

Lawrence Livermore National Laboratory

Recent Advances in NARAC/HotSpot Consequence Assessment Modeling Tools and Services

EMI SIG Annual Meeting
Charleston, SC
May 3-5, 2011



**John Nasstrom, Fernando Aluzzi, Steve Homann,
Brenda Pobanz
NARAC-IMAAC Program**

Lawrence Livermore National Laboratory, P. O. Box 808, Livermore, CA 94551
This work performed under the auspices of the U.S. Department of Energy by
Lawrence Livermore National Laboratory under Contract DE-AC52-07NA27344

LLNL-PRES-483794

Agenda

- Introduction and overview
- *NARAC Web*: New and upcoming features
- *HotSpot*: Upcoming features
- Schedule for NARAC/HotSpot training
- Questions and feedback: How can NARAC and HotSpot better meet your needs?

NARAC and HotSpot: Tools for Your Modeling Toolbox

- HotSpot PC-Based modeling tools for:
 - Emergency Planning Hazard Assessments and Safety Analysis
 - Initial consequence assessment modeling

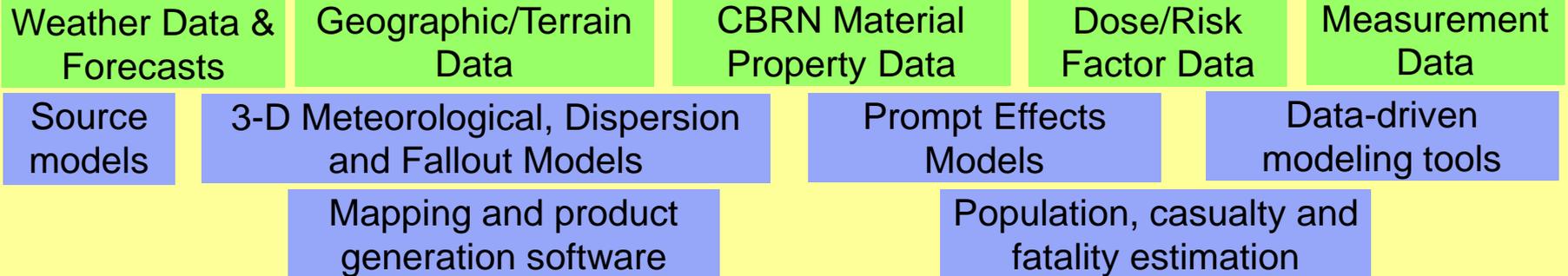
- LLNL/NARAC modeling center:
 - Authorized automated runs by end-users using *NARAC Web* access to NARAC 3-D modeling servers
 - Consequence assessment plume modeling analysis from LLNL/NARAC scientists for drills, exercises and emergencies – including use of measurement data to refine models

NARAC and HotSpot modeling tools are intended to complement, and not supplant, other modeling tools used in your organization

Component-based LLNL NARAC-IMAAC Computer Systems Support In-house and External Users

LLNL Computer Systems

Central System: Automated model set-up and execution software



Remote Access Computer System



User interfaces and Analysis Tools for LLNL scientists



External User Tools



Standalone models and mapping



- Over 400 software applications
- 50 databases
- 3 million lines of computer code
- 28 servers
- 8 data storage systems



