# 17th Annual GMU Conference on Atmospheric Transport and Dispersion Modeling

**Office of Federal Coordinator of Meteorology**

**Special Session**

"*Progress in Governmental Atmospheric Transport and Dispersion Modeling and Response*"

# ALOHA and ALOHA/HYSPLIT Hybrid

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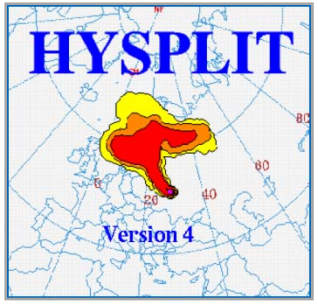


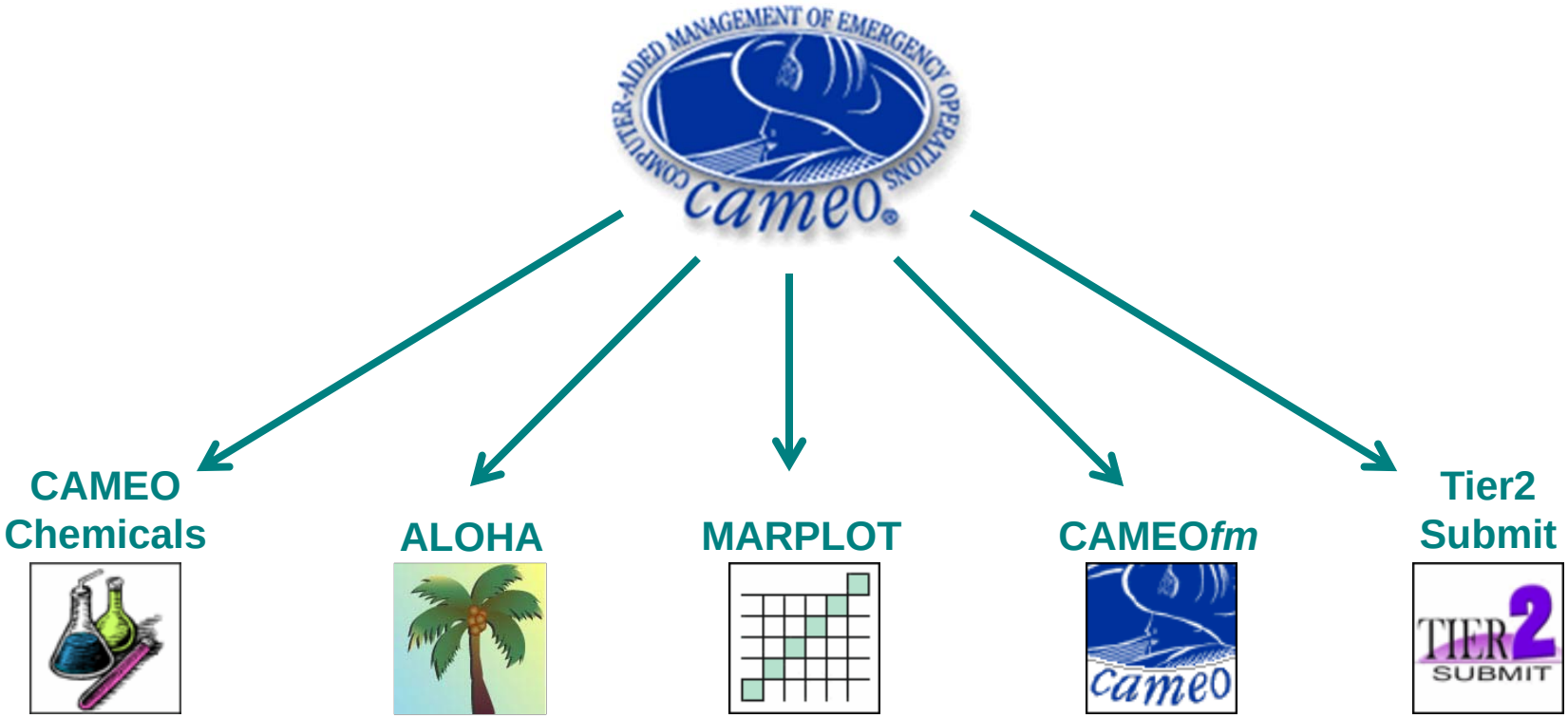

**Office of Response and Restoration**

**Office of Oceanic and Atmospheric Research**

**National Oceanic and Atmospheric Administration**

# What is ALOHA?

# CAMEO Software Suite



# ALOHA Background

- Gaussian and Heavy Gas dispersion algorithms
- Designed for short-duration, short-range incidents (scaling model)
- Multiple time-dependent chemical source models (tank, puddle, gas pipeline, and direct)
- Upgraded to include fires and explosions models in addition to toxic gas dispersion models

