Welcome

Information Sharing Session
South County Particulate Matter Study

AIR POLLUTION CONTROL DISTRICT
COUNTY OF SAN LUIS OBISPO

Background

- Historical PM Levels on the Mesa
- Particulate Matter Health Concerns
- Phase 1 PM Study
- Purpose and Goals of Phase 2 Study
- Goals for this Workshop

South County Phase 2 Particulate Matter Study

Study Design

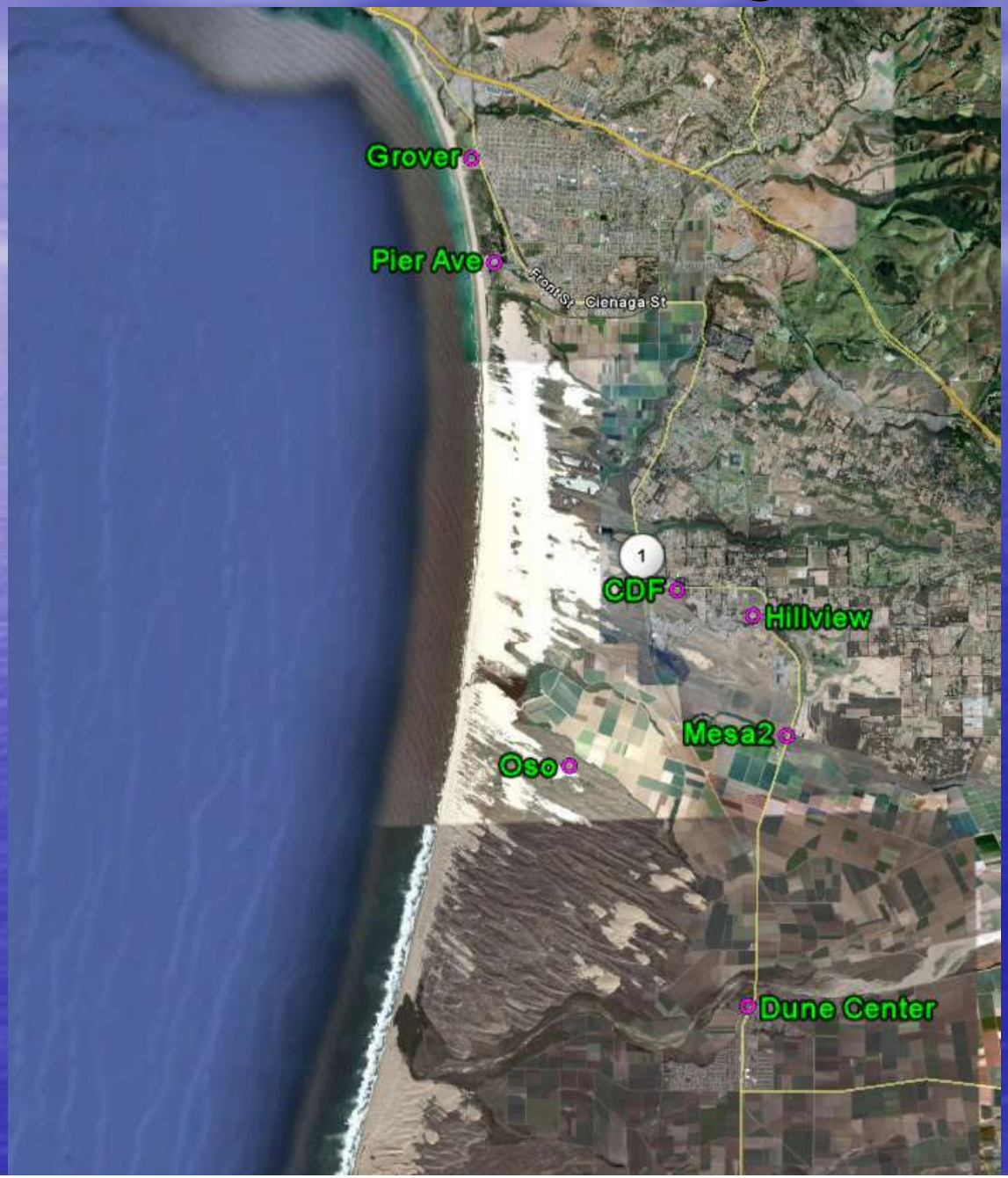
Study Design Elements

- Input on design from State Parks, Great Basin Unified APCD, Delta Group, and Santa Barbara County APCD.
- Main concept of design is to compare dunes at the SVRA to dunes without OHV activity.
- Three independent investigations by three groups using different technologies.

