

LandScan Population Research Program

Presented by

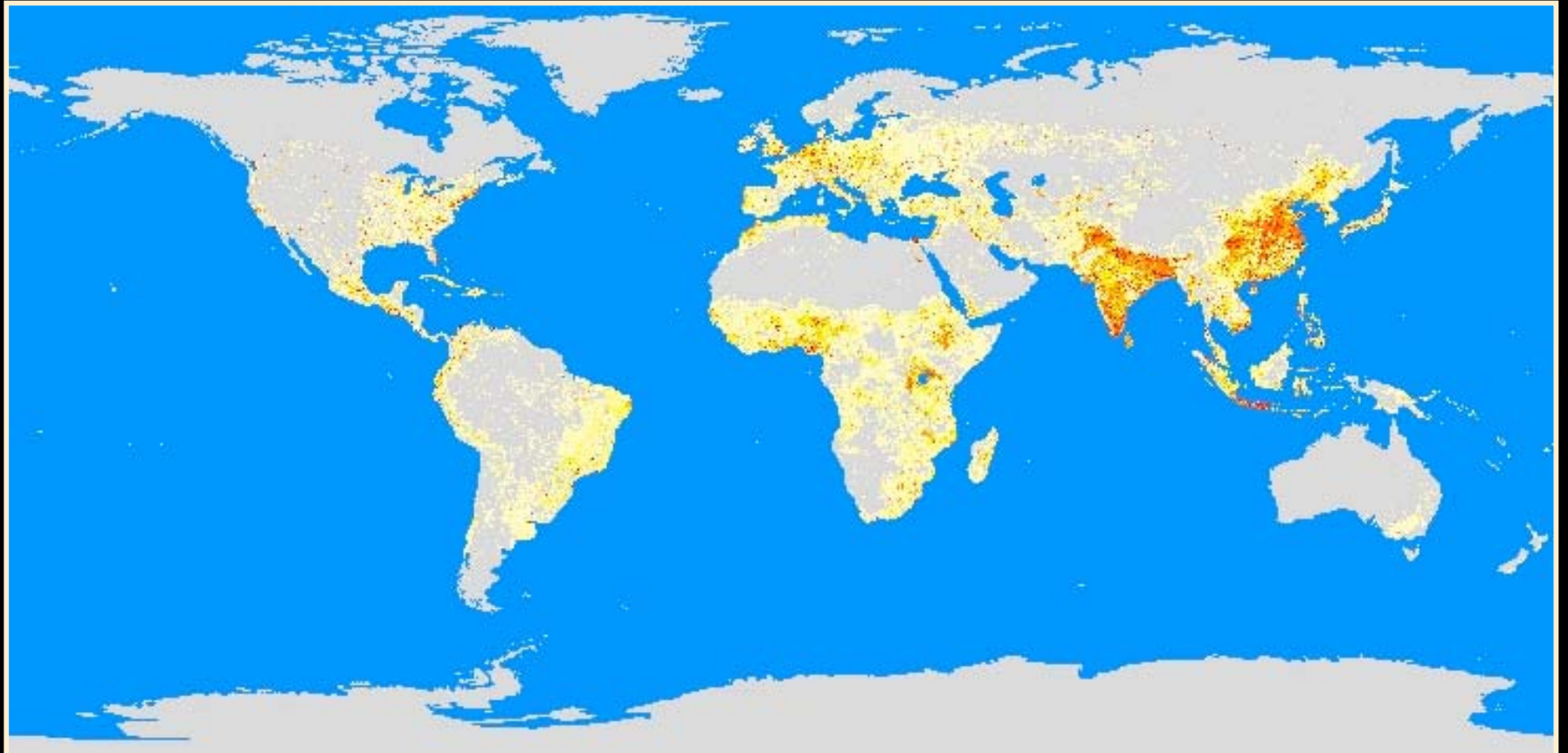
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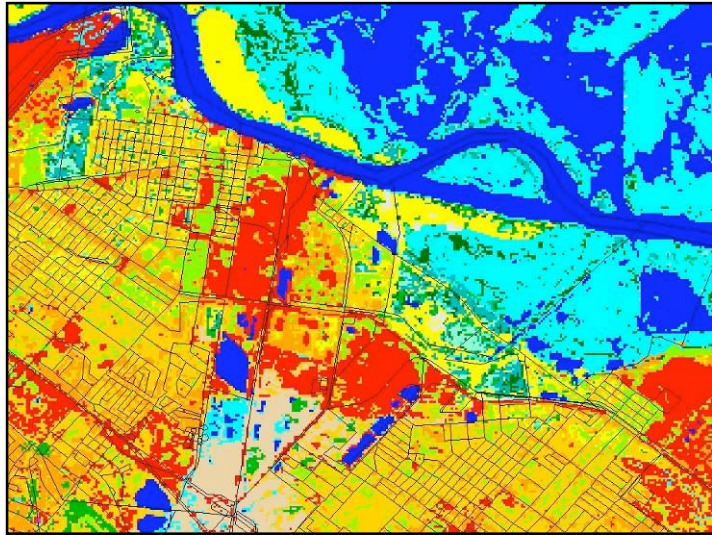
What is LandScan?

Population distribution model, database, and tool developed from census and other spatial data using a uniform regular grid



Improving knowledge of where people are located

How is LandScan developed?



