BREEZE Incident Analyst Overview
Hazardous Release Modeling

Prepared by:

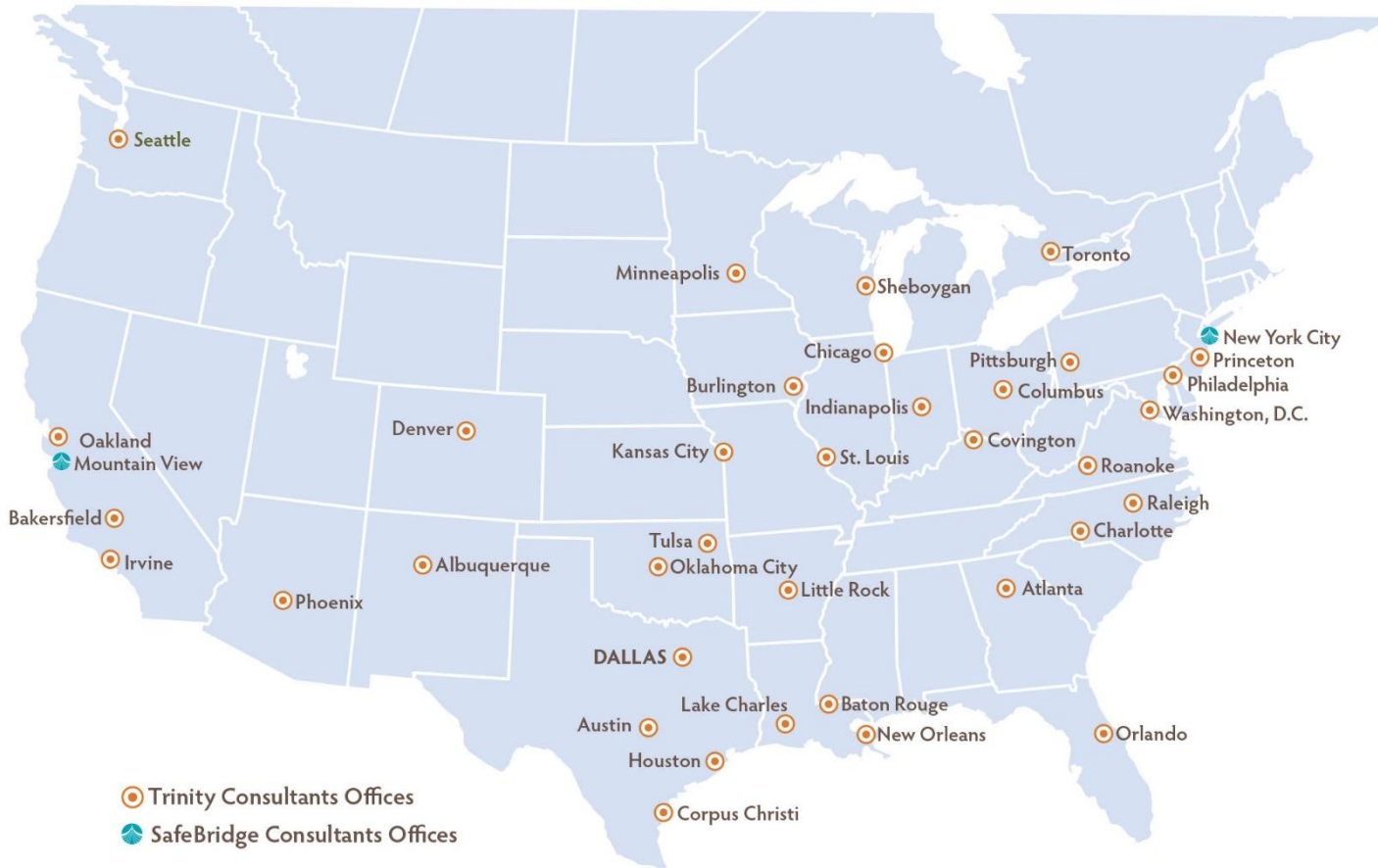Brian Holland, M.S.

