Will the United States see another "Dust Bowl" soon?

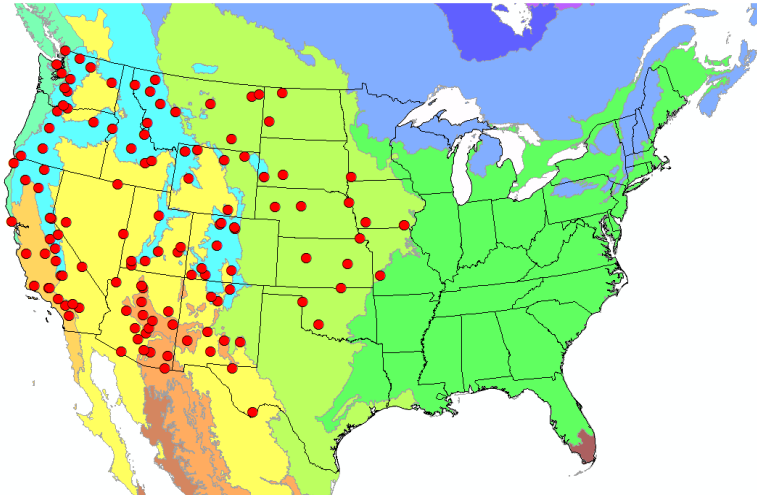
Daniel Tong (CICS/UMD and GMU)
Contributed by Julian Wang (NOAA) and Dongchul Kim (NASA)

- **The 1930s Dust Bowl (severe drought and poor land management);**
- **Observations revealed rapid intensification of dust storm activity in the western US;**
- **The Center for Diseases Control and Prevention (CDC) has reported a sharp increase in valley fever (*Coccidioidomycosis*).**
- **The confluence of drier subtropics expanded by precipitation shift, greater evaporation, less snow/ice, and earlier spring powered by warming collectively amplifies the effects of natural climatic variations to intensify seasonal or decade-long droughts, leading to future "Dust Bowl" in the Americas (*Romm, Science, 2011)*.**

