

Health and Environment Linked for Information Exchange in Atlanta **HELIX-Atlanta**

PHIN Stakeholder Conference - May 25, 2004



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Centers for Disease Control and Prevention



Outline

- **Environmental Public Health Tracking**
- **HELIX-Atlanta Concepts**
- **PHIN**

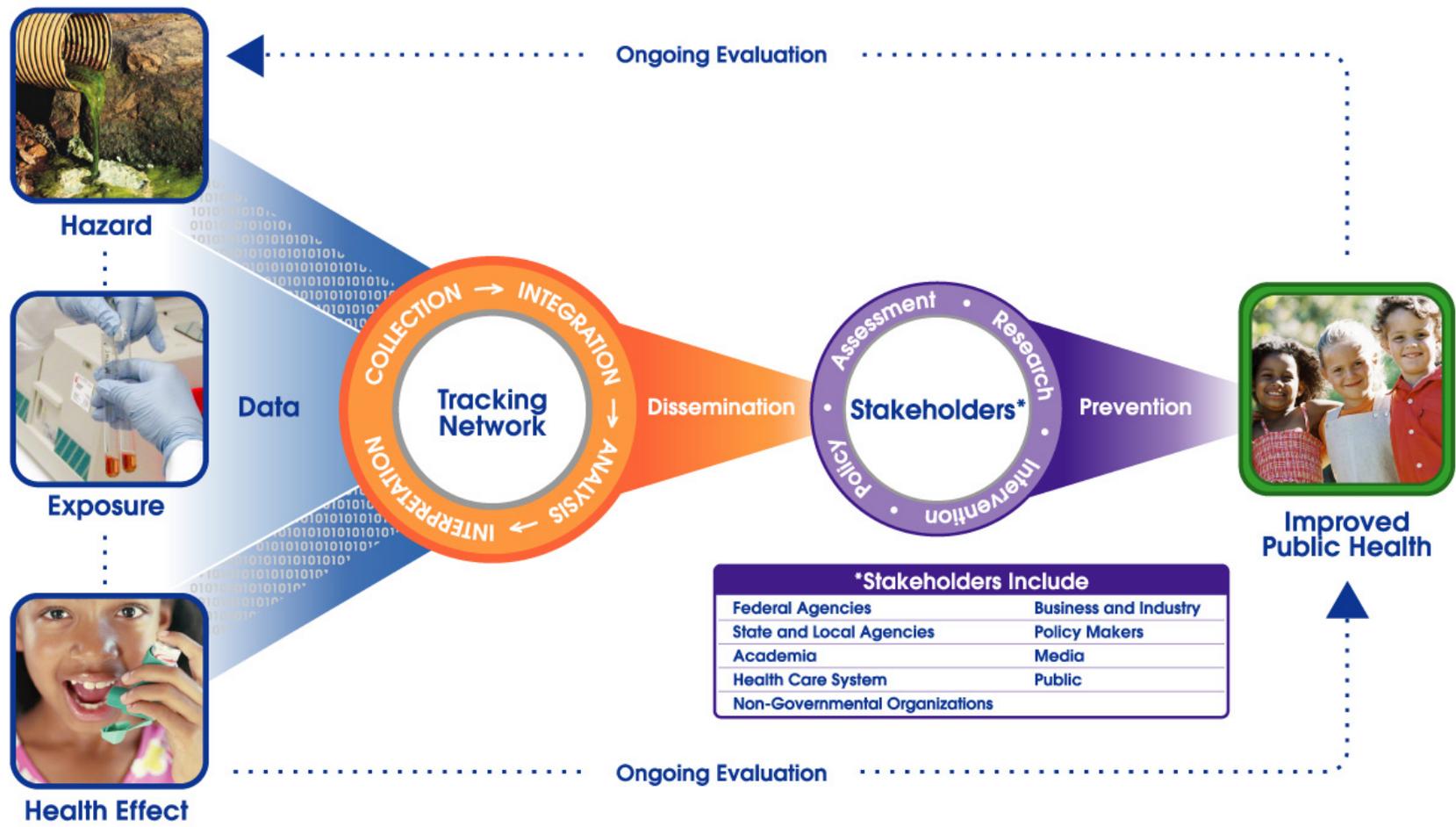
Environmental Public Health Tracking (Surveillance)