- Dasymetric spatial modeling.
- Distribute best available census counts to LandScan cells based on a likelihood coefficient calculated by spatial models.
- Model structure is the same everywhere, but weights for each variable are tailored to each country.
- Similar operations performed for each data layer and outputs are mathematically combined.
- Population is allocated to each cell.

H	H	H	L	L	F
H	H	H	L	F	W
H	L	L	L	F	W
H	L	F	W	W	W
L	L	F	W	W	W
L	F	F	W	W	W

H: High-density residential
 L: Low-density residential
 F: Evergreen forest
 W: Water

150	150	150	90	90	4
150	150	150	90	4	0
150	90	90	90	4	0
150	90	4	0	0	0
90	90	4	0	0	0
90	4	4	0	0	0

$$W_{Cell\ i,j} = LC_{i,j} \times PR_{i,j} \times S_{i,j} \times LM_{i,j}$$

Aggregated to coefficient cell size

	1230		372	
	526		0	

325	63
112	0

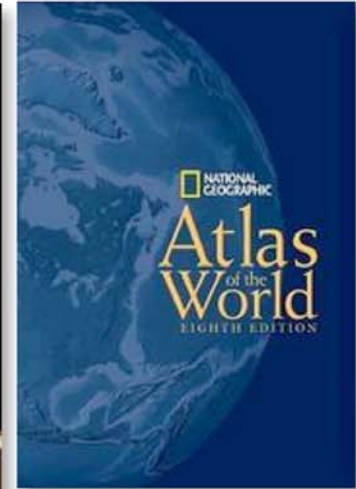
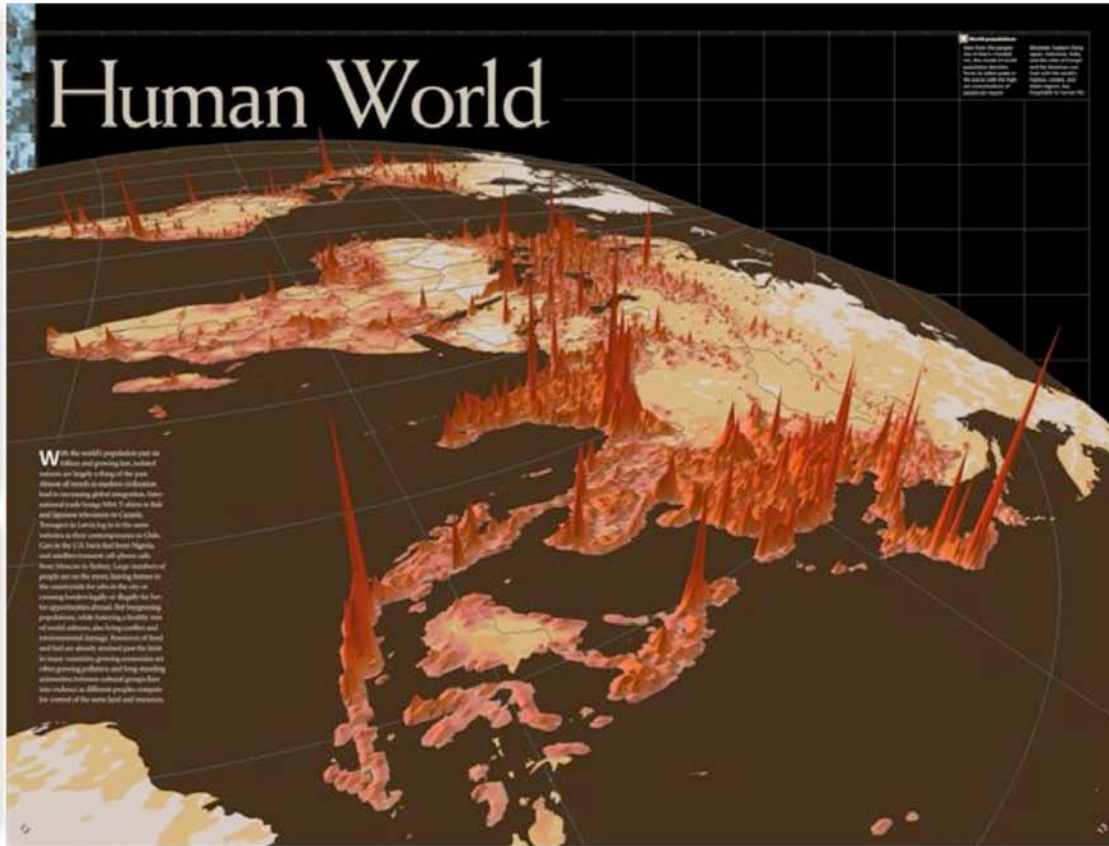
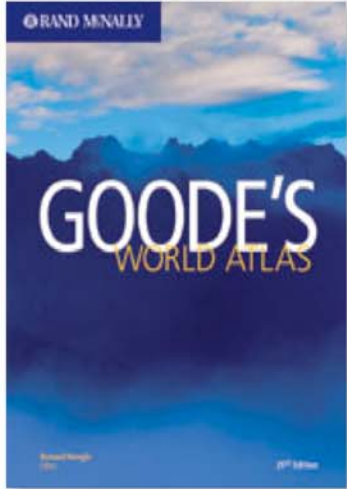
$$Population_{Cell\ i,j} = PC_{Block} \times W_{cell\ i,j}$$

