

BUILDING RESILIENCY: INSTITUTE OF COASTAL CLIMATE CHANGE IN URBAN AREAS

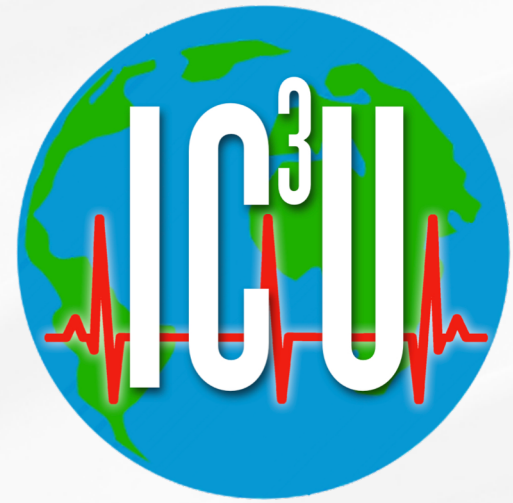
Alexander Gates

Kevin Lyons



CLIMATE CHANGE/SEA LEVEL RISE WILL CAUSE A COMPLEX AND EXPENSIVE DISRUPTION OF LIFE AND COMMERCE IN NORTHERN NJ/NYC

**IMPACT ON ENVIRONMENT, REAL ESTATE, SUPPLY CHAIN, PORT
COMMERCE, TRANSPORTATION, PUBLIC HEALTH, SOCIAL JUSTICE**



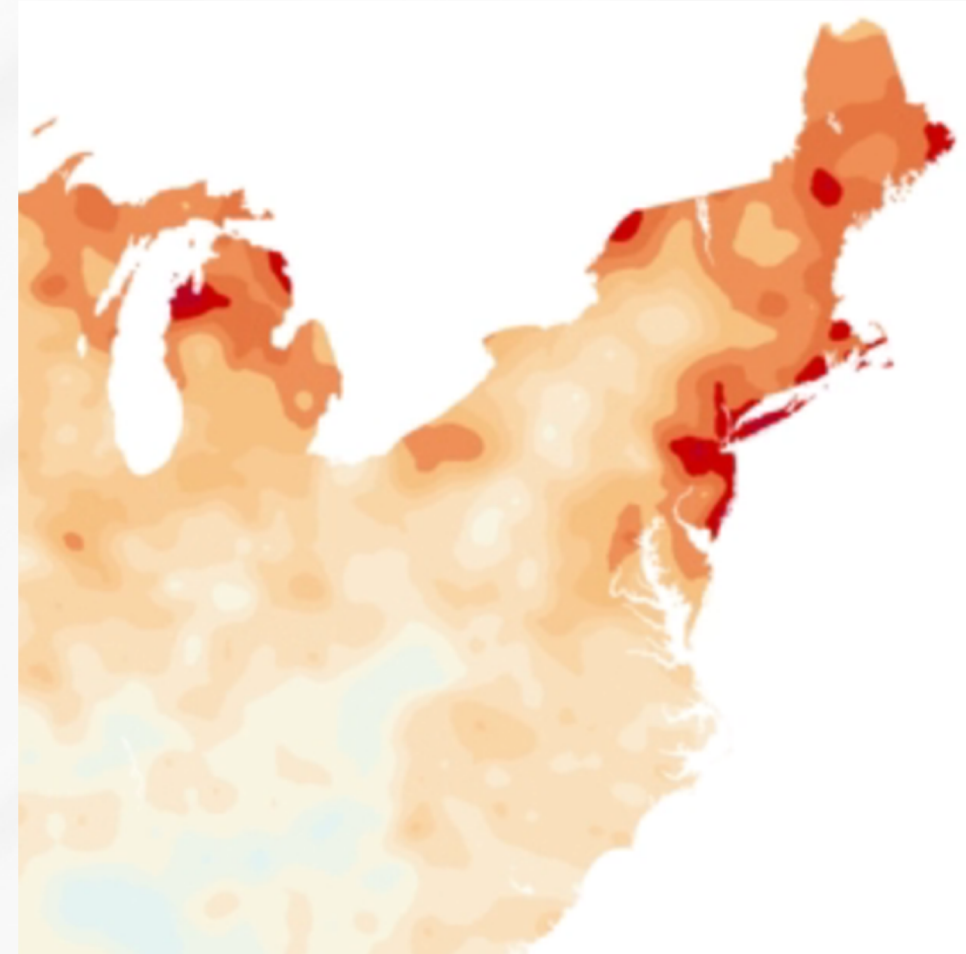
THE PROPOSED SOLUTION:

Institute on Coastal Climate Change
in Urban Areas (IC³U)

- **UNIQUE COLLABORATION OF SCIENCE, BUSINESS & PUBLIC POLICY TO EVALUATE, MONITOR, PREDICT AND PREPARE FOR ALL ASPECTS OF CLIMATE CHANGE/SEA LEVEL RISE**
- **REDUCE IMPACT & COST AT ALL SCALES**

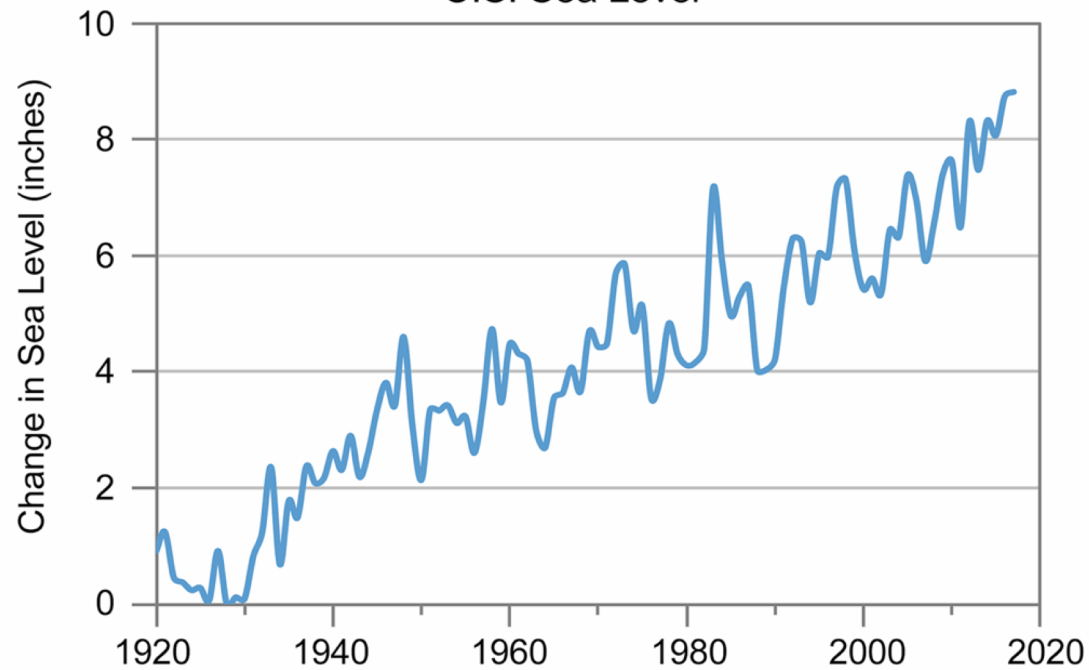
CLIMATE CHANGE AND TEMPERATURE

- **TEMPERATURES ARE INCREASING WORLDWIDE**
- **NJ/NYC AREA IS INCREASING FASTER THAN MOST**

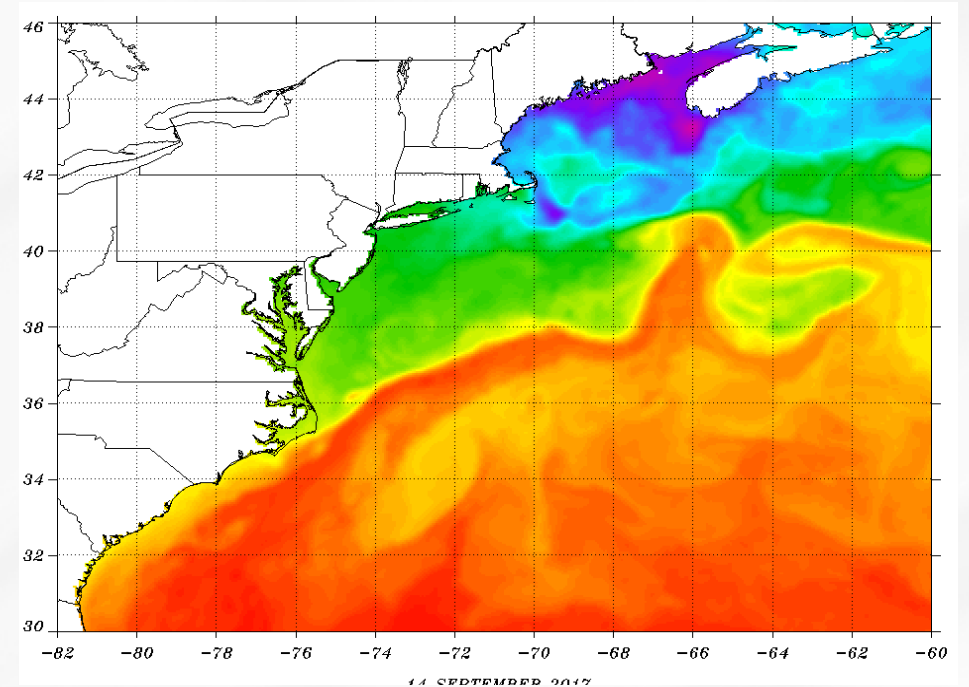
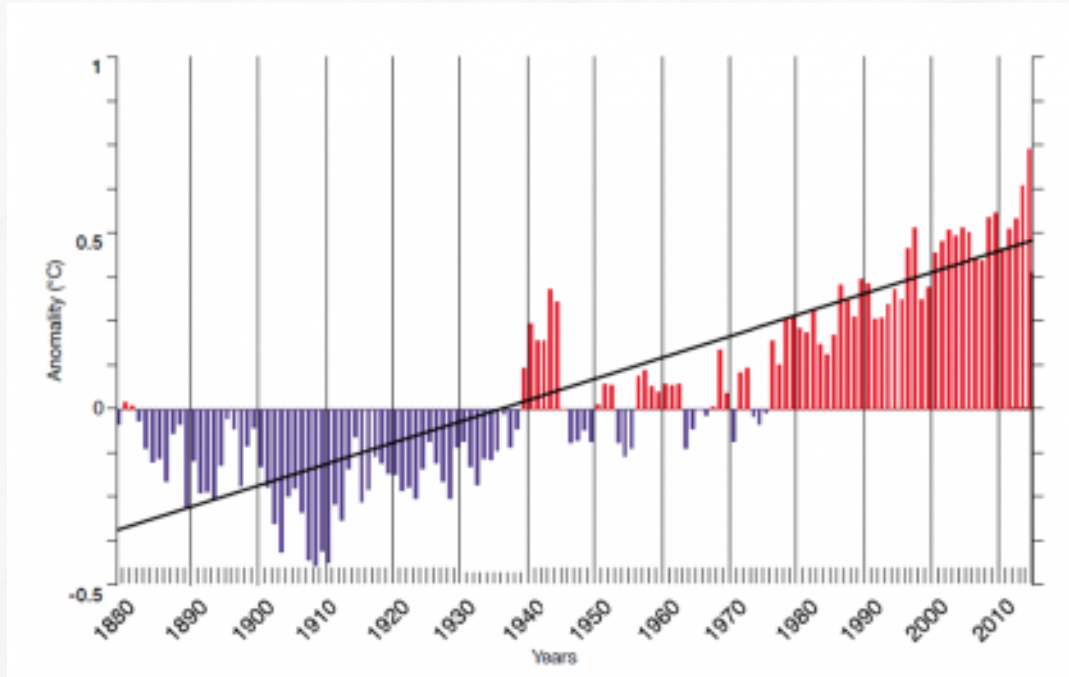


