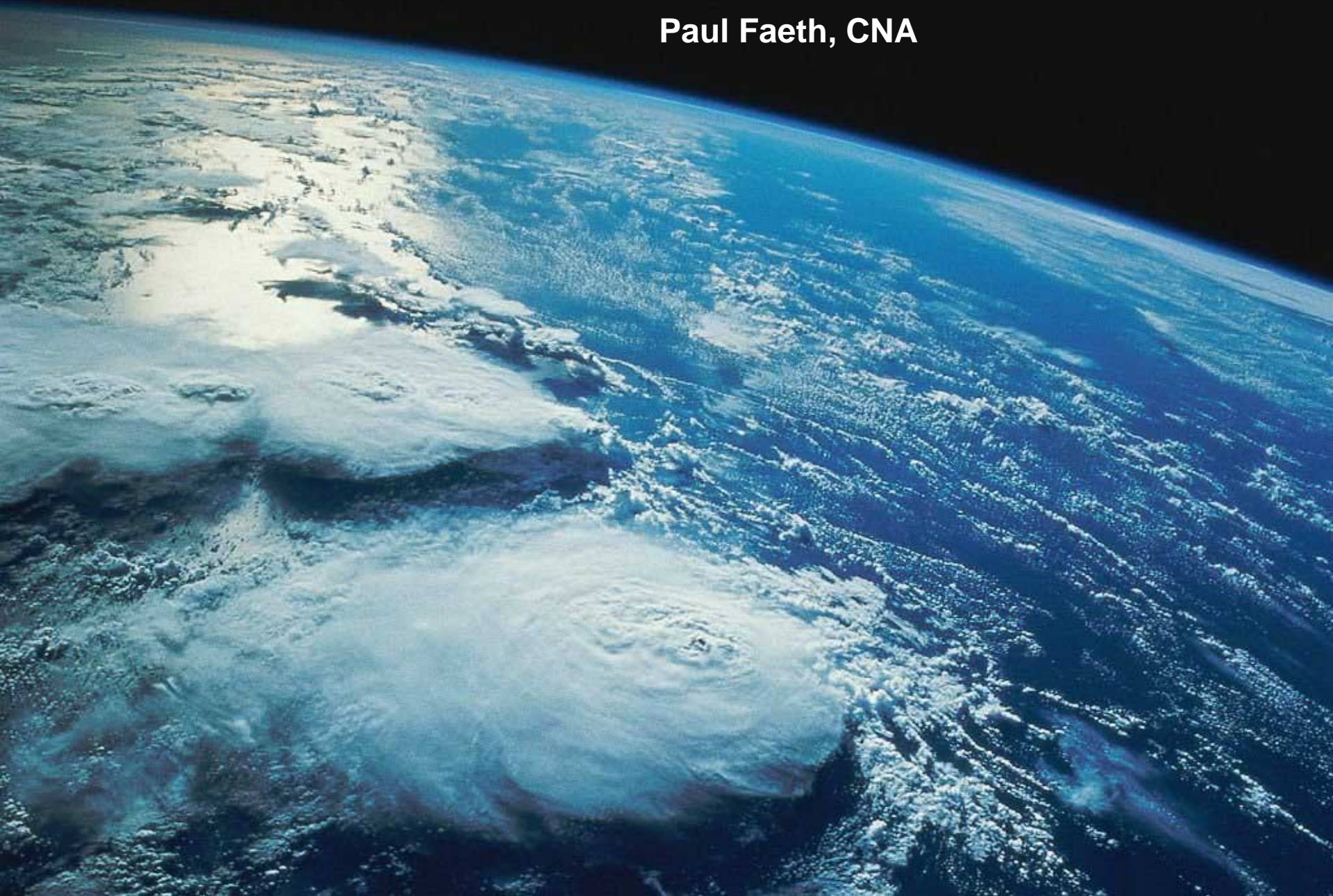