3250	630
1120	0

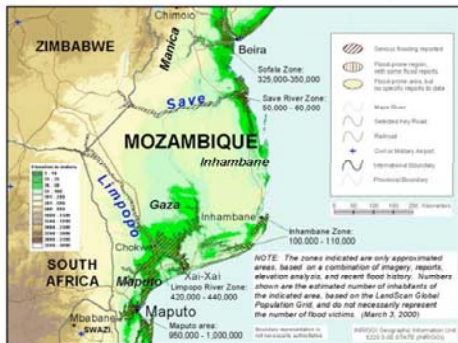
$$PC_{Block} = \frac{Total\ Population_{Block}}{\sum_1^n W_{Cell\ i,j}}$$

Product of additional data types (e.g. distance from roads, slope)

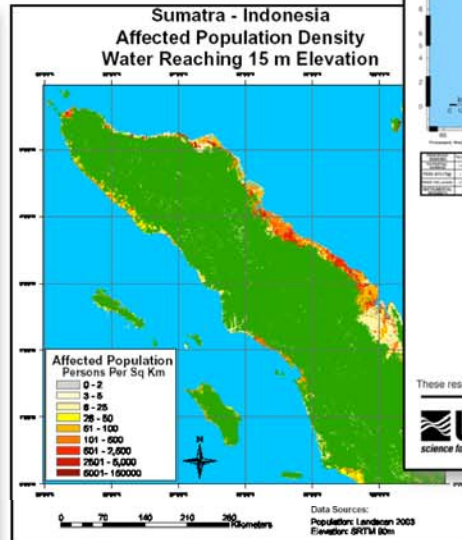
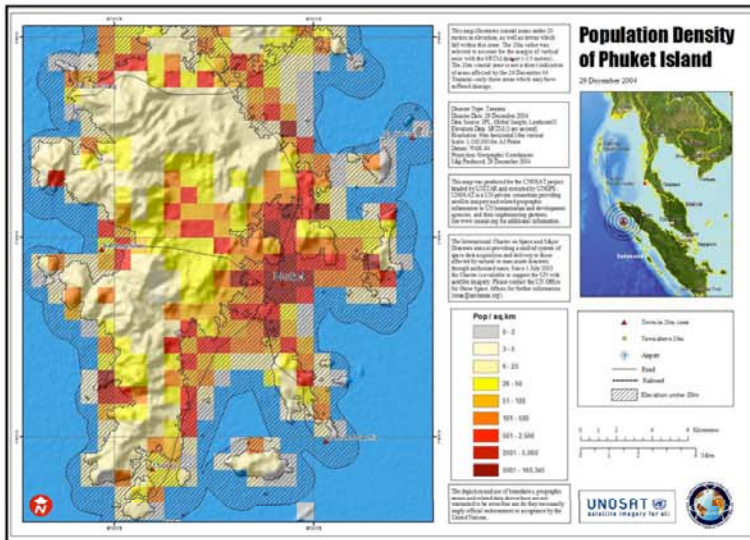
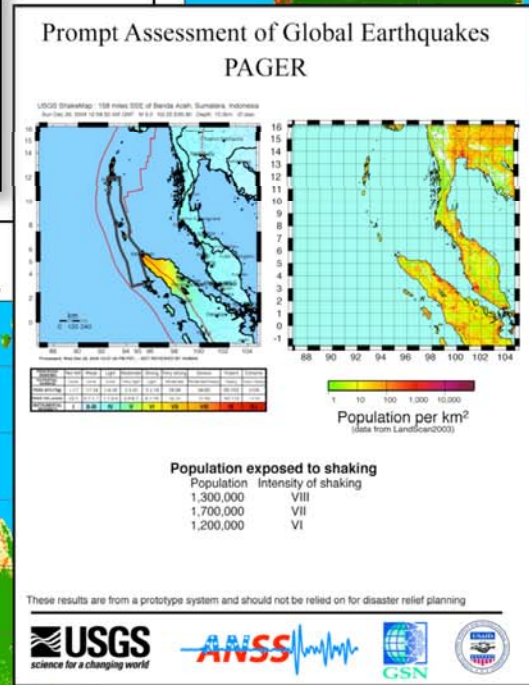
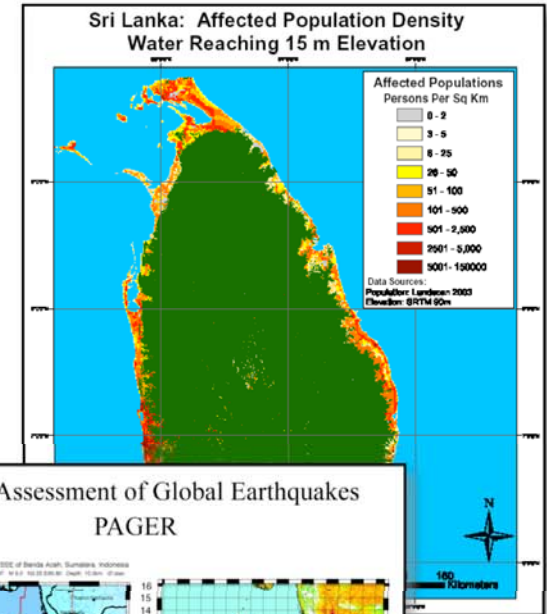
Community standard for population



