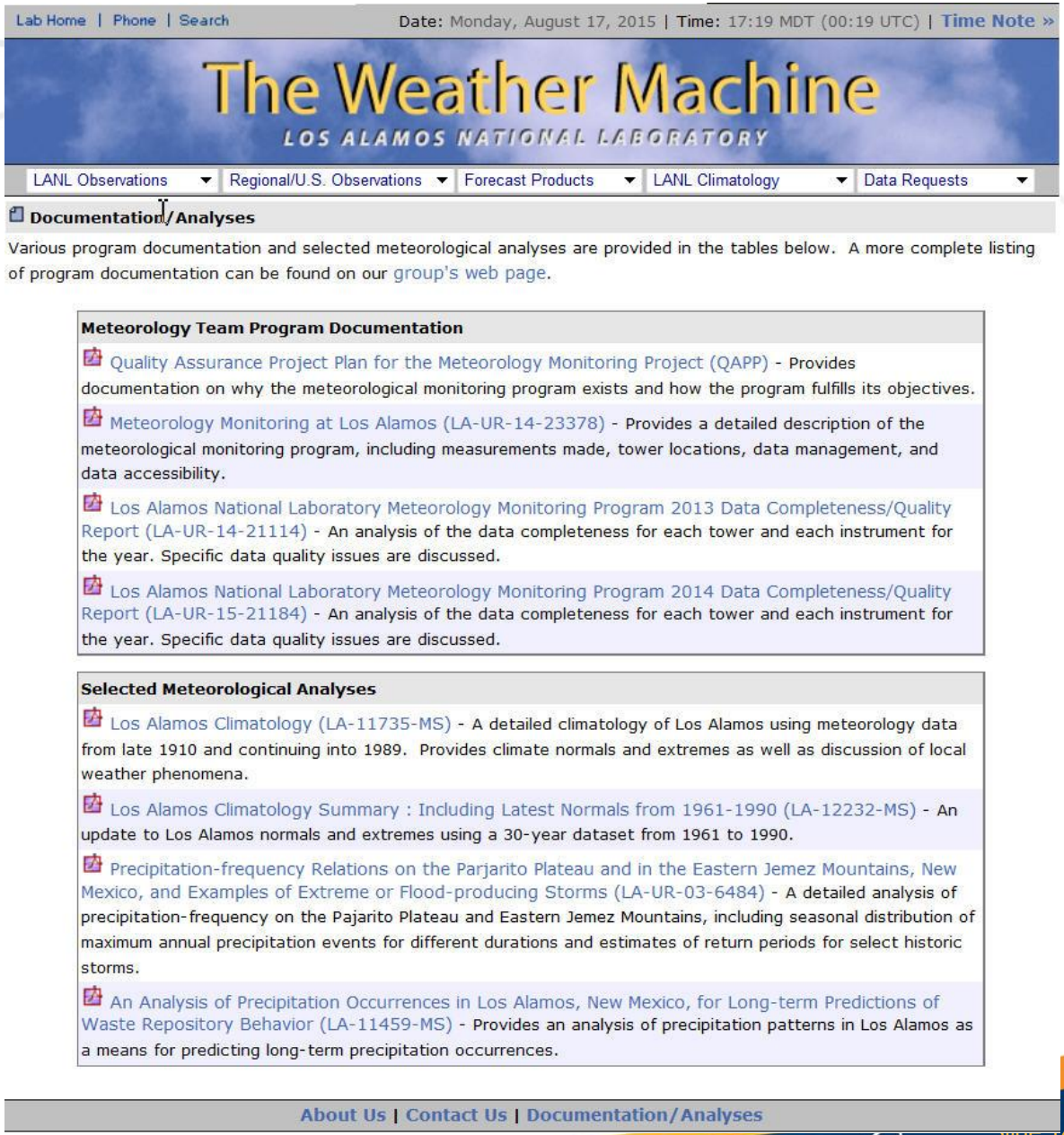


Very Popular Feature:

Raw Data Request



Documentation



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Documentation/Analyses

Various program documentation and selected meteorological analyses are provided in the tables below. A more complete listing of program documentation can be found on our group's web page.

Meteorology Team Program Documentation

- Quality Assurance Project Plan for the Meteorology Monitoring Project (QAPP) - Provides documentation on why the meteorological monitoring program exists and how the program fulfills its objectives.
- Meteorology Monitoring at Los Alamos (LA-UR-14-23378) - Provides a detailed description of the meteorological monitoring program, including measurements made, tower locations, data management, and data accessibility.
- Los Alamos National Laboratory Meteorology Monitoring Program 2013 Data Completeness/Quality Report (LA-UR-14-21114) - An analysis of the data completeness for each tower and each instrument for the year. Specific data quality issues are discussed.
- Los Alamos National Laboratory Meteorology Monitoring Program 2014 Data Completeness/Quality Report (LA-UR-15-21184) - An analysis of the data completeness for each tower and each instrument for the year. Specific data quality issues are discussed.

Selected Meteorological Analyses

- Los Alamos Climatology (LA-11735-MS) - A detailed climatology of Los Alamos using meteorology data from late 1910 and continuing into 1989. Provides climate normals and extremes as well as discussion of local weather phenomena.
- Los Alamos Climatology Summary : Including Latest Normals from 1961-1990 (LA-12232-MS) - An update to Los Alamos normals and extremes using a 30-year dataset from 1961 to 1990.
- Precipitation-frequency Relations on the Parjarito Plateau and in the Eastern Jemez Mountains, New Mexico, and Examples of Extreme or Flood-producing Storms (LA-UR-03-6484) - A detailed analysis of precipitation-frequency on the Pajarito Plateau and Eastern Jemez Mountains, including seasonal distribution of maximum annual precipitation events for different durations and estimates of return periods for select historic storms.
- An Analysis of Precipitation Occurrences in Los Alamos, New Mexico, for Long-term Predictions of Waste Repository Behavior (LA-11459-MS) - Provides an analysis of precipitation patterns in Los Alamos as a means for predicting long-term precipitation occurrences.

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Data Quality Assurance

- Daily Automated range checking – emails sent to program personnel with outliers
- Meteorologist daily review of Weather Machine time series plots (selected data)
- Meteorologist weekly detailed review of time series plots of all instruments
- Annual report of data completeness, accuracy evaluation to management

Current Special Projects

- Data logger upgrades
- Analysis of return period rainfall and winds for engineering design
- September 2013 “1000-yr return period” rainstorm analysis

FY16 Projects

- Completion of datalogger upgrade project
- Real-time wind speed/direction data feed to TA-55 ops center
- Analysis of adequacy of met tower network for emergency response and safety basis work
- Update to 1990/1992 Los Alamos Climatology
- Update to procedures – streamline and fill some gaps
- Analysis of January 15 – 17, 1987 snowstorm
- Routine work! (hopefully lots of snow forecasting!)