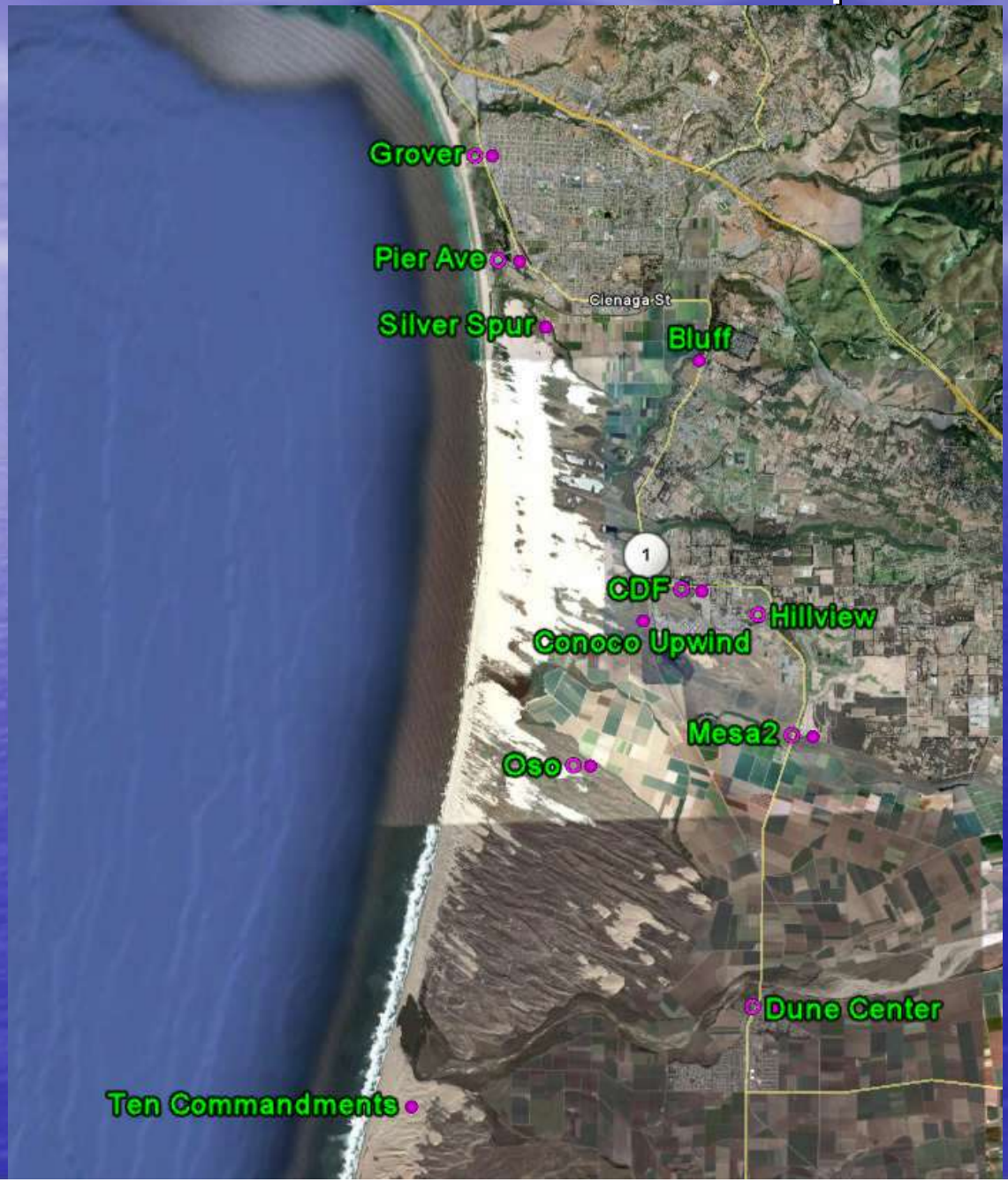
Three groups investigations

- **SLO APCD** – Measure particulate levels and winds to see where high levels come from.
- **Delta Group** – Measure composition and size of airborne particles.
- **GBUAPCD/CARB** – Measure the physics of sand movement to understand emission mechanism.

