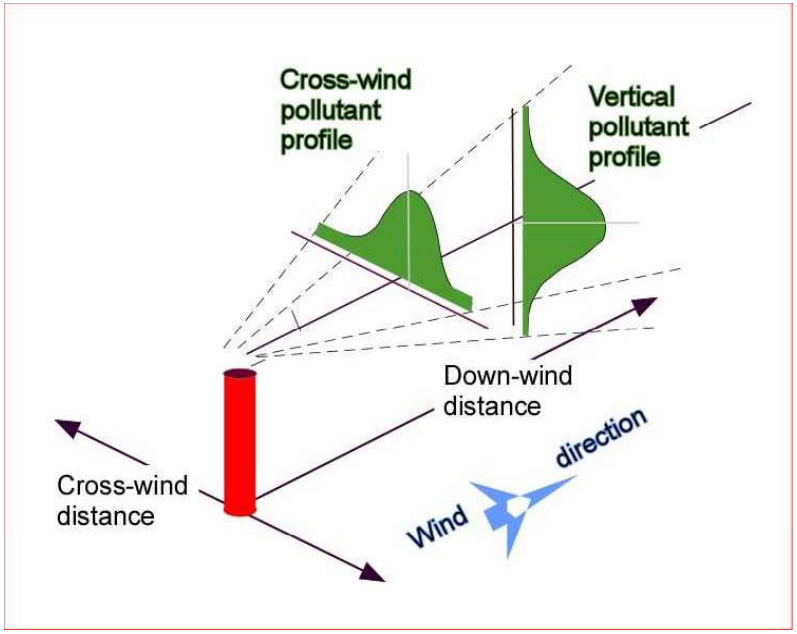
RMIS Demonstration

Presentation Flow

- Key issues in managing chemical risk;
- Need for GIS-enabled integrated information systems and modelling tools;
- The Risk Management Information System (RMIS);

The Issues

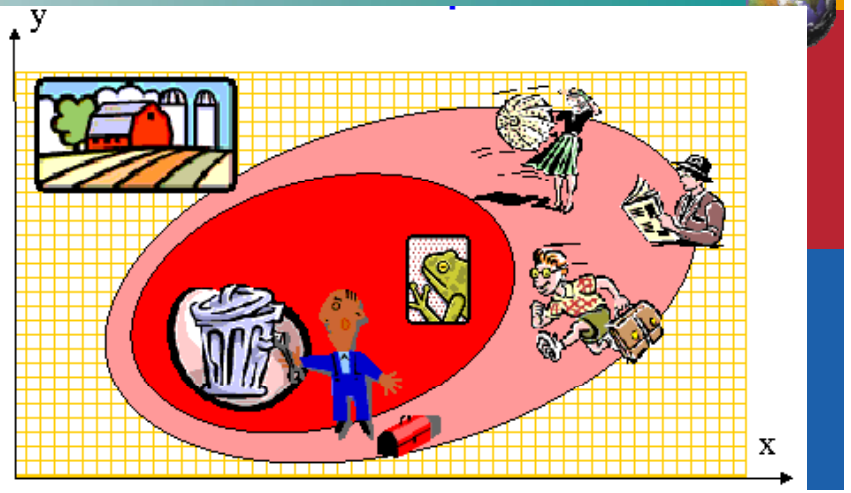
- Technological risk events typically unfold in matter of hours – short response time
- Requires updated information from diverse sources to assess damage
- Prediction needs solving of complex algorithms and spatial analysis

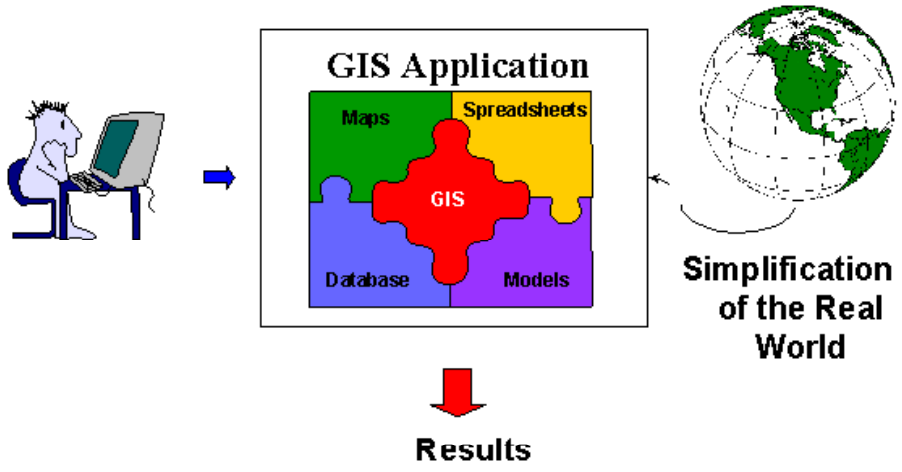


$$C(x,y,z) = \frac{Q}{u\sigma_y\sigma_z 2\pi} e^{-\left(y^2/2\sigma_y^2\right)} \left[e^{-\left((z+He)^2/2\sigma_z^2\right)} + e^{-\left((z-He)^2/2\sigma_z^2\right)} \right]$$

Why we require information system support?

