DPR Urban Water Monitoring

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November 9th, 2015

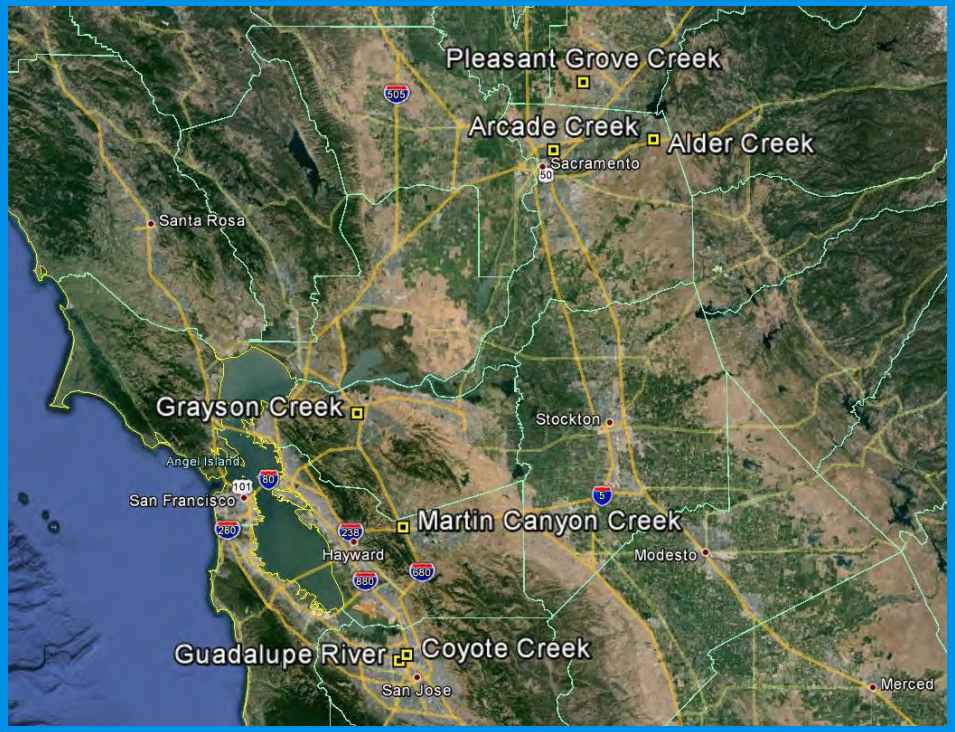
Objectives

1. Determine presence of pesticides in surface waters
2. Compare concentrations to threshold levels
3. Evaluate for regional differences
4. Evaluate for seasonal differences
5. Compare storm drain vs receiving water concentrations
6. Evaluate potential best management practices (BMP)

