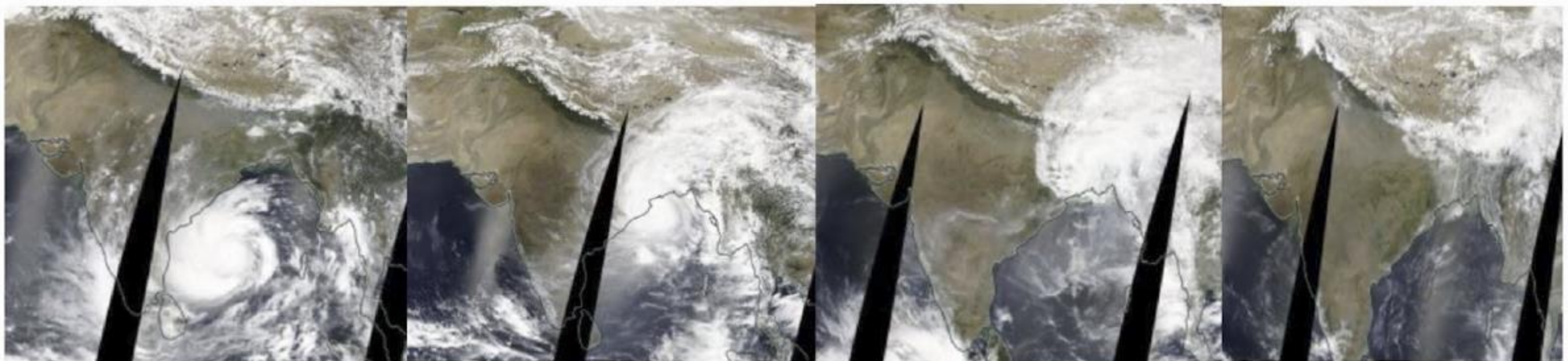
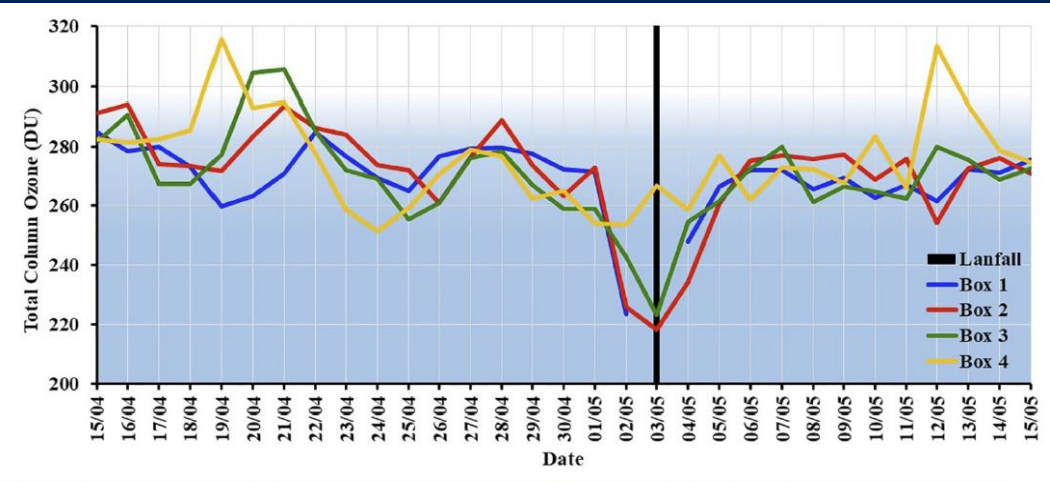
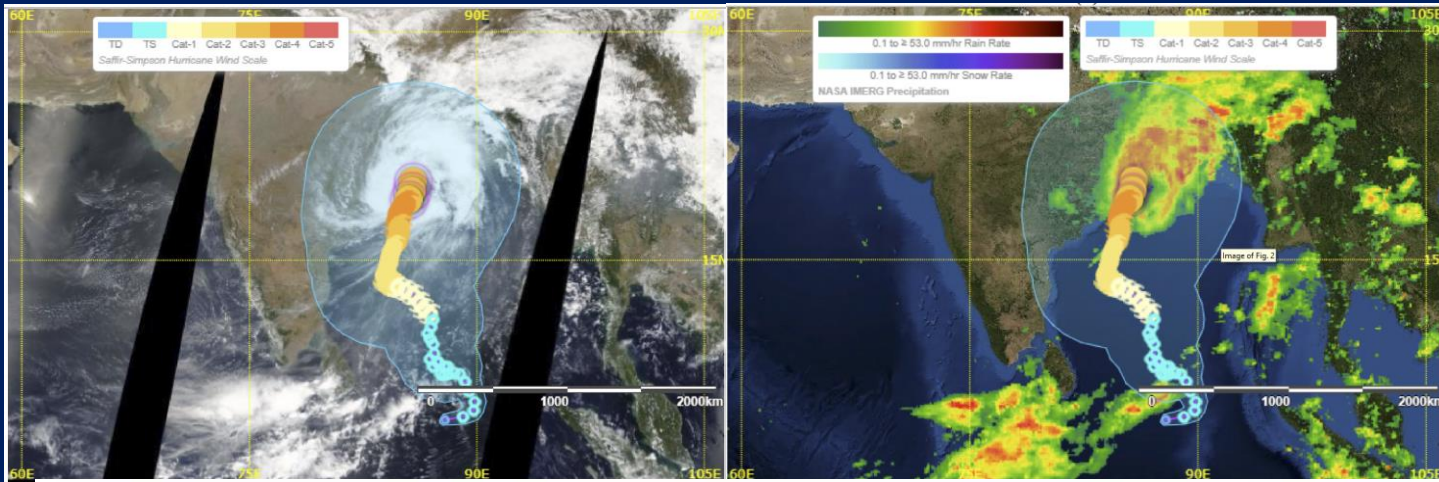