Tracking = Public Health Surveillance

- Environmental public health tracking is the ongoing, systematic collection, integration, analysis, and interpretation of data about the following factors:
 - environmental hazards
 - human exposure to environmental hazards
 - health effects potentially related to exposure to environmental hazards
- Data must be disseminated to plan, implement, and evaluate environmental public health action

ENVIRONMENTAL PUBLIC HEALTH TRACKING



***Stakeholders Include**

Federal Agencies	Business and Industry
State and Local Agencies	Policy Makers
Academia	Media
Health Care System	Public
Non-Governmental Organizations	



**DEPARTMENT OF HEALTH AND HUMAN SERVICES
CENTERS FOR DISEASE CONTROL AND PREVENTION
SAFER • HEALTHIER • PEOPLE**



Public Health Surveillance Objectives

- Estimate the magnitude of a health effect in the population at risk
- Detect health effect outbreaks, clusters or epidemics, and trends
- Document the distribution & spread of a health effect
- Understand the natural history of a health effect
- Monitor, evaluate, and facilitate interventions
- Identify research needs & facilitate scientific research
- Generate hypotheses about etiology

Characteristics of an Ideal EPHT Network

(adapted from Hertz-Picciotto, AJPH, 1996)

- **High-quality, timely mortality & morbidity data with high-resolution geographic coordinates**
- **Exposure information (bio-monitoring, personal monitors, or exposure modeling)**
- **High-quality, timely emissions data & monitoring data for air, water, soil, & food (time & location appropriate sampling schedules)**
- **Updated population data for denominators to calculate rates adjusted for migration & socio-demographic factors**
- **Ability to link geographically or individually as appropriate**
- **Resolution to evaluate effects from localized environmental exposures in small areas**