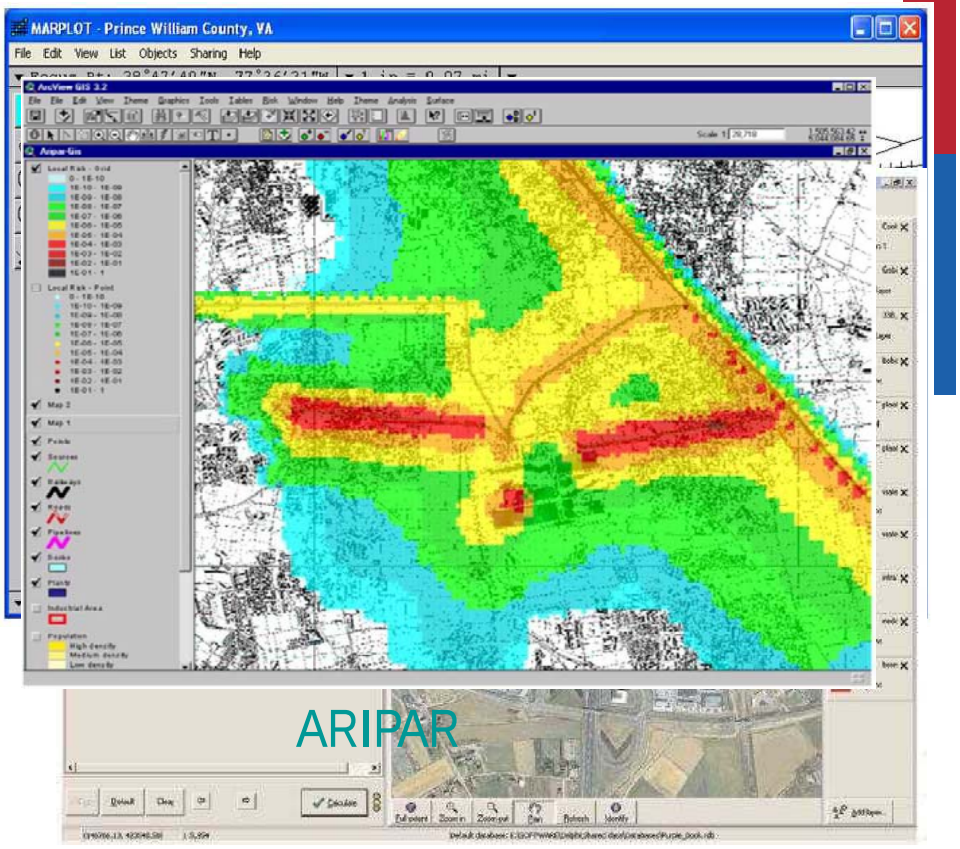
- Management of a chemical risk scenario is information intensive;
- Models require high processing power;
- Strong spatial dimension;





Gaps in existing tools

- Provide end point effect distances for different incidents;
- Hazard footprints displayed for better visualization;
- Risk maps shown as contours;
- But, not closely coupled with GIS;



Risk Management Information System (RMIS)

Key Features:

- **Aggregate information on industries, chemicals, hazards, vulnerability, emergency responders** in a single database;
- **Provides for spatial analysis** and better understanding of chemical risks**;**
- **Transparent mechanism** for sharing risk related information;
- **Integrated with QRA based consequence analysis models** for providing decision support to risk management actors;

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RMIS – Key Benefits

- **High scale of Maps** – better representation of hazards and vulnerabilities;
- **Hazard Data and Maps can be updated / managed** in a distributed manner or centrally;
- **[Active] Modeling of accident scenarios** – MCLS or any quantity of chemical;
- Live **Meteorology Information** while the risk event is unfolding;