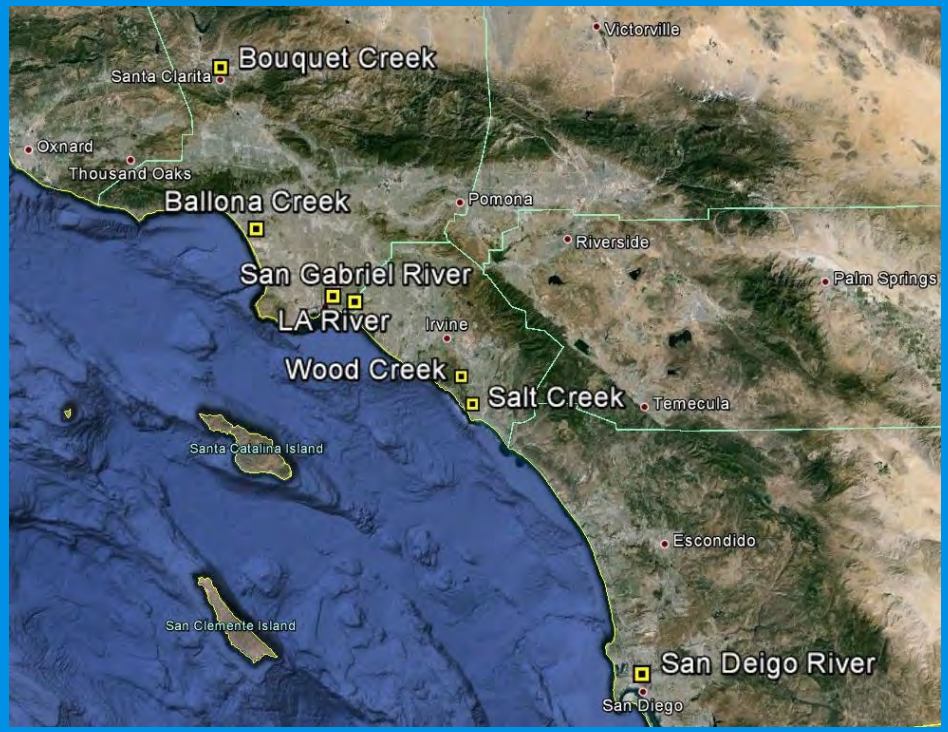
Sampling Protocol

- Sample 4 – 5 events per year
  - 2 dry season, 2 storm events (first flush)
- Prioritization model used to help determine analyte list
- Sites located at storm drains or receiving waters of urban landscapes
- Water Quality Measurements
  - pH, temp, conductivity etc.
- Flow
  - Gauging stations at 7 sites

