# Creating the LA County Solar Model

**Mark Greninger, LA County**

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## Purpose

- Show technical details on how to leverage LAR-IAC data for solar modeling.
- Highlight the derived data for use by participants – don't redo the process.
- Show advantages of cell-based processing.
- Re-introduce GRID (old school GIS)

## Background

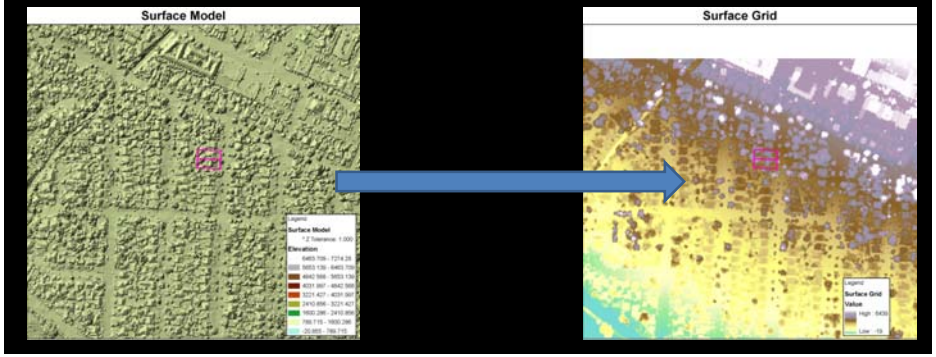
- Wanted to model solar radiation to drive solar PV installs.
- LAR-IAC DSM (surface model) great data source
- Brian Sims (Pasadena) showed a way to isolate buildings only!
  - Get the solar information for buildings ONLY (where most PV is installed)

## Data Sources

- Combined the following data:
  - DSM in TIN format
  - DEM grid
  - Ortho Red Band
  - Ortho Near Infrared (NIR) band
- For reference follow the two parcels

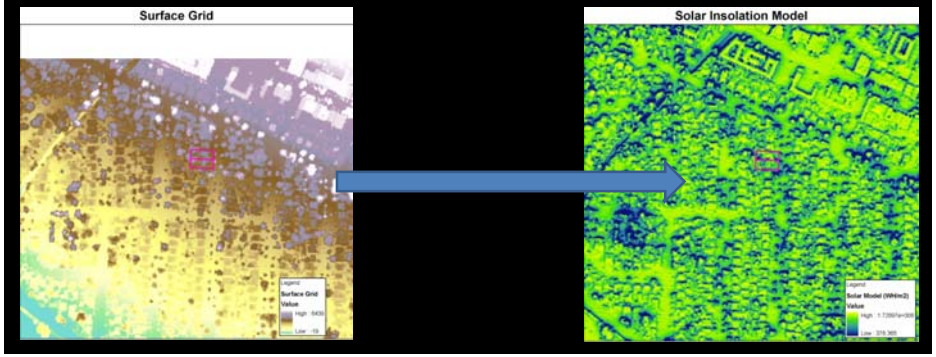
# 1: DSM TIN to Raster Grid

- *Function:* ***TIN to Raster***




# 2: Solar Insolation Model

- *Function:* ***Area Solar Radiation***

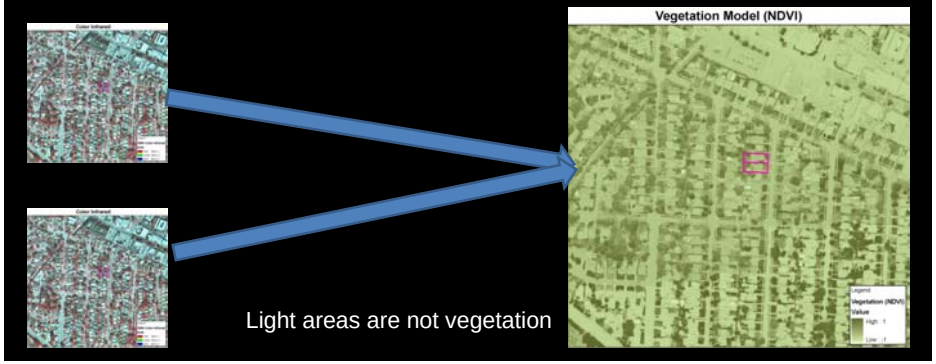



# 3: Create Height Grid

- *Function:* ***Subtraction (DSM – DEM)***


# 4: Create NDVI

- *Function:* ***(NIR band + RED band)/(NIR band – RED band)***



# 5: Extract Buildings

*Function:* ***CON (conditional) command***

***My favorite command in GIS***

***Usage: con(test statement, what if true, what if false)***

***Example: con(ndvi < 0.1, 1,0)***

***Can be nested, so you can run two commands at once.***

***Technically I could have run the entire model with one CON command***

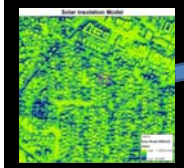
**Con(ndvi < 0.1,con(height > 8,1,null),null)**

# 5: Extract Buildings

Con(ndvi < 0.1,con(height > 8,1,null),null)


# 6: Solar Model for Buildings

- *Function:* ***Con command – yay for CON!***



Con(isnull(buildings),
null,solar_value)


# 7: Convert Grid to Points (350 million)

- *Function:* ***gridpoint***


Zoomed in

# 8: Attach Parcel info

- *Spatial Join Parcel info*
- *Each dot has a parcel #*
- *Each dot has the amount of sun in wattHours/m2*


# 9: Final Steps

- *Classify each dots wattHours/m2*
  - *Optimal, Good, Not Good, Poor*
- *Summarize the number of each class per parcel*
  - *i.e. 40 optimal, 10 good, 15 not good, 5 poor in a parcel*
  - *Convert dots to square feet*
  - *Convert square feet to solar potential*
- *Publish on solar map site!*

# The Website - http://solarmap.lacounty.gov/