

# OEI, OPP and Big Decisions

Shelly Thawley

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## *EFED's Mission within OPP*

- Federal Insecticide, Fungicide and Rodenticide Act (FIFRA)
  - Analyze the environmental fate and effects of pesticide use
- Endangered Species Act
  - Ensure registered pesticides will not harm (all) listed species or critical habitat



## *Adopting an ESA Strategy*

- Need a strategy for assessing impacts of pesticide use on species nationwide
- Critical statutory deadlines for review of existing registrations rapidly approaching
- Increasing load of litigation support work



## *The Perfect Storm*

- Thousands of pesticides to be reviewed
- 1200 + listed endangered species
- Increasing number of lawsuits
- Chemical review deadlines approaching
- Lack of central repository of species data



## *ES Risk Assessment Technical Implementation Needs To Be:*

- Geo-spatially based
- Automated
- Centralized GIS database
- Include new tools and models for analyzing effects on a wide range of species



## *Current GIS in OPP*

- Non-centralized data warehousing
- Desktop-based tools
- No server or server side tools
- GIS used in ad-hoc fashion within current assessments
- GIS user community a grass roots effort



## *OEI and Big Decisions*

- Looking for projects with agency-wide potential use
- Provide contract and hosting support



## *Big Decisions - Goals*

- Create a centralized GIS data repository
  - Integrated Geodatabase
  - Potential to mirror to local server
- Create data discovery tool
- Create specialized tools for adapting EFED models to accommodate spatial data





# Data Warehouse

Aquatic Ecoregions of the U.S.	Gap Data	NAWQA Boundaries
Aquifers	GDT(TeleAtlas)	NCFAP Use Data
CADPR (California Pesticide Database)	Geographic Names Information System (GNIS)	NHDPlus (including elevation)
Climate Atlas Data (NOAA)	HSIP Gold (DHS)	NLCD & Generalized Cropland Coverage
Climate Divisions	HUC 12 -1 4 by State	NRI Polygons and Data
CWS Intakes and Catchments	HUC Polygons (2,4,6,8) + HUC 10,11,12 where available	Political Boundaries
Dam Inventory	Hydroregions	Principal Aquifers
Ecoregions	Kellog - USDA Runoff Vulnerability Scheme	PRISM Monthly, Annual Precip.
EFED Scenarios	Major Land Resource Areas (MLRA) Ecoregions	SAMPSON Weather Station Data
Endangered $\xi$ species Locations (ad-hoc)	Met Station Data (NOAA) (Both Sets)	SSURGO
Endangered Species (by County from FRS)	NAFTA Ecoregions	STATSGO
EPA Ecoregions	NASQAN	Urban Areas
EPA Regions	NASS Agriculture Statistics 20 02, 1997)	USGS Stream Gauges
ERF1 Watersheds	NASS Land Cover (13 states)	Water Wells
Federal Lands	National Elevation Dataset	Watershed Boundary Dataset
	National Pipeline Data	Zip codes
	National Wetlands Inventory	
	NatureServe	



# *Environmental Modeling Tools*

- Transition from scenario-based to GIS based
- Adapt current models to accept GIS data