# ALOHA Users

**(Based on a user survey completed in 2006)**

- First Responders (Fire and Police Service) - 35%
- State/Local Planners - 25%
- Industry - 10%
- Other - 30%
  - Academics
  - Environmental Organizations

**Downloads:** 1,000-4,000 downloads/month (over the last decade)

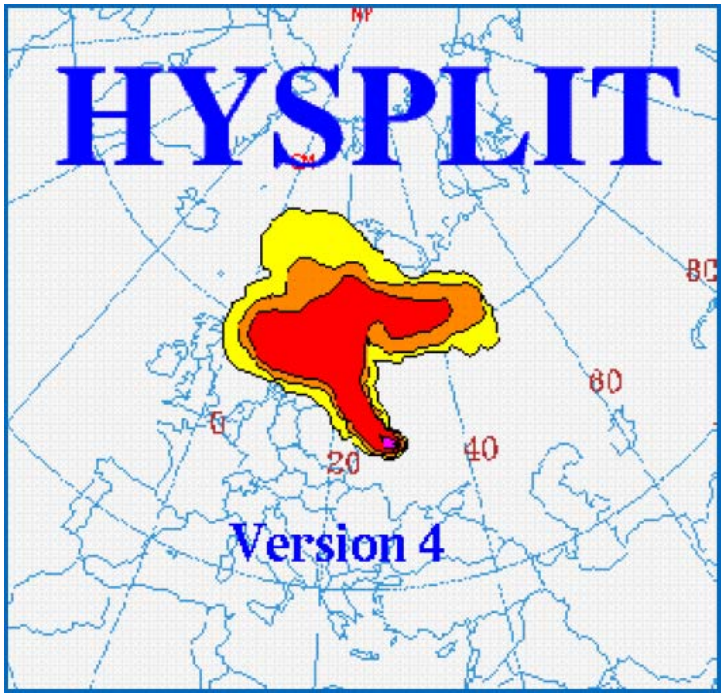
# ALOHA Sources and Scenarios

| Source | Toxic Scenarios | Fire Scenarios | Explosion Scenarios |
|---|---|---|---|
| **Direct** | | | |
| Direct Release | Toxic Vapor Cloud | Flammable Area (Flash Fire) | Vapor Cloud Explosion |
| **Puddle** | | | |
| Evaporating | Toxic Vapor Cloud | Flammable Area (Flash Fire) | Vapor Cloud Explosion |
| Burning (Pool Fire) | | Pool Fire | |
| **Tank** | | | |
| Not Burning | Toxic Vapor Cloud | Flammable Area (Flash Fire) | Vapor Cloud Explosion |
| Burning | | Jet Fire or Pool Fire | |
| BLEVE | | BLEVE (Fireball and Pool Fire) | |
| **Gas Pipeline** | | | |
| Not Burning | Toxic Vapor Cloud | Flammable Area (Flash Fire) | Vapor Cloud Explosion |
| Burning (Jet Fire) | | Jet Fire | |

# Reasons for ALOHA Web Transition

- **Update technology** – Move legacy ALOHA product onto the web
- **Model Integration** – Combine parts of two air dispersion models (ALOHA and HYSPLIT) in order to create a tool that better serves users
- **Cross-NOAA development** – Collaboration between NOAA's OR&R and NOAA's Air Resources Laboratory