Component-based LLNL Systems Support In-ho

LLNL Computer Systems

Central System: Au

Weather Data & Forecasts

Geographi Da

Source models

3-D Meteorolog and Fallo

Mapping & generatio

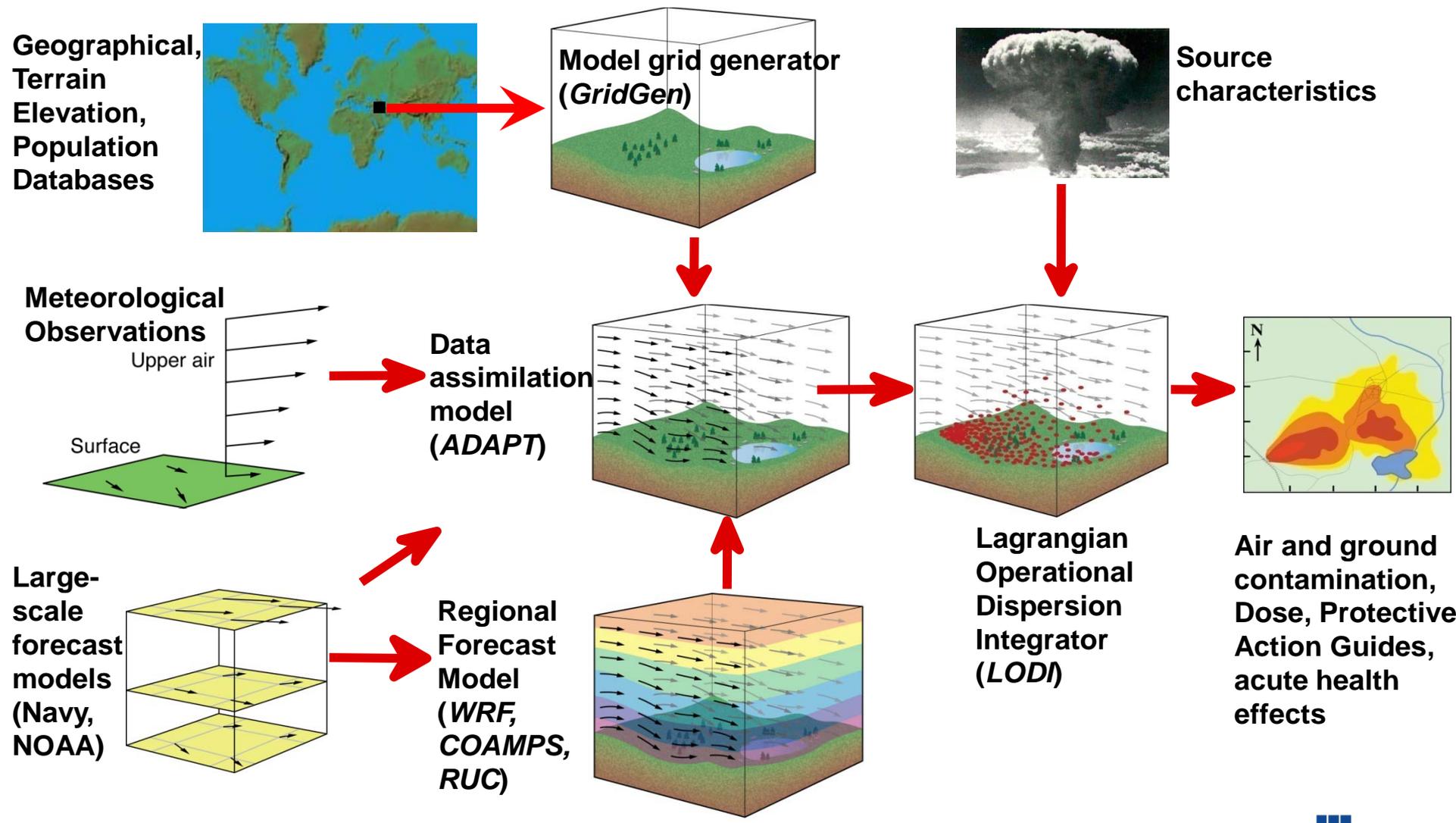
Remote A Computer

Inter

External User Tools




NARAC/IMAAC Central Modeling System Provides Automated 3-D Worldwide Plume Model Predictions



NARAC's modeling system is fully automated and for any location in the world in real-time

NARAC Supports a Large Number of DOE/NNSA Organizations and Users

Organizations supported:

- 15 national and regional DOE/NA-42 Emergency Response assets (ARG, AMS, FRMAC/CM, JTOT, NRAT, 9 RAP regions, REAC)
- 21 DOE/NNSA Sites
- DOE/NNSA Headquarters: Operations Center, Nuclear Incident Team, Exercise Program

Annual DOE/NNSA typical usage levels:

- 650 user accounts total
- 5000 user logins
- 1500 model runs
- 35 NARAC-supported exercises, responses and planning activities

- User accounts are reviewed and approved through a NARAC Web group coordinator for each user organization
- One-day drills with NARAC can be scheduled by calling NARAC

QUESTION: What are the DOE O 151.1C requirements related to NARAC for my site and how does my site obtain the required access and connectivity to NARAC?

ANSWER:

If your site has the potential for a General Emergency or a Site Area Emergency due to an atmospheric release of a hazardous material, you must have access to NARAC under DOE Order 151.1C (Section IV.3.b.5 and Attachment 2, Section 13).

In order to establish the required access and connectivity, **a site should submit answers to the questionnaire, listed in the FAQ answer, via email to narac@llnl.gov**

Recent NARAC Web Upgrades (v2.2, 2.3, 2.4, 2.5)

- Fire and Stack emission scenarios to the NARAC web
- Ability to Probe the Plume to get point values
- “Advanced” tab, allowing DOE sites the ability to control aerosolized/respirable fraction and plot output
- Ability to upload HotSpot scenario for NARAC model run
- Google Map Layers in NARAC Web plume displays: street, satellite, hybrid
- New download options:
 - Expanded GIS Shapefiles
 - KMZ file for display of NARAC results in *Google Earth*
 - NARAC ASCII concentration data file for use with HotSpot exercise data generation tool
- User-specified distances in centerline table output
- Import source term scenario from a HotSpot “.hot” file to a NARAC model run
- Example measurement Excel .csv file provided as a template for uploading measurements to NARAC for model refinement
- PAC TEEL database Rev 26 (NARAC Central Modeling System, January 2011)

Planned NARAC Upgrades

NARAC Web 2.6 (in Beta, soon to be released)

- Decision-maker Briefing versions of products for Radiological Explosive scenarios
- Ability for Advanced users to request particle output to create animations
- Ability to resubmit a run with a radiological mixture created by another user
- Improved plume probing

Future NARAC Web features

- Mission Planning Tool (NA-42 TI) will allow the calculation of dose along a path across a deposited plume

New Briefing Versions of NARAC Products Are Being Deployed

- DOE and DHS supported the development and interagency review of “Briefing Product” versions of NARAC/IMAAC and FRMAC products
- Products intended to help subject matter experts brief decision-making officials
- Explain possible actions, like sheltering and evacuation, that need to be considered and why
- Communicate protective action guides in plain, non-technical language
- NARAC software quickly produces PowerPoint versions of briefing products

Unclassified

Product Set 2: Top Off 4 Exercise
Portland, OR
RDD Explosion at 12:06 16Oct 2008

Evacuation and Sheltering Areas

Projected radiation dose, if no protective action implemented
Post Plume Phase – projected radiation dose from ground contamination only



A Area A: Evacuation of entire population warranted (unless additional unusually hazardous circumstances exist).
Estimated population: 5,400

B Area B: Evacuation (or, for some situations, sheltering-in-place) normally initiated.
Estimated population: 18,100

Key Points:

- Prompt evacuation and sheltering reduces radiation dose and cancer risk
- Evacuation generally preferred to sheltering especially after plume has passed
- Institutionalized groups require special consideration
- Protective actions are only based on dose that can be avoided, not dose received before protective actions implemented

- This is a model prediction based on an estimated source, but no measurements
- Post Plume Phase – Airborne plume has passed
- Residual ground contamination is the concern

Created: 14:00 10/16/08
Check for updates

Contact DOE Consequence Management
Home Team (702) 794-1665

Unclassified

FRMAC NARAC
page 1 of 2

Unclassified

Product Set 2: Top Off 4 Exercise
Portland, OR
RDD Explosion at 12:06 16Oct 2008

Evacuation and Sheltering Areas

Projected radiation dose, if no protective action implemented
Post Plume Phase – projected radiation dose from ground contamination only

Key Points:

- Evacuate or shelter as soon as possible to minimize dose and long-term cancer risk
- Evacuation is generally preferred for the general population.
- Evacuees should be directed to designated location(s) for contamination monitoring and collection of exposure information.
- Sheltering-in-place may be preferable to evacuation in some situations
 - Institutionalized populations (invalids, prisoners...)
 - Severe weather, competing disasters, impediments to evacuation
 - Very rapid radioactive decay
- Initial airborne plume has cleared the area, leaving only ground contamination
- Protective actions are based only on dose that can be avoided, not dose acquired prior to protective action
- Dose does not include doses acquired before 14:00 10/16/08 (presumed end of plume passage)
- Projected dose is accumulated over 4 days (14:00 10/16/08 to 14:00 10/20/08)
- Projected dose assumes individuals are unsheltered and unprotected
- Map may be updated, if implementation of protective actions has been delayed and/or new information obtained