SEA LEVEL RISE AND FLOODING

U.S. Sea Level



OCEAN TEMPERATURES AND STORMS



**79°F+ HURRICANES INTENSIFY
STRONGER STORMS CAN PERSIST FARTHER NORTH**

OTHER EFFECTS

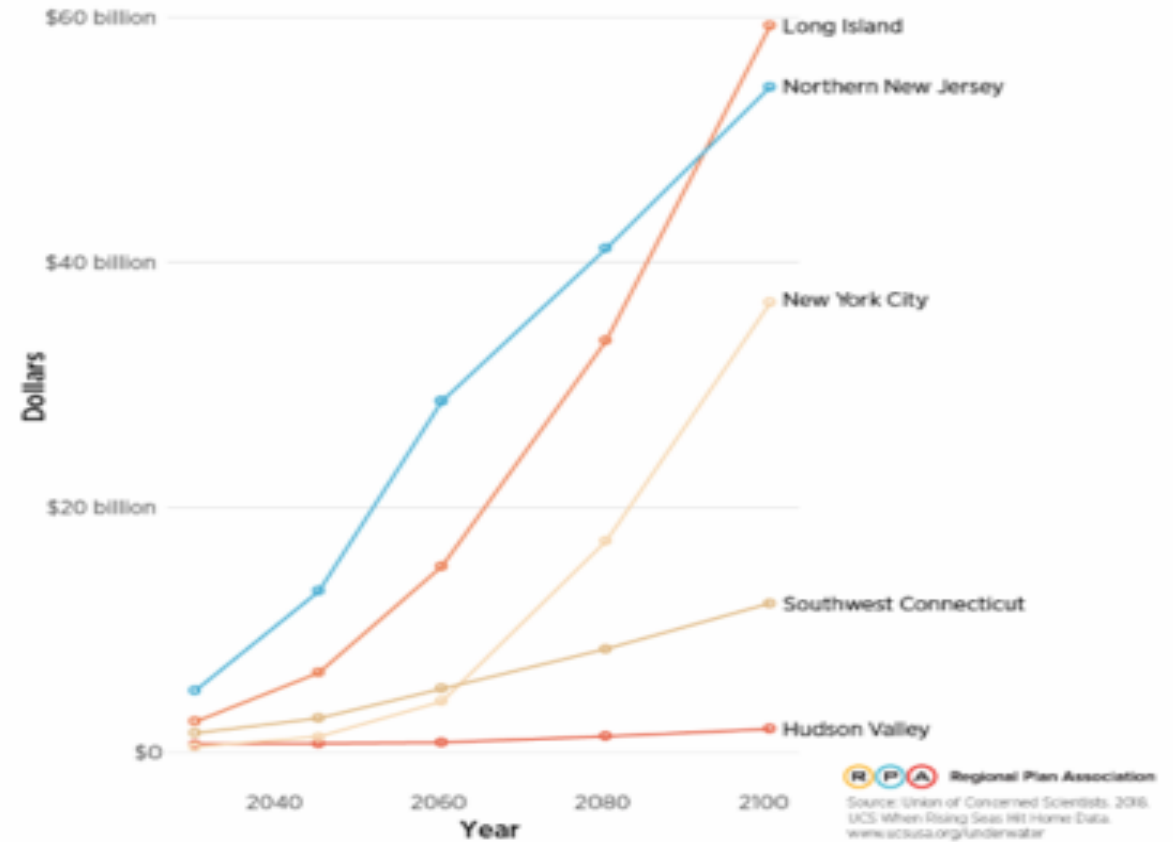
- **CONTAMINATION OF AQUIFERS**
- **BIOLOGICAL CHANGES – ALGAE, DISEASE**
- **RESUSPENSION OF POLLUTANTS**



THE COST: PROPERTY VALUES ALONE

By 2045, >45,000 homes at risk valued at >\$24 billion in NJ/NYC area. By 2100, >285,000 homes valued at \$164 billion at risk.