# How was ALOHA integrated with HYSPLIT?



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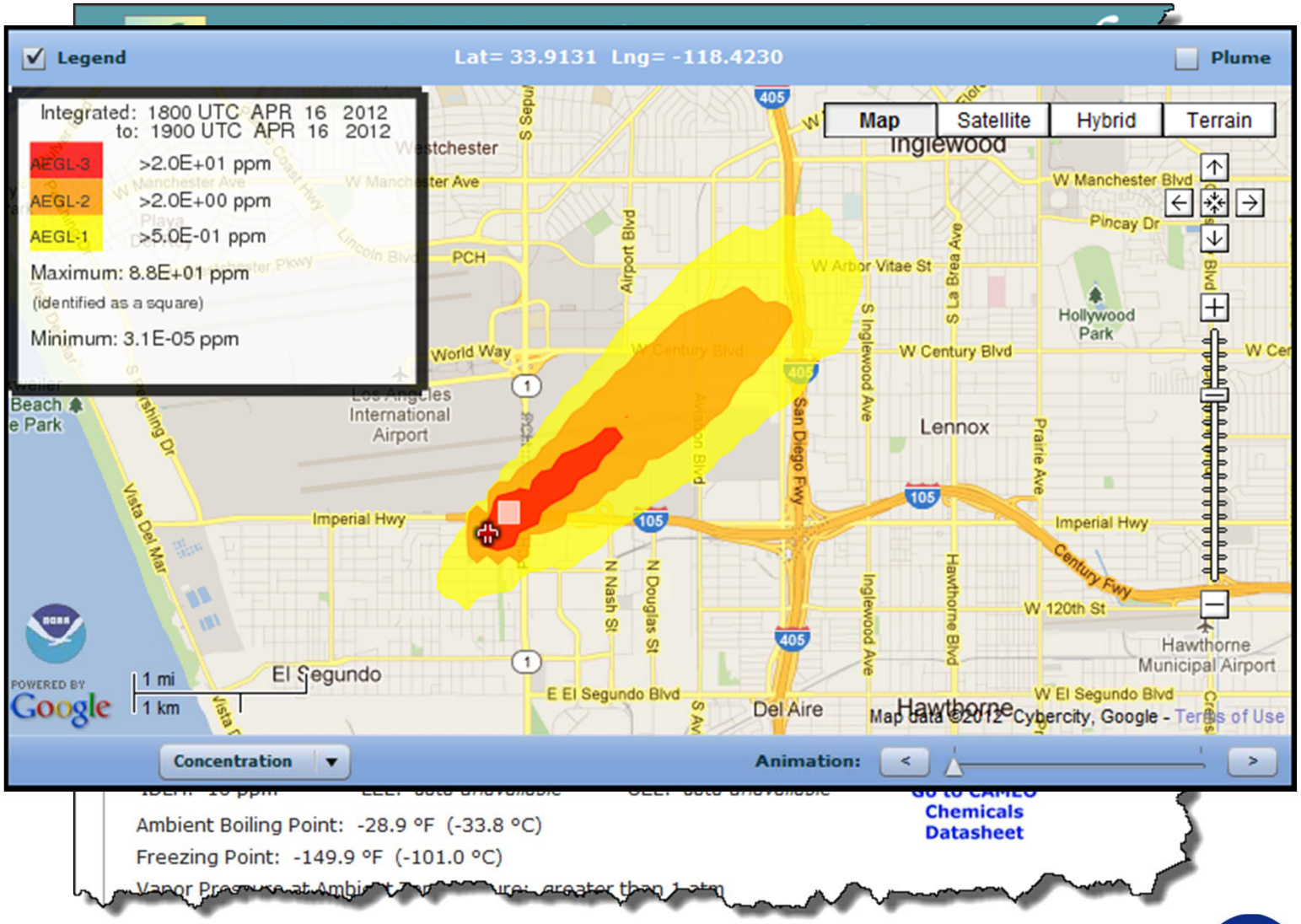
# ALOHA


Legend
Lat= 33.9131 Lng= -118.4230
Plume
Integrated: 1800 UTC APR 16 2012
to: 1900 UTC APR 16 2012
AEGL-3 >2.0E+01 ppm
AEGL-2 >2.0E+00 ppm
AEGL-1 >5.0E-01 ppm
Maximum: 8.8E+01 ppm
(identified as a square)
Minimum: 3.1E-05 ppm
Map
Satellite
Hybrid
Terrain
Inglewood
W Manchester Blvd
Pincay Dr
Hollywood Park
W Century Blvd
Lennox
Imperial Hwy
Century Fwy
W 120th St
Hawthorne Municipal Airport
El Segundo
E El Segundo Blvd
W El Segundo Blvd
Del Aire
Hawthorne
Los Angeles International Airport
PCH
World Way
Vista Del Mar
San Diego Fwy
Airport Blvd
Aviation Blvd
S La Brea Ave
S Inglewood Ave
Prairie Ave
Hawthorne Blvd
N Nash St
N Douglas St
1 mi
1 km
POWERED BY Google
Map data ©2012 Cybercity, Google - Terms of Use
Concentration
Animation:
Ambient Boiling Point: -28.9 °F (-33.8 °C)
Freezing Point: -149.9 °F (-101.0 °C)
Chemicals
Datasheet

# Next Development – Tank Source Model Update

- Coordinating with Tim Bauer, Naval Warfare Center Dahlgren
- Implementing RAILCAR – compressed gases
- Predictions based on Jack Rabbit trials


BT&P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