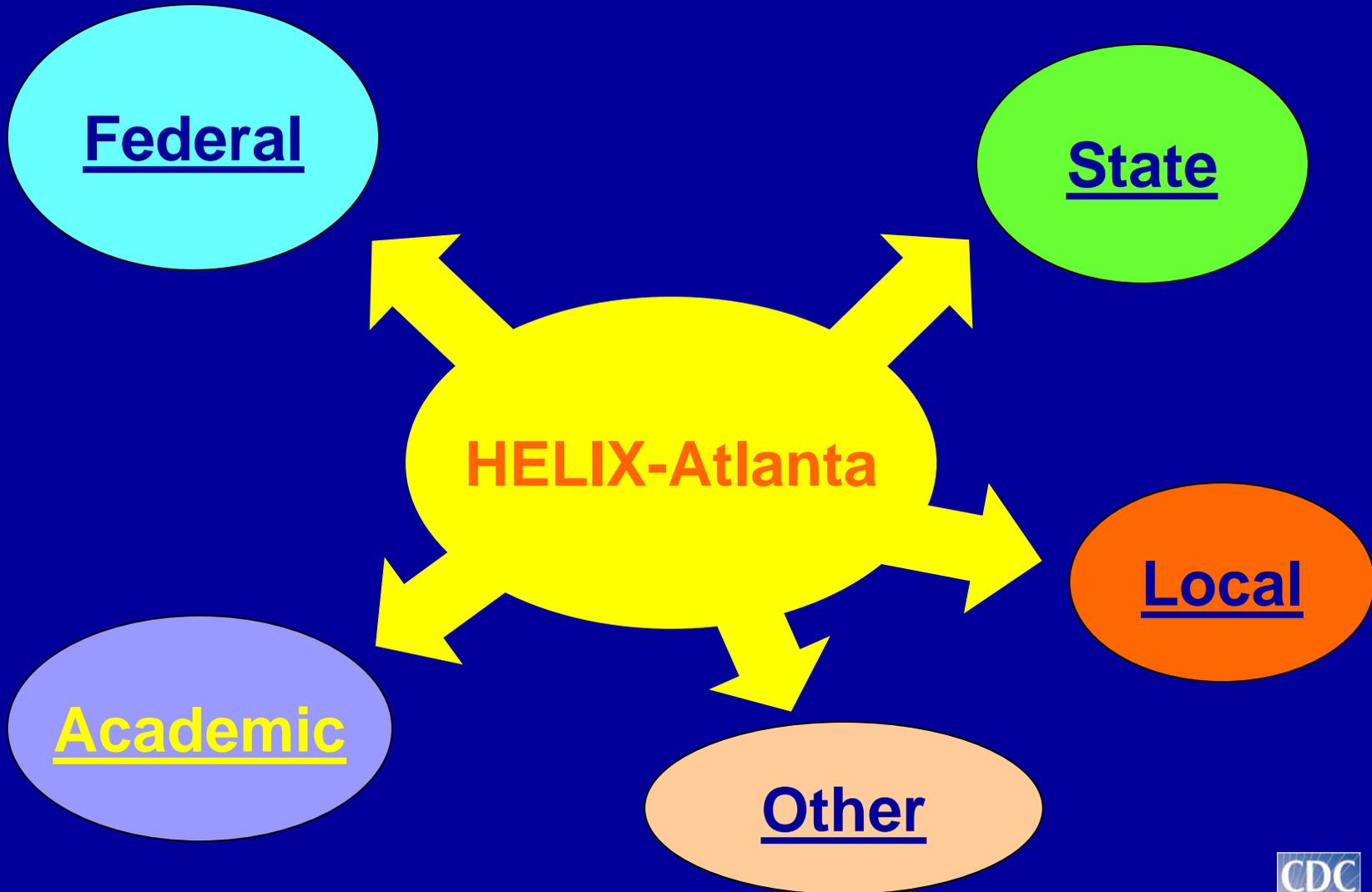


HELIX-Atlanta Concepts

HELIX-Atlanta Public Health Significance

- **Provide information regarding the 5-county Metro-Atlanta Area**
 - **Clayton, Cobb, DeKalb, Fulton, & Gwinnett**
- **Integrate environment & public health data into a network**
- **Take action to prevent & control environmentally related health effects**

Partners



Selected Network Features

- **Tools for linkage, visualization, analysis, generation of alerts, & reporting**
- **Internet-based**
- **Standards-based**
- **HIPAA compliant**
- **Direct access to distributed data sources as appropriate**
- **Includes data for health effects, exposures & hazards**
- **Access to the network is based on role & purpose**