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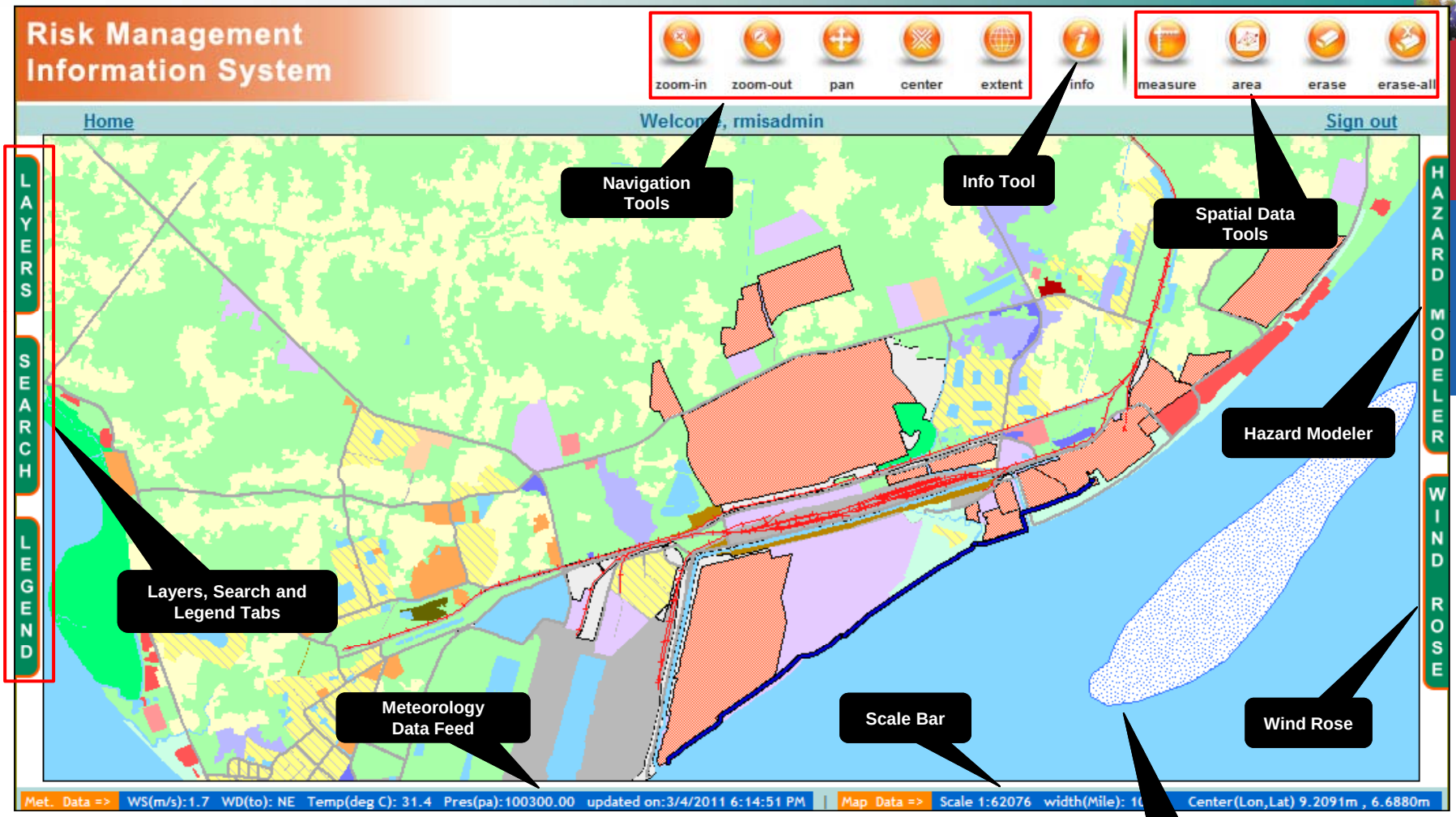
Building the RMIS

- Industrial town of Haldia in West Bengal;
- Identifying and mapping chemical hazards;
- Mapping elements at risk;
- Appending information in a central database;
- Integrating Risk Analysis Models for prediction of accident scenarios;

