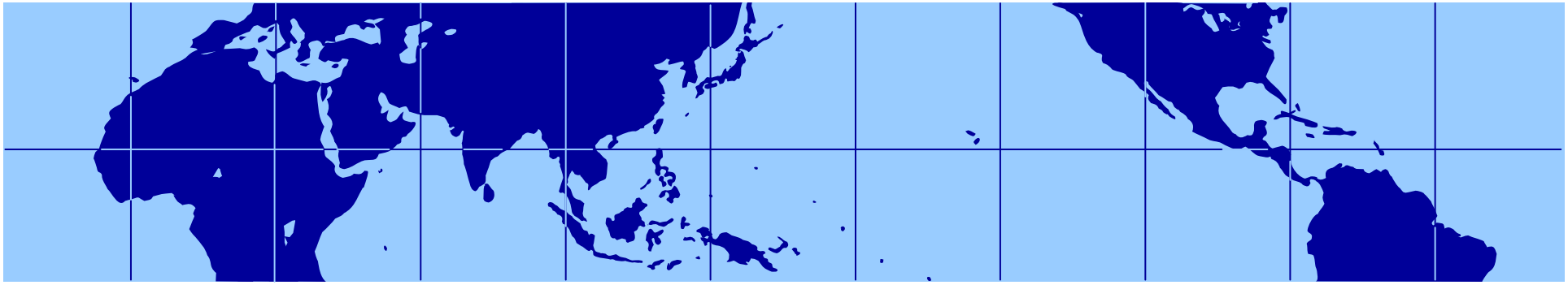


OEI, OPP and Big Decisions

Shelly Thawley

Environmental Information Symposium, St. Louis

November 15, 2007

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 $_S$ pecies 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

