

NSF – Hazards SEES

(Interdisciplinary research in hazards & disasters)

- Project: “Preventing flood hazards from becoming disasters through two-way communication of household resolution flood risk”
- Two study sites:
 - Newport Beach, CA
 - Tijuana, MX & Imperial Beach, CA
- Economics phase one:
 - Estimate property premiums assoc. with flood risk
 - Benefit-cost analysis of infrastructure investments
 - Information; risk behavior; role of flood insurance







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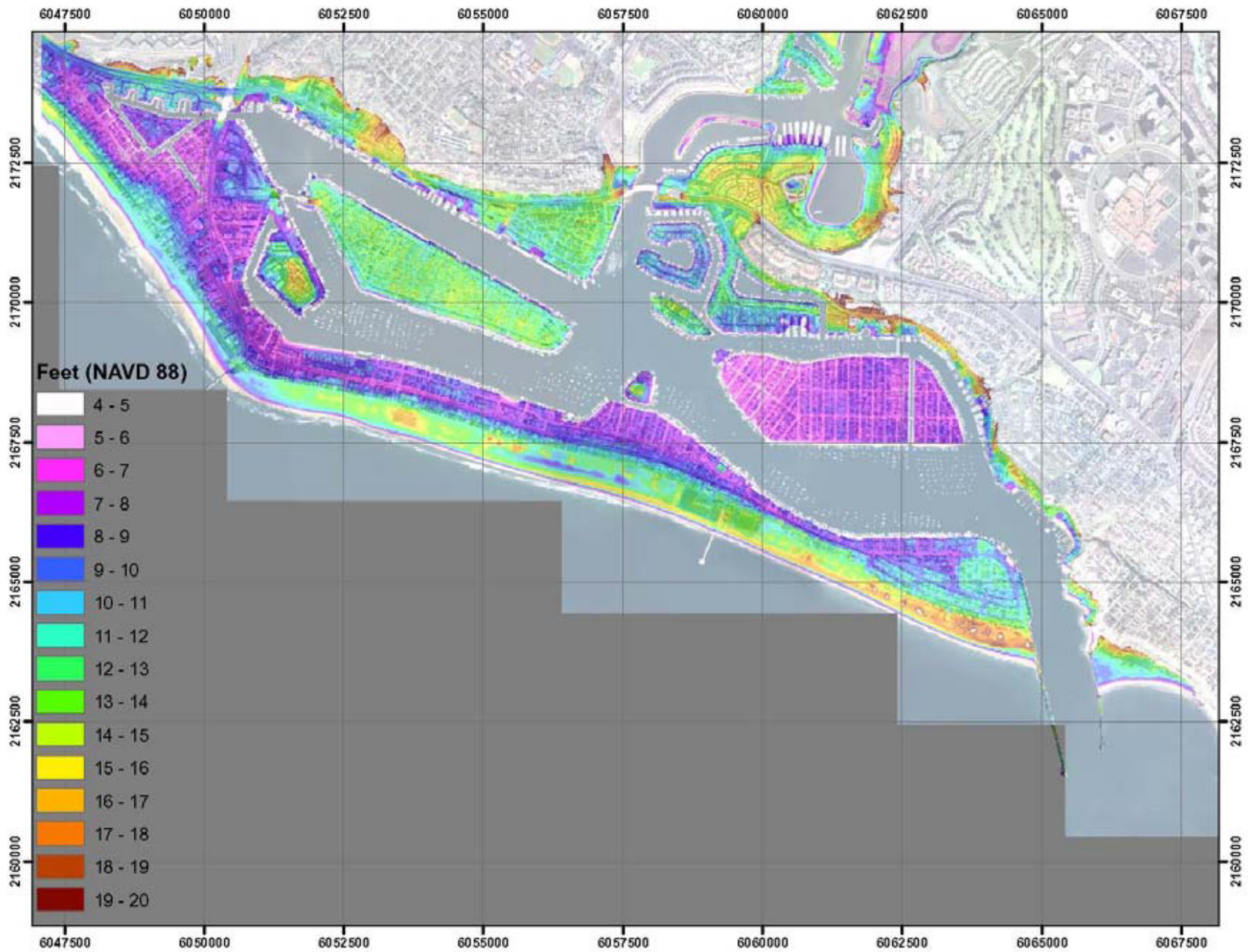