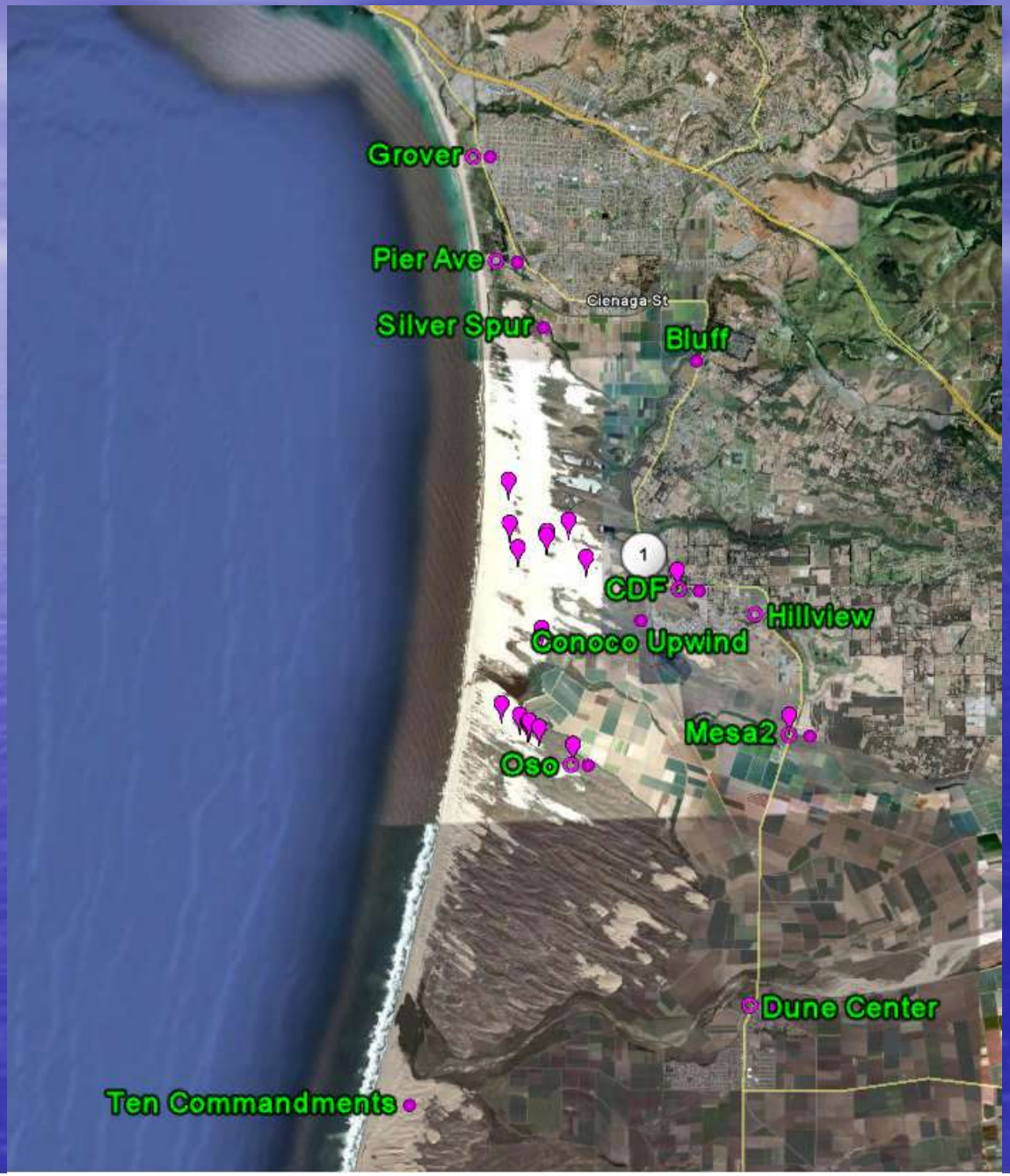
SLO APCD Monitoring Sites



SLO APCD and Delta Group Sites

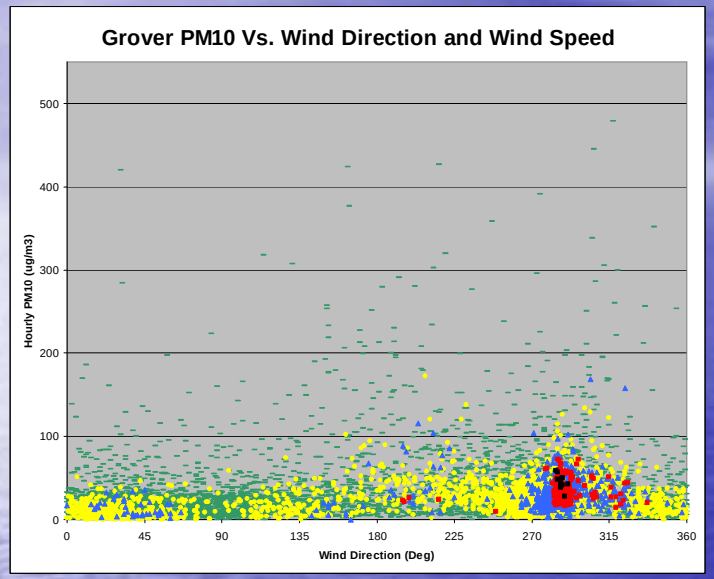


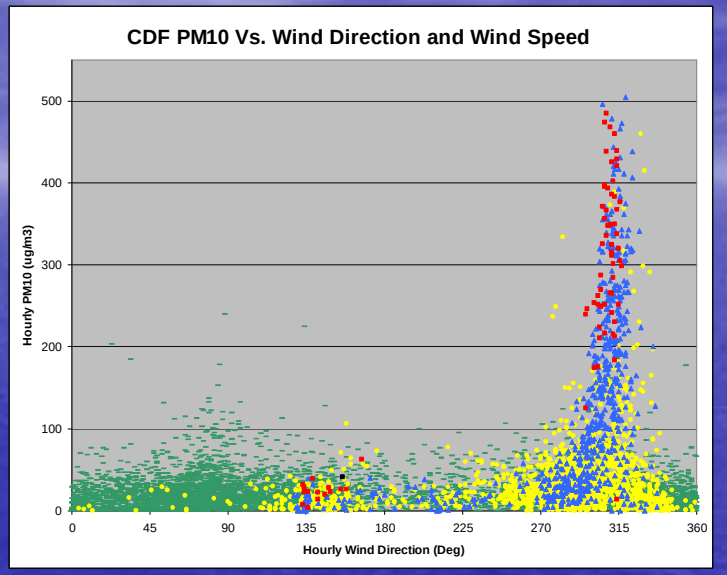
SLO APCD, Delta, and Sand Flux Measurement Locations