Currently Monitored Watersheds

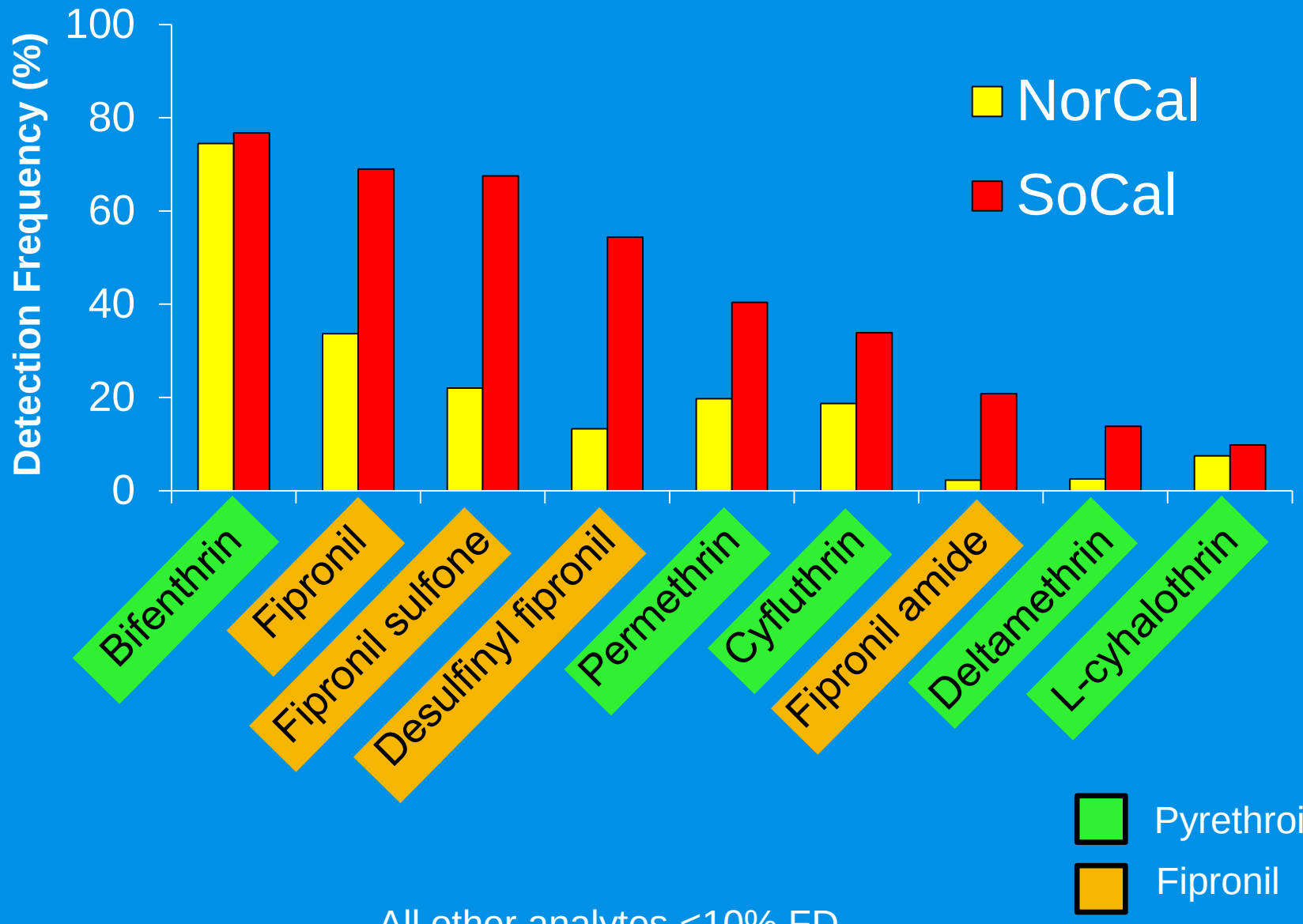


Northern California