BREEZE Software

12770 Merit Drive | Suite 900 | Dallas, TX 75251

+1 (972) 661-8881 | breeze-software.com

About Trinity Consultants

> EH&S consulting firm established in 1974, headquartered in Dallas, Texas

> Provides a unique blend of consulting services, software/data, and training to meet the needs of clients

> Serves more than 1,800 clients globally and support nearly 4,000 users of our *BREEZE*® modeling software in more than 70 countries

Trinity△
Consultants

Our Locations

Map of Trinity Consultants and SafeBridge Consultants office locations across the United States, Canada, China, Middle East, and United Kingdom.

United States & Canada:
Seattle, Minneapolis, Sheboygan, Toronto, Chicago, Burlington, Indianapolis, Pittsburgh, Columbus, New York City, Princeton, Philadelphia, Washington, D.C., Covington, Roanoke, Raleigh, Charlotte, Denver, Oakland, Mountain View, Kansas City, St. Louis, Bakersfield, Tulsa, Oklahoma City, Little Rock, Atlanta, Irvine, Albuquerque, Phoenix, DALLAS, Lake Charles, Baton Rouge, Austin, New Orleans, Orlando, Houston, Corpus Christi

- ⊙ Trinity Consultants Offices
- ☘ SafeBridge Consultants Offices

CHINA
Hangzhou

MIDDLE EAST
Bahrain, Doha

UNITED KINGDOM
Liverpool

Trinity Consultants

BREEZE Software, Data, and Services

> Software for environmental, health, and safety modeling
  - ❖ Widely-respected, regulatory compliant models
 - ❖ Microsoft Gold Certified Partner
  - ❖ 4000+ users worldwide
> Consulting Services
  - ❖ Specialty EH&S modeling
  - ❖ Deep technical knowledge
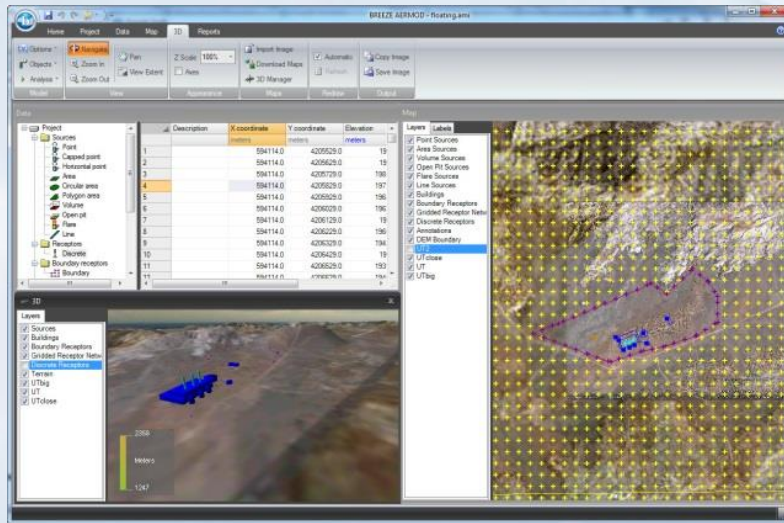 - ❖ Custom software/web development
> Model-Ready Data

Trinity Consultants
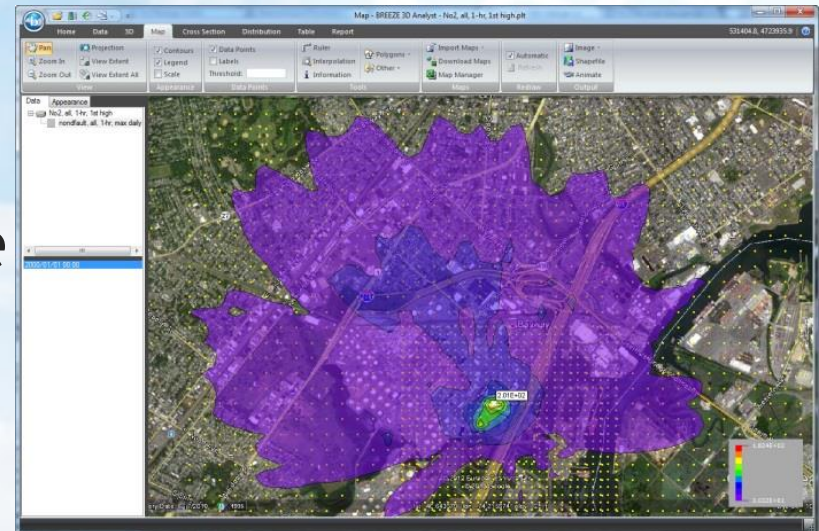
BREEZE Software Features

