App for Esri "Climate Resilience App Challenge"

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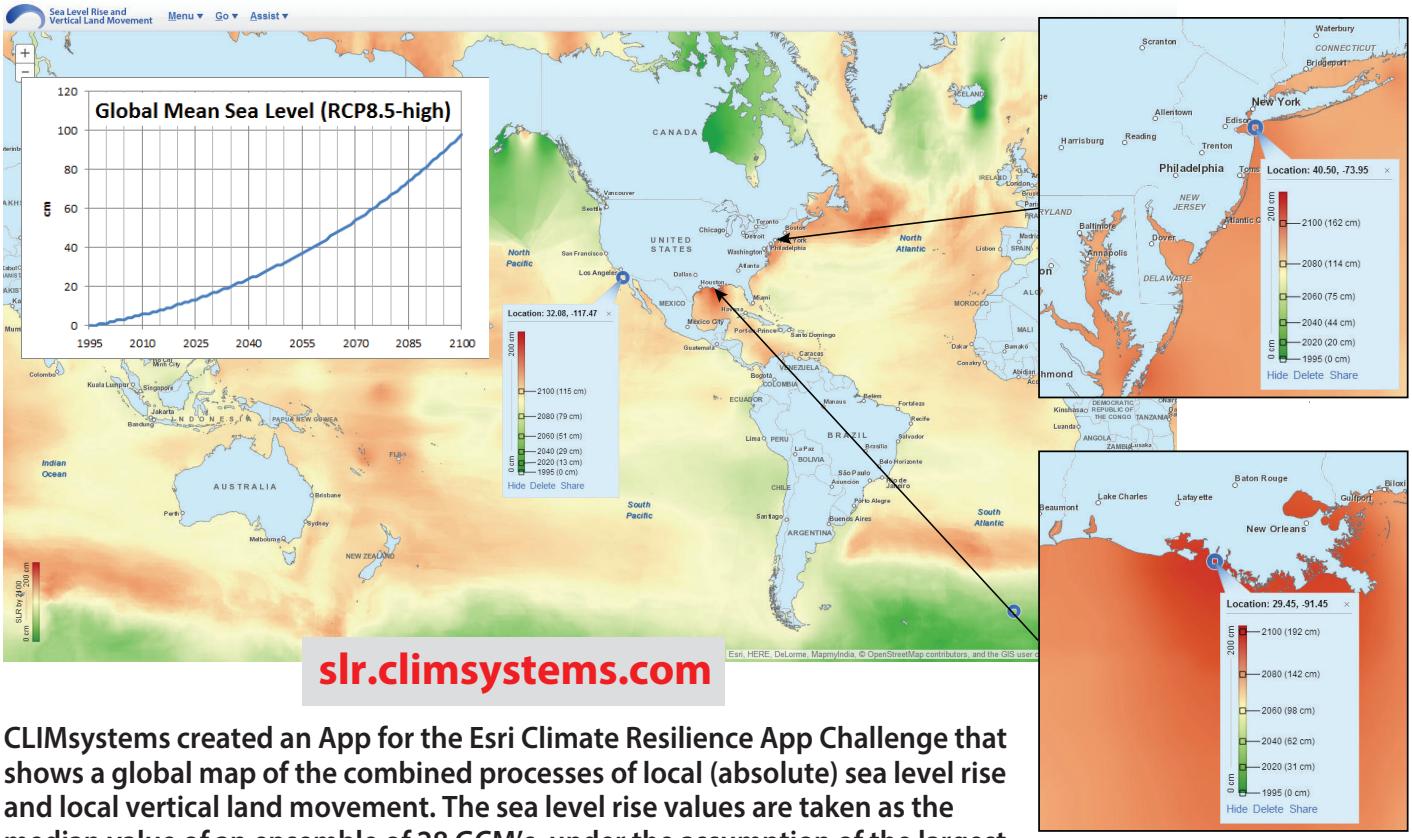
Sea levels around the globe rise owing to climate change: with air temperatures going up because of greenhouse gas emissions, this increases the melting of land-ice, and more importantly, raises the oceans' temperatures causing the sea water to expand. Other processes play a role as well: an air-pressure drop of 10 mbar causes the sea level to rise 10 cm, and changes in ocean-currents and the distribution of ice-masses contribute to variations in sea level rise spatially and seasonally.

There is another critical and often overlooked factor that determines how sea level rise is experienced locally. Land is not stable but can move up or down. The magnitude of this process can be comparable to that of sea level rise. When land rises, it lowers the rate of sea level rise experienced locally, while when land sinks, it exacerbates the local sea level rise.
A proper indication of local sea level rise is crucial for building community resilience!



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CLIMsystems created an App for the Esri Climate Resilience App Challenge that shows a global map of the combined processes of local (absolute) sea level rise and local vertical land movement. The sea level rise values are taken as the median value of an ensemble of 28 GCM's, under the assumption of the largest greenhouse gas emissions as described by the RCP8.5 scenario in AR5. It also assumes a high climate sensitivity. Both assumptions are made to allow analysis of future impacts from the higher end of the emission concentration pathways which are consistent with current trends in greenhouse gas emissions. The vertical land movement values were generated from direct observations through continuous GPS (Global Positioning Systems used by the SONEL program), and from trend analysis of tidal observations (the PSMSL program).

Unique features of our App:

- runs on your phone and tablet (try it *slr.climsystems.com*) !
- uses the latest IPCC findings from the 5th Assessment Report !
- takes local vertical land movement into account !
- focusses on the highest change (even over the seasons) !
- works for coastlines anywhere in the world !
- shows that sea levels will continue to rise beyond 2100 !
- share your findings (try it *slr.climsystems.com/#31.70,-119.49*) !
- is scientifically robust (*www.climsystems.comslr-app/technical/*) !

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