RMIS Interface



Custom Built User Controls integrated with the web interface

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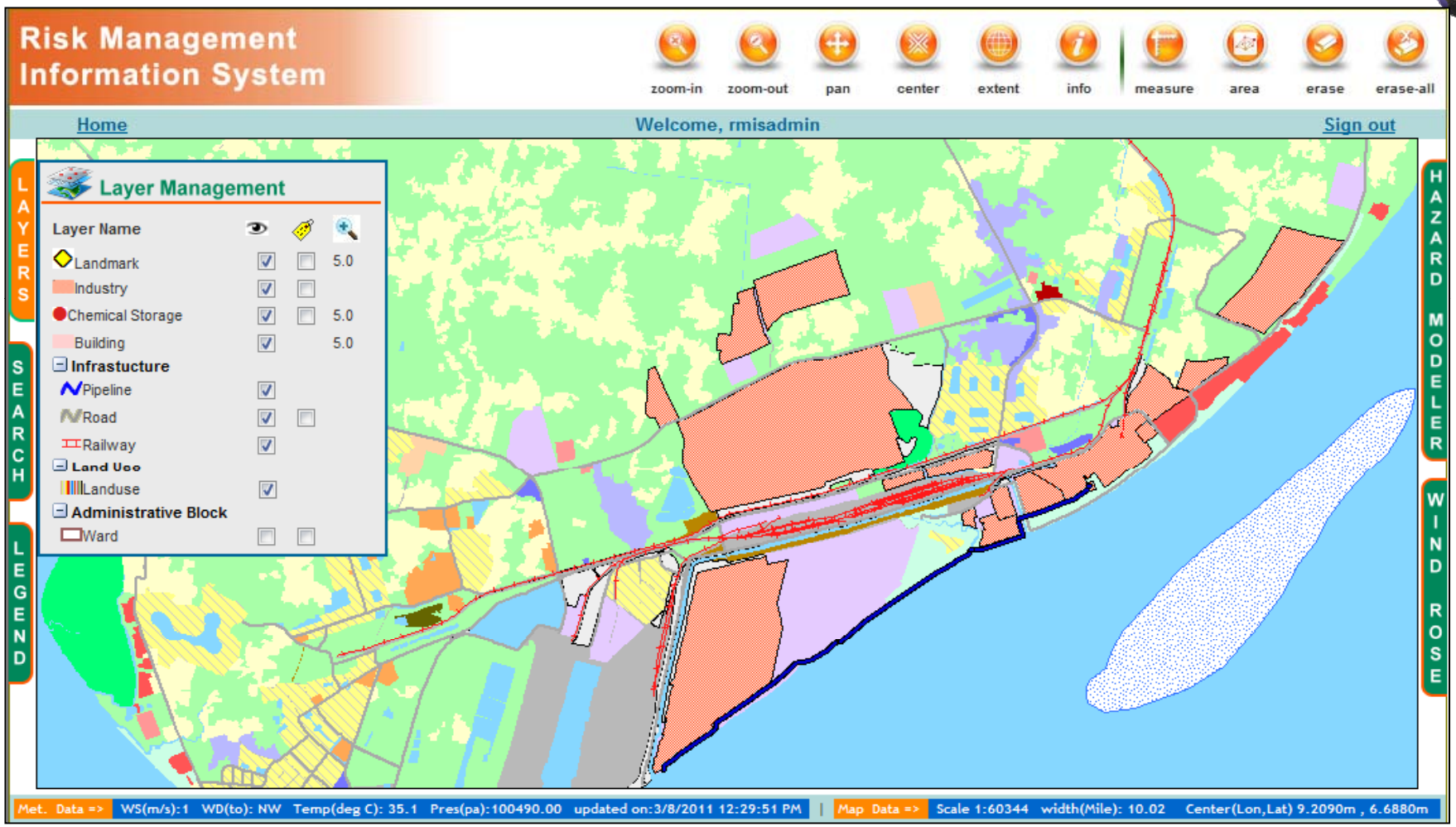
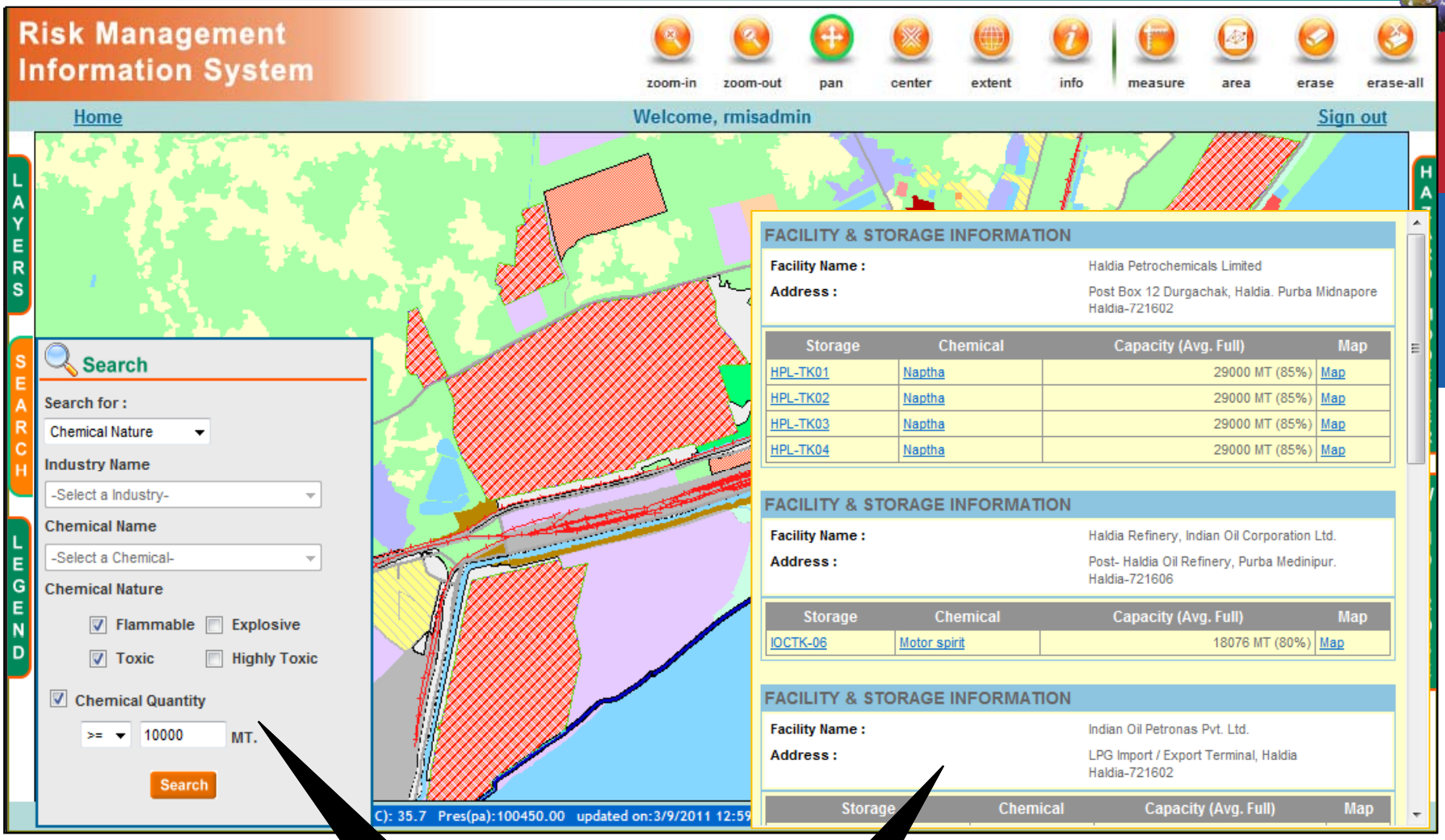
RMIS Interface (contd...)