Technical Background:

- Shelter and evacuation guidance based on EPA/DHS guidelines for the Early Phase (assumes 4 day duration)
- Projected dose is known as Total Effective Dose Equivalent (TEDE), which is only due to external irradiation by ground contamination, plus dose due to radioactivity taken into the body by inhalation of contaminated dust (resuspension)
- Map contours correspond to minimum and maximum evacuation/sheltering thresholds of 1 and 5 rem respectively

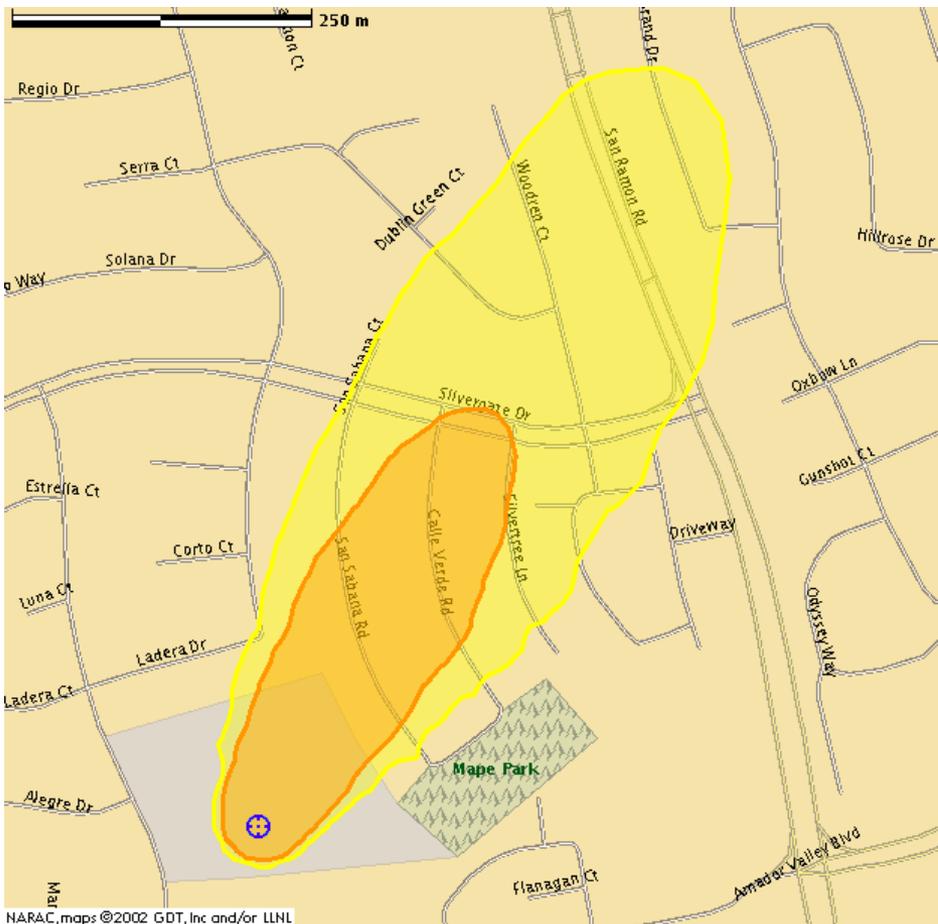
Created: 14:00 10/16/08
Check for updates

Contact DOE Consequence Management Home Team (702) 794-1665

Unclassified

FRMAC NARAC
page 2 of 2

Predicted Evacuation and Sheltering Areas Based on EPA/DHS Guides Applicable within first hours/days while radioactive cloud is present



A

B

Evacuation of entire population warranted, unless additional unusually hazardous circumstances exist (exceeds 5 rem). Estimated Population: 80

Evacuation or sheltering normally initiated (1 to 5 rem). Estimated Population: 250

Notes:

- Promptness of evacuation and/or sheltering reduces radiation dose and cancer risk.
- Sheltering-in-place can be more protective than evacuation while radioactive cloud is present.
- Radiation dose predicted for maximally exposed individuals and includes both dose from contaminated air, plus dose from ground contamination over four days.
- Protective actions are only based on dose that can be avoided. Prediction does not include dose received before 9 Sep 2009 19:00 UTC.

Assumptions:

- Areas shown are model predictions based on an estimated source term but no measurements.
- Plume Phase - Radioactive cloud may still be present or imminent.
- Four days exposure to both airborne and ground contamination.

Briefing Product for Public Officials
Current: 30 Sep 2009 14:51 UTC
Check for updates

Predicted Evacuation and Sheltering Areas Based on EPA/DHS Guides

Applicable within first hours/days while radioactive cloud is present

Key Points

- **Protective actions are based on dose that can be avoided.**
- **Areas shown do not include dose received before 9 Sep 2009 19:00 UTC.**
- **Greatest hazard is due to exposure to the radioactive cloud. Evacuation before radioactive cloud is present is best, but avoid evacuation in the radioactive cloud.**
- **Radioactive cloud is expected to clear the contoured areas by 9 Sep 2009 20:45 UTC.**
- **Sheltering-in-place may be preferable to evacuation in some situations**
 - ◆ **If radioactive cloud is present or its arrival is imminent,**
 - ◆ **For certain populations needing special consideration (hospitals/nursing homes, prisoners, elderly...),**
 - ◆ **Other hazards are present which complicate or impede evacuation (severe weather, competing disasters...).**
- **Sheltering followed by delayed evacuation may be best if radioactive decay is very rapid.**
- **Predicted dose is accumulated over 4 days (9 Sep 2009 19:00 UTC to 13 Sep 2009 19:00 UTC).**
- **Predicted dose assumes individuals are unsheltered and unprotected.**
- **Use the "Radioactive Cloud has Passed" map after radioactive cloud passes.**

Example RDD Briefing Notes

Automated Report: Testing
Livermore Lab, ca
RDD Explosion at 09 Sep 2009 18:00 UTC