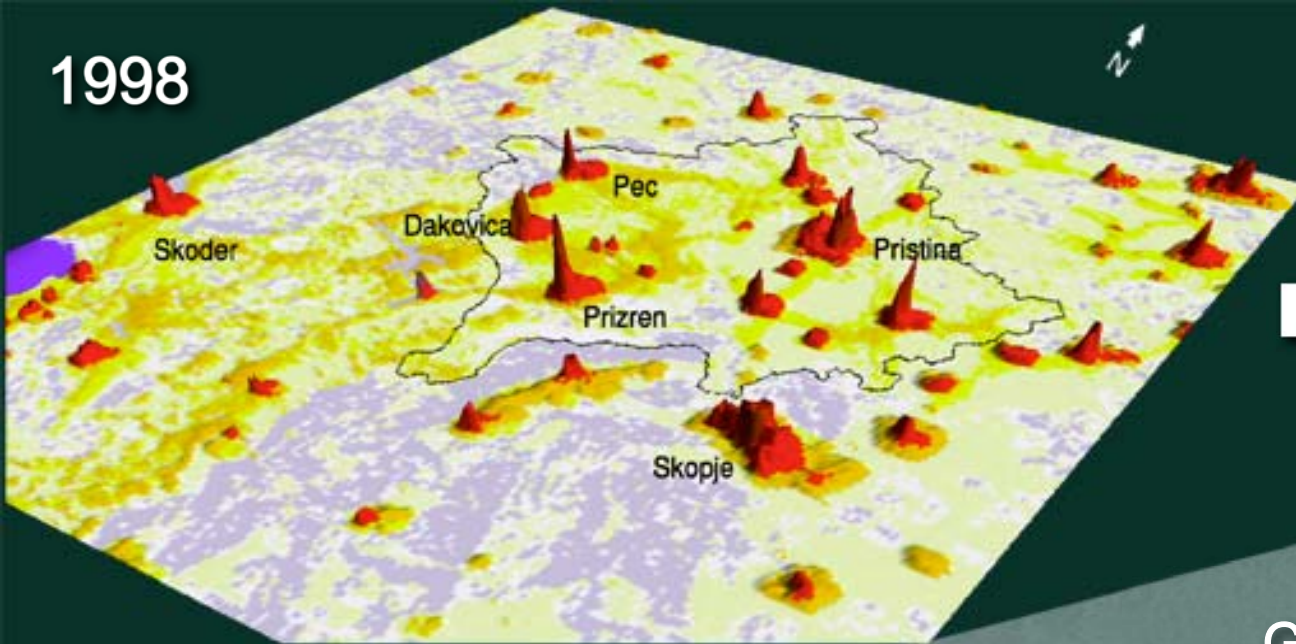
MOZAMBIQUE FLOOD ZONES (Probable Areas)