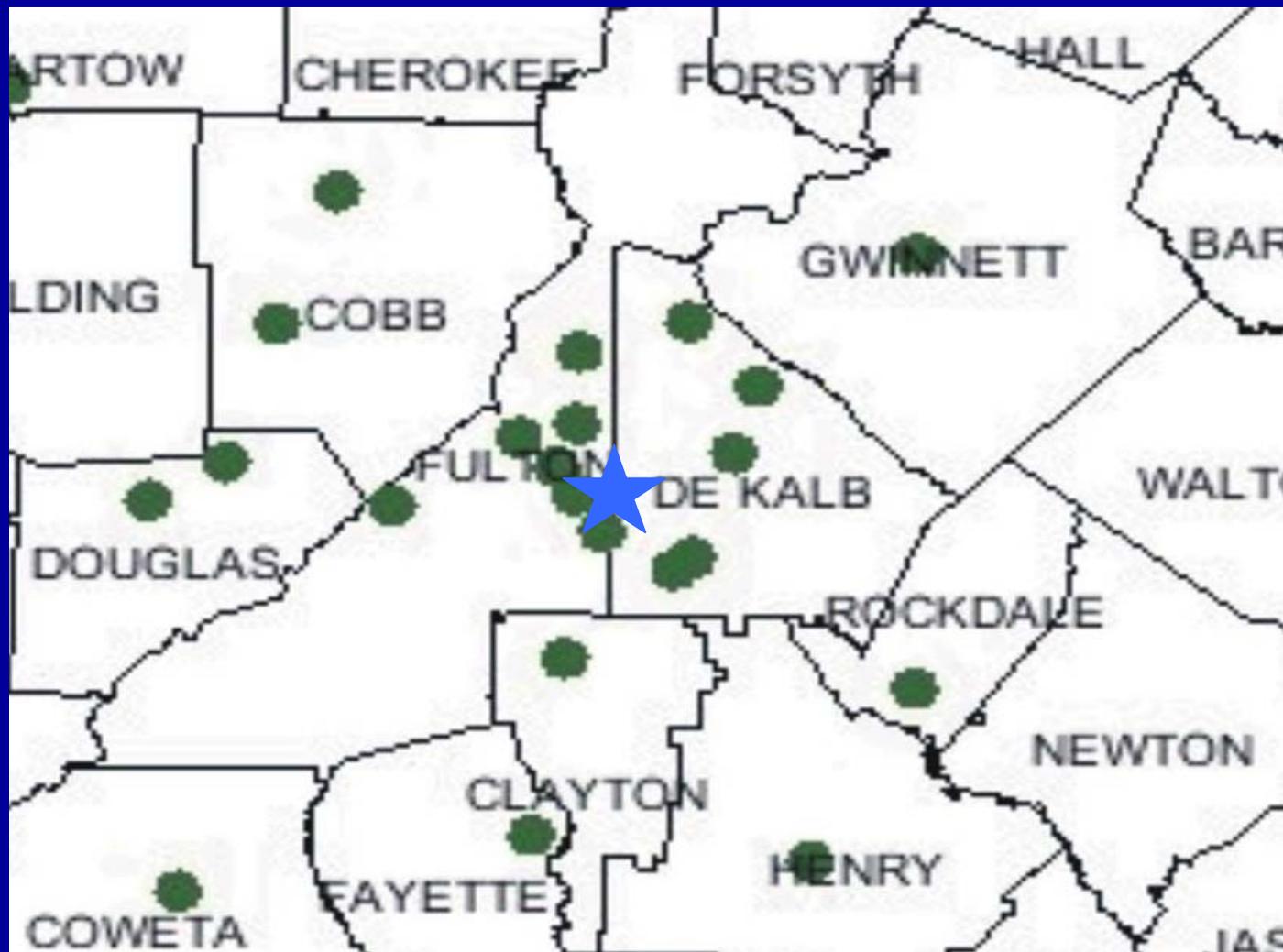
HELIX-Atlanta Project Ideas

- **Birth Defects**
 - Integrate data for air & birth defects
- **Developmental Disabilities & Lead**
 - Integrate data for housing age, blood lead biomonitoring, & developmental disabilities
- **Cancer**
 - Integrate data from traffic & short latency cancers
- **Asthma**
 - Select a standardized classification system & evaluate existing data sources
- **Water**
 - Identify data gaps & strengths

Selected EPA Data for HELIX-Atlanta

- **Ozone & PM_{2.5}**
 - **Source: Air Quality Subsystem (AQS)**
- **Ozone Precursors**
 - **Source: Photochemical Assessment Monitoring Stations (PAMS)**
 - **Validates Ozone modeling**