Predicted Evacuation and Sheltering Areas Based on EPA/DHS Guides

Applicable within first hours/days while radioactive cloud is present

Presenter Notes - Additional Information

- PAG - Protective Action Guideline, projected dose at which a specific protective action to reduce or avoid that dose is warranted.
- Protective actions are based only on dose that can be avoided, not dose acquired prior to implementation of the protective action.
- Areas shown do not include dose received before 9 Sep 2009 19:00 UTC.
- Areas shown are model predictions based on an estimated source term but no measurements.
- Reduce radiation exposure to minimize long-term cancer risk. Evacuation and sheltering reduce radiation exposure.
- Exposure to the radioactive cloud presents the greatest hazard, because dose results from radiation by the cloud, inhalation of radioactivity, plus radiation from contamination on the ground.
- Completion of evacuation before plume arrival is best. Evacuation in radioactive cloud may result in more dose than sheltering until it passes. Evacuees in cloud should cover mouth & nose with available filter materials.
- Evacuation and shelter guidance based on EPA/DHS Early Phase guidelines
 - ♦"Evacuation (or, for some situations, sheltering) should normally be initiated at 1 rem."
 - ♦"Sheltering may be the preferred protective action when it will provide protection equal to or greater than evacuation, based on consideration of factors such as source term characteristics, and temporal or other site-specific conditions."
 - ♦"Because of the higher risk associated with evacuation of some special groups in the population (e.g. those who are not readily mobile), sheltering may be the preferred alternative for such groups as a protective action at projected doses up to 5 rem."
 - ♦"Under unusually hazardous environmental conditions use of sheltering at projected doses up to 5 rem to the general population (and up to 10 rem to special groups) may become justified."
- Sheltering followed by delayed evacuation may be best if radioactive decay is very rapid (e.g. radioiodine or nuclear detonation).
- Radioactive cloud expected to clear contoured area by 11 Sep 2009 02:45 UTC.
- A different map, based only on the radioactivity deposited and excluding the radioactive cloud, must be used after the radioactive cloud has passed.

Briefing Product for Public Officials

Current: 30 Sep 2009 14:51 UTC

Check for updates

Presenter Notes - Technical Background

- Guidance based on EPA and DHS PAGs, as given in:
 - ♦"Manual of Protective Action Guides and Protective Actions for Nuclear Incidents", (EPA 400-R-92-001, May 1992).
 - ♦"Protective Action Guides for Radiological Dispersal Device (RDD) and Improvised Nuclear Device (IND) Incidents", (Federal Register, Vol. 71, No. 1, Jan. 3, 2006, pg 174).
- "The PAG for evacuation (or, as an alternative in certain cases, sheltering) is expressed in terms of the projected sum of the effective dose equivalent from external radiation and the committed effective dose equivalent incurred from inhalation of radioactive materials from exposure and intake during the early phase."
- Predicted dose is known as Total Effective Dose Equivalent (TEDE) and includes the following:
 - ♦External irradiation by the radioactive cloud plus inhalation of the contaminated air as it passes,
 - ♦Also includes external irradiation by ground contamination, plus dose due to radioactivity taken into the body by inhalation of contaminated dust (resuspension).
- Predicted dose is accumulated over 4 days (9 Sep 2009 19:00 UTC to 13 Sep 2009 19:00 UTC).
- Predicted dose assumes maximum possible exposures, but only considers dose that can be avoided by protective actions. Doses received prior to this point in time are not considered.
- Radioactive contamination is expected outside the contoured areas, but not at levels expected to exceed federal guidelines for evacuation and sheltering based on current information.
- Additional technical and background information is provided in the Consequence Report containing the detailed, technical version of this calculation.
- Briefing Products are intended for presenting a common operating picture to key leaders and decision makers. Other more technical products are available (Standard Products).
- Contact the FRPCC Subcommittee for Environment, Food and Health (Advisory Team) for advice and recommendations. Available by calling the CDC Emergency Operations Center (EOC) at 770-488-7100.

NARAC Web: New Features

Importing Source From Hotspot

Home | New Run | View ▾ | Members ▾ | Bookmarks ▾ | Help ▾ | Manage ▾

Step 1: Pick scenario

Step 2: Model input | Step 3: Review request | Step 4: Run model

Select the situation (predefined) that best describes your needs or create your own.

Predefined Scenarios | Scenarios | **From File**

Load a predefined scenario from a hotSpot input file (current.hot). Note not all fields from the HotSpot input file are preserved. Carefully look at the input after loading the file to make sure the input matches what you would like to use.

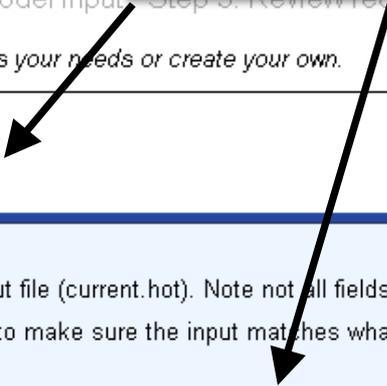
Select File

Proceed with loading of HotSpot input file

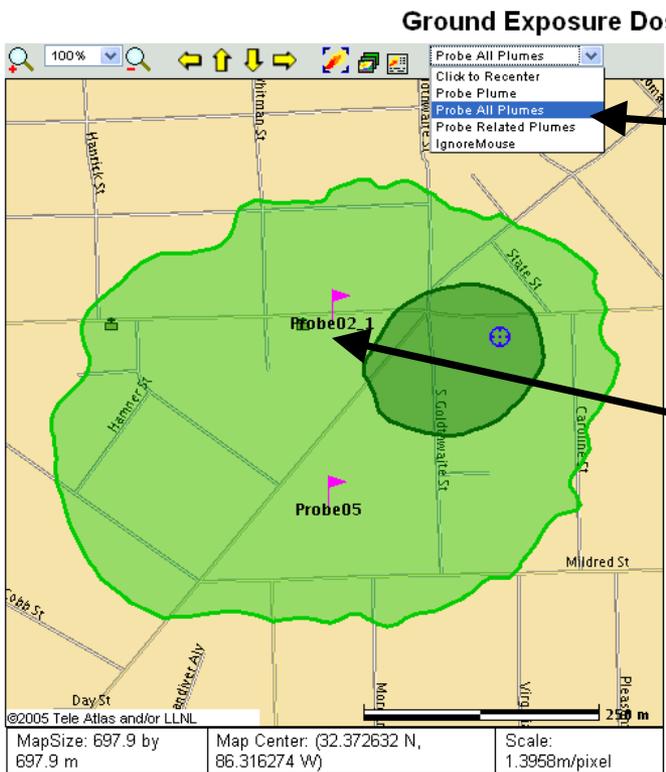
Contact NARAC Support at: [NARAC Support](#) or at (925) 422-9159

[Privacy & Legal Notice](#)

A NARAC scenario can be built from a pre-existing Hotspot ".hot" file.