LandScan application: Tsunami relief



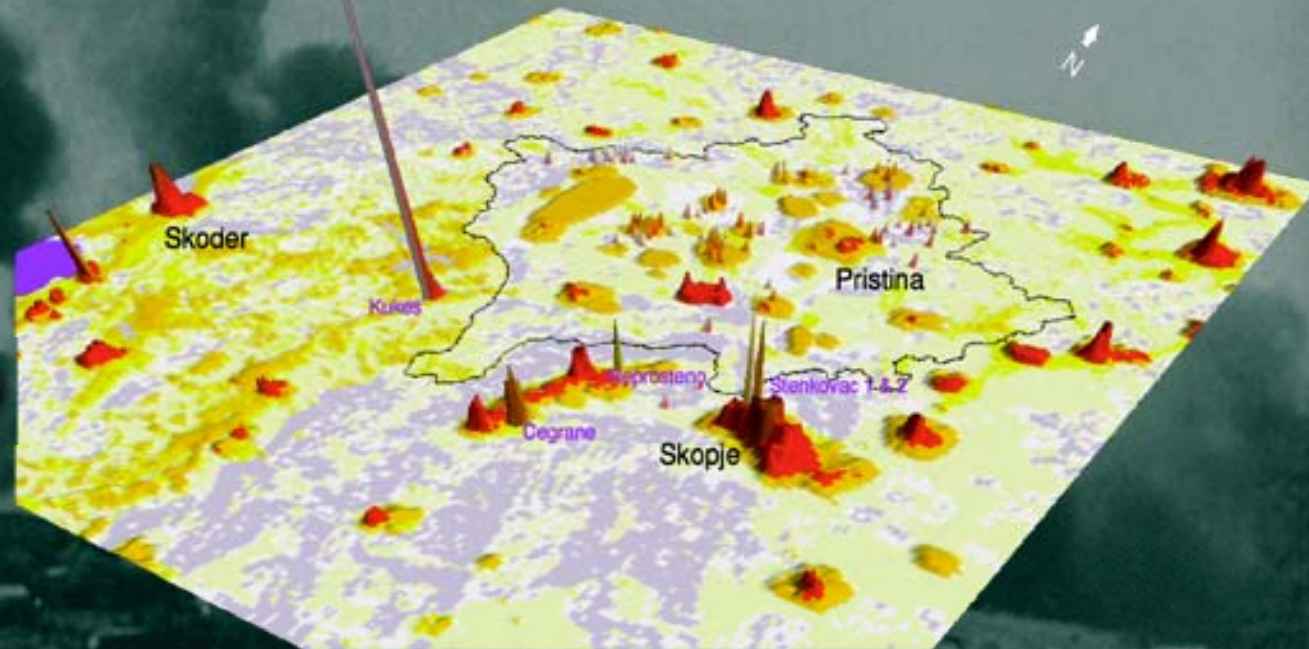
1998



Kosovo Refugee Crisis

LandScan
Global Population Project
Oak Ridge National Laboratory

May 25, 1999

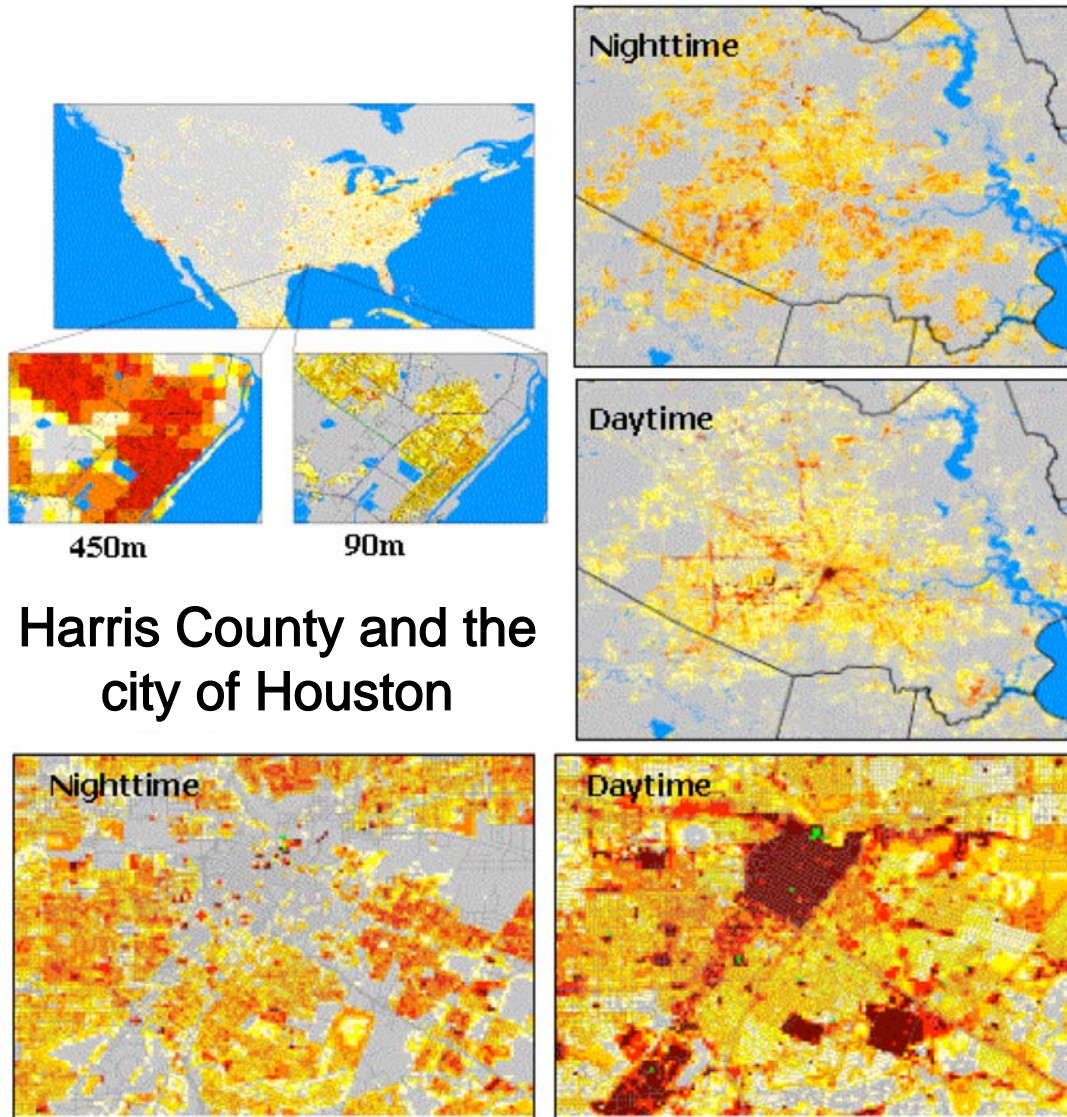


LandScan spatial resolutions



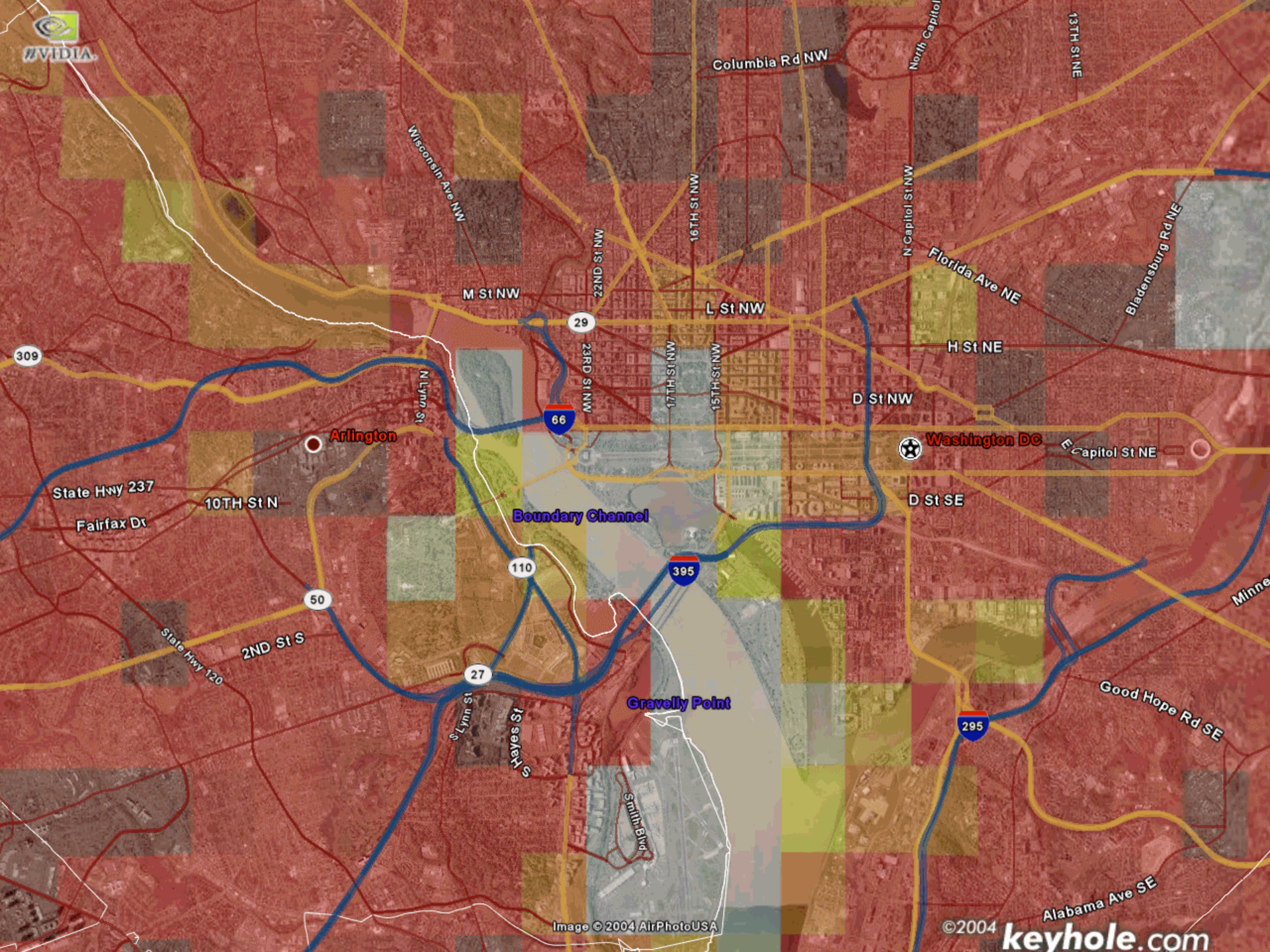
LandScan data resolutions: Global USA Interim USA

LandScan USA



Harris County and the city of Houston

Very high spatial resolution	3 arc second resolution (about 90 m or 300 ft) or finer
Finer temporal resolution	Nighttime (residential) and daytime population distributions
High currency	Modeled from best available Census block data
Value added	Demographic and socioeconomic characteristics for easy integration with risk and impact assessment models
Compared with census data	Better than census resolution for most city blocks