(EM Study 299)



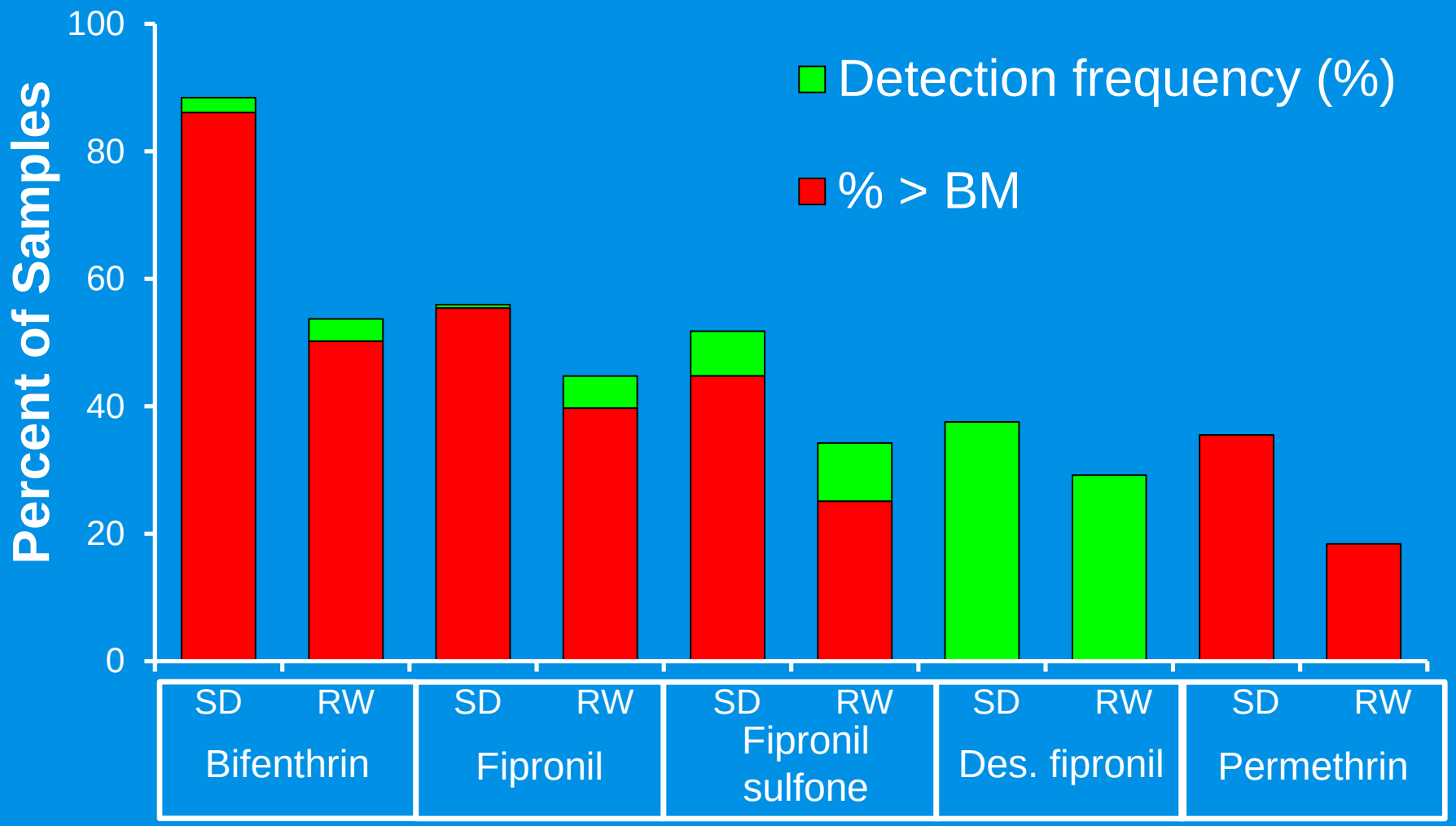
Southern California
(EM Study 270)