## *Prototype Spatial Tool: PRZM/EXAMS*

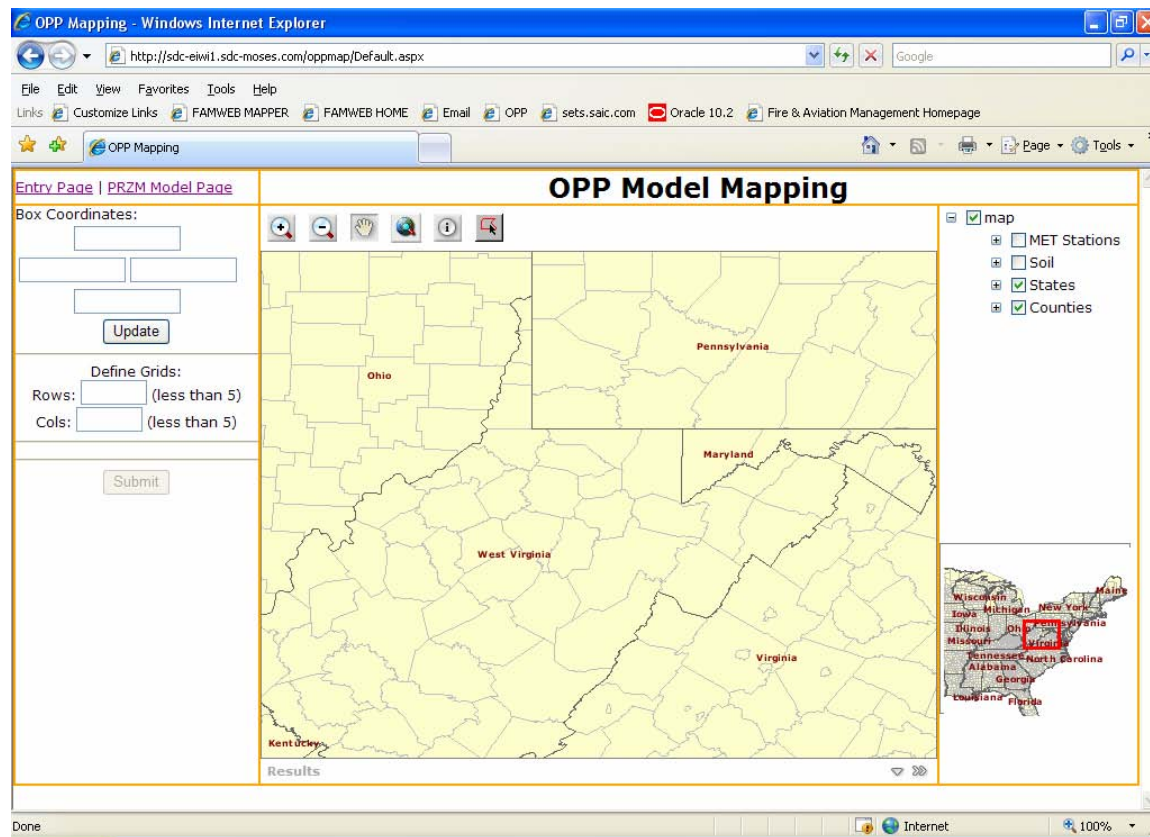
- Leave current models unchanged
- Develop wrappers around models to run in spatial mode
- Drawing from geo-spatial database



# PRZM Model Mapping Application

- Application Interface

Start



For Conference Use Only



- Application Interface (contd.)

### Define Gridded area

OPP Mapping - Windows Internet Explorer

http://sdc-eiwi1.sdc-moses.com/toppmap/Default.aspx

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OPP Mapping

Entry Page | PRZM Model Page

### OPP Model Mapping

Box Coordinates:

40.406200

-82.462645 -82.015241

39.997701

Update

Define Grids:

Rows: 2 (less than 5)

Cols: 2 (less than 5)

Submit

11

Row Crops

SR

good

Crop File: OHCornC.txt  
Metfile: W14821.DVF  
Soil Type: C  
State: OH  
Curve Number: 87/83/85  
1 Grd(s) defined.

Finalize

map

- MET Stations
- Soil
- States
- Counties

Michigan New York

Indiana Ohio Pennsylvania

Kentucky West Virginia Virginia

Results

Done

Internet 100%



- Application Interface (contd.)

## Define Grid Parameters

OPP Mapping - Windows Internet Explorer

http://sdc-eiwi1.sdc-moses.com/oppmap/Default.aspx

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OPP Mapping

Entry Page | PRZM Model Page

### OPP Model Mapping

Box Coordinates:

39.752140

-82.408281 -82.407084

39.750943

Update

Define Grids:

Rows: 2 (less than 5)

Cols: 2 (less than 5)

Submit

22

Row Crops

SR

poor

Crop File: OHComC.txt  
Metfile: W14821.DVF  
Soil Type: C  
State: OH  
Curve Number: 88/86/87  
[1 Gnd\(s\) defined.](#)

Finalize

map

- MET Static
- Soil
  - A
  - A/D
  - B
  - B/D
  - C
  - C/D
  - D
- States
- Counties