Plume Probing Extension: "Probe All Plumes"



Ground Exposure Dose Rate

MapSize: 697.9 by 697.9 m Map Center: (32.372632 N, 86.316274 W) Scale: 1.3958m/pixel

Effects and Actions	
Description	(rem/yr) Area
Below health effect guidelines. Possibly contaminated area. Use to confirm with monitoring surveys.	>1.00 151m 23,484
Below health effect guidelines. Possibly contaminated area. Use to confirm with monitoring surveys.	>1.00 501m 220,19

Note: Areas and counts in the table are for Population Source = LandScan USA V1.

Effects or contamination at October 03, 2005 or near ground level.

Back to: [Example](#)

Select	Probe name	Latitude	Longitude	Value	Unit	Product
<input type="checkbox"/>	Probe05	32.371613 N	86.316356 W	2.839461E-7	rem/hr	Ground Exposure Dose Rate
<input type="checkbox"/>	Probe02_1	32.373425 N	86.316298 W	2.056048E0	uCi/m2	Total Deposition
<input type="checkbox"/>	Probe05_1	32.371613 N	86.316356 W	1.192508E0	uCi/m2	Total Deposition
<input type="checkbox"/>	Probe02_2	32.373425 N	86.316298 W	6.551804E1	rem	Total Effective Dose Equivalent
<input type="checkbox"/>	Probe05_2	32.371613 N	86.316356 W	3.907028E1	rem	Total Effective Dose Equivalent

Export options: CSV | Excel

1) Select the "Probe All Plumes" mode in an interactive session

2) Click on your map.

3) Each click generates:

- i) a marker at the selected point along with its latitude and longitude in the results table.
- ii) The concentration at that point for **ALL** the plumes in the run.

NARAC Web: New Features

Example Measurements CSV File

Back to **Sample DOE Site Run**

Add Field Measurements using the form below:

- **Format** The type of format the field measurements are stored in:
 - NARAC -- Either NARAC standard XML format or iClient 1.6 format
 - FRMAC -- Format created by FRMAC RAMS system
 - NARAC CSV -- NARAC Comma Separated Value ([Show format](#))
- **File** The File containing the field measurements.
- **Send Measurements** If checked, send the measurements to an assessment scientist so they improve the results. Otherwise the field measurements will just be used as a visualization layer

Measurement File:

Format:

Number of Header Lines: [Example File](#) 

Separator:

Quote Character:

Send Measurements:

To facilitate the entry of field measurement data in NARAC's CSV (Comma Separated Values) format, a sample file is provided in the Measurements (Measurements → Add Measurements) section of a run.

The example file can be edited in Excel or any text editor. Using this template helps eliminate time formatting issues that can arise along with other formatting issues.

A	B	C	D	E	F	G	
Lat	Lon	Date	Time	Val	Units	LocationName (optional)	Material
37.12345	-127.12345	8/14/2006	17:55:00 PST	40	mrem/hr	Sample 1	CS-137
37.12346	-127.12346	8/14/2006	17:56:00 PST	0	mrem/hr	My Backyard	
37.12347	-127.12347	8/14/2006	17:57:00 UTC	0.012	mrem/hr		
37.12348	-127.12348	8/14/2006	17:57:00	0.008	mrem/hr		

NARAC Web: New Features

Particle Output

Step 2: Model input (Advanced Options)

Plot requests [Help](#)