Pyrethroids and Fipronil (2009-2015)



All other analytes <10% FD

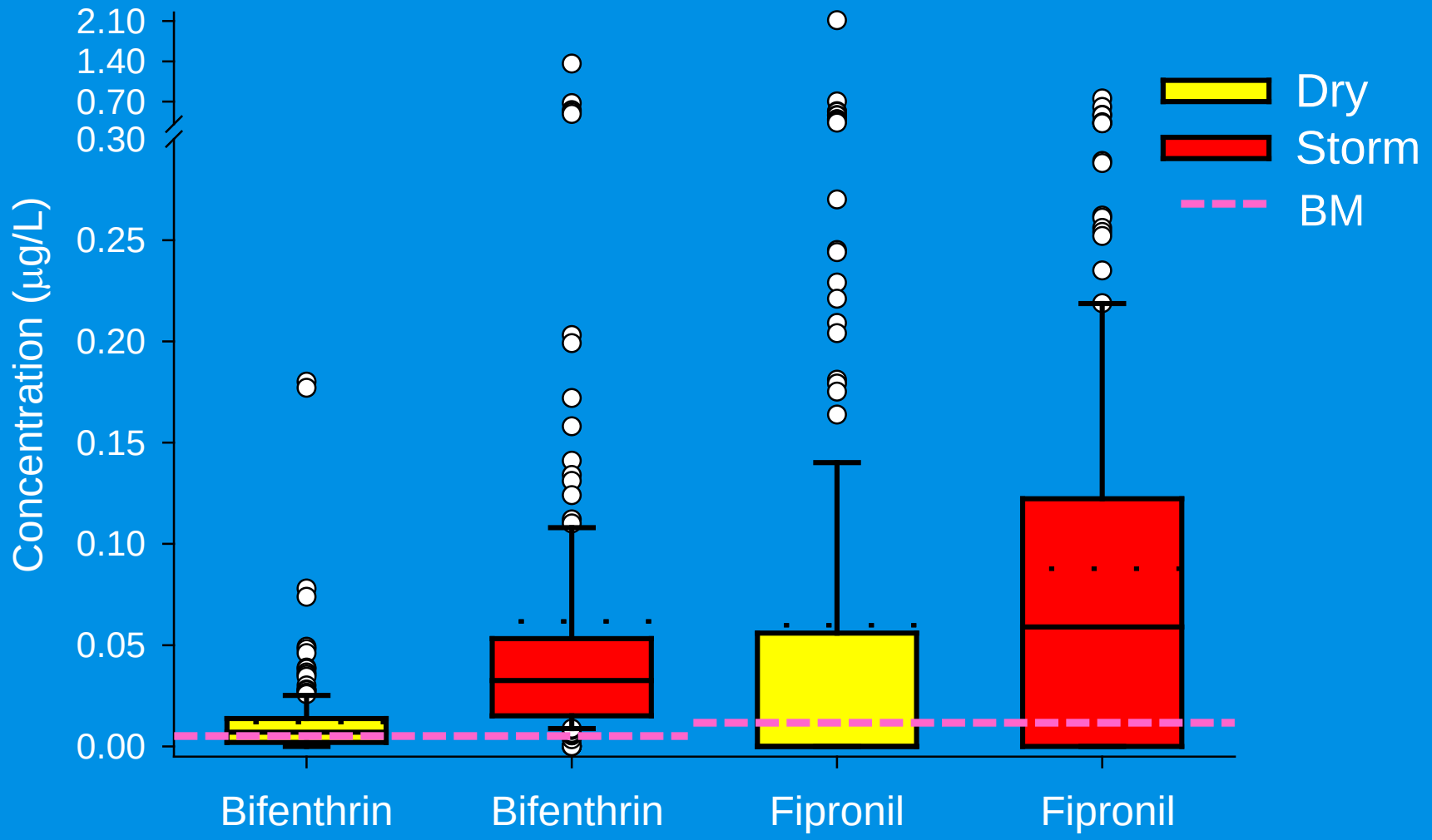
Storm Drains vs. Receiving Waters



BM=Minimum aquatic benchmark set by USEPA

SD = Storm Drain
RW = Receiving Water

Storm Drain Concentrations

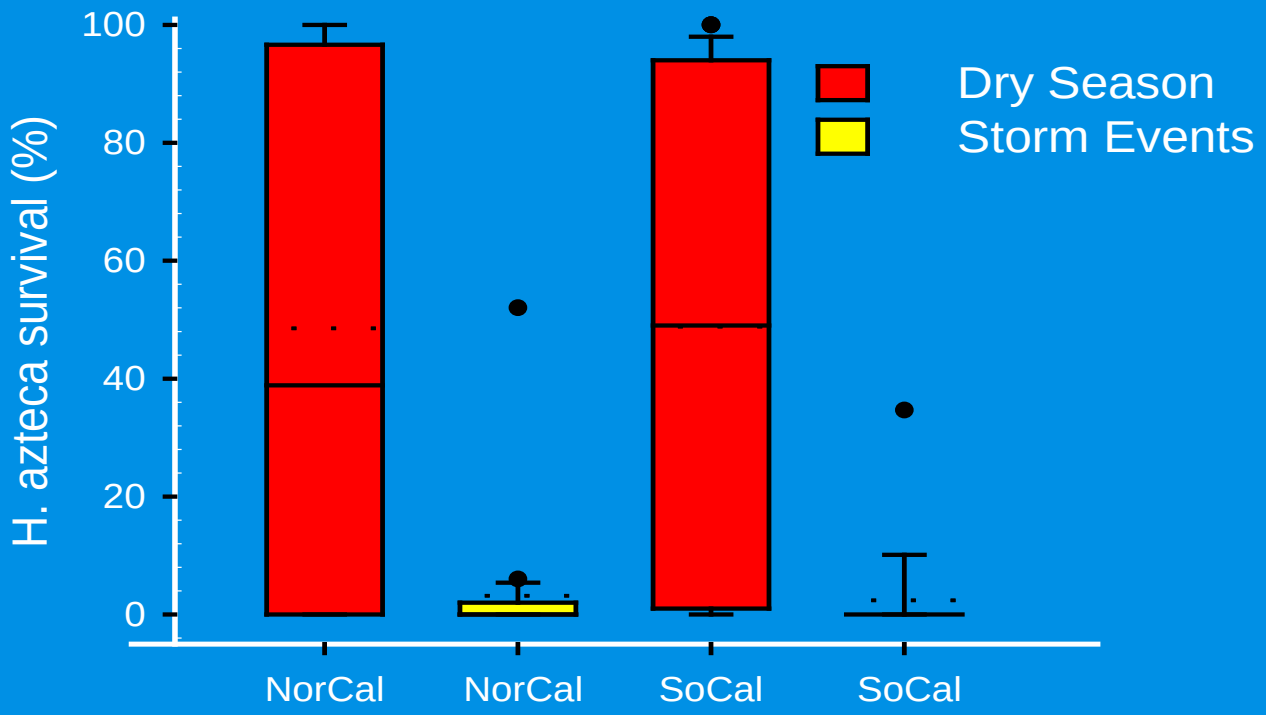


BM=Minimum aquatic benchmark set by USEPA

Dry= dry season
Storm=rain events

Observed Aquatic Toxicity

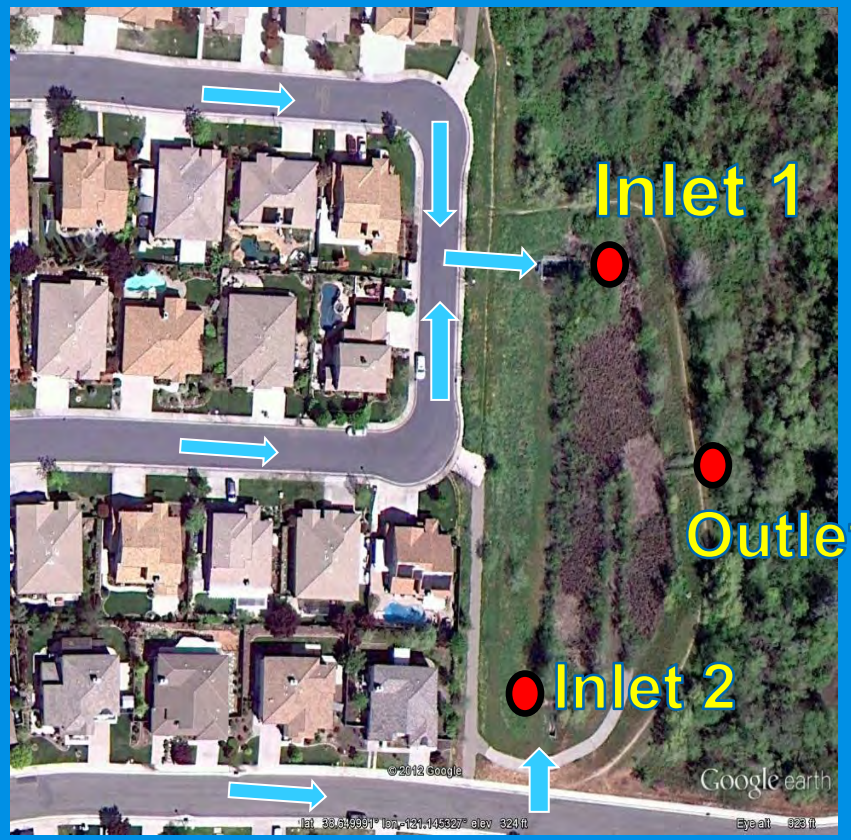
H. azteca



H. azteca Toxicity Tests Indicate Pyrethroids at Toxic Levels in Surface Waters