> Intuitive interfaces simplify setup of complex models

> Advanced model output:

  ❖ Data analysis and post-processing tools

  ❖ 2D/3D Contours

  ❖ Export to Google Earth, GIS shapefiles, video

Trinity Consultants
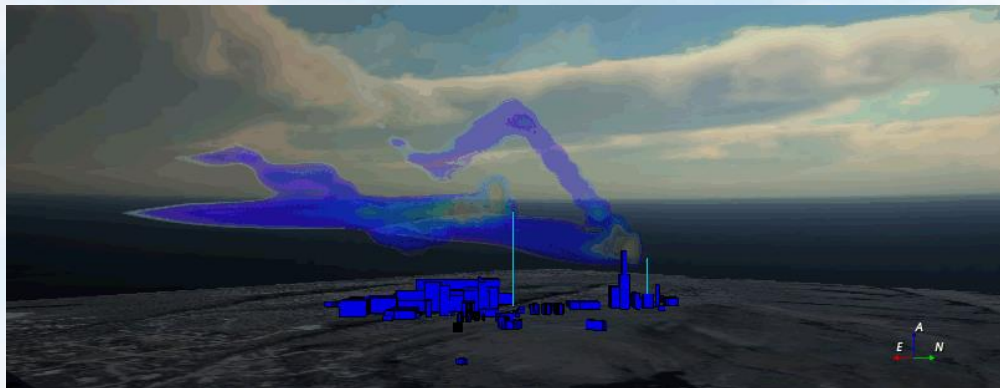
BREEZE Software Focus Areas

Air dispersion modeling tools for:

- ❖ Continuous emissions (normal facility operations)
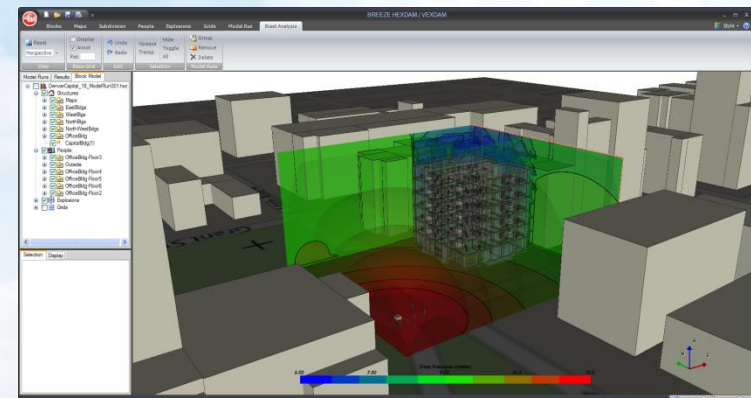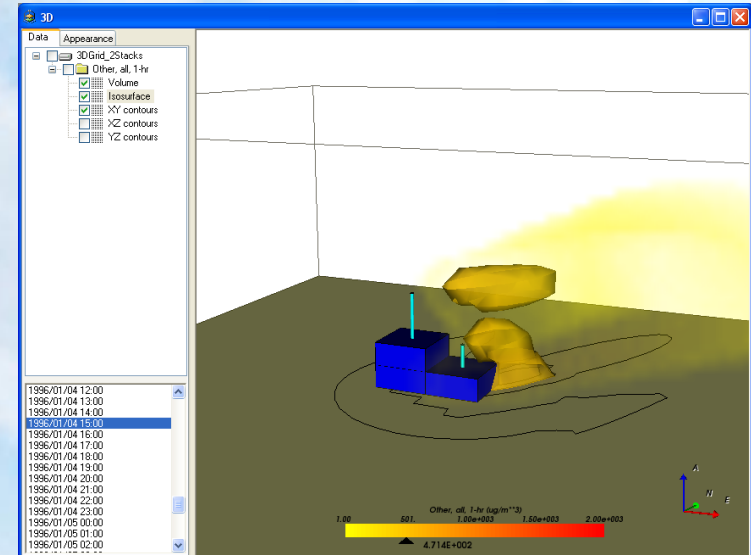- ❖ Accidental releases
- ❖ Mobile sources