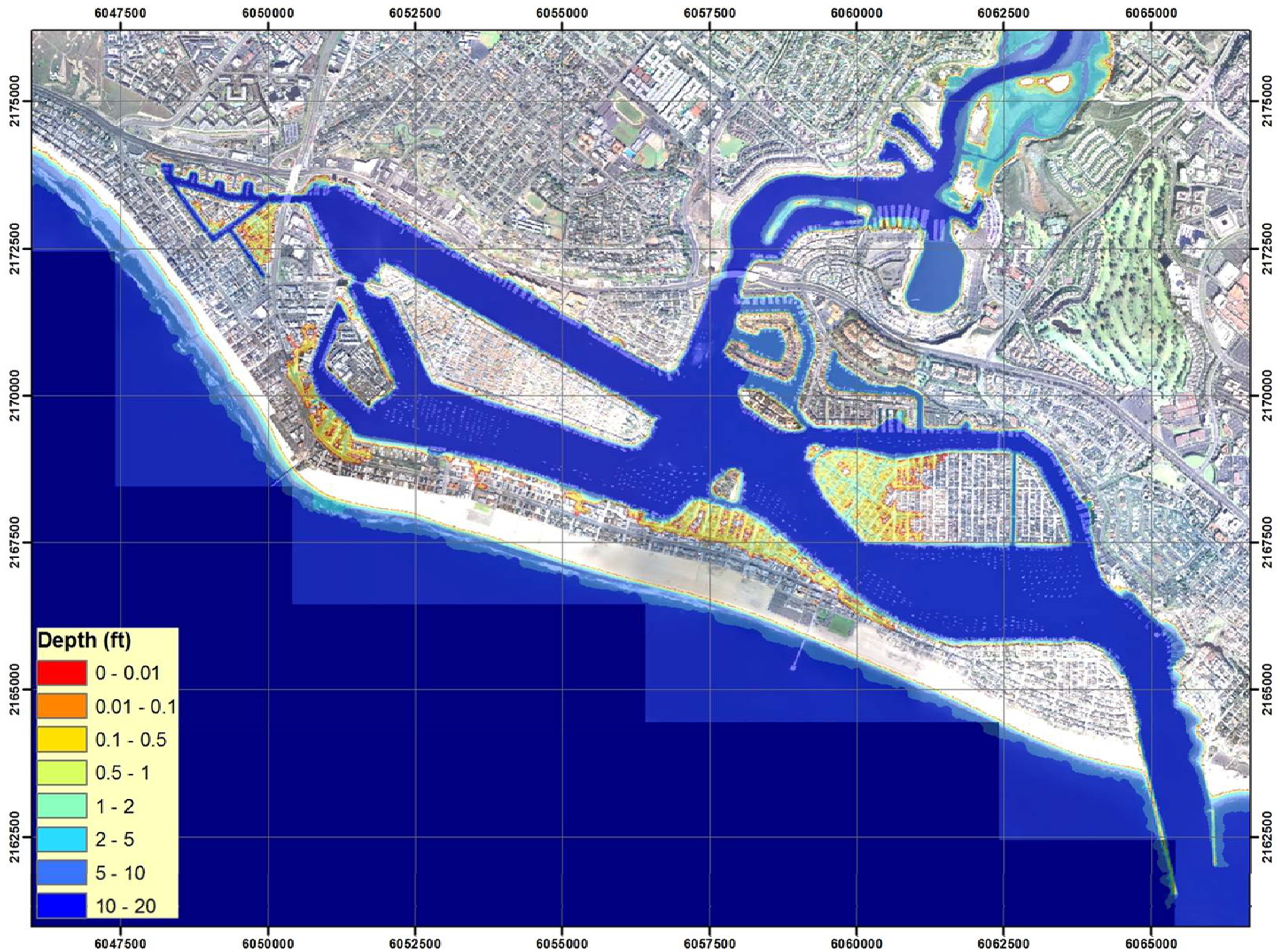
Newport Bay, 1921:

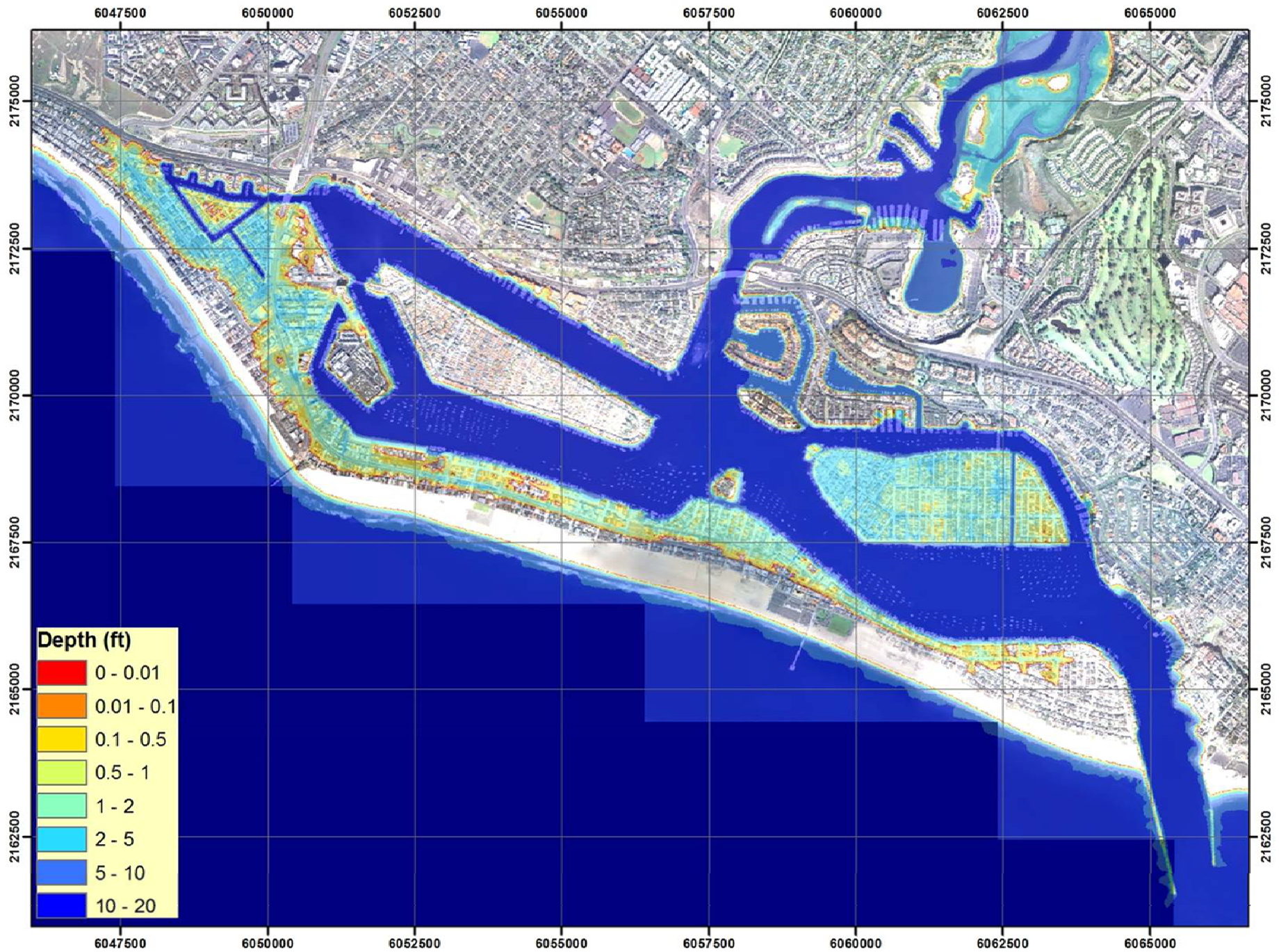


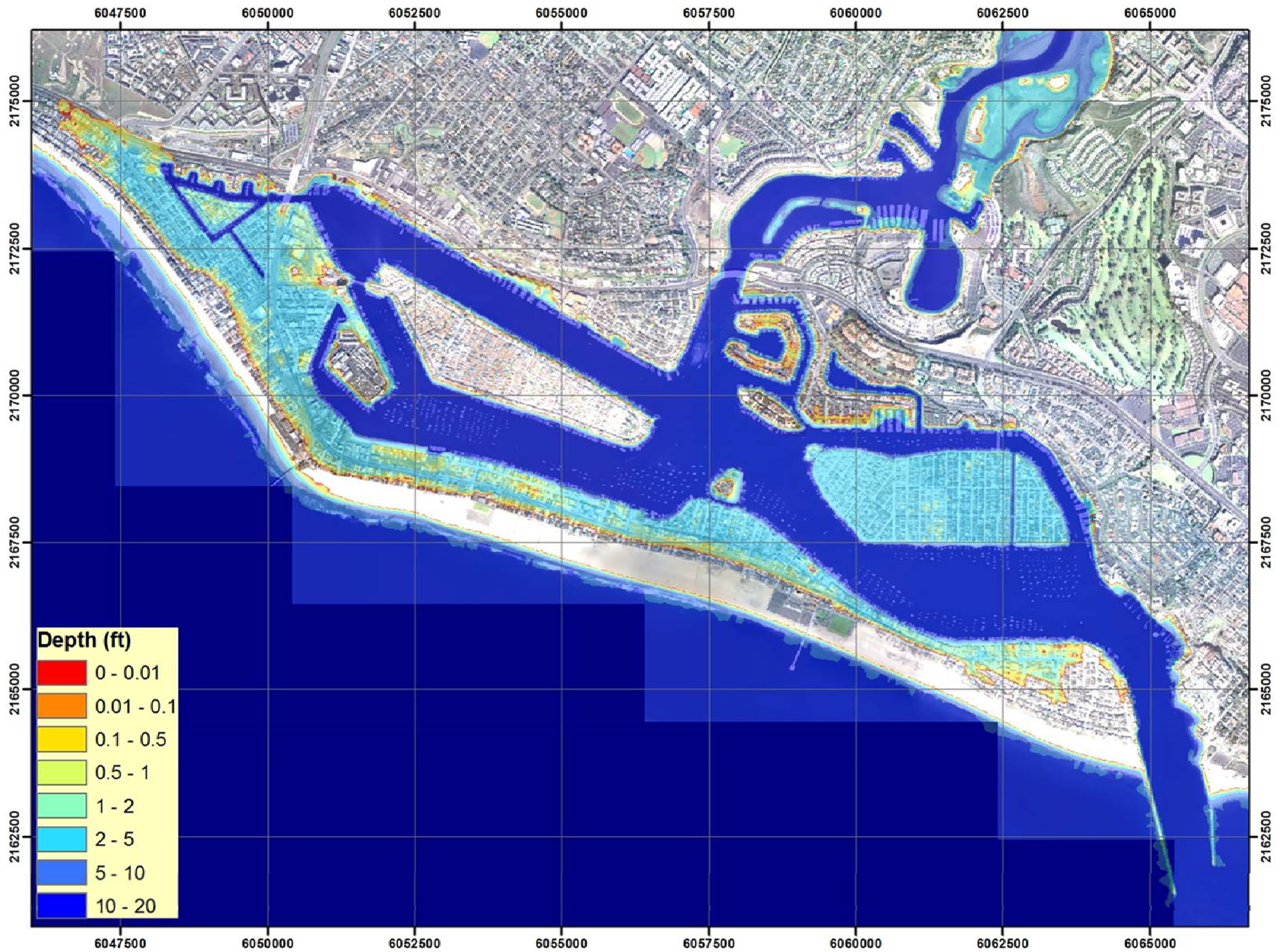
Data Integration

- High-resolution flood model (Sanders, et al)
 - LIDAR elevation measurements (3m x 3m cells)
 - Storm event characteristics
 - Hydrology
 - Output characterized at land parcel level
 - Max depth, duration, flow rate
- Property characteristics and transactions from County assessor and recorder offices
 - Same unit of analysis: legal land parcel
 - 15 year sales history
 - Structural, tax, and debt characteristics