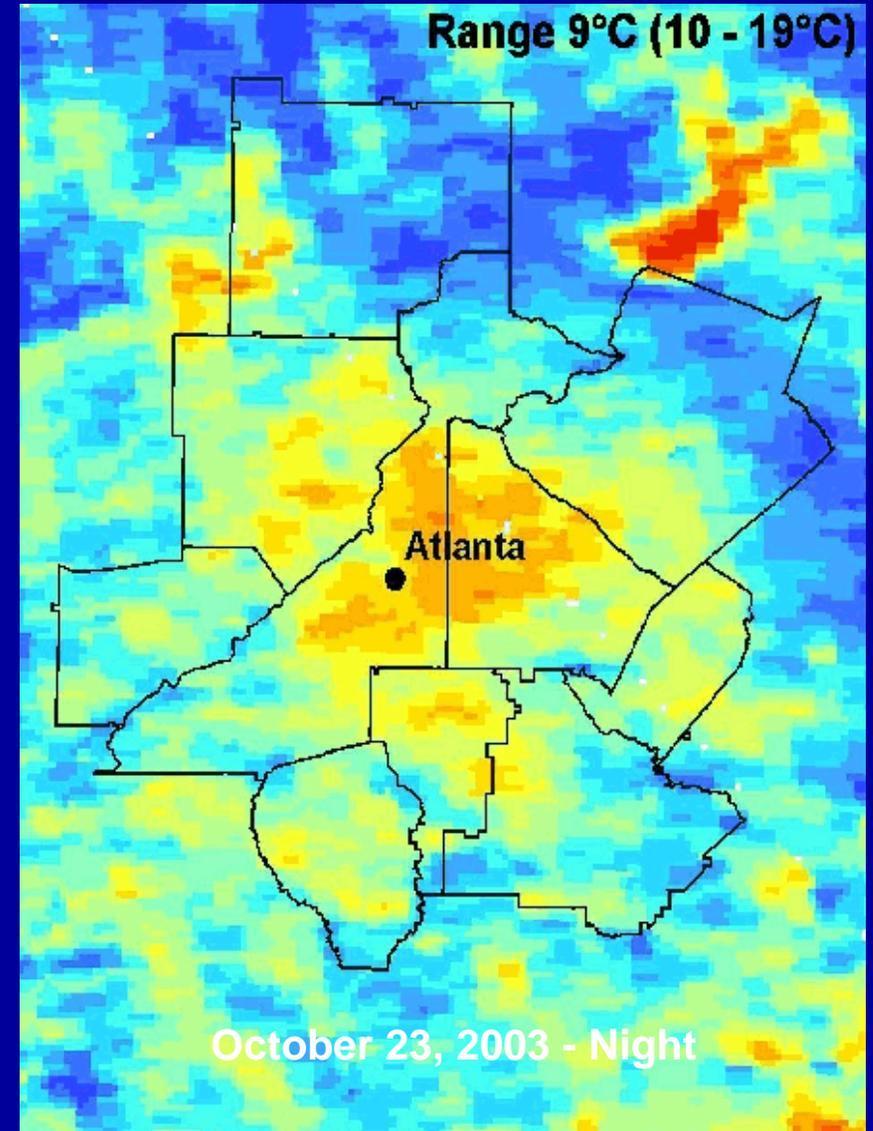
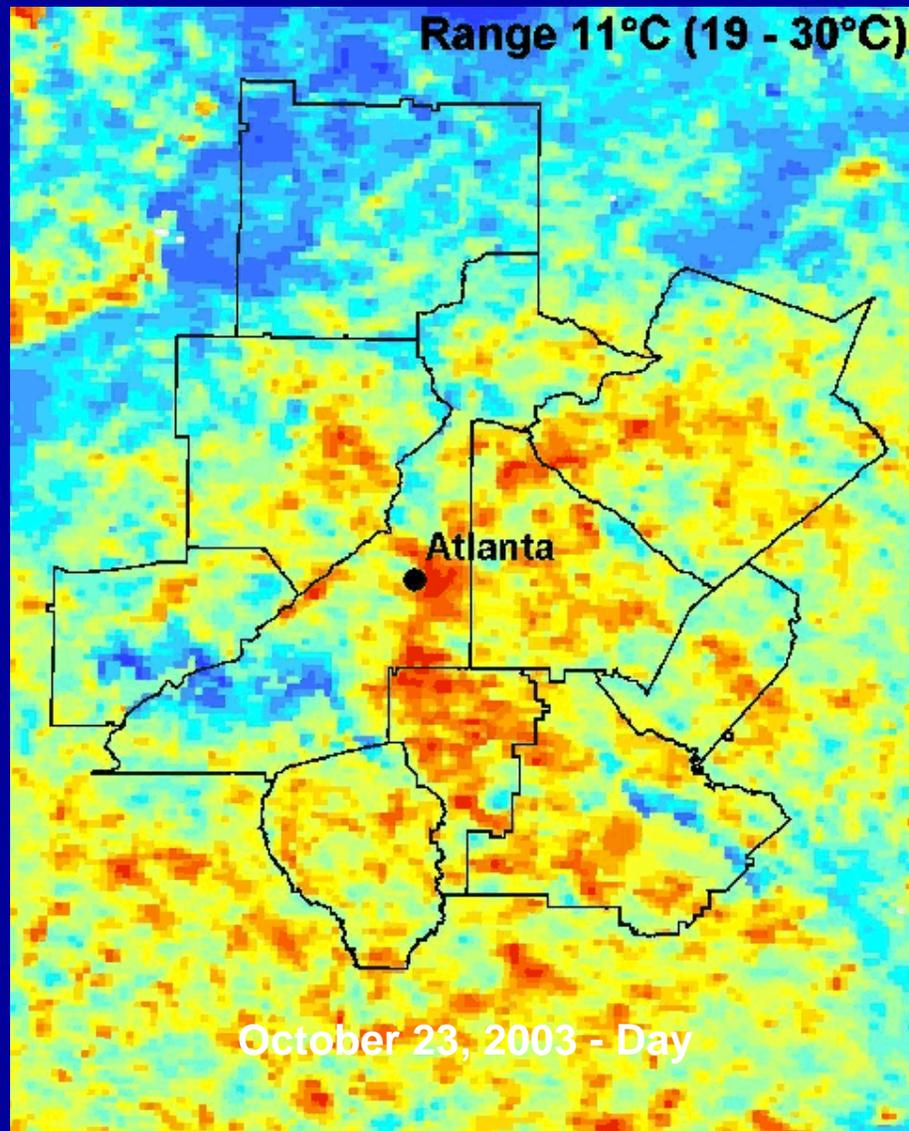
AQS Sampling Locations