Workshop on Bringing Land, Ocean, Atmosphere and Ionosphere Data to the Community for Hazards Alerts

May 20-24, 2021

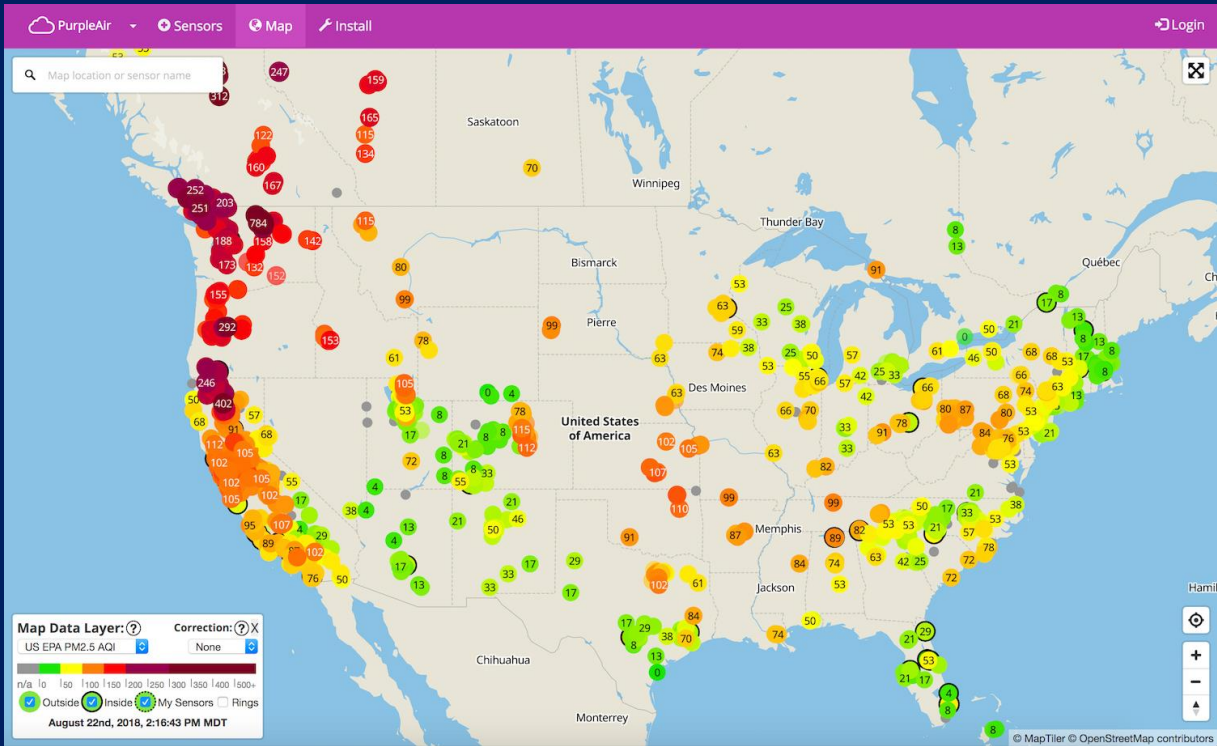


18 May 2020

19 May 2020

20 May 2020

23 May 2020

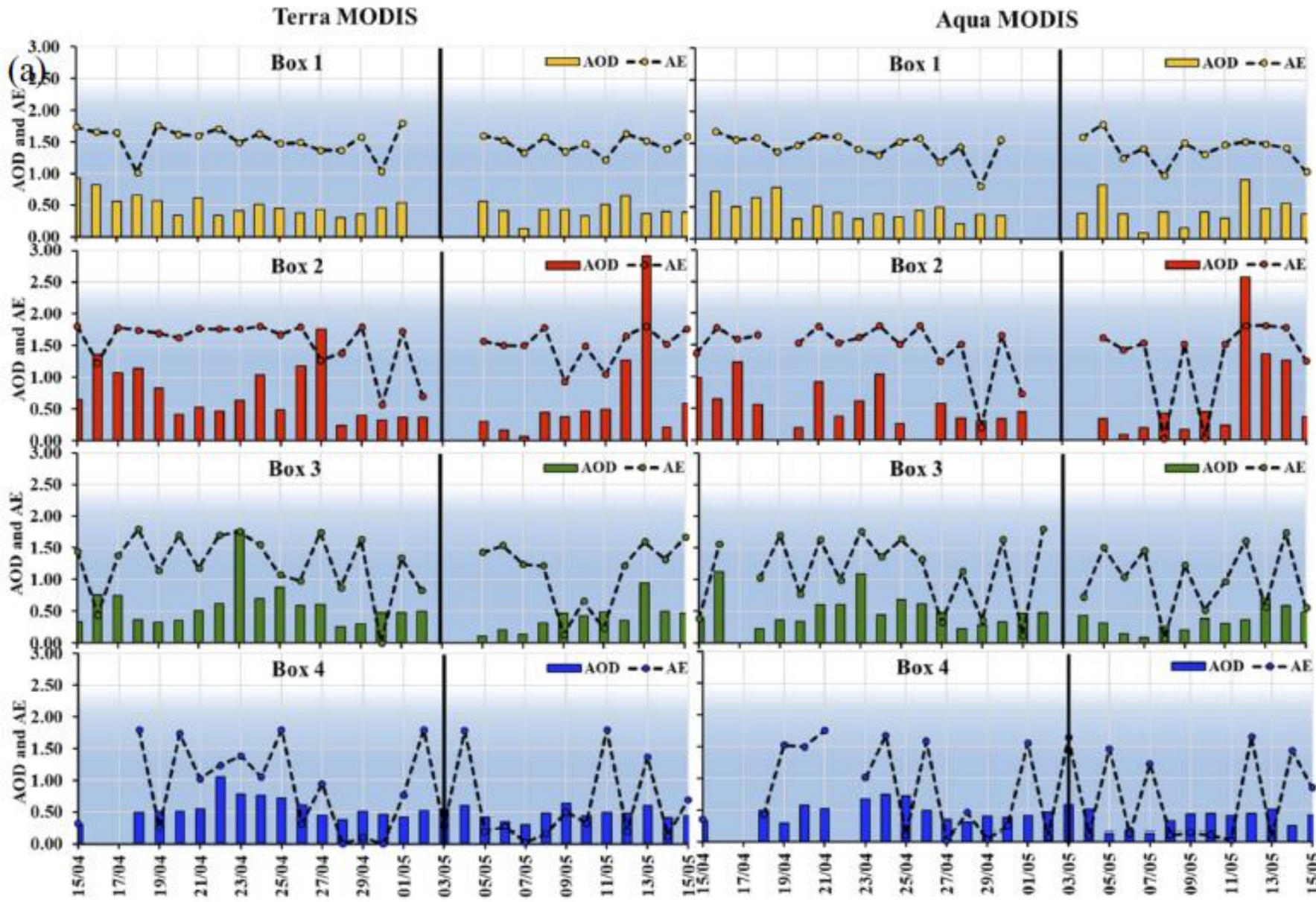


Co-Seismic Response to water level associated with earthquakes

Ramesh P Singh, Chapman University, Orange, California
 E-mail rsingh@chapman.edu



Recent observations of water levels in China show co-seismic changes even of distant earthquakes. Water levels are monitored by USGS. Water levels with high sampling rate in dense network of water wells may be carried out in understanding of earthquake wave propagation in epicentral region.