Property Value at Risk by Subregion



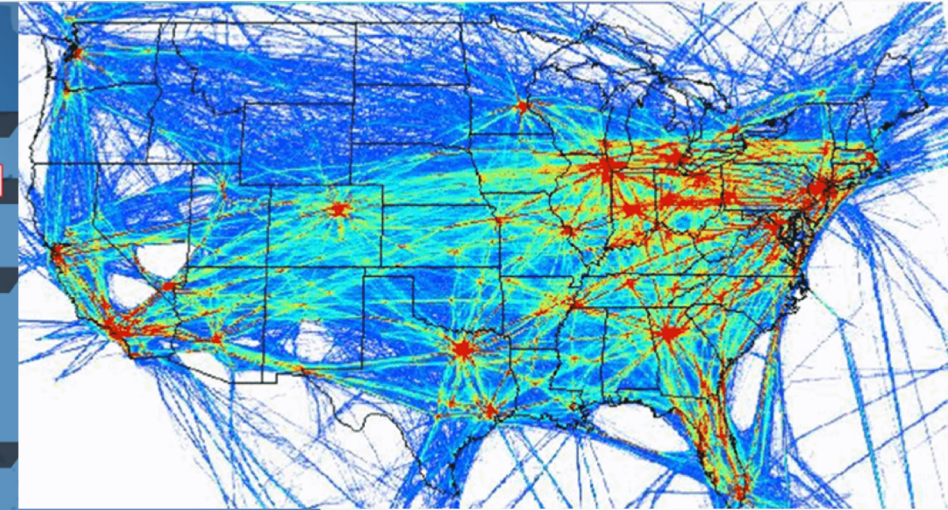
THE COST: COMMERCE IN NJ/NYC



FREIGHT TRAFFIC

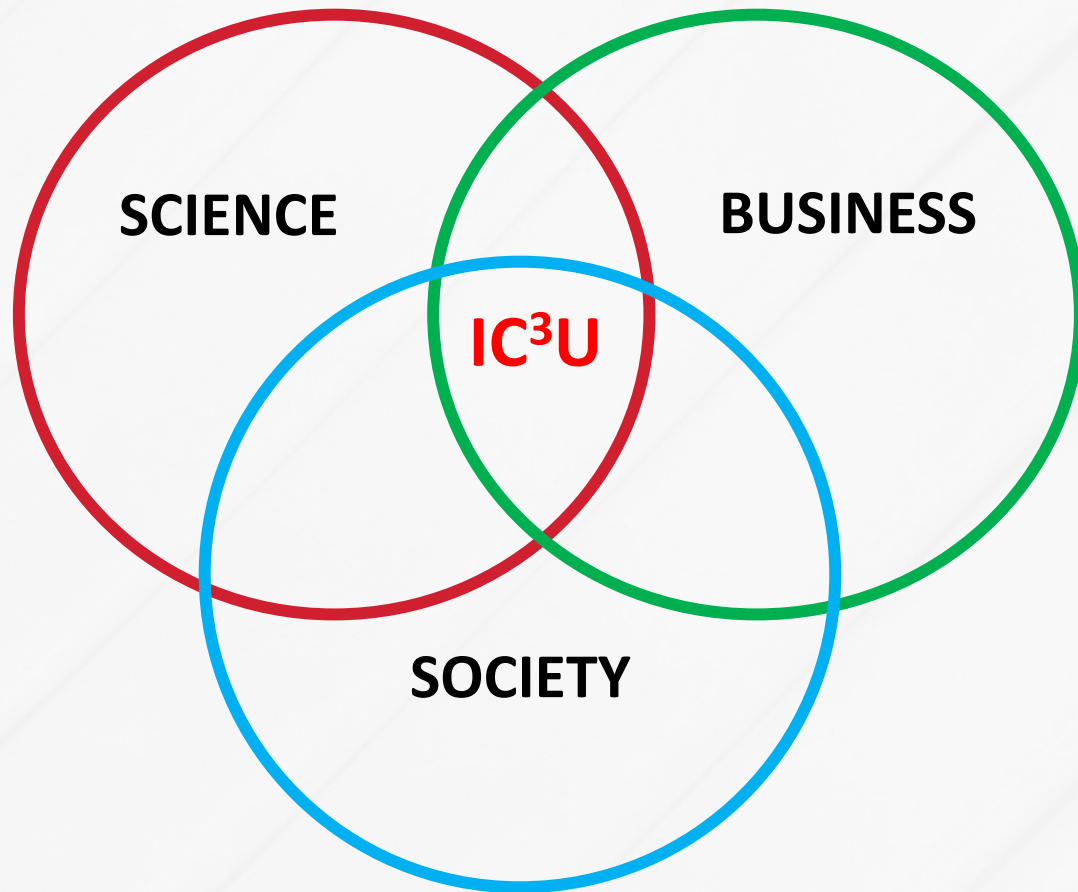


Top 15 Ports of the Americas



AIR TRAFFIC

INSTITUTE OF COASTAL CLIMATE CHANGE IN URBAN AREAS (IC³U)