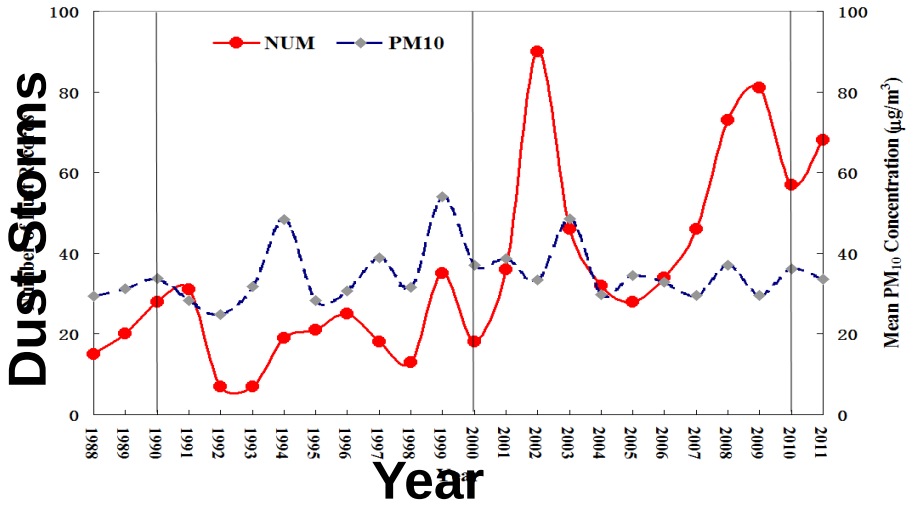
Dust Trend and Valley Fever

- **Rapid increase in dust storm activity;**

Ground Monitors

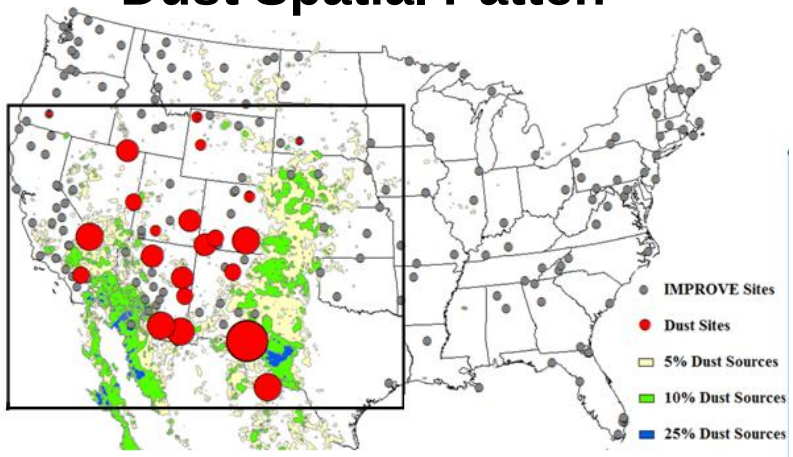


Dust Climatology

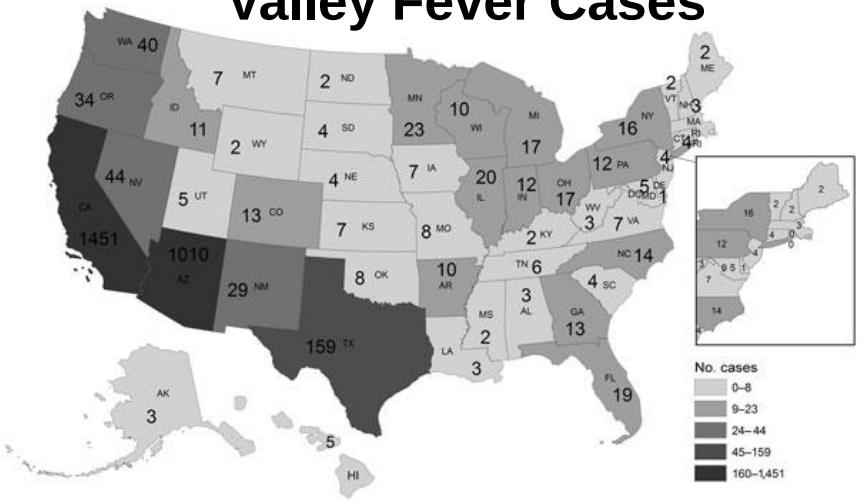


- **The dust trend is correlated with the Valley Fever incidences;**

Dust Spatial Patten

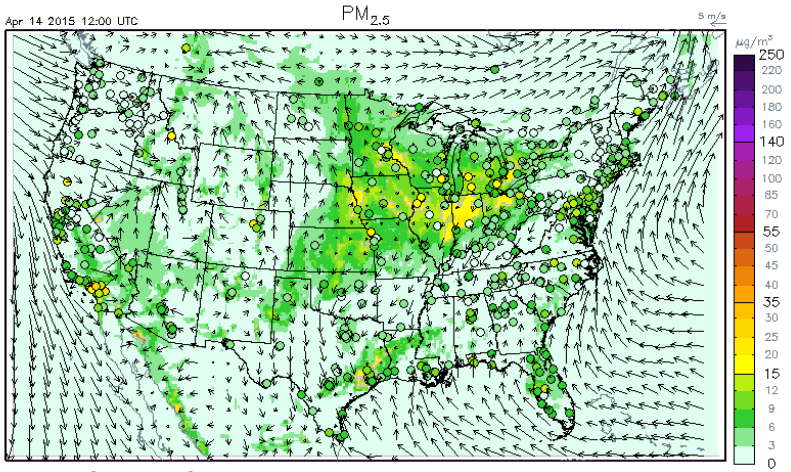


Valley Fever Cases

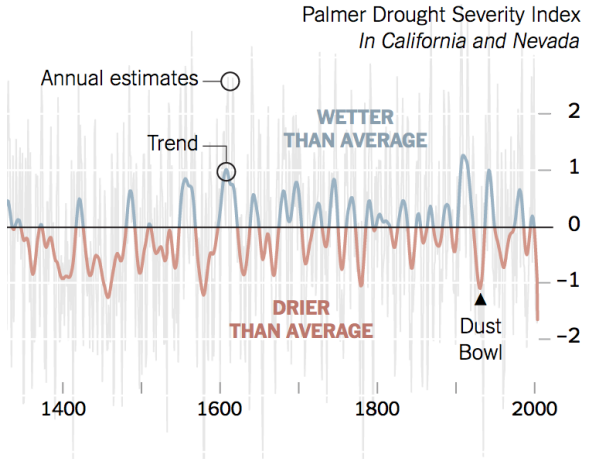


Building “Dust Bowl” Prediction Capability

- **Short-term dust forecasting capability (Tong et al., 2015);**



- **Long-term dust storm projection;**



- **Reproduce observed dust variability;**
- **Assimilate satellite data;**
- **Identify key climate drivers;**

The profound socioeconomic impacts of another Dust Bowl can easily justify investment in building dust bowl prediction capability.