Layer Management

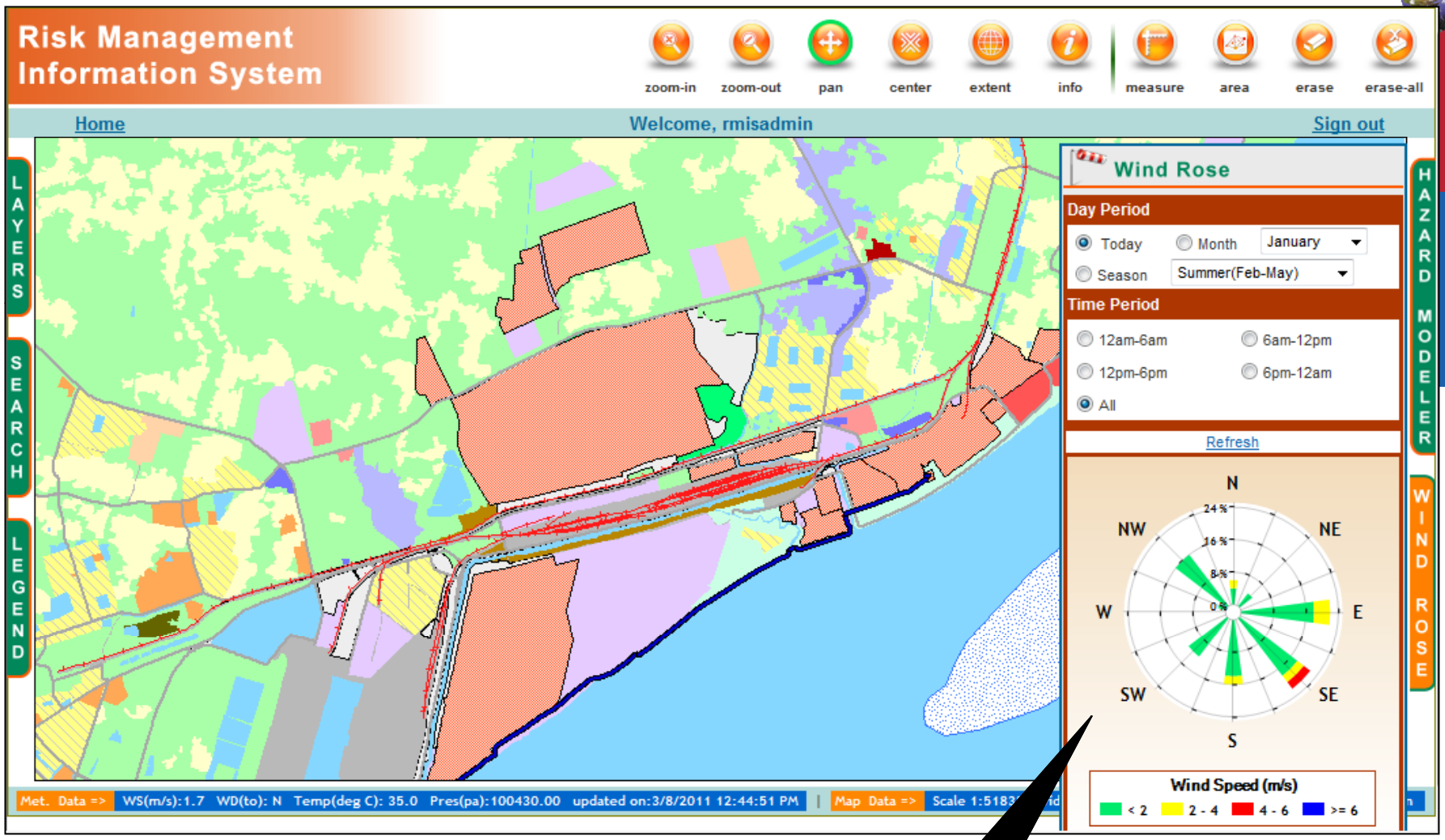
RMIS Interface – Search Function



Search by Chemical Nature & Quantity

Search Results

RMIS Interface – Meteorology