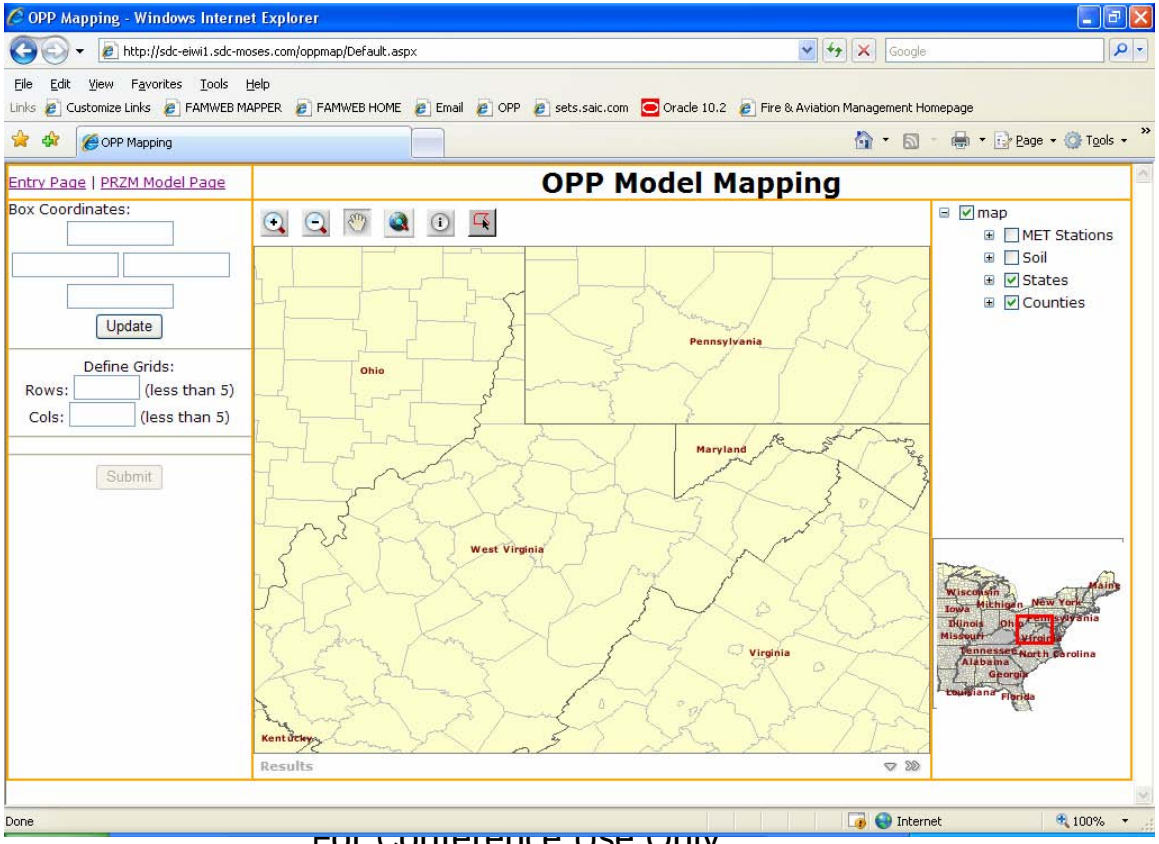
Prototype Spatial Tool: PRZM/EXAMS

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

PRZM Model Mapping Application