Risk management and emergency response tools for:

- ❖ Accidental atmospheric releases
- ❖ Fire/Explosions
- ❖ Human Health Risk Assessment
- ❖ Noise Modeling

Trinity
Consultants
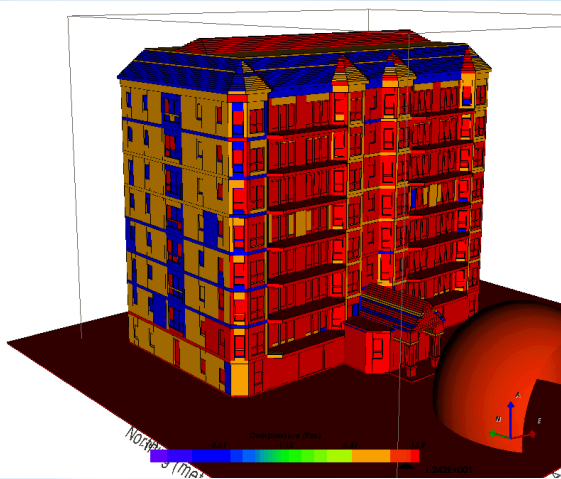
BREEZE Software Products

> BREEZE AERMOD

> BREEZE CALPUFF

> BREEZE Incident Analyst

> BREEZE ExDAM

> BREEZE Risk Analyst

> BREEZE 3D Analyst

> BREEZE Noise

> BREEZE ROADS

> ...

Trinity Consultants

Accidental Release Modeling

BREEZE Incident Analyst
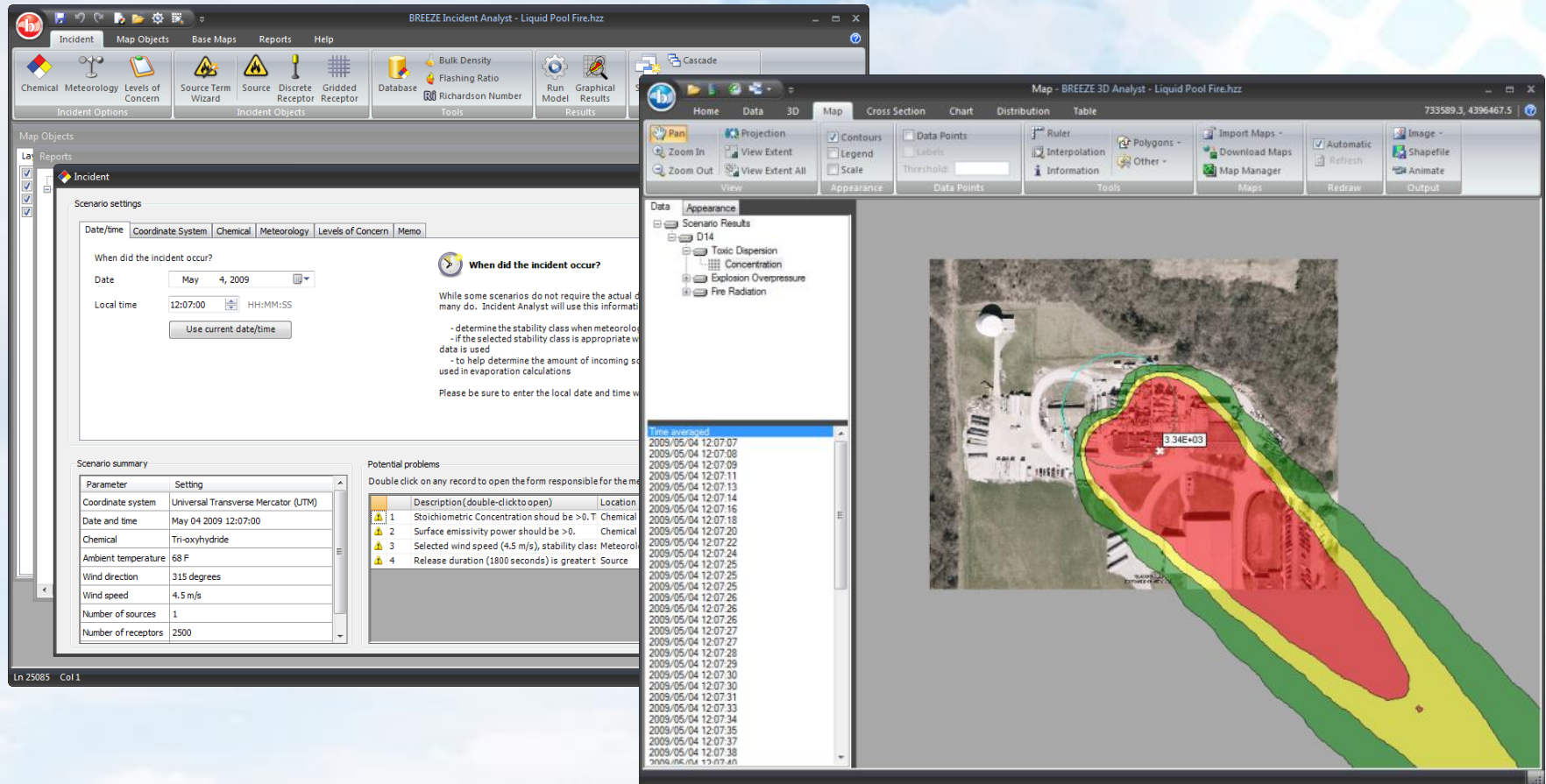
BREEZE Incident Analyst Capabilities