Selected NASA Data Products for HELIX-Atlanta

- $PM_{2.5}$
- Surface Temperature
- Changes in Land Use

Land Surface Temperature



PHIN & HELIX-Atlanta



EPHTN is Part of CDC's Public Health Information Network

Early Event Detection
BioSense

Outbreak Management
Outbreak Management System

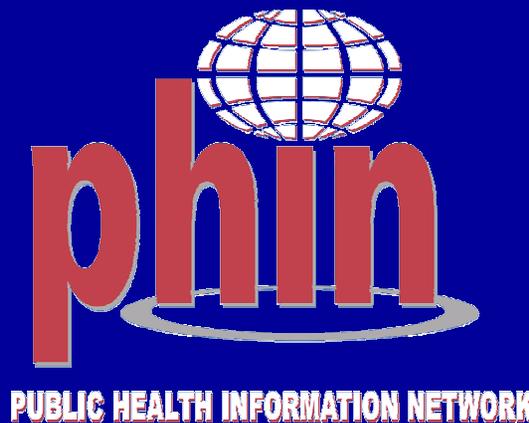
Surveillance
NEDSS
EPHT

Secure Communications
Epi-X

Analysis & Interpretation
BioIntelligence
analytic technology

Information Dissemination & KM
CDC Website
Health alerting

PH Response
Countermeasure administration
Lab, vaccine,
prophylaxis



Federal Health Architecture, NHII & Consolidated Health Informatics



Meeting in the Middle

PHIN

HELIX-Atlanta

Standards & Processes

A successful &
PHIN
Interoperable
Network

Surveillance Requirements

Meeting in the Middle Examples

PHIN

Standards & Processes

- Messaging Protocol
- Transport Protocol
- Data Models
- Data Security and Privacy

HELIX-Atlanta

Surveillance Requirements

- What needs to be sent ?
- Who sends & who receives ?
- What data is useful for HELIX-Atlanta ?
- What Vocabulary Standards & Code sets should be used ?
- What data is confidential ?
- Who has access ?