Impact of Cyclone on Air Quality



Forecast of winds speed, Wave heights, track and intensity – all these information are needed to the coastal community

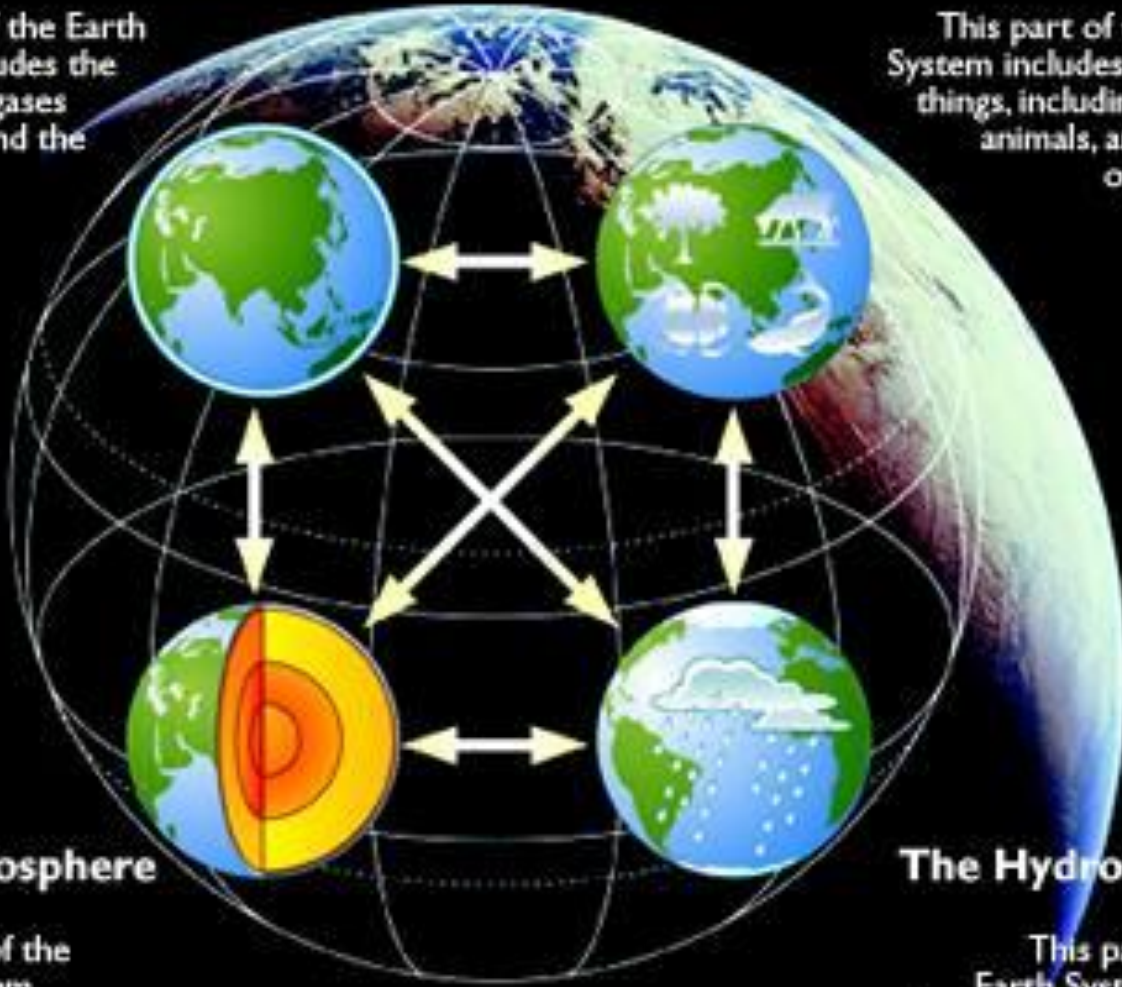
Do we have building codes for the houses and infrastructures along the coastal regions?