> Toxic Dispersion

  ❖ Array of source and chemical types

  ❖ Area of toxic/flammable concentrations

> Fire

  ❖ Pool, jet fire, and BLEVE capabilities

  ❖ Area of dangerous/destructive thermal effects

> Explosion

  ❖ "Worst case" vapor cloud explosion modeling

  ❖ Area of dangerous/destructive overpressure

Trinity Consultants

Models in BREEZE BIA

> **Source Term Calculation Wizard**

> **Gas Dispersion Models**
  - ❖ Neutrally Buoyant: INPUFF, AFTOX, etc.
  - ❖ Dense Gas: DEGADIS, SLAB

> **Fire/Explosion Models**
  - ❖ Jet Fire, Unconfined/Confined Pool Fire
  - ❖ TNT, BLEVE, Multi-Energy Models

Trinity Consultants
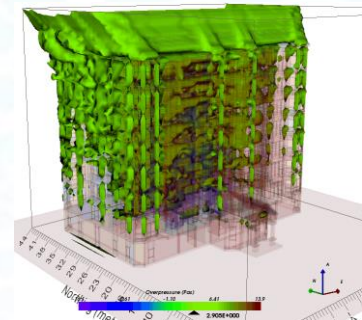
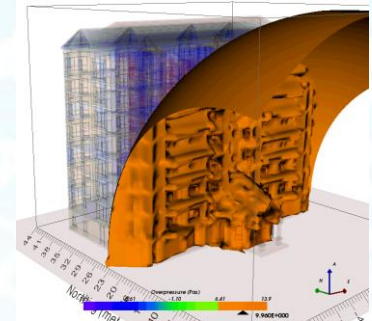# Scenario Setup: Source Term Wizard
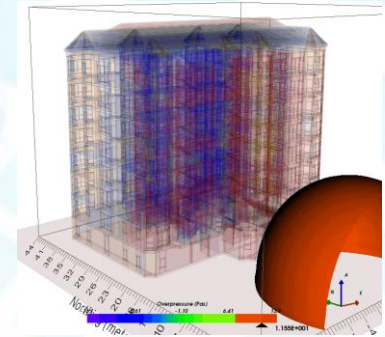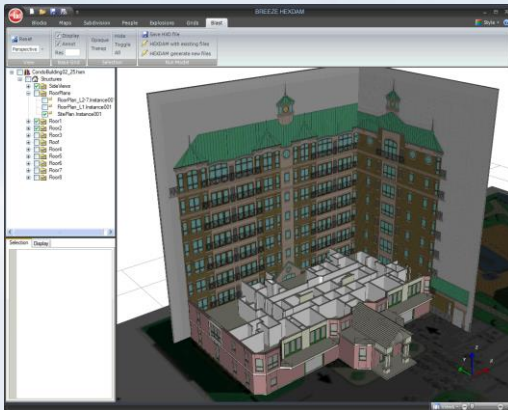
> Calculates release properties automatically