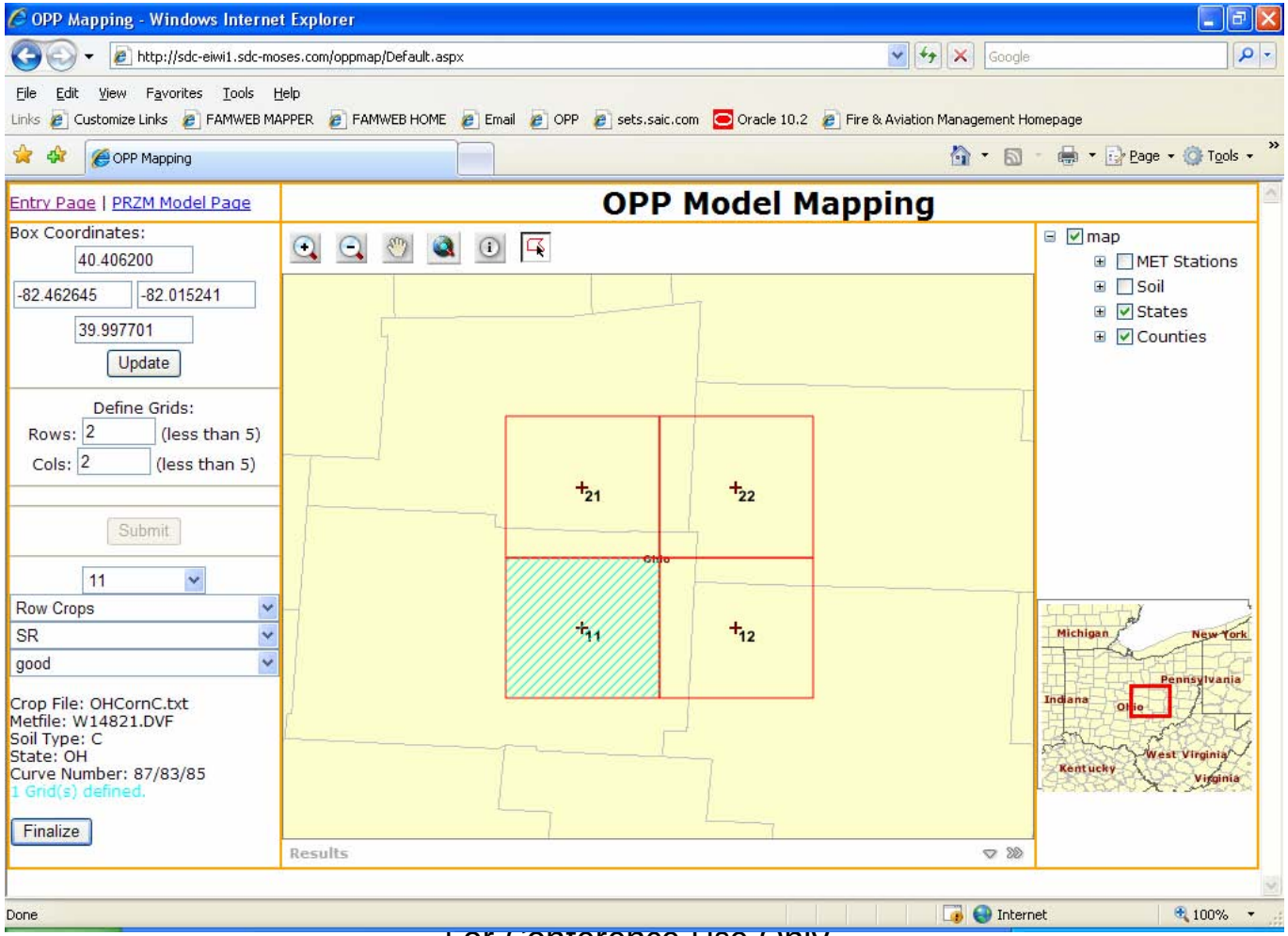
- Application Interface

  Start



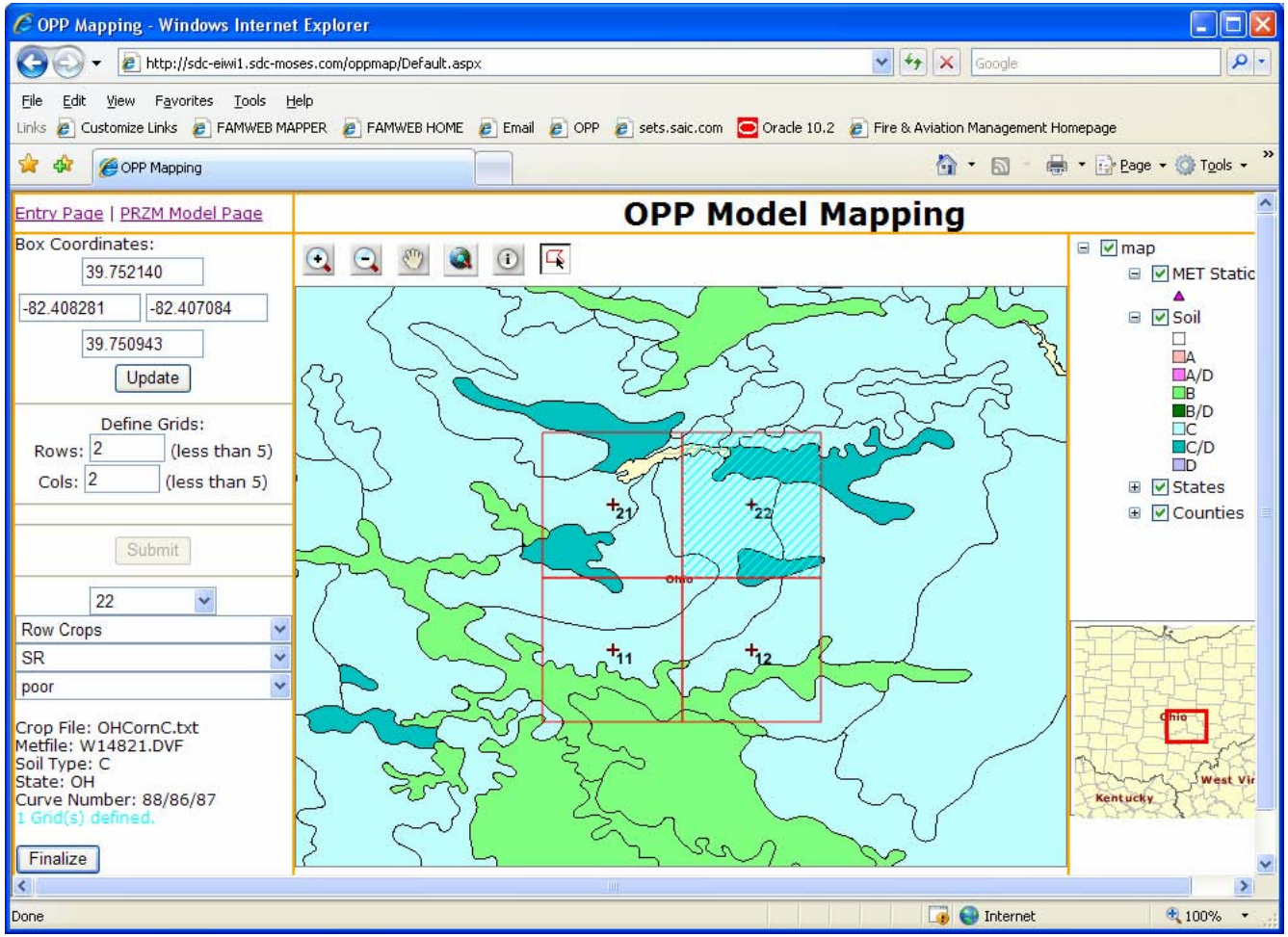
- Application Interface (contd.)