309

State Hwy 237
Fairfax Dr

10TH St N

2ND St S

State Hwy 120

50

27

S Lynn St

110

Kayes St

Smith Blvd

Boundary Channel

Gravelly Point

Image © 2004 AirPhotoUSA

Columbia Rd NW

North Capitol

13TH ST NE

Wisconsin Ave NW

M St NW

NM St NW

29

23RD St NW

16TH St NW

17TH St NW

15TH St NW

L St NW

N Capitol St NW

Florida Ave NE

Bladensburg Rd NE

H St NE

D St NW

Washington DC

E Capitol St NE

D St SE

Minne

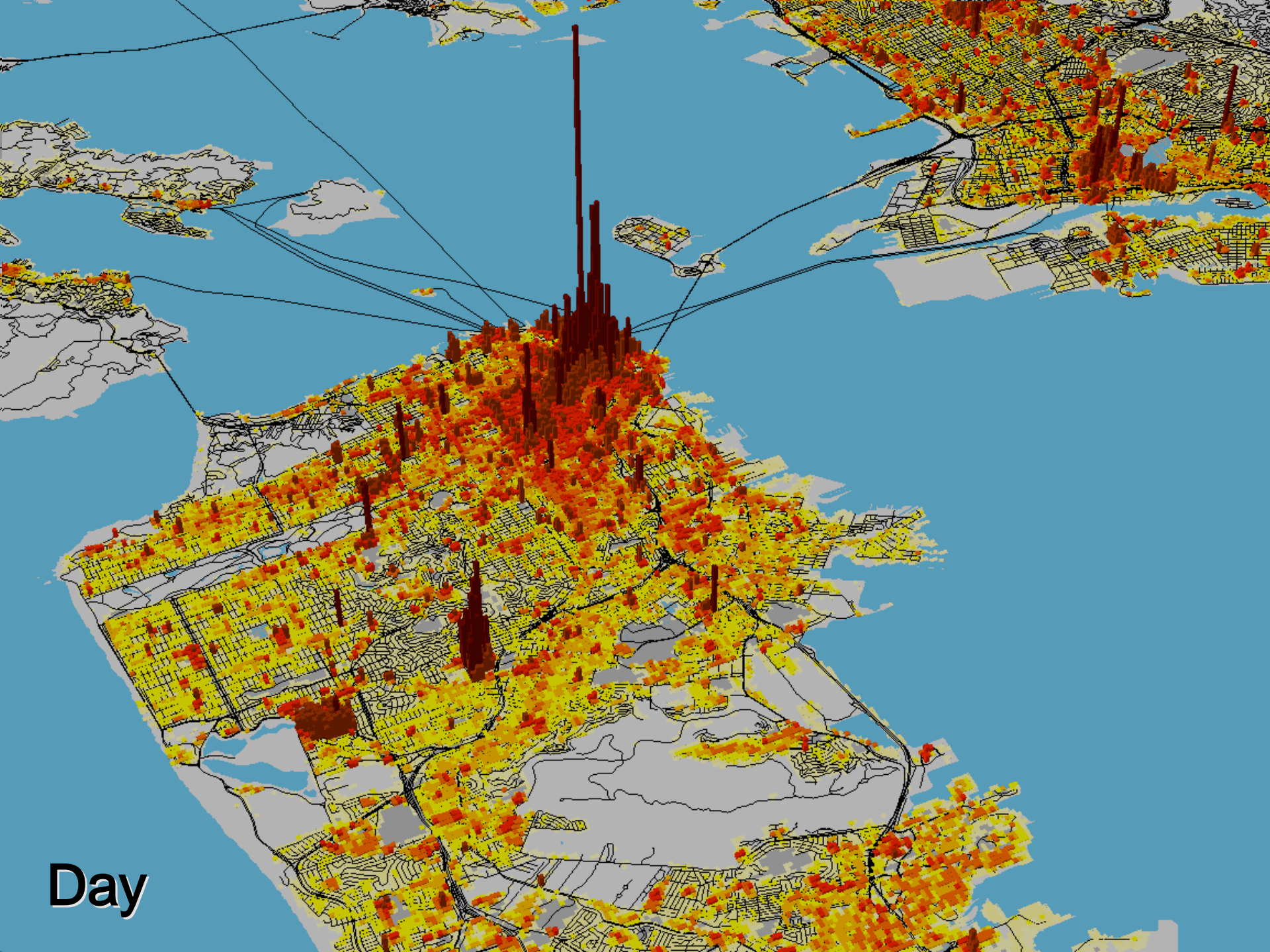
Good Hope Rd SE

295

Alabama Ave SE

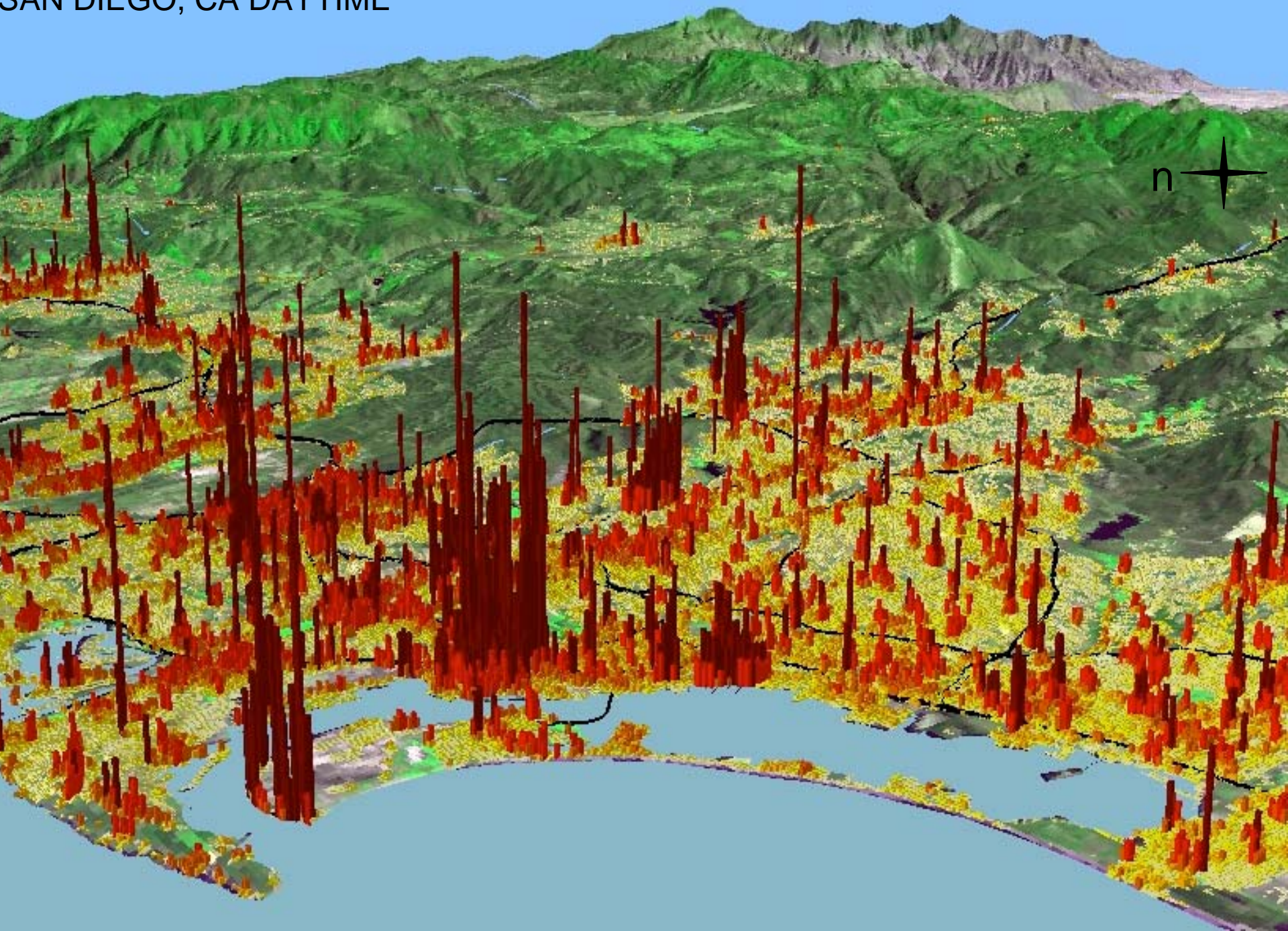
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keyhole.com