The Atmosphere

This part of the Earth System includes the mixture of gases that surround the planet.

The Biosphere

This part of the Earth System includes all living things, including plants, animals, and other organisms.



The Geosphere

This part of the Earth System includes the crust, mantle, and inner and outer core.

The Hydrosphere

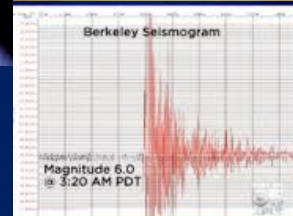
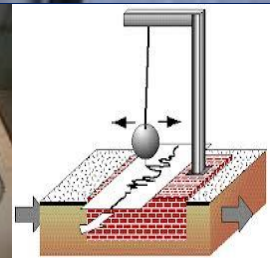
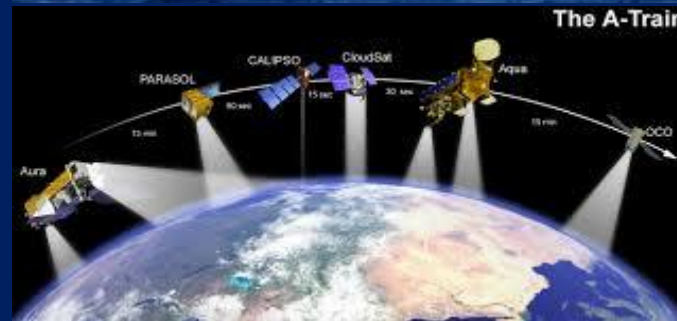
This part of the Earth System is the planet's water, including oceans, lakes, rivers, ground water, ice, and water vapor.