  Define Gridded area



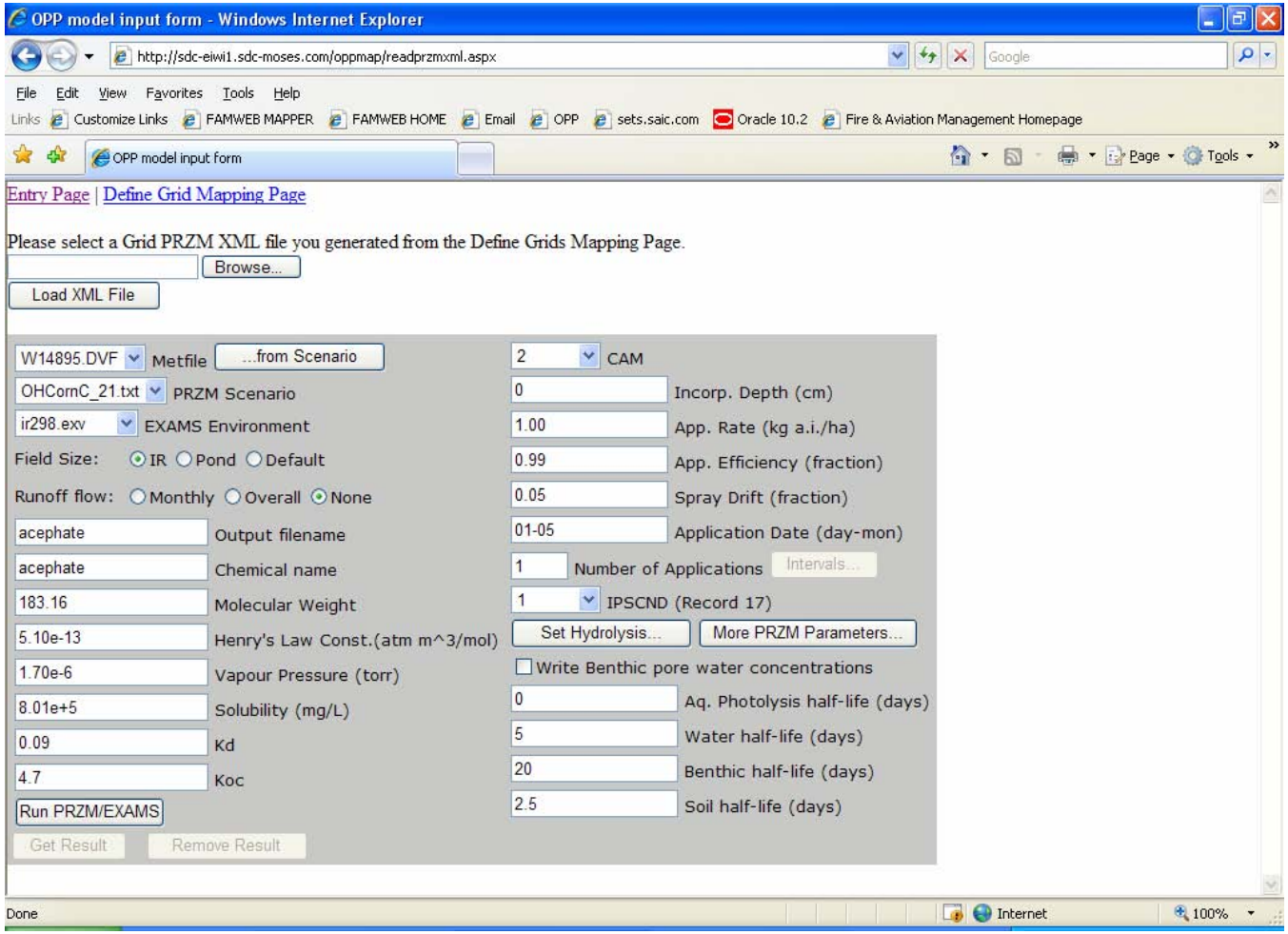
- Application Interface (contd.)

Define Grid Parameters



- Application Interface (contd.)