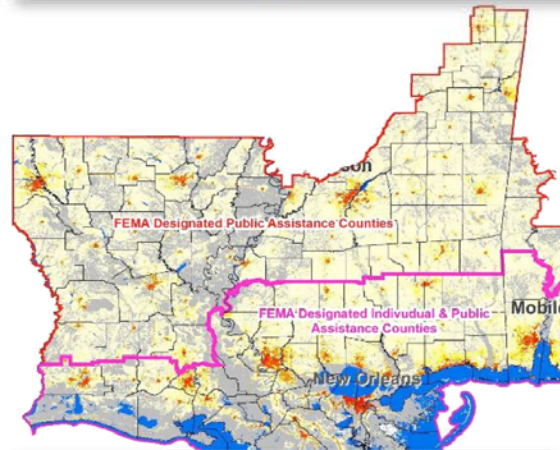
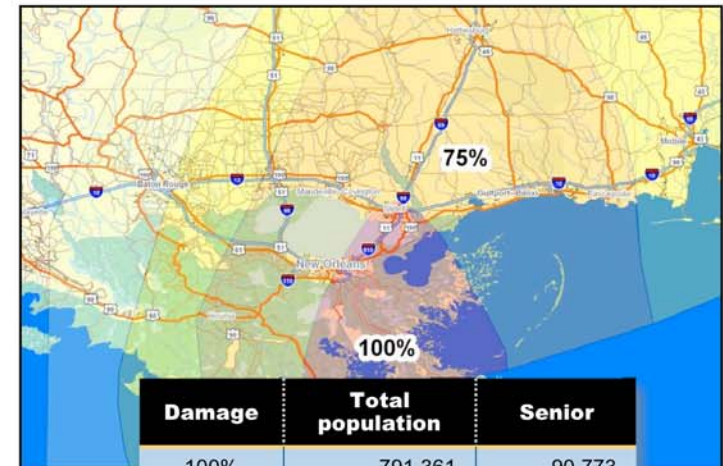
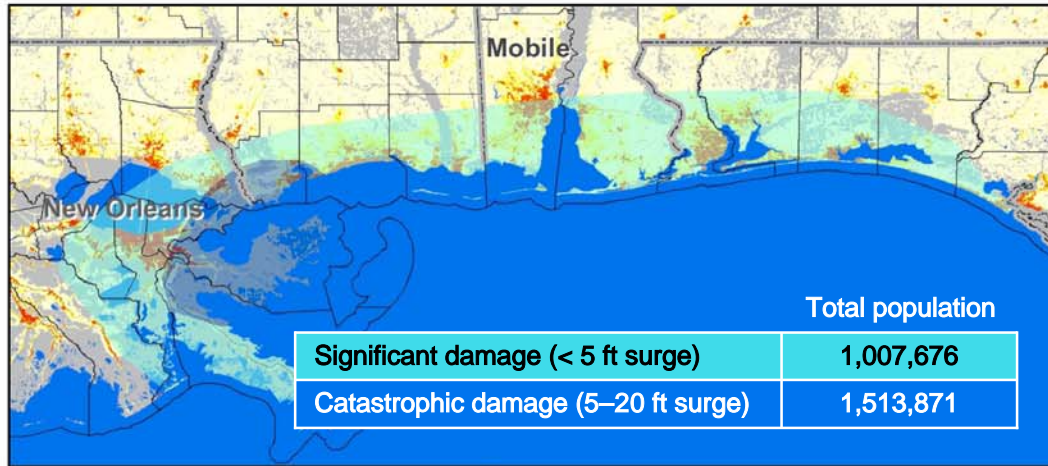


Day

SAN DIEGO, CA DAYTIME



Hurricane preparedness and response



	Individual and Public Assistance	Public Assistance
Alabama	575,133	56,801
Mississippi	707,506	1,391,233
Louisiana	3,153,293	1,362,477



FEMA Impacted Areas

Source: FEMA Impacted Areas, August 31, 2005





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