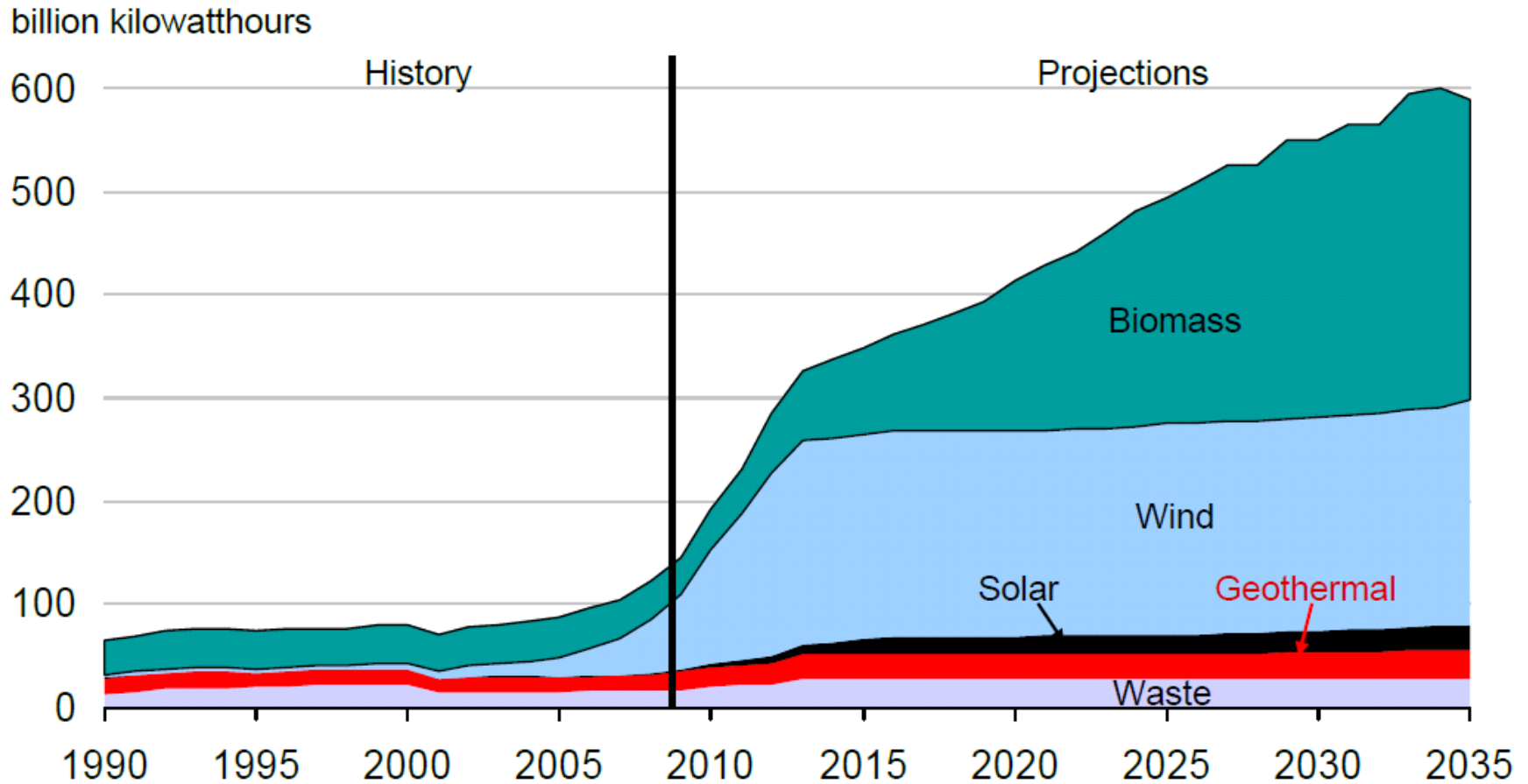