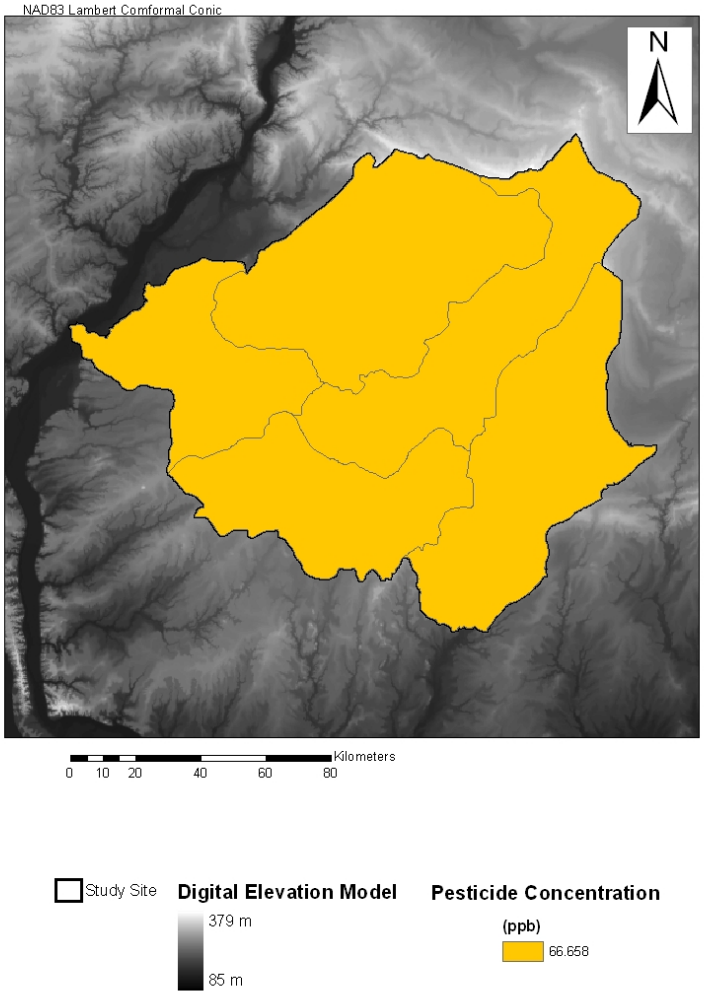
  PRZM data entry screen



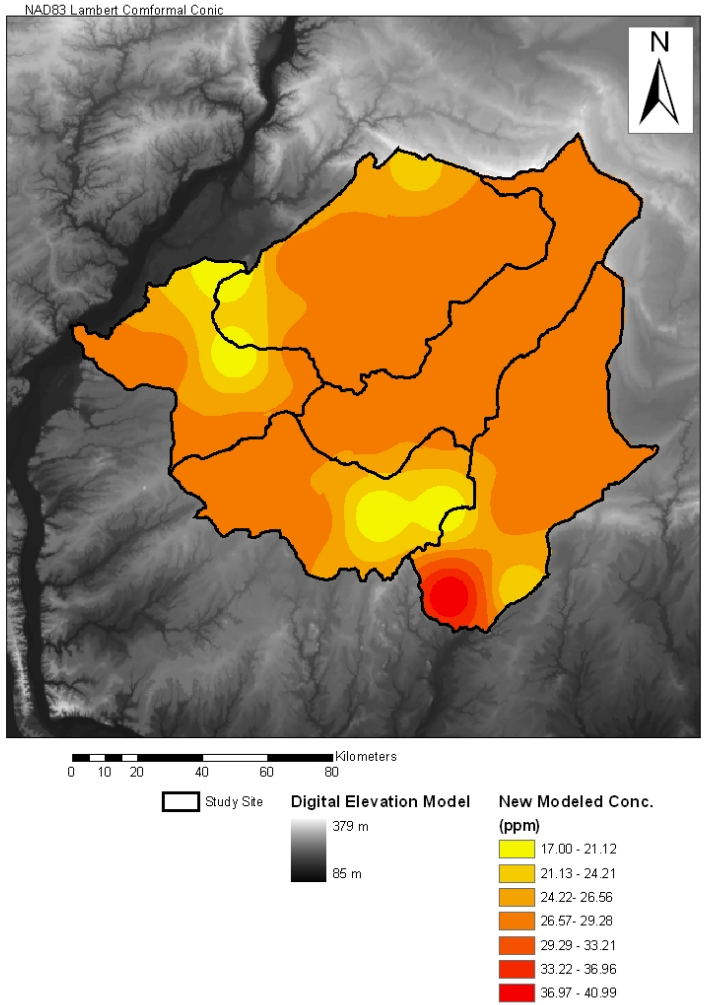
- Sample PRZM output

GRID	Longitude	Latitude	Peak	96 hr	21 Day	60 Day	90 Day	Yearly	Avg
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



VS.



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