Run duration
 Hours

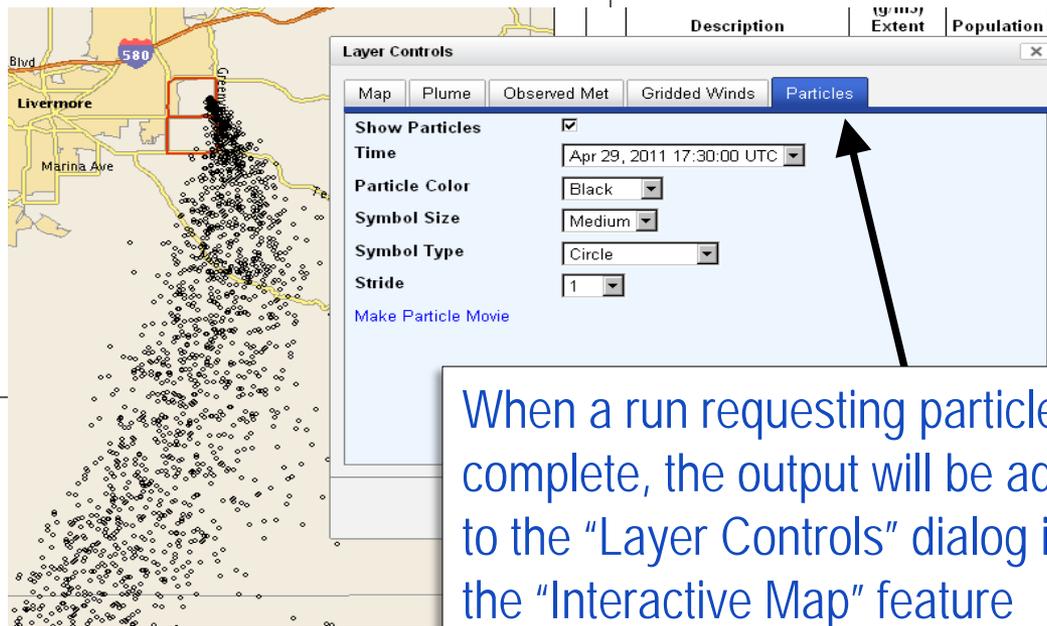
Particle output interval
 Hours

Plot request repository

Desired plot requests

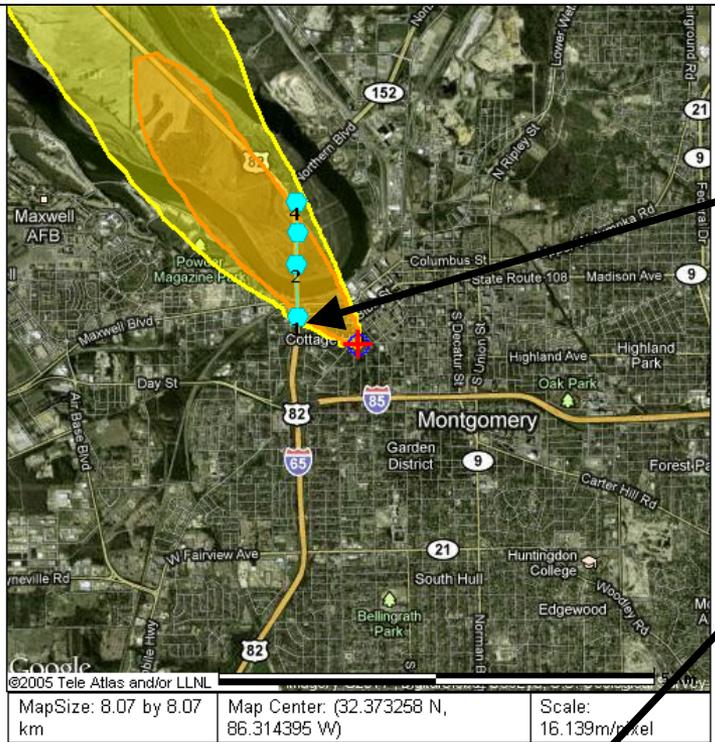
- 1-Hour Average Air Concentration
- Total Deposition

In the "Advanced" section of the model input form, a new field called "particle output interval" allows designated users to request particle output from NARAC's 3-dimensional dispersion model.



When a run requesting particles is complete, the output will be added to the "Layer Controls" dialog in the "Interactive Map" feature

NARAC Web Mission Planning Tool In Development (NA-42 TI)



- 1) Click on monitoring route points
- 2) Enter arrival and stay times
- 3) Dose rate and dose in transit is computed

MapSize: 8.07 by 8.07 km
 Map Center: (32.373258 N, 86.314395 W)
 Scale: 16.139m/pixel

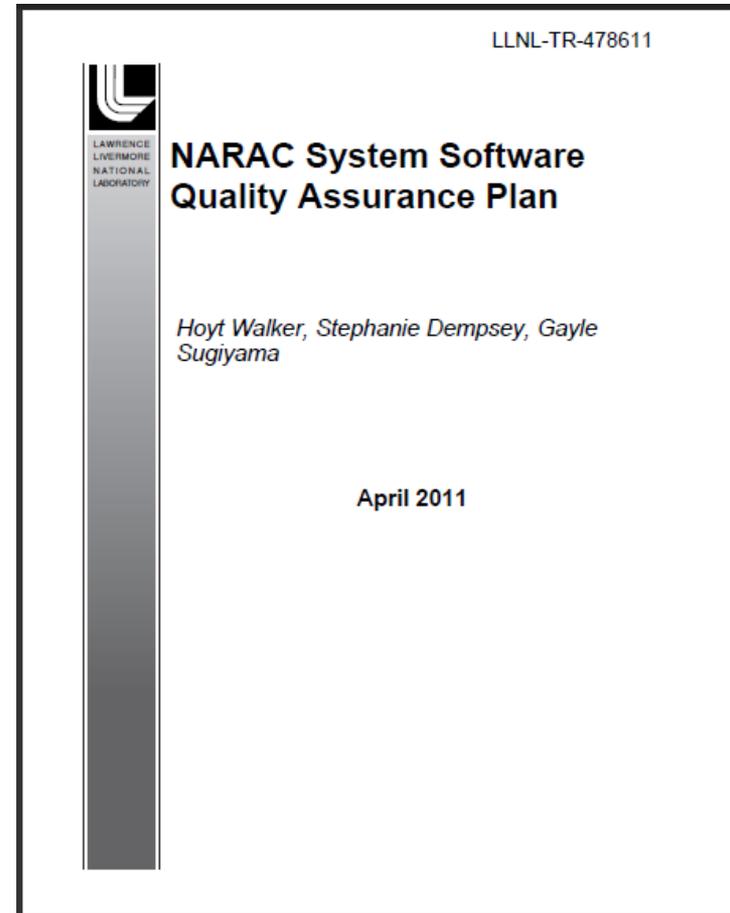
Route Points

	Location	Arrival Time	Stay	Transit Time	Dose Rate (mrem)	Dose at Location	Dose in Transit
<input type="checkbox"/> 1)	(32.376303 N, 86.321948 W)	04/29/2011 11:57:58	0:05:00	0:00:00			
<input type="checkbox"/> 2)	(32.381812 N, 86.322120 W)	04/29/2011 12:07:58	0:05:00	0:05:00			
<input type="checkbox"/> 3)	(32.385146 N, 86.321948 W)	04/29/2011 12:17:58	0:05:00	0:05:00			
<input type="checkbox"/> 4)	(32.388336 N, 86.322120 W)	04/29/2011 12:27:58	0:05:00	0:05:00			