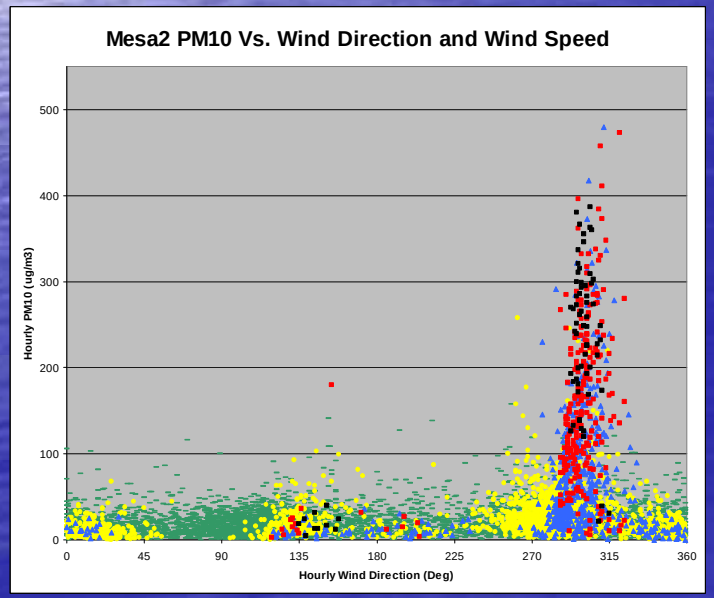


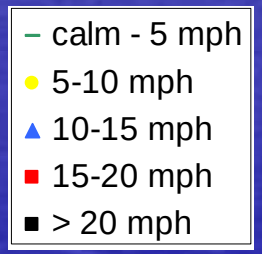
Data Results

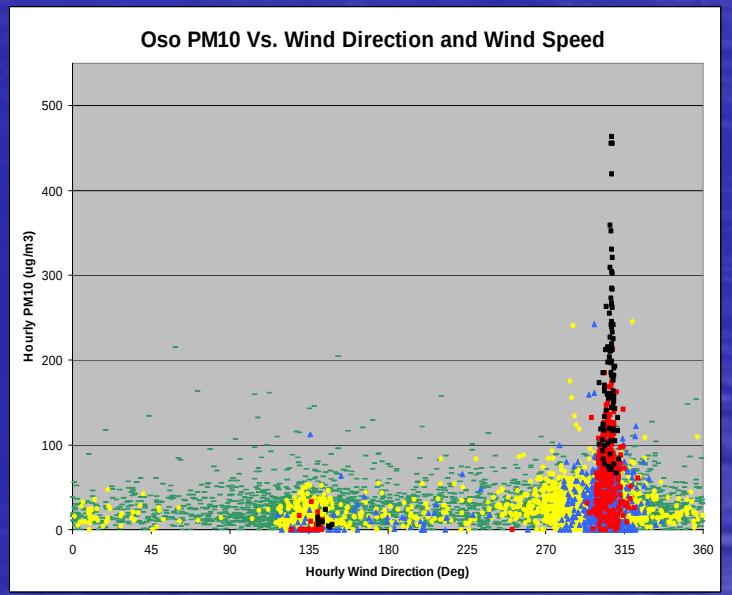
SLO APCD Results



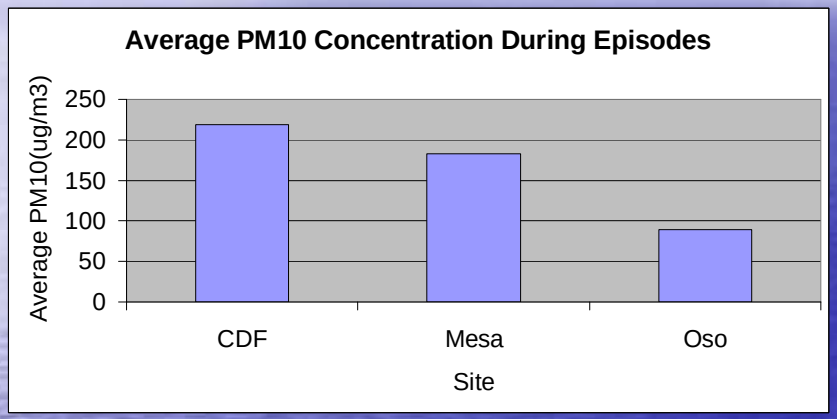


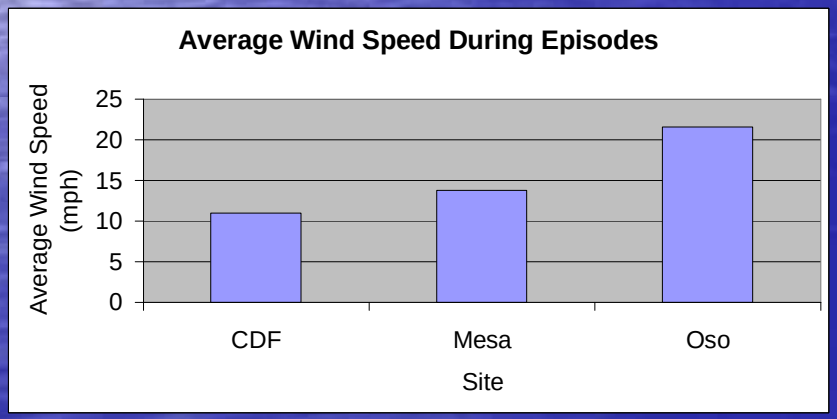


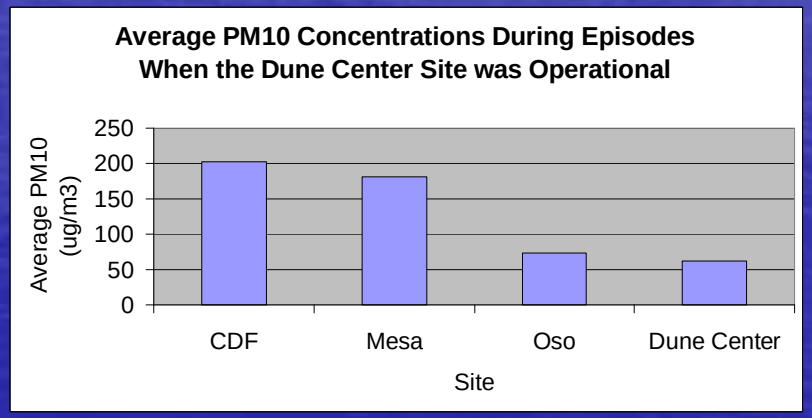