# Water and U.S. National Security Policies

Paul Faeth, CNA



# Nonhydropower renewable sources meet 41% of total electricity generation growth from 2008 to 2035





# Alternative vehicles: They use less petroleum, but producing their fuel guzzles more water.

## Gallons of Water Depleted to Travel 100 Miles



**Ethanol vehicle**



**Hydrogen fuel-cell vehicle**



**Plug-in hybrid electric vehicle**

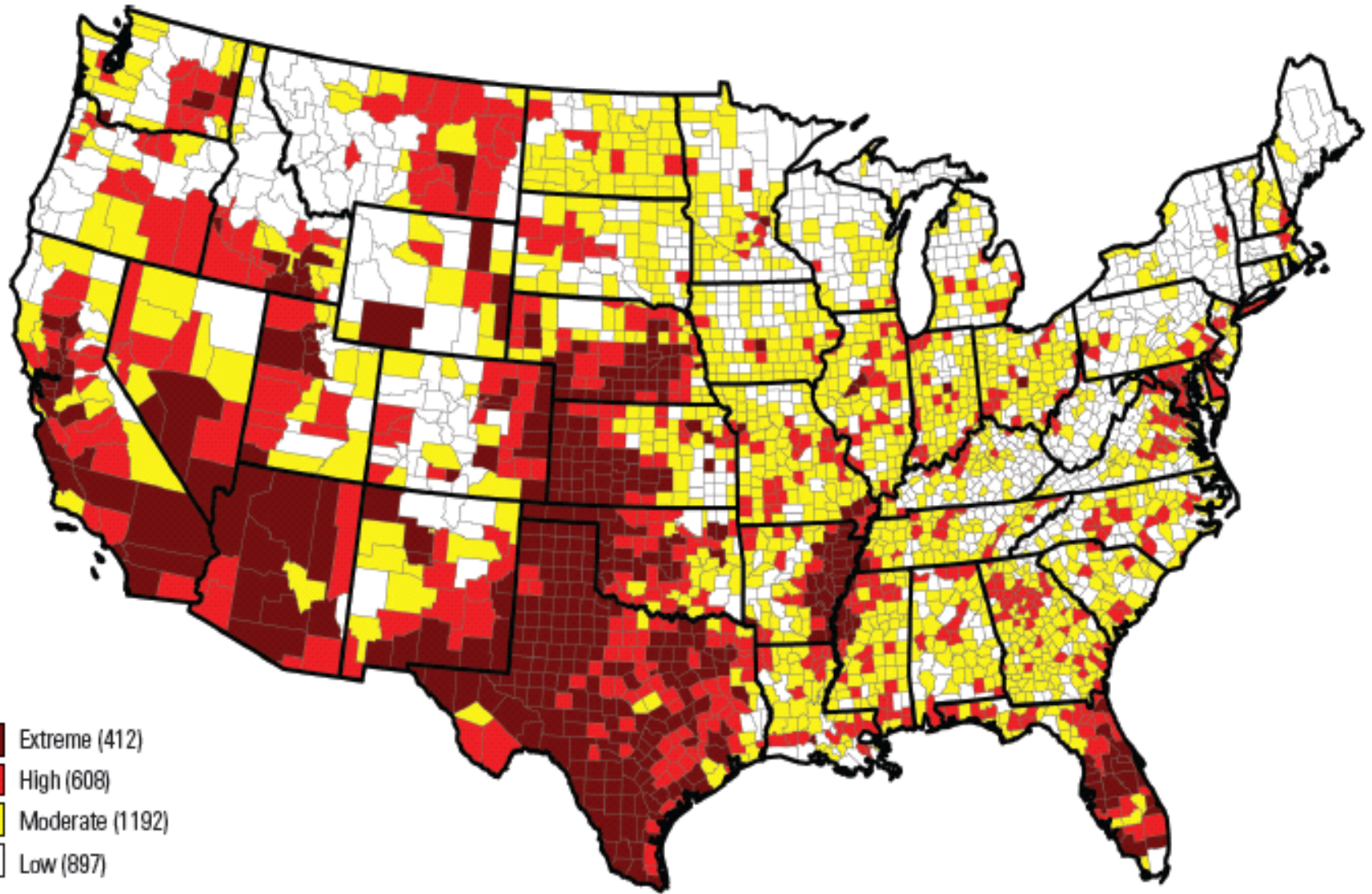


**Gasoline vehicle**

*NOTES: For ethanol made from irrigated corn. Hydrogen for fuel cells is made by electrolysis of water with electricity from standard grid. Water for hybrids cools local power plants and processes their energy source. Water is used to extract and refine oil for gasoline.*