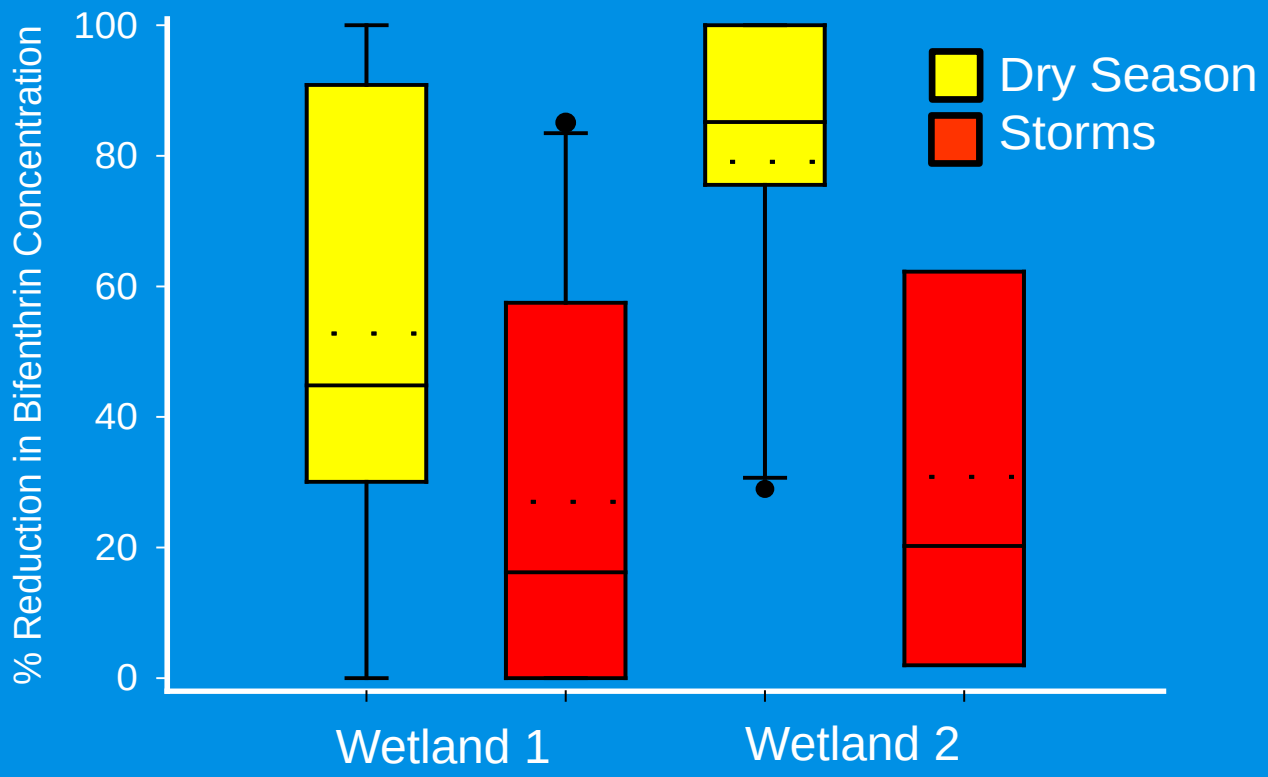
BMP Investigations

Wetland 1



Wetland 2

Bifenthrin in Wetlands



% Reduction = Outlet concentration/Inlet concentration x 100

Observations with higher outlet concentrations set to zero

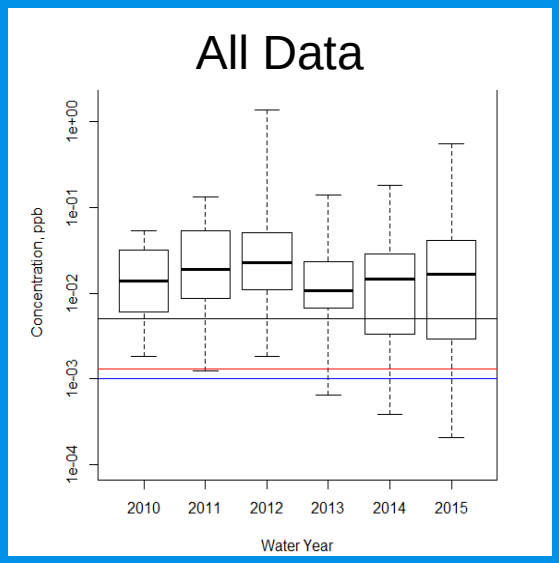
Surface Water Regulations

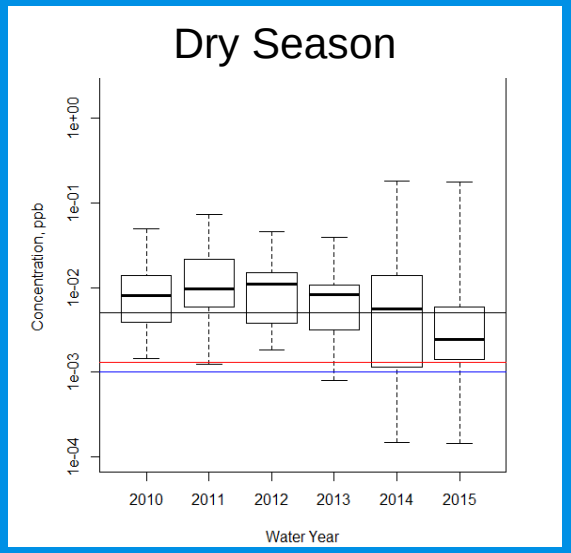
- Adopted July, 2012
- Professional applicators, including landscape maintenance
- Objective: reduce amount of pyrethroids applied (and therefore runoff) in urban landscapes