SLO APCD Results

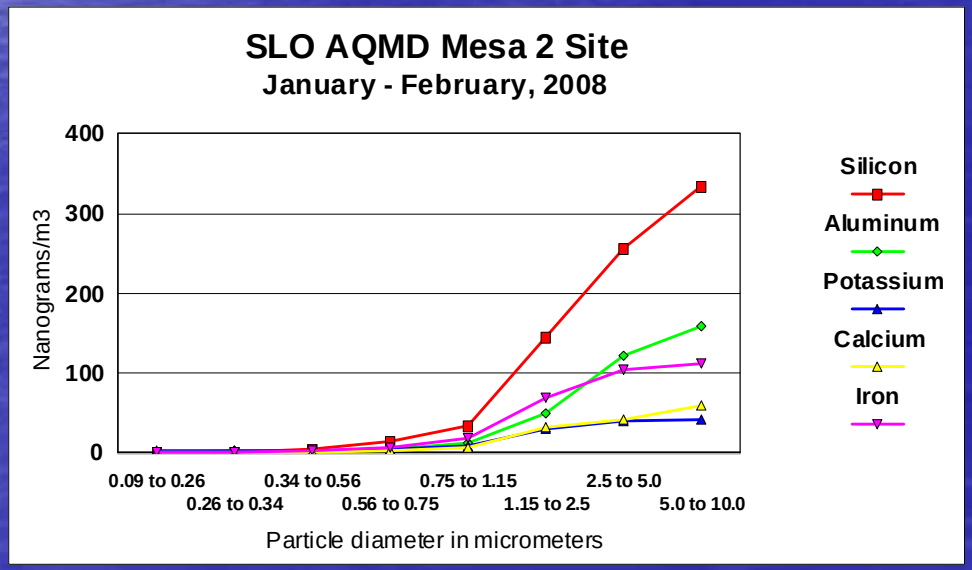




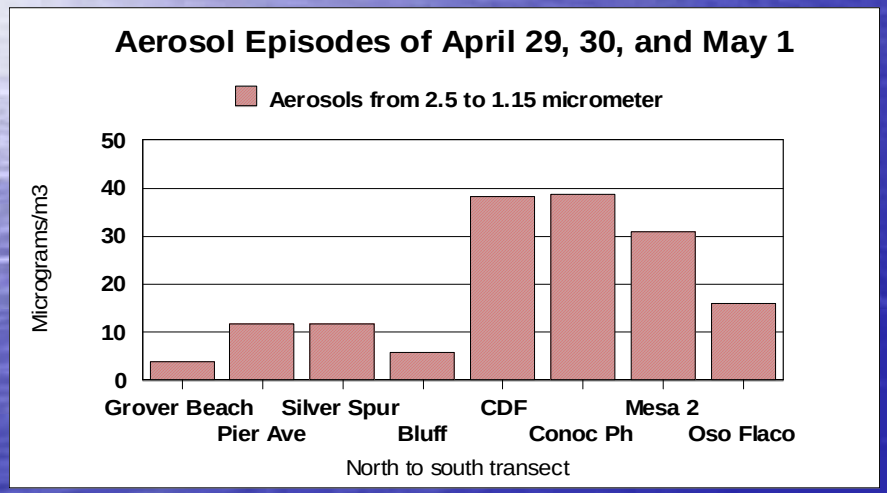


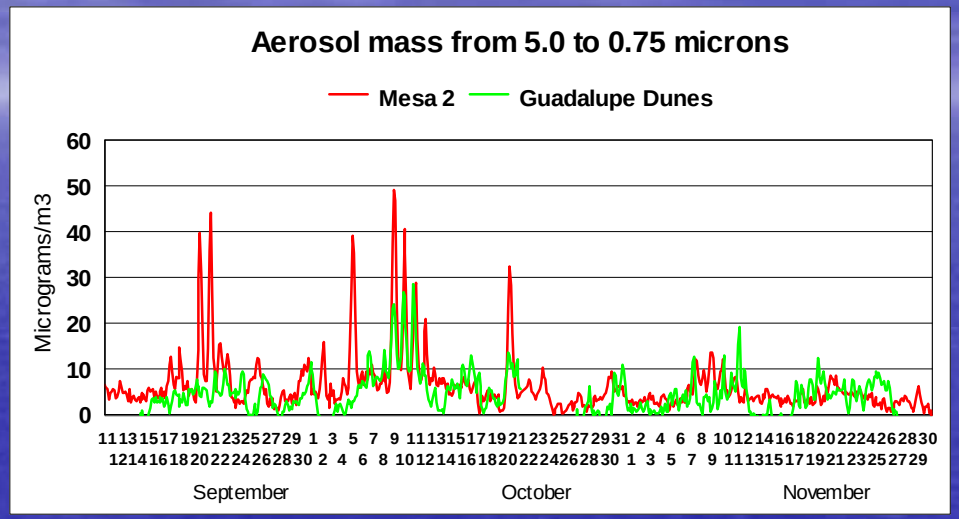
Delta Group Results

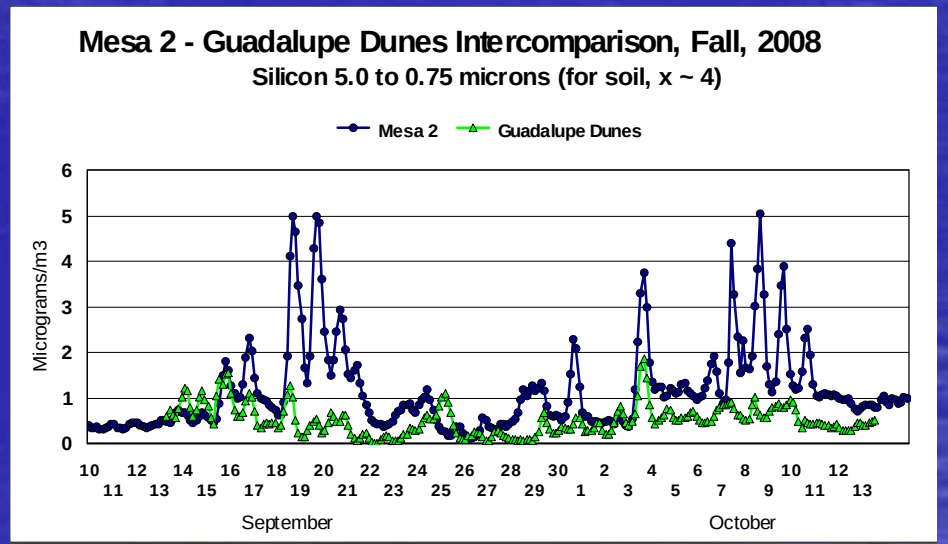
- Composition of particulate during wind episodes mostly sand.
- About 10% of composition is sea salt.
- Elemental analysis confirms very little particulate from combustion.
- Elemental tracers for petroleum coke showed no impact from the coke piles.
- Confirmed little to no impact from agricultural fields.