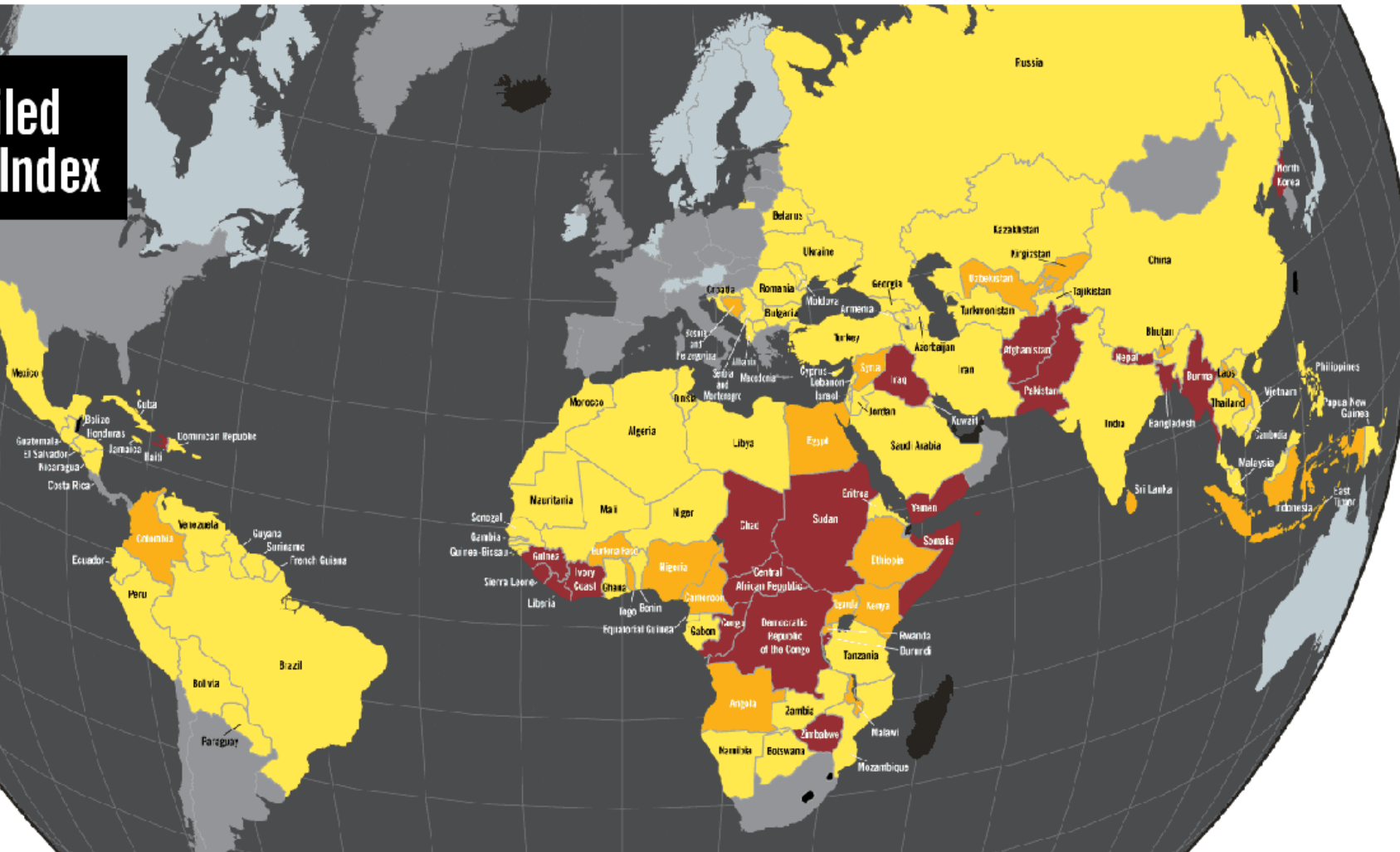
Source: Webber, 2008.