Daily and Seasonal Wind Patterns

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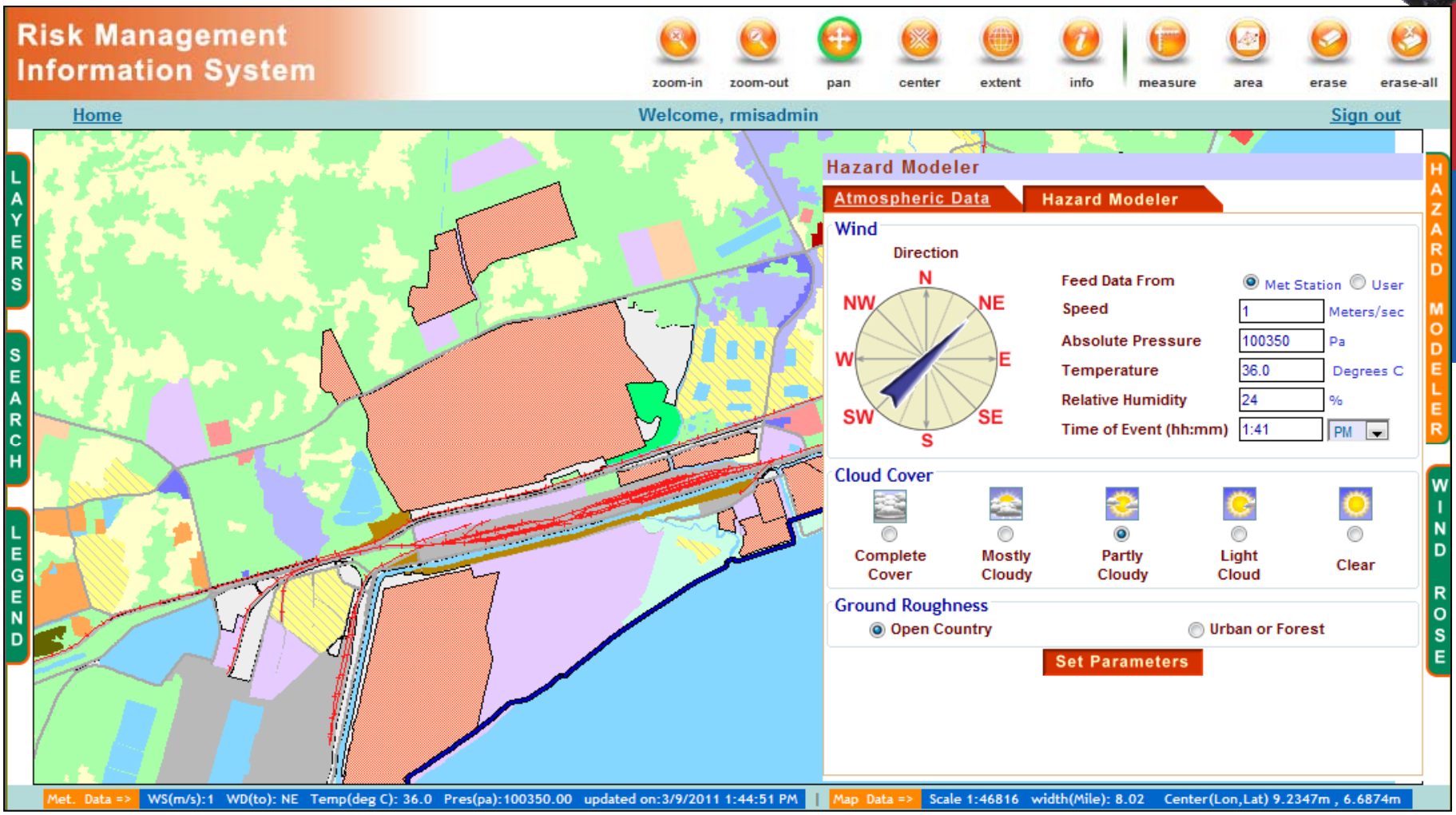
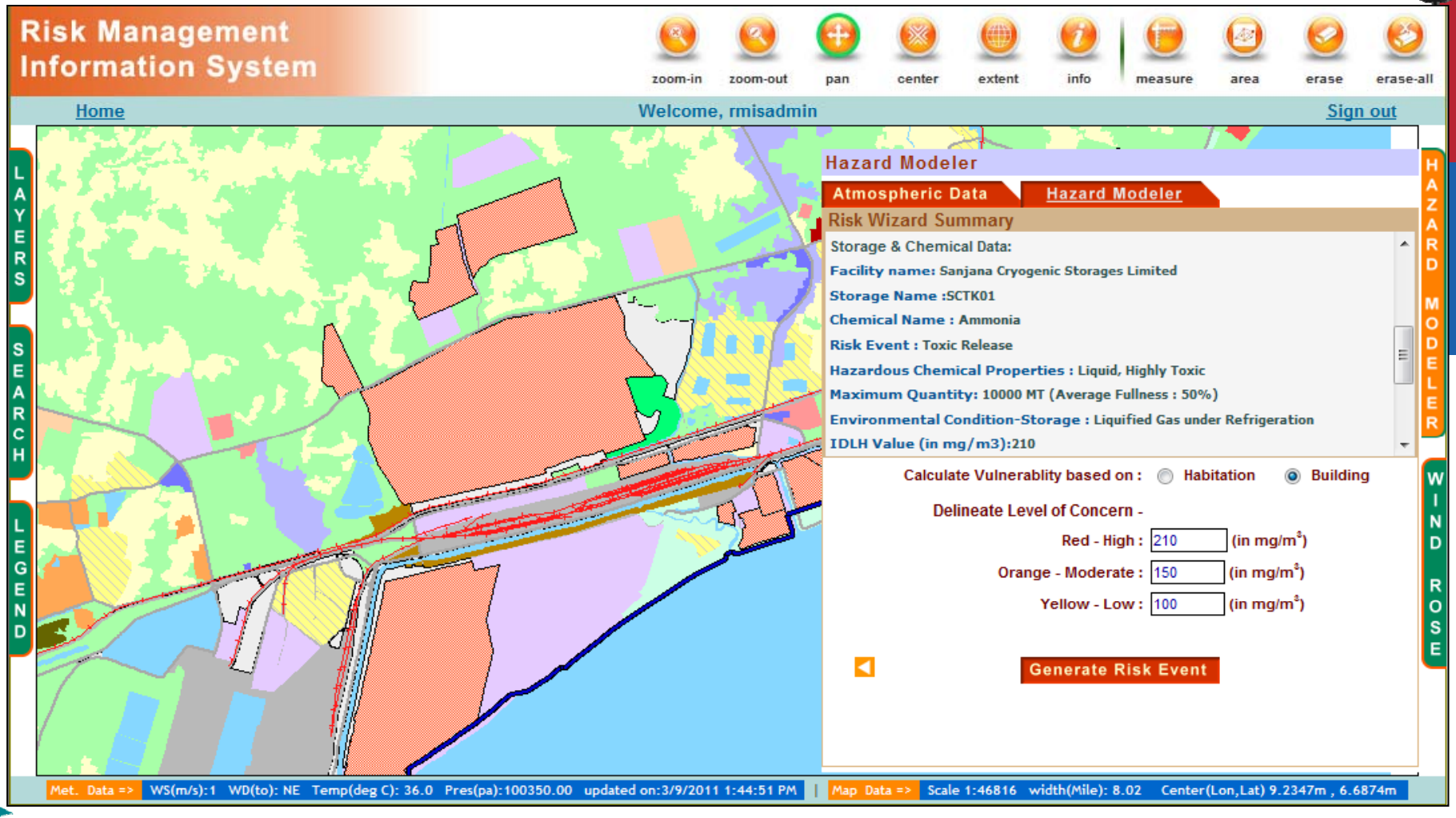
RMIS Interface – Hazard Modeler