BREEZE Incident Analyst: Results
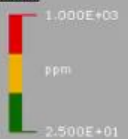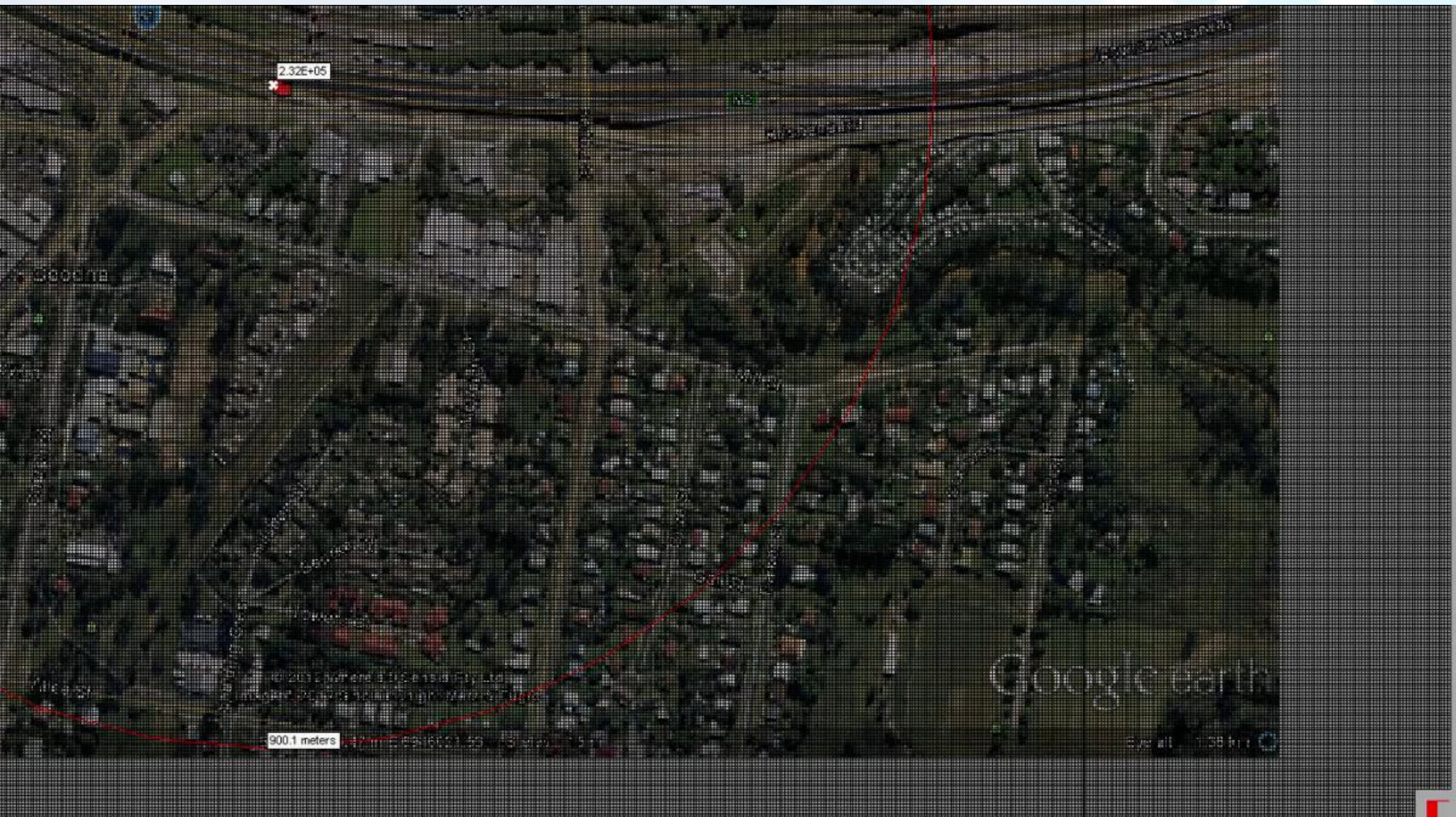
Advanced Explosion Modeling