Ohio

Kentucky West Vir

Done

Internet 100%



- Application Interface (contd.)  
PRZM data entry screen



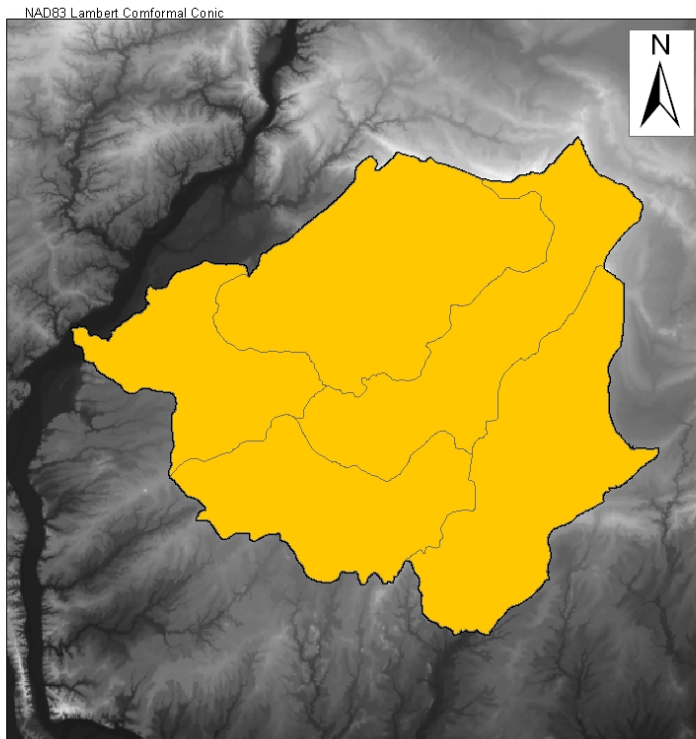
- Sample PRZM output

<b>GRID</b>	<b>Longitude</b>	<b>Latitude</b>	<b>Peak</b>	<b>96 hr</b>	<b>21 Day</b>	<b>60 Day</b>	<b>90 Day</b>	<b>Yearly</b>	<b>Avg</b>
11	-81.9048	39.9489	1.865	1.703	1.064	0.469	0.314	0.077	0.065
12	-81.7456	39.9489	12.454	10.646	6.115	2.550	1.702	0.420	0.135
13	-81.5865	39.9489	3.279	2.859	1.716	0.722	0.483	0.119	0.072
21	-81.9048	40.0539	5.280	4.552	2.689	1.171	0.783	0.193	0.086
22	-81.7456	40.0539	2.073	1.853	1.180	0.521	0.348	0.086	0.067
23	-81.5865	40.0539	1.825	1.608	1.017	0.449	0.300	0.074	0.064
31	-81.9048	40.1590	1.825	1.608	1.011	0.442	0.295	0.073	0.064
32	-81.7456	40.1590	3.279	2.859	1.716	0.722	0.483	0.119	0.072
33	-81.5865	40.1590	1.825	1.608	0.996	0.441	0.295	0.073	0.063

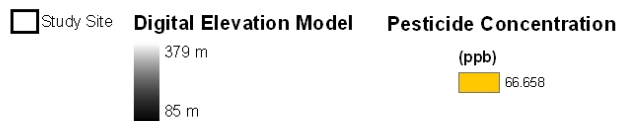




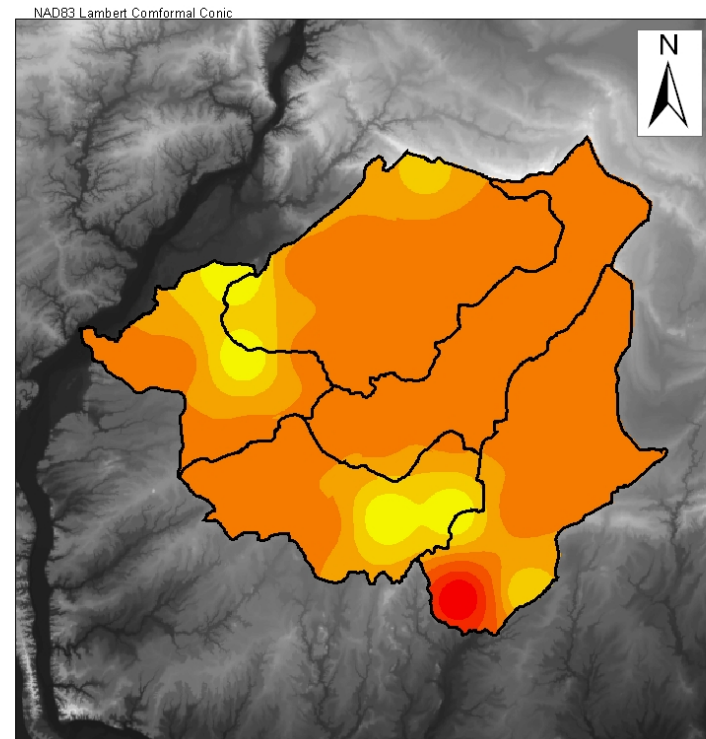
# *Spatial variability in estimated exposure*



0 10 20 40 60 80 Kilometers



# VS.



0 10 20 40 60 80 Kilometers