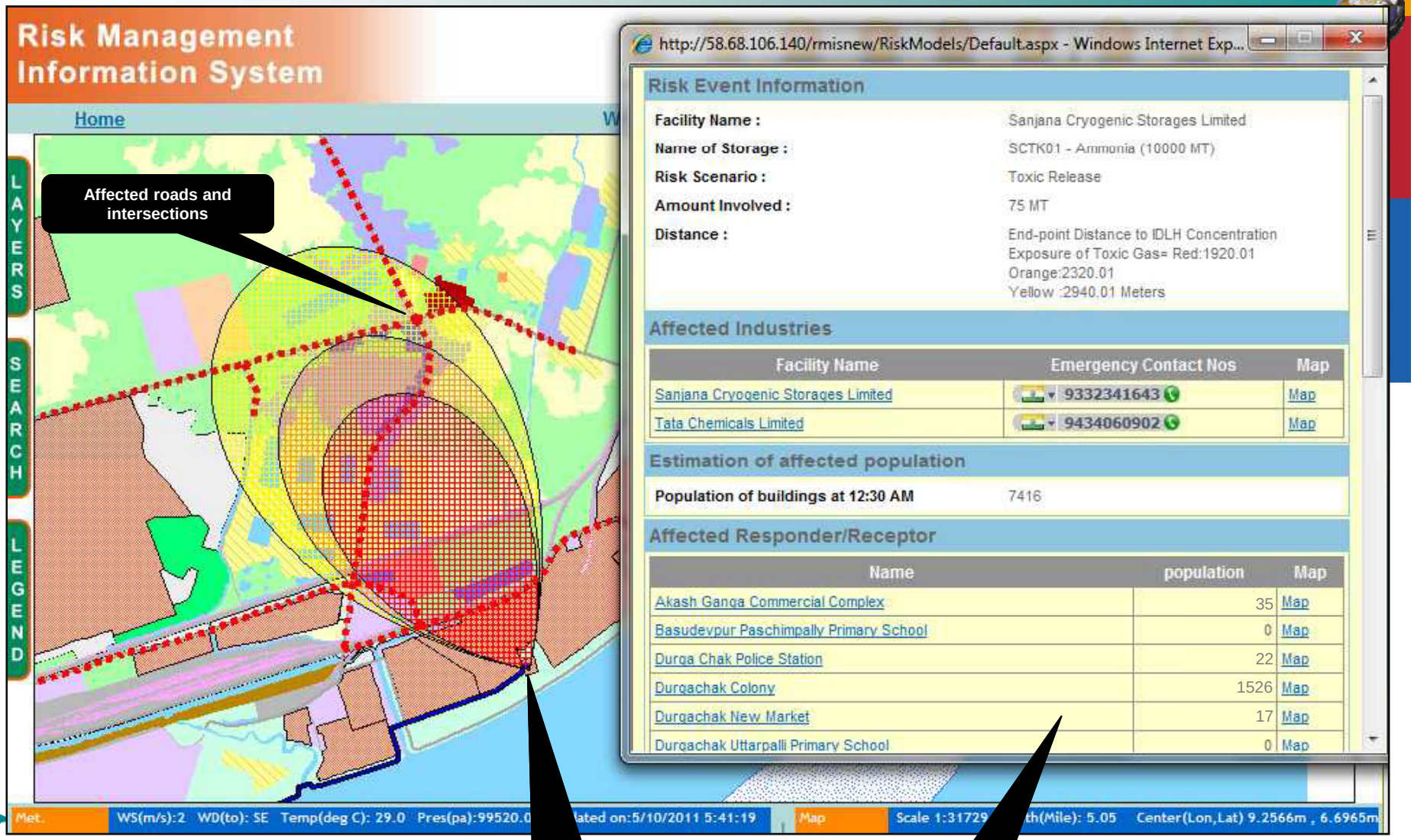
Setting up atmospheric data

RMIS Interface – Hazard Modeler (contd...)



Preparing the hazard model

RMIS Interface – Hazard Modeler (contd...)



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Conclusion

- **The RMIS has been developed as a versatile and integrated information system that can assist decision makers to effectively plan for and manage a chemical risk event**

Thanks!

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