## Water Supply Sustainability Index (2050)



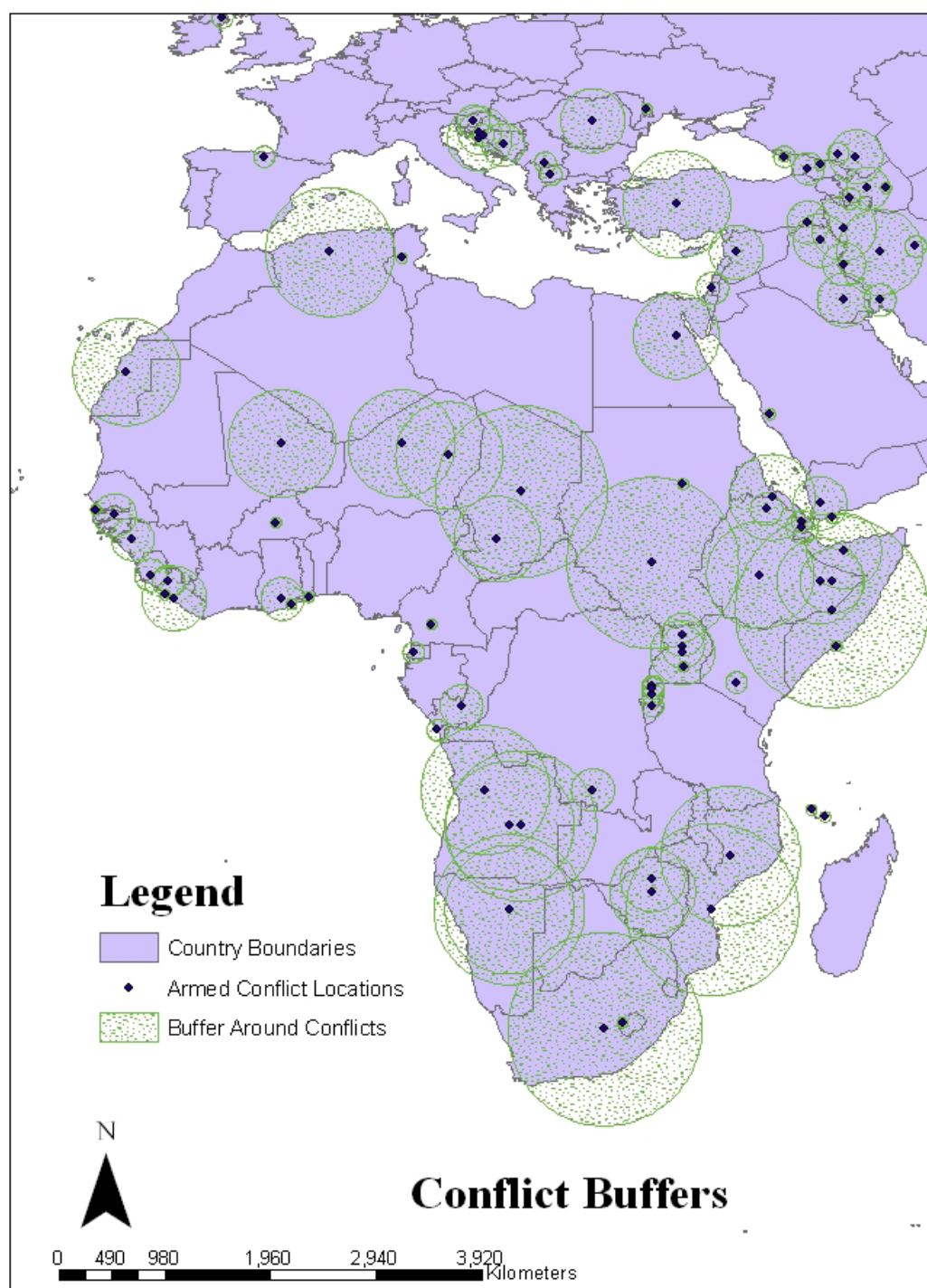
Source: NRDC, 2010

# The Failed States Index





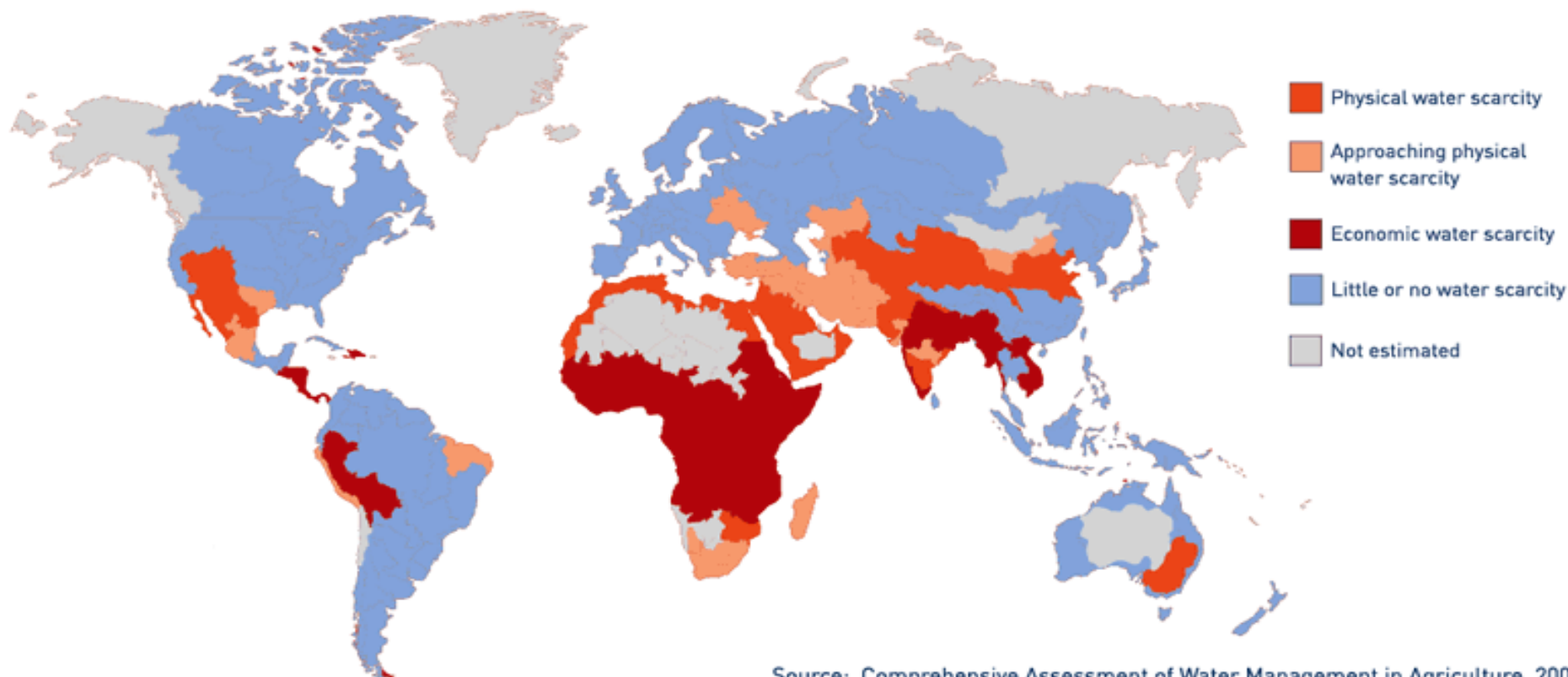
There is a highly significant correlation between rainfall deviations and *high-intensity internal conflicts*.



Source: Levy et al., 2005. CIESIN

# AREAS OF PHYSICAL AND ECONOMIC WATER SCARCITY

- Physical water scarcity**  
water resources development is approaching or has exceeded sustainable limits). More than 75% of the river flows are withdrawn for agriculture, industry, and domestic purposes (accounting for recycling of return flows). This definition—relating water availability to water demand—implies that dry areas are not necessarily water scarce.
- Approaching physical water scarcity.** More than 60% of river flows are withdrawn. These basins will experience physical water scarcity in the near future.
- Economic water scarcity** (human, institutional, and financial capital limit access to water even though water in nature is available locally to meet human demands). Water resources are abundant relative to water use, with less than 25% of water from rivers withdrawn for human purposes, but malnutrition exists.
- Little or no water scarcity.** Abundant water resources relative to use, with less than 25% of water from rivers withdrawn for human purposes.



Source: Comprehensive Assessment of Water Management in Agriculture, 2007

***1/3 of the world's population live in basins that have to deal with water scarcity  
Could be 2/3 by 2025.***