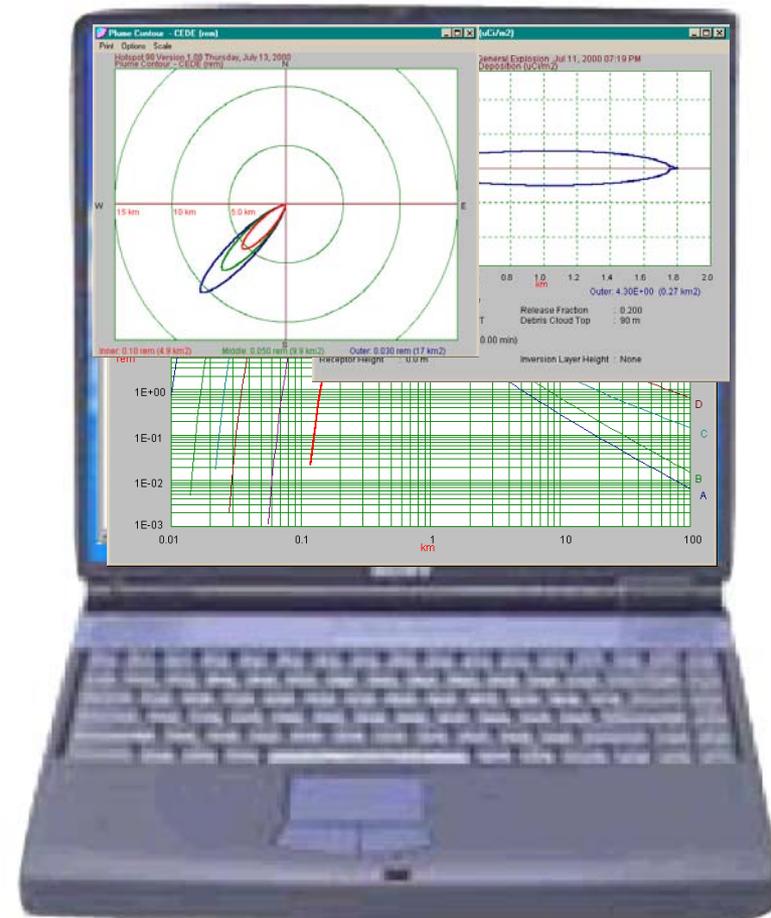
Ongoing NARAC SQA Work

- NARAC provided a reviewer (Hoyt Walker) for the Consequence Modeling SCAPA Toolbox SQA Review team
- NARAC is preparing its submission to the SCAPA model toolbox review process
- NARAC SQA plan document updated and released



Hotspot Provides Quick Dose Estimates for Radiological and Nuclear Releases

- Fast-running PC-based plume, fallout and prompt effects models
- Multiple release scenarios: explosive, fire, general plume, nuclear detonation, resuspension
- Air and ground contamination and dose output as contours, tables and Google Earth format (.kml)
- Exercise data measurement simulation using NARAC or HotSpot model output and GPS device coordinates
- Historical weather data file used to compute 95th percentile dose



Upcoming Features of HotSpot Version 2.07.2

- **Full Vista and Windows 7 compatibility:**
Follows Microsoft Windows 7 requirement to use a user's "Documents and Settings" as opposed to "..\Program Files" folder for any file input or output.
- **Automatic Batch Mode:**
Allows HotSpot to be run in a "background" mode that produces Table output and Google Earth .KML files without displaying the graphical user interface. When this mode is enabled HotSpot can be launched at the command prompt, batch file, etc. These files are placed in the HotSpot "Output" folder.
- **Beta testing completed in April 2011. Release in May 2011.**

Upcoming features of HotSpot Version 2.07.2 (Cont.)

- Expanded MACCS2 meteorological file support

Supports MACCS2 meteorological file input in both “wind from” and “wind towards” format. These site-specific meteorological data are input into HotSpot for calculation of percentile dose values

Input file format: Sequential hourly data (in MACCS2 code format)
(1-5 years):

Date/Time

Wind speed (wind-from or wind-towards option)

Wind direction

Stability Class (A-G)

- Revised Maxwell and Anspaugh Resuspension Factor

$RF = 1E-05 \exp(-0.07t) + 7E-09 \exp(-0.002t) + 1E-09$ (t in years)

HotSpot Web Site

<https://naracllnl.gov/HotSpot/HotSpot.html>



- User Registration
- Download HotSpot software and user guide
- Past problem reports
- Submit question

HotSpot

Health Physics Codes for the PC



NARAC/HotSpot Training and Meetings in 2011

- **September 13-14, 2011** – NARAC Classroom Training Course at LLNL, Livermore, CA

 - **September 15, 2011** – HotSpot Training Workshop at LLNL, Livermore, CA
- **On-line** - NARAC training (focused on DOE Site consequence assessment) currently available on EOTA Web site
 - Two interactive training modules:
 1. NARAC Dispersion Modeling - “NARAC101”
 2. Use of NARAC Web - “NARAC102” (Will be updated for Web 2.0)
 - <http://eota.doeal.gov/>

How can NARAC or HotSpot better meet you needs?

For more information:

Web: <http://narac.llnl.gov>

To contact NARAC or submit a request:

Email: narac@llnl.gov

Phone: 925-422-9159

NARAC provides airborne hazards predictions of the consequences of radiological, nuclear, chemical, and biological releases. Under the DOE, NARAC "provides real-time computer predictions of the atmospheric transport of material from radioactive releases and of the downwind effects on health and safety" (National Response Framework, Nuclear / Radiological Incident Annex). Under DHS auspices, NARAC is currently the primary provider of Interagency Modeling and Atmospheric Assessment Center (IMAAC) products.

Emergency Contact Information

If you are involved in an emergency situation involving a major hazardous release to the atmosphere where lives are at risk and you believe you need Federal dispersion modeling assistance, you may notify one of the following and request NARAC/IMAAC support:

- NARAC/IMAAC Operations at **925-424-6465**, for emergencies only
- Department of Energy (DOE) Watch Office **202-586-8100**, for radiological incidents
- Department of Homeland Security (DHS) National Operations Center **202-282-8101** for Federal assistance with a major accident or WMD incident

Between 7:30 AM to 4:15 PM Pacific Time, Monday-Friday, calling NARAC/IMAAC Operations will put you in direct contact with one of our trained operations staff members who will ask you a short series of questions to determine the nature and severity of the incident. At other times, your call will be answered by LLNL's Emergency Duty Officer, who will forward your request to our on-call staff when you request NARAC/IMAAC assistance. You will receive a call-back in about 10 minutes.