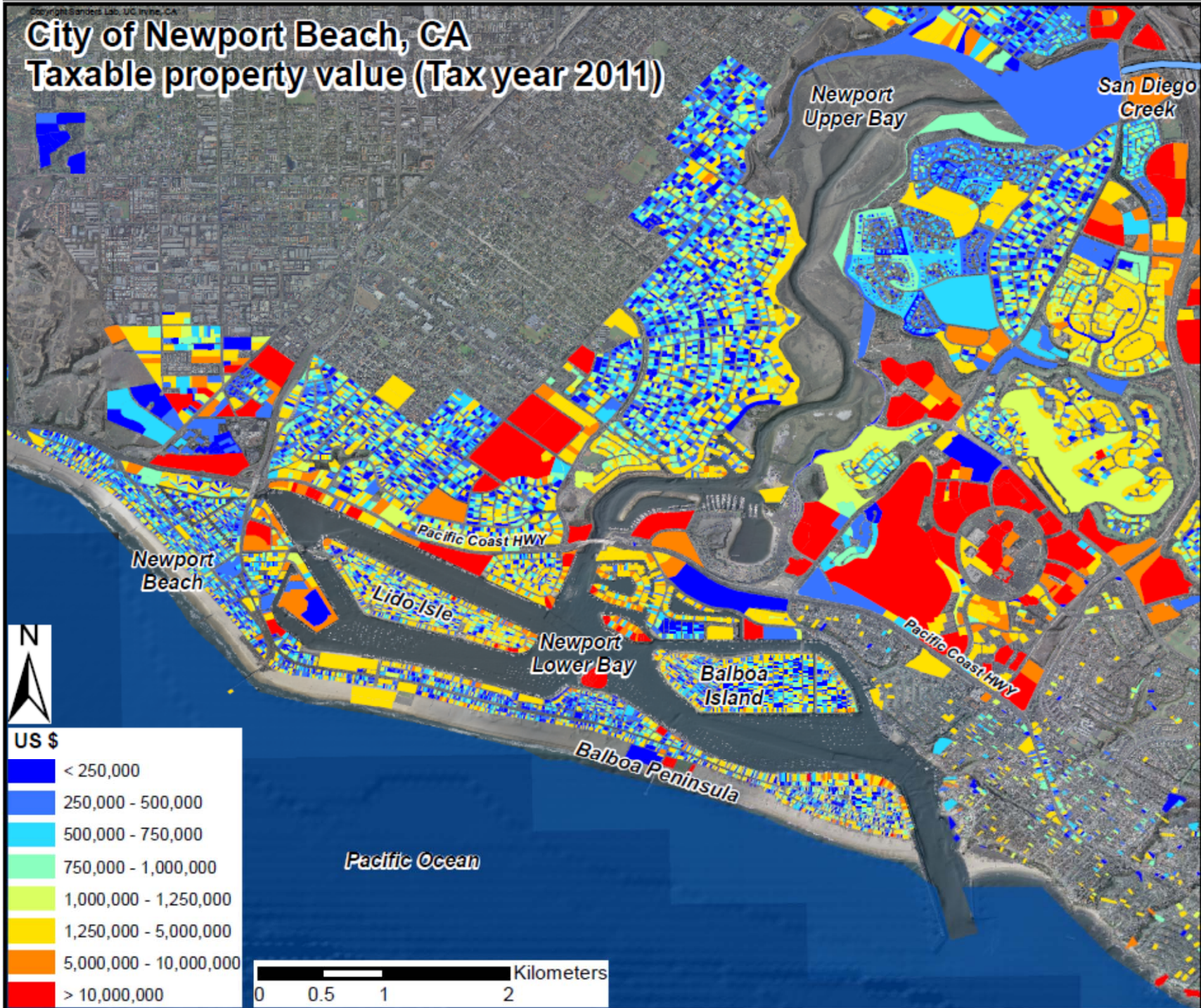






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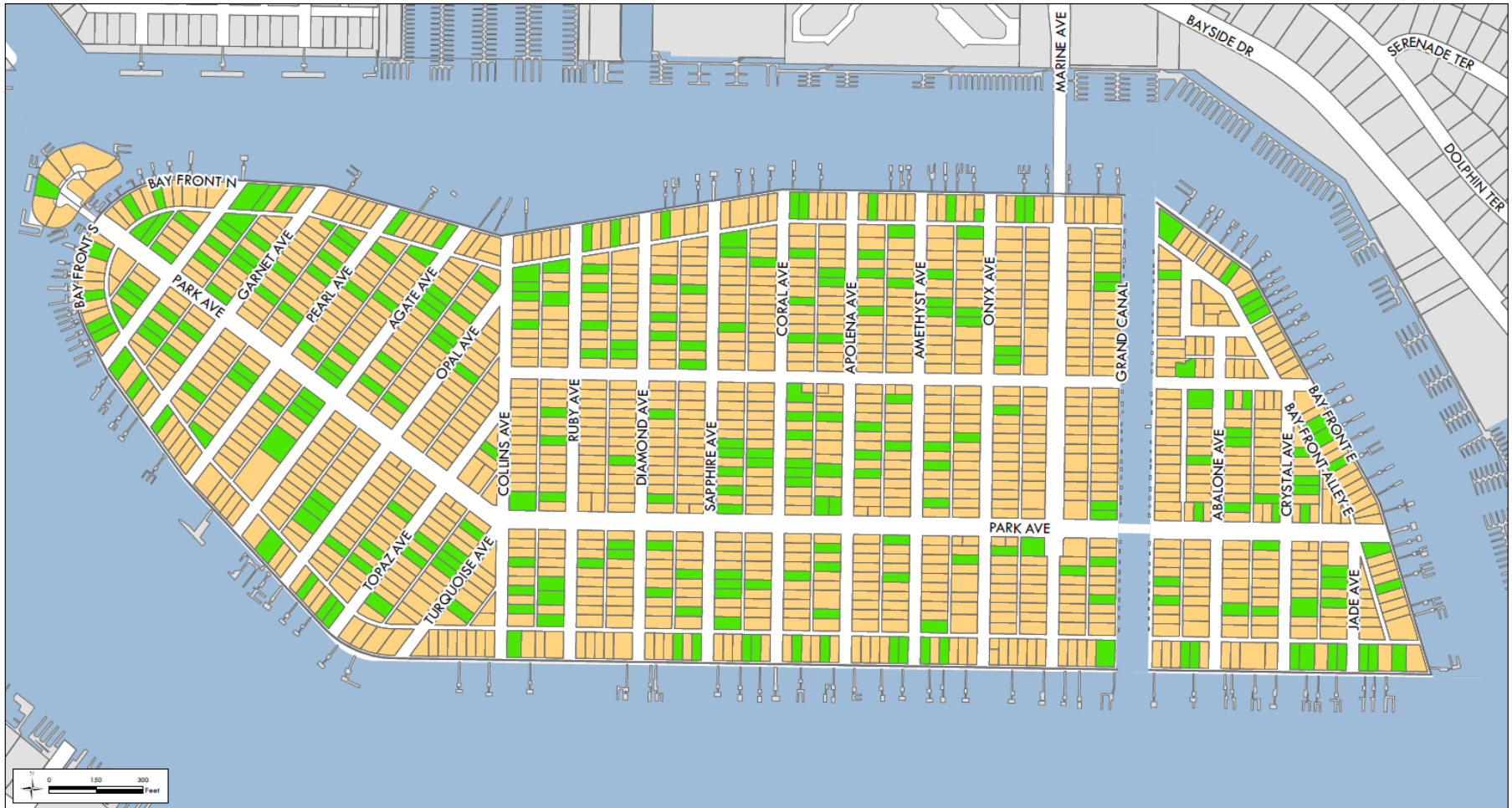
City of Newport Beach, CA Taxable property value (Tax year 2011)



Econometrics

- Index or vector of household-level flood risk measures
 - 10 yr, 25 yr, 100 yr, and 500 yr simulated flood events
- Observed arms-length transactions
- Control variables: structural, spatial
- Identification
 - Hedonic, repeat sales
 - Spatial: variation in flood risk within floodplain
 - Temporal: effects around a flood event
 - Elevated foundations

Flood insurance: Elevation Certificates



Balboa Island - EC's by Year (1989 - 2013)

1989 - 7 Units	1994 - 7 Units	1999 - 12 Units	2004 - 12 Units	2009 - 11 Units
1990 - 11 Units	1995 - 13 Units	2000 - 12 Units	2005 - 12 Units	2010 - 7 Units
1991 - 12 Units	1996 - 9 Units	2001 - 6 Units	2006 - 13 Units	2011 - 8 Units
1992 - 13 Units	1997 - 7 Units	2002 - 16 Units	2007 - 22 Units	2012 - 6 Units
1993 - 10 Units	1998 - 11 Units	2003 - 9 Units	2008 - 8 Units	2013 - 15 Units

- Parcels with EC's - 269 Total or 19%
- Parcels without EC's - 1,148 Total or 81%



City of Newport Beach
GIS Division
January 09, 2014

BalboaIslandFinalPermitVer2_11x17_Landscape.mxd

Second study site: Tijuana