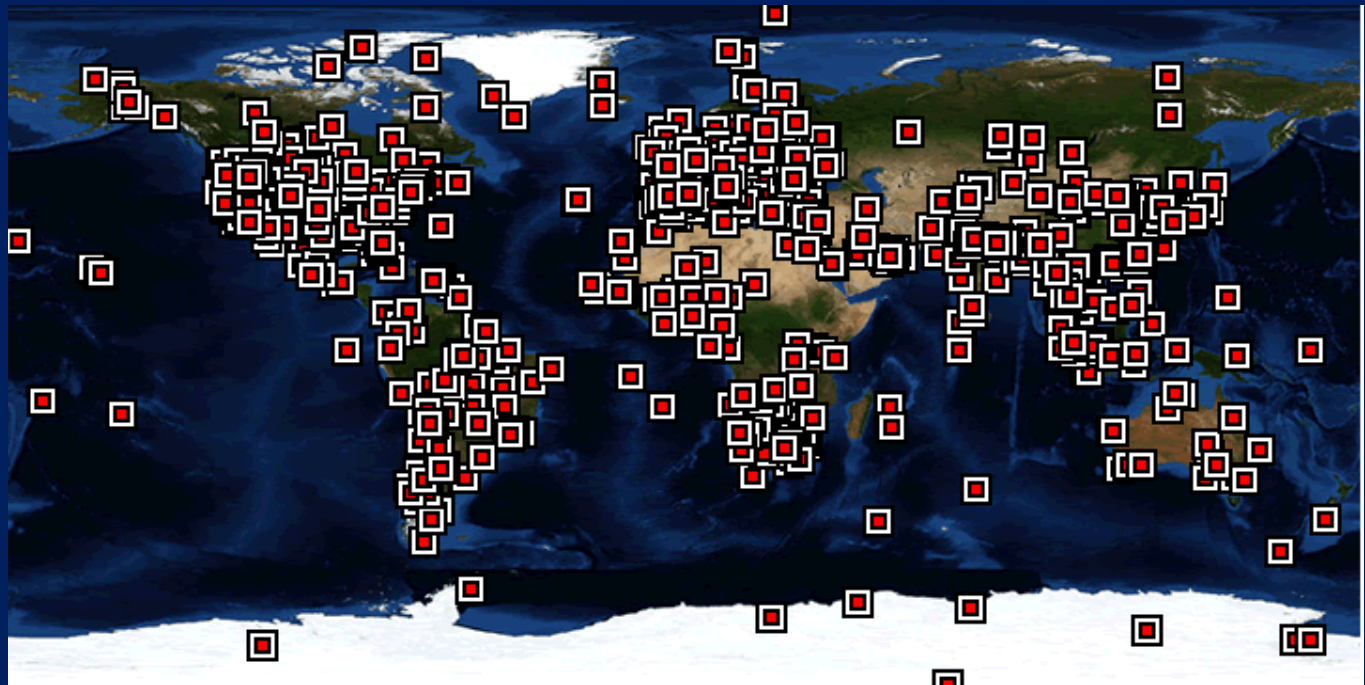
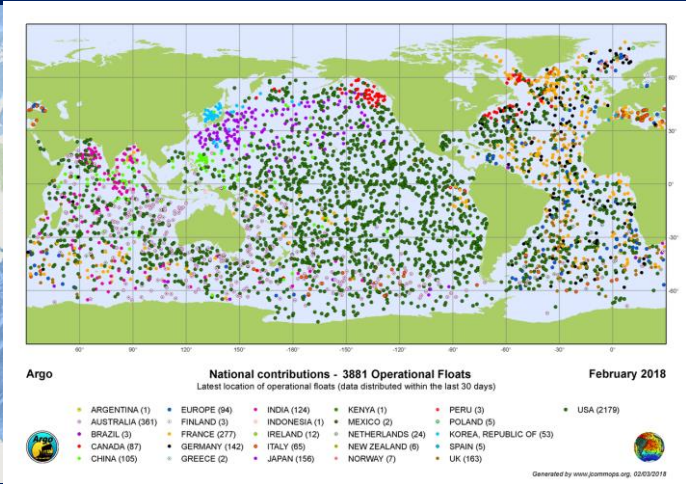
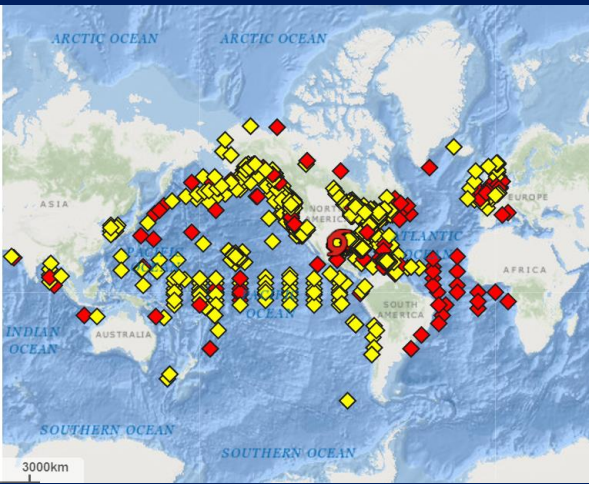
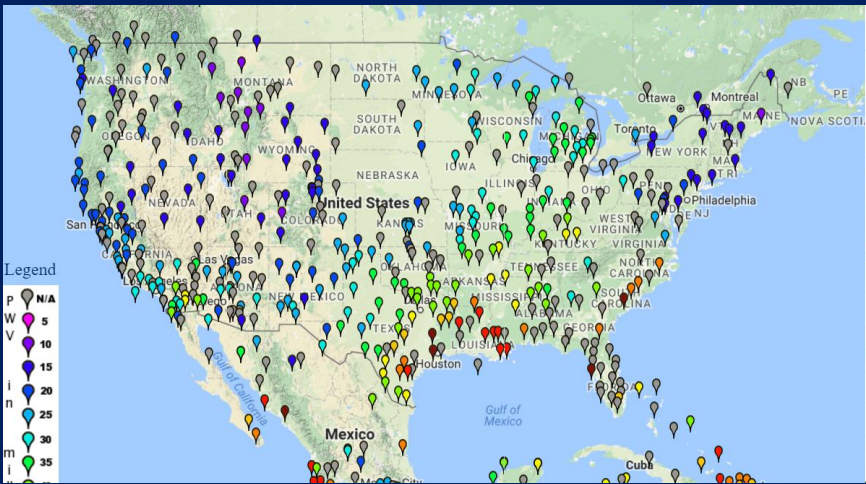
Coupling between Land-Ocean-atmosphere-Ionosphere