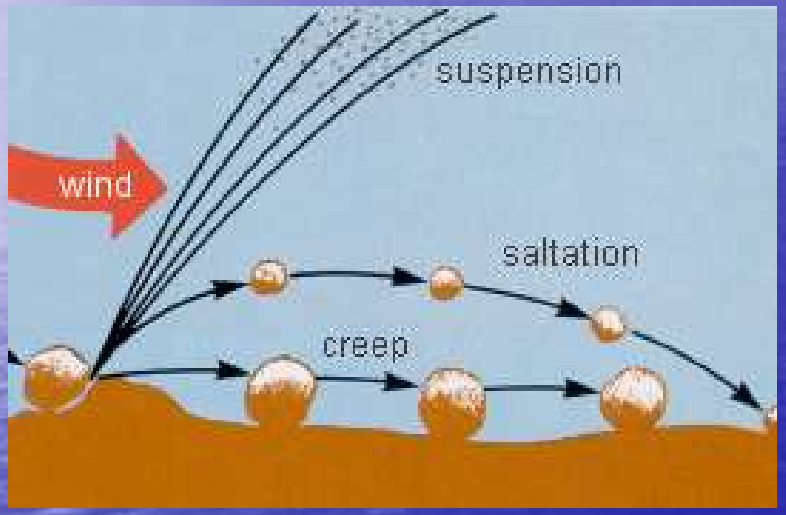
Delta Group Results

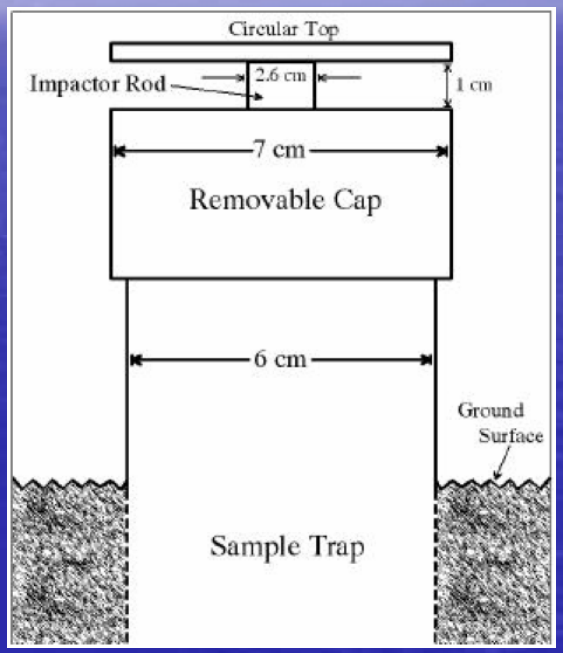






GBUAPCD Results



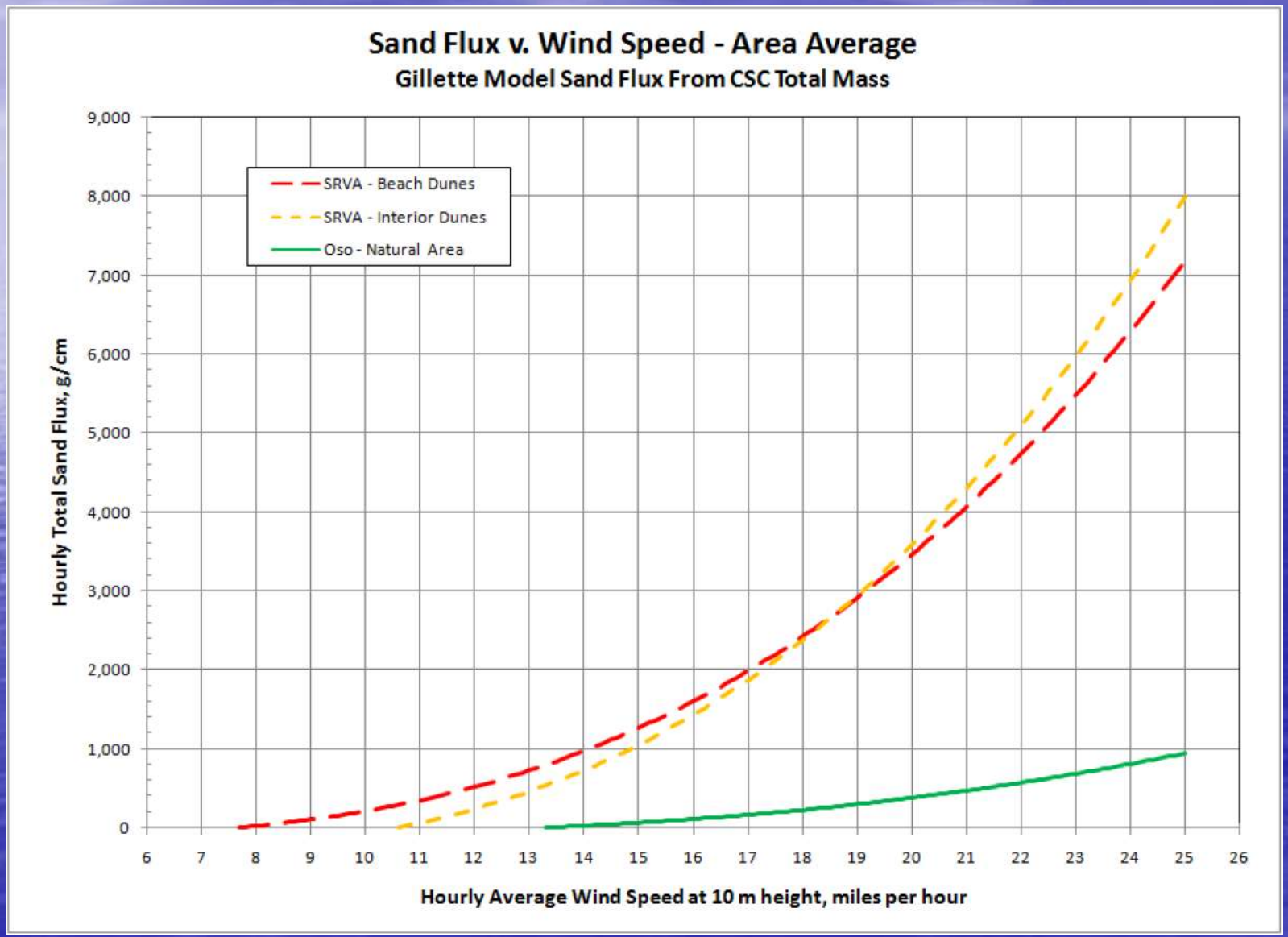


- No sand movement in vegetated areas.
- If the sand is not moving it can't be a source.

