

# Public Perceptions of Tsunamis and Tsunami Warning Signs in Los Angeles



## ABSTRACT

After the devastating December 2004 Indian Ocean Tsunami, California and other coastal states began installing "Tsunami Warning Zone" and "Evacuation Route" signs at beaches and major access roads.

The geography of the Los Angeles area may not be conducive to signage alone to communicate tsunami risk and safety precautions.

Over a year after installation, most surveyed do not know about or recognize the tsunami signs. More alarming is that many did not believe a tsunami could occur in the area.

The public and tourists need more than signs to become prepared for a tsunami.

## INTRODUCTION

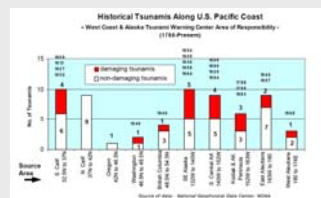
In the last 200 years, the Los Angeles area has been affected by 10 tsunamis with four of those events being destructive. "Eventually, all coastal communities in California will have tsunami warning signs," Troy Nicolini of the National Weather Service told the Redwood Times. Los Angeles County recently installed tsunami danger zone signs at the beaches in Marina del Rey, Venice, Santa Monica and Malibu. Newspapers have reported many controversial statements about these signs - such as "it scared my kids" and "the signs may lower property values." Our findings do not agree with the newspaper reports.

In an exploratory survey administered to 147 respondents in the Santa Monica and Venice vicinity of Los Angeles county, I investigate the effectiveness of the visual communication of these signs. I hypothesized that many of the survey takers would be unaffected by the signs' presence, be unaware of the signs and may not even know the causes or how to detect a tsunami.

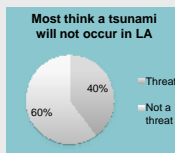
The survey consisted of 22 likert scale questions that assessed knowledge and opinions of tsunamis in the area, 4 multiple choice questions about preparedness and reactions, and one qualitative awareness question.

## RESULTS

### Southern California is among the top sources for tsunamis

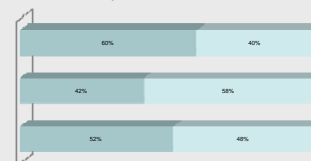


60% feel that tsunamis are not a threat to Los Angeles even though devastating waves have hit Santa Monica as recent as 1964 and non-destructive tsunami waves have reached nearby beaches as recently as September 2009.



## RESULTS

### Safety Awareness and Confidence



•60% would not "know" what to do

•42% would not get to higher ground

•52% are not confident that they would survive a natural disaster

## DISCUSSION

Most Los Angelinos remain in denial that they live near a tsunami hazard zone - even though many respondents seem to have a grasp of the scientific facts.

Far too many people would not know what to do in the event of a tsunami. Over 42% failed to report that they would seek higher ground.

While the majority of respondents believe the state is being responsible by posting warning and evacuation signage, most have never seen them and were previously unaware of their existence.

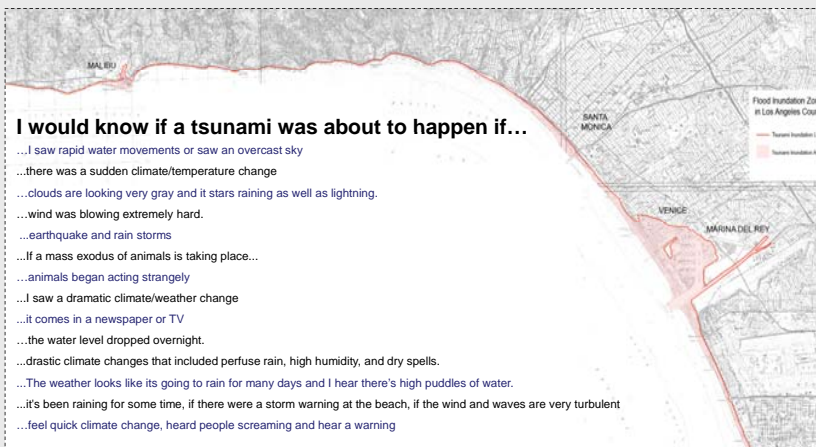
Many are expecting to be warned in ways that are not currently set up (texting, sirens) or are simply impossible (newspaper).

## CONCLUSIONS

Tsunami signage is still in the experimental phase in Los Angeles. The dense population, expansive geography and tourism patterns should be better assessed before moving forward with the project.

The state must understand the expectations of the area's population and find a way to meet or adjust those expectations to match emergency management plans and capabilities.

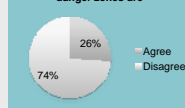
### Many are Unaware of the causes or signals of an approaching Tsunami



### I would know if a tsunami was about to happen if...

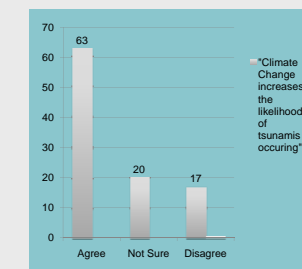
- ...I saw rapid water movements or saw an overcast sky
- ...there was a sudden climate/temperature change
- ...clouds are looking very gray and it starts raining as well as lightning.
- ...wind was blowing extremely hard.
- ...earthquake and rain storms
- ...If a mass exodus of animals is taking place...
- ...animals began acting strangely
- ...I saw a dramatic climate/weather change
- ...it comes in a newspaper or TV
- ...the water level dropped overnight.
- ...drastic climate changes that included peruse rain, high humidity, and dry spells.
- ...The weather looks like its going to rain for many days and I hear there's high puddles of water.
- ...it's been raining for some time, if there were a storm warning at the beach, if the wind and waves are very turbulent
- ...feel quick climate change, heard people screaming and hear a warning

### There are warning signs to tell me where tsunami danger zones are



Even though 66% said the warning signs were an effective method of public communication, very few respondents were aware of the tsunami warning signage and evacuation route plans.

### 63% Believe that tsunamis are climate or weather related events



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