Earth is Dynamic, how we can monitor its dynamic nature

By looking and using

- balloon
- Airborne system
- Ships
- Buoys
- GPS
- Seismographs
- Satellites/Rockets
- iPhones

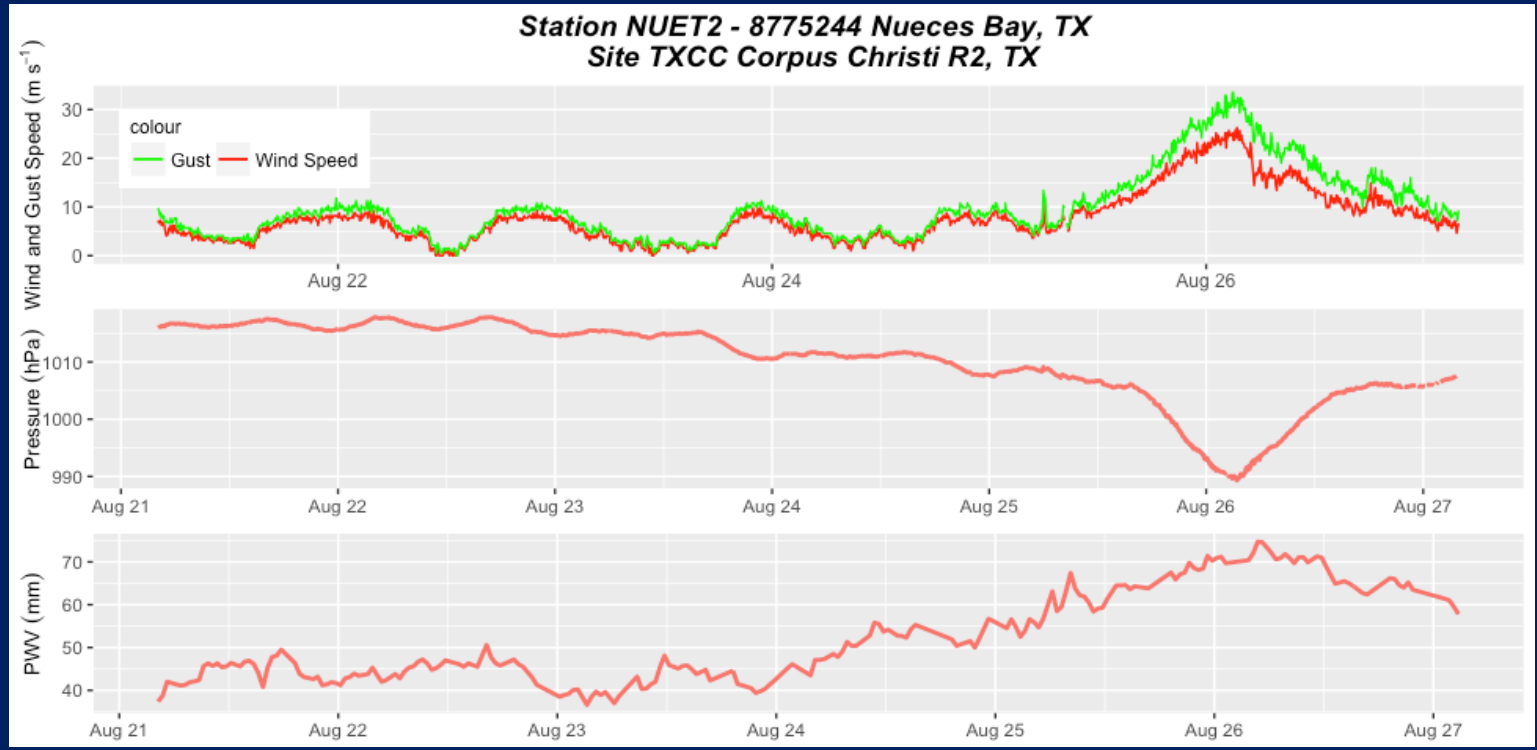
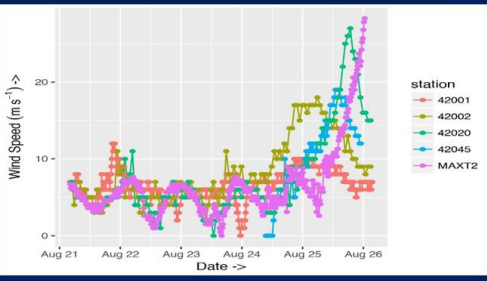
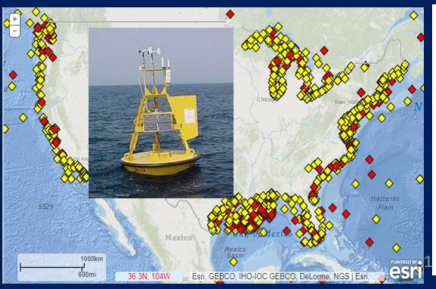
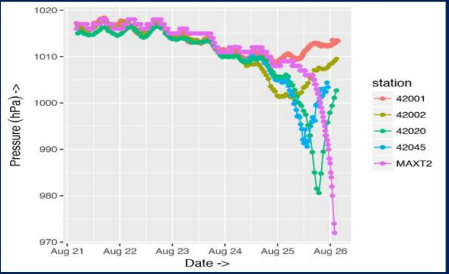
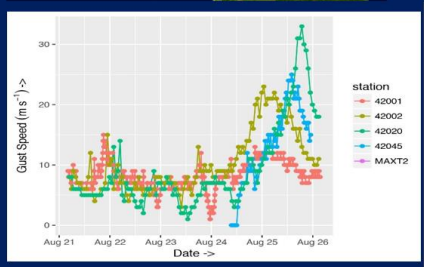
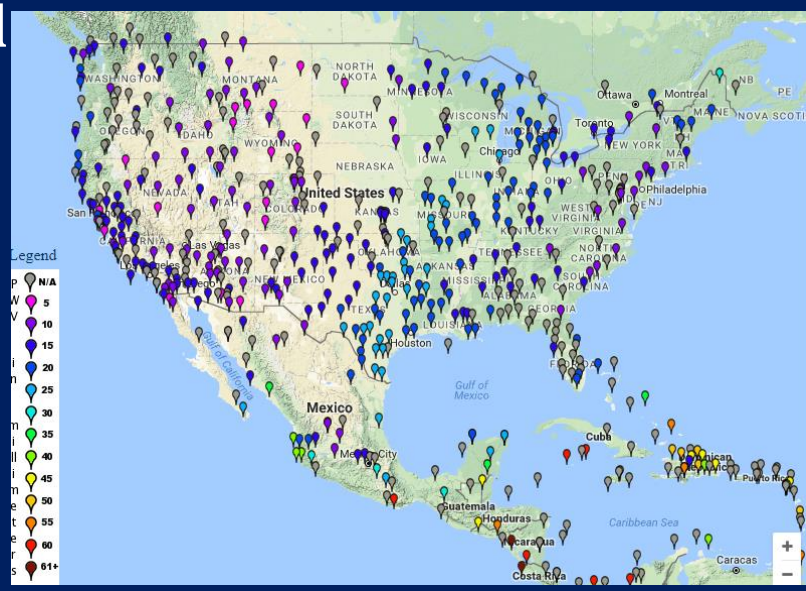




Hurricane Harvey on 24 August, a day before it made landfall in Texas as a Category-4 storm.



Julia Rosen Science
2017;357:853-854



Virtual Workshop

Proposed dates May 20-24, 2021

**Timings 7.00 am – 10.30 noon
4.00 pm - 9.00 pm**

Main Focus – What are unknown to scientists and public?

Sessions: Natural Hazards – Land (earthquakes, volcano, subsidence, landslides, forest fires)
- **Ocean (Hurricane/Cyclones/Typhoons, Tsunami, Marine slides, Sea level rise)**
- **Atmosphere (dust storms)**
- **Hydrometeorological (Landslides, Droughts, Floods, epidemics)**
- **Extreme events (extreme precipitation)**
- **Dust storms and Tornados**
- **Snow avalanches**
- **Climate change**

What are needed to Alert public from all kinds of Natural Disasters?

Our Efforts to outreach to K12 students and teachers.

**Our partners: NGO, Industries, Purple air, Hurricane Center, IRIS, Quake finder, NOAA,
Virtual Workshop platform, goto, webex, Zoom,**