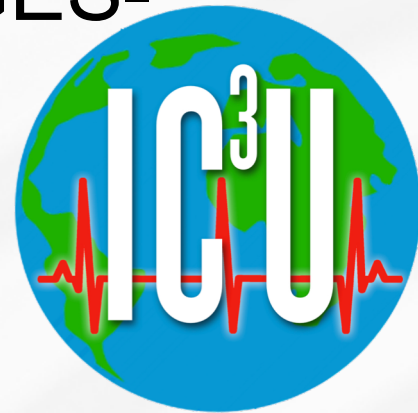


**MULTIDISCIPLINARY ANALYSES –
SCIENCE, BUSINESS, SOCIETY**



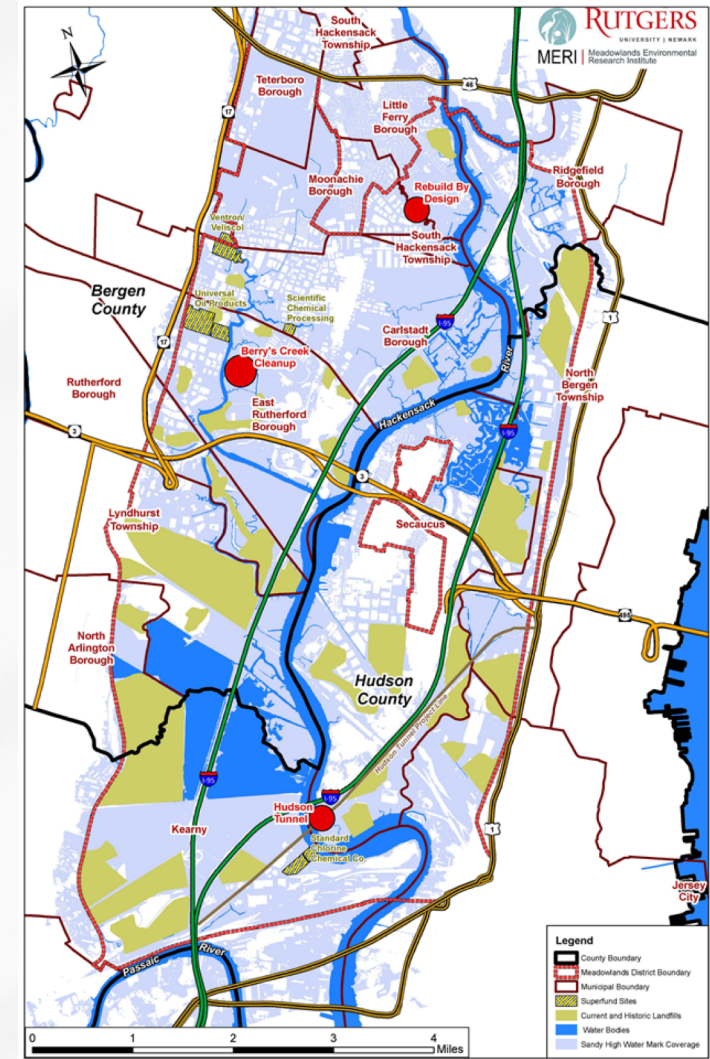
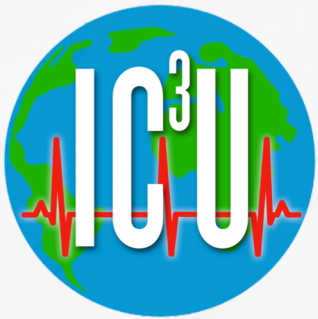
RESEARCH AND ASSESSMENT

- **MULTI DISCIPLINE INFORMED DECISION-MAKING**
GOVERNMENTS, BUSINESSES, COMMUNITIES
- **RESEARCH TO ADDRESS NEED**
- **ADVANCED MODELING:** FORECAST CHANGES-
ENVIRONMENT, BUSINESS, COMMUNITY