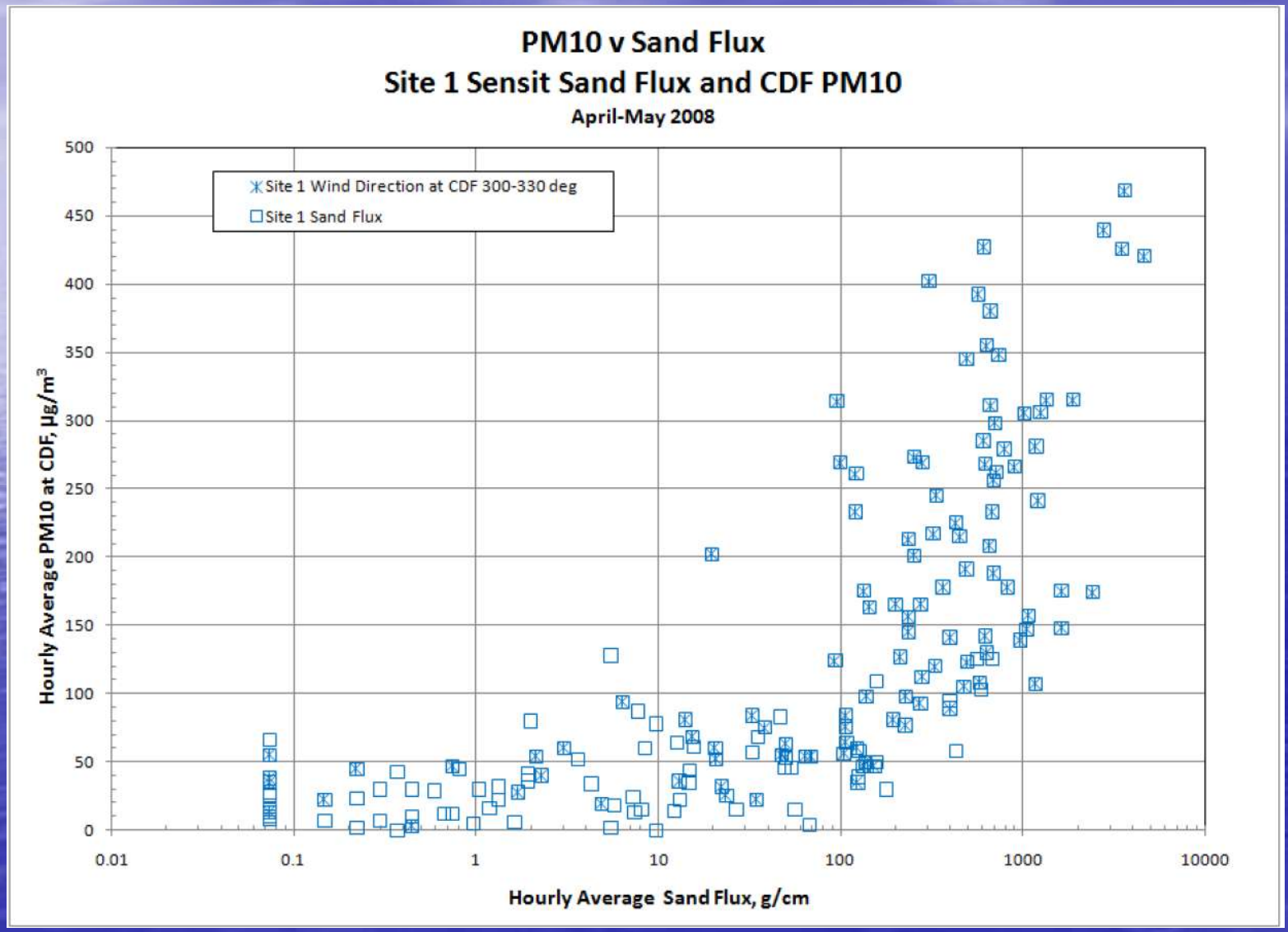
GBUAPCD Results

Location	Threshold Wind Speed at 10 Meters
SVRA – Beach Dunes	7.7 mph
SVRA – Interior Dunes	10.6 mph
Natural Area – Oso	13.3 mph

GBUAPCD Results



GBUAPCD Results



Finding #1

- **Neither the petroleum coke piles at the ConocoPhilips facility nor agricultural fields or activities in and around the area are a significant source of ambient PM on the Nipomo Mesa.**
  - **Delta Group elemental analysis downwind from the coke piles did not detect the tracers of petroleum coke in the coarse fraction of particulate.**
  - **Delta Group measurements at the Bluff site showed low levels of PM.**

Finding #2

- **Vegetated areas do not emit wind blown particles.**
  - **Essentially no sand was collected in sand catchers in vegetated areas for the entire sand flux study.**
  - **No high concentrations were measured under high wind speeds passing over only vegetated areas.**
  - **This is significant because State Parks research shows that vegetation can not survive in areas with OHV activity.**

Finding #3

- **The airborne particulate matter impacting the Nipomo Mesa on high episode days predominantly consists of sand type material transported to the Mesa from upwind areas under high wind conditions.**
  - **Data from both Phase 1 and 2 studies show the composition during episodes is largely earth crustal elements and a small amount of sea salt and a strong relationship between high wind speeds and high PM.**
  - **Sand flux measurements showed a strong correlation between sand movement and high PM downwind.**

Finding #4

- **Sand sheets with OHV activity emit greater amounts of particulates than similar sand sheets without OHV activity under the same wind conditions.**
  - **SLO APCD and Delta measurements showed that the average PM concentrations downwind from the SVRA are 2 – 3 times higher than downwind from the control sites.**
  - **Sand Flux measurements showed that the threshold for sand movement was much greater and the amount of sand movement less in the control areas as compared to the SVRA.**

Primary Conclusion

- **OHV activity in the SVRA is a major contributing factor to the high PM concentrations observed on the Nipomo Mesa.**

Summary & Next Steps

- Present to APCD Board – March 24
  - 9 a.m. at the SLO County Board Chambers
  - Questions and comments from the workshop will be summarized and included in the staff report to Board
- Implement Board Directives


Thank You!