BREEZE ExDAM

BREEZE ExDAM
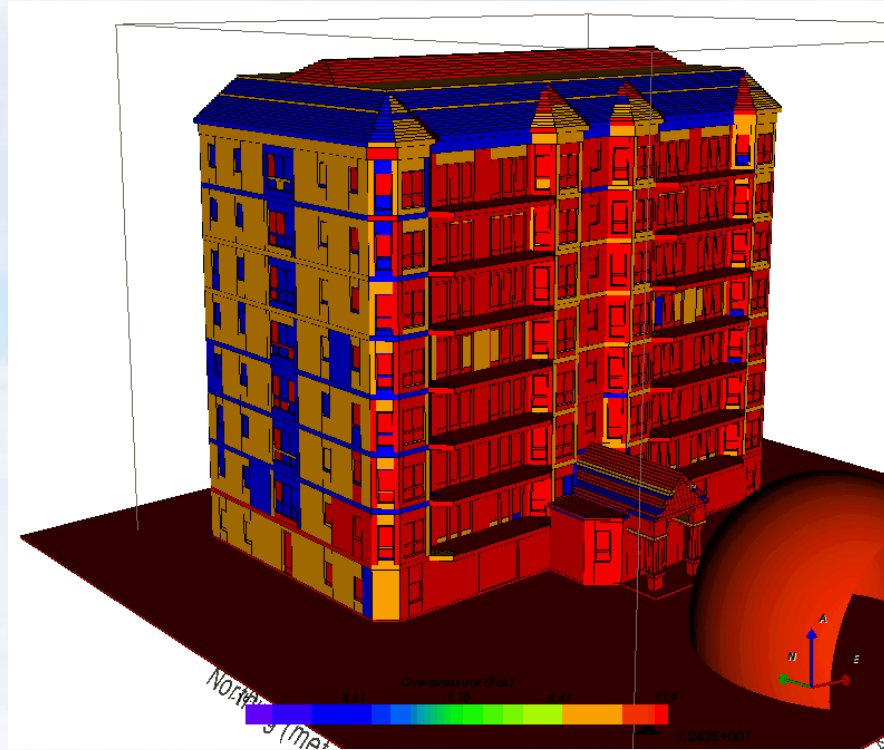
http://www.breeze-software.com/EXDAM/
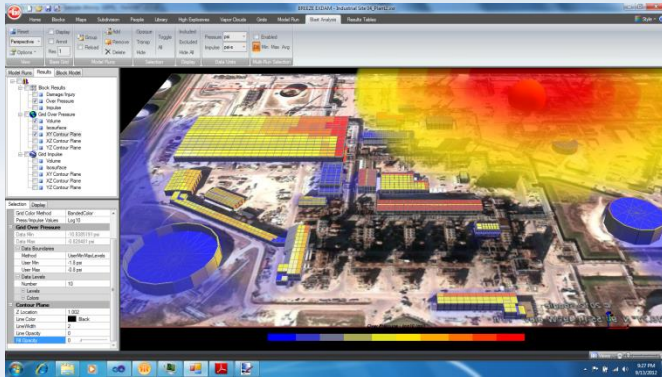
> Explosion modeling with shielding effects: more advanced than BIA explosion tools

> Calculates detailed damage estimates for structures (steel, glass, etc.) and personnel (eardrums, limbs, etc.)