NARAC Services

NARAC provides subject matter experts and software tools to predict and map the consequences associated with significant atmospheric releases of nuclear, radiological, chemical, or biological material. Using a centralized atmospheric dispersion modeling system, NARAC can readily estimate the downwind effects from these sources and distribute products to you electronically through several mechanisms, including the NARAC Web. Users of NARAC Web have the ability to access and download consequence management products. Some NARAC Web users are also able to run simulations using the NARAC



The same username and password will grant access to CMweb, IMAAC Web and NARAC Web sites:

<https://cmweb.llnl.gov/web>

<https://imaacweb.llnl.gov/web>

<https://naracweb.llnl.gov/web>



Emergency Support
 For consequence modeling support contact NARAC Operations at 925-424-6465
[Additional Information](#)

Notices (View all)
 30 percent Hydrochloric Acid Spill ... Feb 24, 2009 6:13:57 AM - more
 Test Ops Manual access granted (boo... Dec 24, 2008 3:41:56 AM - more
 NARAC IMAAC CM folder access grante... Nov 15, 2008 3:21:14 AM
 You have been granted access to folder, RSL No-Notice Exercise. - more
 NARAC IMAAC CM run access granted (... Nov 15, 2008 2:51:58 AM
 You have been granted access to run, Nov08 DCNET Mesonet Test. C... - more
 NARAC IMAAC CM book access granted ... Nov 15, 2008 2:17:29 AM
 You have been granted access to book, Documentation. Comments: ... - more
 Time in Japan

Operations

Events

Exercises -
[NNPP Exercise Folder](#)

***Note - not all information is accessible to all users. To request access, call NARAC customer support.*

Guides and Information
[FAQ](#)
 Frequently Asked Questions
[NARAC Notification Checklist](#)
[NARAC-IMAAC Plot Guide](#)

Contact NARAC Support at: [NARAC Support](#) or at (925) 422-9159

Home page is customized to allow easier access to information, including Event and Exercise folder links. Access to these folders is controlled, so you will only be able to see content that has been specifically shared with you.

The CMweb login page has links to other DOE NA-42 Asset web pages and fact sheets along the left side of the page.

- [FRMAC](#)
- [pFRMAC](#)
- [ARAC](#)
- [AMS](#)
- [ARG](#)
- [RAP](#)
- [NEST](#)
- [REAC/TS](#)
- [TRIAGE](#)

Welcome to the Department of Energy (DOE) National Nuclear Security Administration (NNSA) Office of Emergency Response (NA-42) *Consequence Management Web* site. This site provides information to help respond to radiological accidents or incidents anywhere in the world. NNSA can provide rapid and continuous monitoring and assessment of the situation, and inter-agency coordination to resolve the emergency. Each asset is designed for rapid response, and is equipped and staffed to handle certain aspects of a radiological emergency. Requests for radiological emergency response asset support should be made through the DOE Headquarters Operations Center (OC) at 202-586-8100.

NNSA's radiological emergency response assets include: Federal Radiological Monitoring and Assessment Center (FRMAC), Atmospheric Release Advisory Capability (ARAC), Aerial Measuring System (AMS), Accident Response Group (ARG), Radiological Assistance Program (RAP), Nuclear Emergency Support Team (NEST), and Radiation Emergency Assistance Center/Training Site (REAC/TS). For more information about any of these assets, refer to the links to the left.

Authorized users can log in using the box to the right to obtain Consequence Management Data and Modeling Products from NNSA Emergency Response Assets for planning, exercises and incident/accident response.

LLNL-WEB-410860

User ID

Password

[Forgot your password?](#) [Request CMweb Account](#)

Primary users of the CMweb will see Meeting Notes, Documents, and DOE NA-42 Asset Folders in addition to Event and Exercise Folders. Access to these Folders is controlled, so though all users may see these links, only those with need to know will have access to them.



CMweb

1 New Msgs | Signed in as **pobanz2-usa** | [Your Account](#) | [Sign out](#)

Home
CM Events
New Run
View ▾
Members
Bookmarks ▾
Help ▾

On March 1, 2009 a significant update to the NARAC Web, IMAAC Web and CMweb software will be deployed. Beginning 8 am Pacific on March 1, these Web sites will be unavailable for up to 24 hours. However, NARAC/IMAAC Operations will be available in the case of an emergency to generate and deliver products to the user by alternate means (email, HSIN or a back up version of the NARAC/IMAAC web site). The NARAC, IMAAC and CM Web sites are expected to be back in service on March 2.

Emergency Support

DOE Watch Office 202-586-8100
 For consequence modeling support contact NARAC/IMAAC at (925) 424-6465.

[Additional Information](#)

Notices (View all)

30 percent Hydrochloric Acid Spill ... - more	Feb 24, 2009 6:13:57 AM
Test Ops Manual access granted (boo... - more	Dec 24, 2008 3:41:56 AM
NARAC/IMAAC/CM folder access grante... You have been granted access to folder, RSL No-Notice Exercise. - more	Nov 15, 2008 3:21:14 AM
NARAC/IMAAC/CM run access granted (... You have been granted access to run, Nov08 DCNET Mesonet Test. C... - more	Nov 15, 2008 2:51:58 AM
NARAC/IMAAC/CM book access granted... You have been granted access to book, Documentation. Comments: ... - more	Nov 15, 2008 2:17:29 AM

Time in Japan

Guides and Information

[FAQ](#)
 Frequently Asked Questions
[NARAC-IMAAC Plot Guide](#)

Operations

[Events](#) -There are currently no events being supported.

[Exercises](#) -Planning is being done for the **Empire09** Exercise. If you require access to planning materials, please contact Don Van Etten 702-295-8018.

Federal Radiological Monitoring and Assessment Center (FRMAC)

Please call Keith Frandsen 702-295-8634 with questions related to the FRMAC.

[FRMAC Working Groups](#)

[FRMAC Calendar](#)

[FRMAC Manuals](#)

Aerial Measuring System (AMS)

Please call Karen McCall 702-295-8089 with questions related to AMS.

Radiological Assistance Team (RAP)

Possible future HotSpot Upgrades

Planned/Current

1. Upgrade HotSpot source code to most current version of Microsoft's .NET Framework. Theoretically should not change the user interface or HotSpot capabilities from 2.07.2. Done to preserve HotSpot's sustainability and to improve code maintenance and development.

Possible

1. Incorporate additional meteorological file formats for the Dose Percentile module as was done for MACCS2.
2. Incorporate NRC/ARCON96 building wake option into HotSpot for calculations near buildings
3. Upgrade and document HotSpot Exercise data generation module
4. Develop a HotSpot web based, on-line training course
5. Add additional daughter products to ground shine

Please suggest other new features to meet your needs

- DOE NA-42:
 - Base maintenance, development and readiness of NARAC systems, facilities, personnel, software, and computer models
 - Operational support for drills/exercises/response

- DOE NA-41:
 - Development and maintenance of NARAC/HotSpot modeling tools needed by DOE/NNSA sites
 - Training material tailored for DOE/NNSA sites