Steps to Developing HELIX-Atlanta as Part of PHIN

- 1) Reviewed the PHIN Functions & Specifications Document Version 1.2 (<http://www.cdc.gov/phin/architecture/index.htm>)
- 2) Mapped HELIX-Atlanta functions to a subset of PHIN functions & identified the relevant specifications
- 3) Documented commonalities & differences between HELIX-Atlanta functions & PHIN specifications
- 4) Identify actions needed for HELIX-Atlanta to develop as part of PHIN
- 5) Identifying existing code sets/vocabulary standards for environmental data



HELIX-Atlanta PHIN Checklist

- How do we document the commonalities and differences between HELIX-Atlanta functions and PHIN specifications?
 - Extracted from the PHIN Functions and Specifications Version 1.2 Document
<http://www.cdc.gov/phin/architecture/index.htm>
 - HELIX-Atlanta PHIN Checklist (Draft)
 - Companion Document (Draft)

HELIX-Atlanta PHIN Checklist

	<input type="checkbox"/>	<input type="checkbox"/>	distribution of application systems	
	<input type="checkbox"/>	<input type="checkbox"/>	17. Use of X12 protocol for sending healthcare related business transactions	30
<input type="checkbox"/>	<input type="checkbox"/>	6. Analysis and Visualization of Data		2
	Yes	No	Specification:	
	<input type="checkbox"/>	<input type="checkbox"/>	1. Use of Commercial-off-the-shelf (COTS) Reporting and Analysis Tools	6
	<input type="checkbox"/>	<input type="checkbox"/>	2. Use of <u>JDBC</u> technology to access data from Java programming language	16
	<input type="checkbox"/>	<input type="checkbox"/>	3. Applications and databases are Open Database Connectivity (<u>ODBC</u>) compatible	22
	<input type="checkbox"/>	<input type="checkbox"/>	4. Use of the Secure Sockets Layer (<u>SSL</u>) Protocol to provide privacy between communicating applications	27 (1.14, 8.2)
	<input type="checkbox"/>	<input type="checkbox"/>	5. Use of a <u>strong authentication</u> technique	28 (1.15, 8.3)
<input type="checkbox"/>	<input type="checkbox"/>	8. Information Dissemination and Alerting		2
	Yes	No	Specification:	
	<input type="checkbox"/>	<input type="checkbox"/>	1. Use of a Lightweight Directory Access Protocol (<u>LDAP</u>) to structure the authentication, authorization and general information about a user for centralized data	17 (1.8)
	<input type="checkbox"/>	<input type="checkbox"/>	2. Use of the Secure Sockets Layer (<u>SSL</u>) Protocol to provide privacy between communicating applications	27 (1.14, 6.4)
	<input type="checkbox"/>	<input type="checkbox"/>	3. Use of a <u>strong authentication</u> technique	28 (1.15, 6.5)
	<input type="checkbox"/>	<input type="checkbox"/>	4. Use of <u>Apache</u> or <u>Microsoft IIS</u> versions of web servers	31 & 32

Examples of Existing Data Standards

- **EPA Information Exchange Network**
- **NASA**
 - **Hierarchical Data Format (Satellite)**
 - **National Spatial Data Infrastructure**
- **Non-infectious health effect data standards**

HELIX-Atlanta Action Steps

- **Anticipate PHIN's process for registering & updating vocabulary standards/code sets**
- **Continue to work with PHIN about information system architectural differences**
- **Clarify level of geo-coded data as it relates to confidentiality**
- **Develop novel linkage methods to bridge environment & health data**

For More Info. . .

- **Tracking Website:**
 - <http://www.cdc.gov/nceh/tracking/>
 - **HELIX-Atlanta's Webpage is in development**
- **PHIN Website:**
 - <http://www.cdc.gov/phn/index.htm>
- **E-mail: GRainisch@cdc.gov**