> Intuitive "chop block" interface allows easy creation of very complex/realistic buildings

> Separate explosion modules:
  - HEXDAM for high explosives (TNT)
  - VEXDAM for vapor clouds

Trinity Consultants
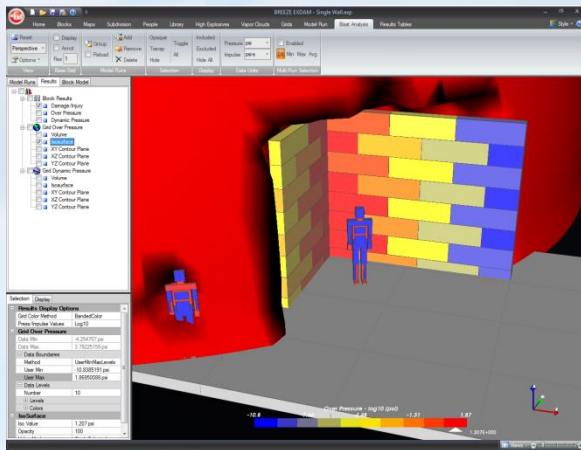
BREEZE Services

> Professional Training

  ❖ Off-the-shelf Training Courses (EDU)

  ❖ Custom Training Courses

  ❖ Webinar and Remote Training

> Consulting

  ❖ Specialized modeling projects
    - Domestic and International
    - Atmospheric Dispersion
    - Hazardous Release/Explosion

  ❖ Custom Software Development
    - Expanding current product's functionality
    - Recompilations of code
   - Creating new tools from the ground-up

> Meteorological and Terrain Data

Trinity Consultants
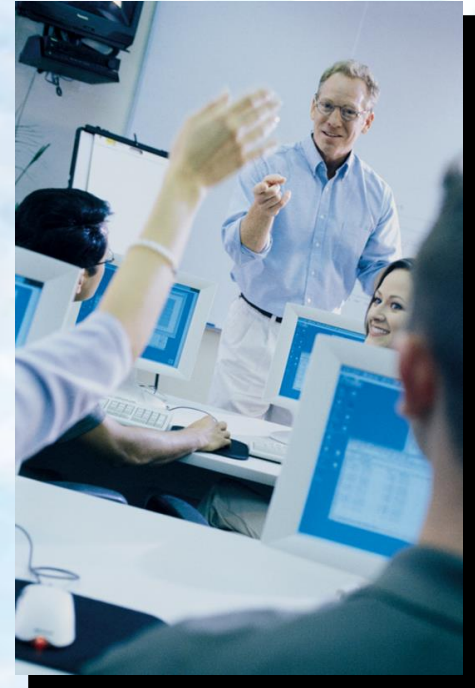
BREEZE Consulting

> Environmental, health, & safety modeling experts

> Common areas:

  ❖ Environmental regulations/hazard assessment (e.g. EPA RMP Off-site Consequence Analysis)

  ❖ Safety concerns: "Worst case" scenario

  ❖ Facility design/layout

  ❖ Risk assessment

> Expertise in source term characterization

Trinity Consultants

Recent (2013-2014) Example Projects

> Oil and Gas
   ❖ Natural gas/associated leak/rupture
   ❖ North sea blowout
> Petrochemical
   ❖ Facility design/layout
> Semiconductors
   ❖ Accidental release: Fire and toxics assessment
> Mining
   ❖ Air Quality Modeling Assessment

Trinity
Consultants
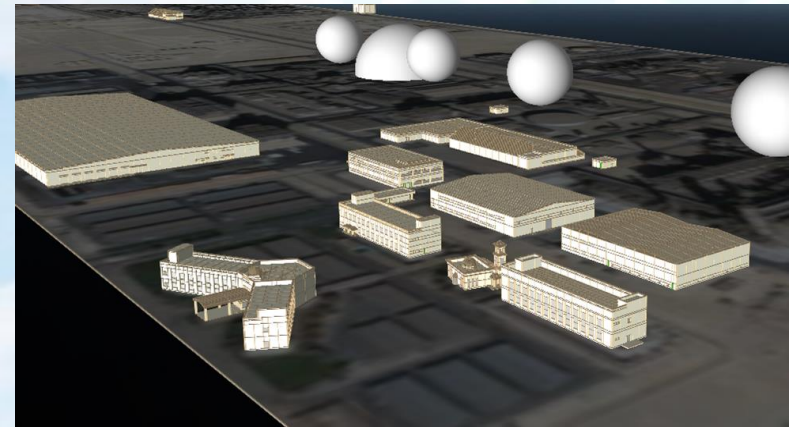
Thank You for Your Attention

Brian Holland

bholland@trinityconsultants.com

+1 972-661-8100