MEADOWLANDS ENVIRONMENTAL RESEARCH INSTITUTE (MERI) – SCIENCE

- **REALTIME SENSOR NETWORK**
- **DRONES, GIS MAPPING, DRILL RIG**
- **DATA REPOSITORY**
- **STAKEHOLDER CONSORTIUM**



EXPAND THE MERI SYSTEM TO IC³U

- EXPAND THE SENSOR COVERAGE
- INCREASE PARAMETERS
- DIRECTED RESEARCH STUDIES
- EXPAND STAKEHOLDERS



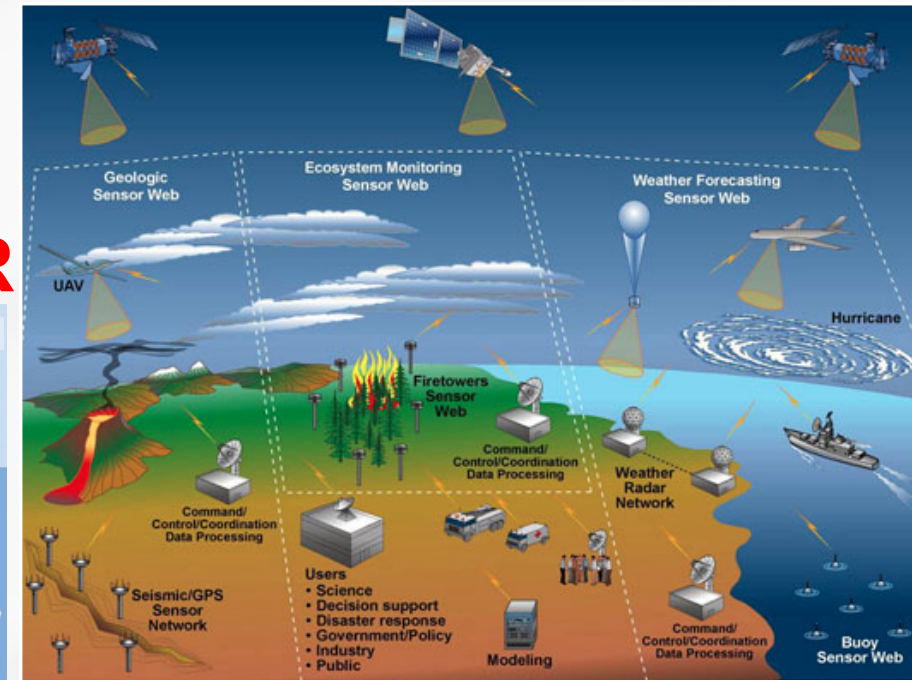
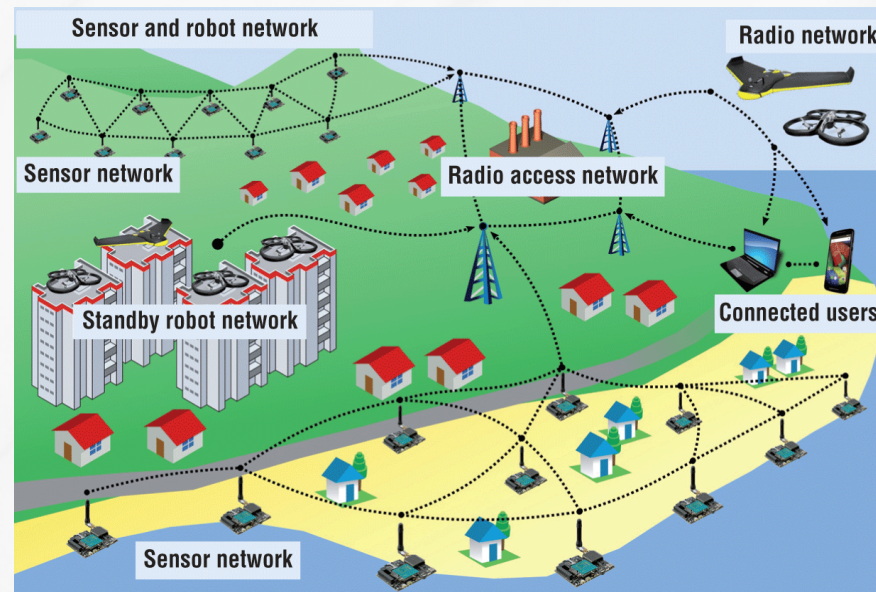
DEVELOP IC³U NERVE CENTER

- **BIG DATA MODELLING CENTER**

- MODEL IMPACT IN REAL TIME
- QUICK REACTION TO CHANGES

- **STAKEHOLDER RESOURCE CENTER**

- BUSINESSES
- GOVERNMENT
- COMMUNITY
- EDUCATION



EDUCATION

- INTEGRATION OF CLIMATE CHANGE INTO CURRICULA FOR **RESILIENCY PREPARED PROFESSIONALS**
- NEW MAJORS AND PROGRAMS
- HANDS-ON EXPERIENCES
- DIVERSE WORKFORCE