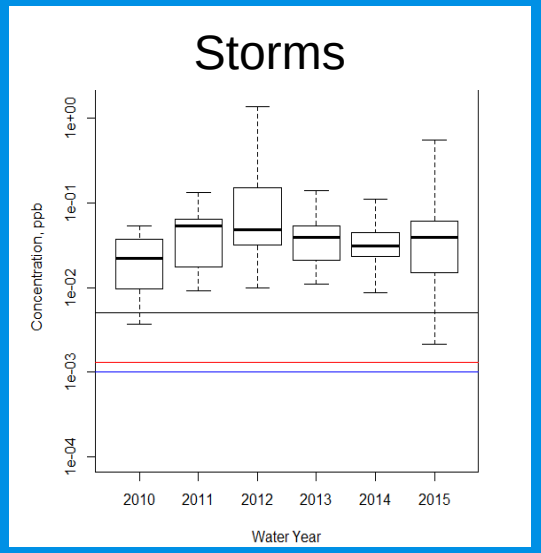
SW Regulations - Are They Working?

- Bifenthrin Data
- Storm Drains
- Dry Season and Storm Samples
- Parametric (MLE) and Nonparametric (Mann-Kendall) trend tests
  - All Data
  - 2010-2012 water yrs
  - 2013-2015 water yrs

Bifenthrin Trends







All tests indicate

- Slight increase in concentrations WY 2010-2012
- Slight decrease in concentrations WY 2013-2015
- Trends not significant

NEED MORE DATA!!

Mitigation and Outreach

- Homeowner Pesticide Use Surveys
- IPM project with applicators
- Meetings
  - Target Specialty Products
  - CACs

References

Sampling Plans

Study 299 – Northern California
http://www.cdpr.ca.gov/docs/emon/pubs/protocol/study299_ambient_mitigation_urban_areas.pdf

Study 270 – Southern California
http://www.cdpr.ca.gov/docs/emon/pubs/protocol/study270protocol2015_16.pdf

Fipronil Analysis Paper

Budd et al., 2015. *Monitoring fipronil and degradates in California surface waters, 2008-2013*. Journal of Environmental Quality, 44: 1233-1240