ABSTRACT

Ports play a vital role in the economy of nations and provide a critical link in the supply chain. Ports form the gateway by which essential goods are received within large geographic regions. Because of their function, ports are exposed to substantial risk of flooding, storm events, sea-level rise, and climate change. The resiliency of ports is essential for the economy, the people, and national readiness. The contribution of this research work is in providing a methodology to quantify port resiliency that is applicable at the individual port level and regionally. The research approach first defines a quantifiable measure of systematic resiliency. Then this measure is applied to quantify the resiliency of six regional US ports impacted by Hurricane Matthew (2016). Based on the analysis of these individual ports, a regional resiliency assessment is then applied to quantify the regional resiliency of the impacted area. In general, the results showed that regionally, ports are more resilient to disruptive events than the individual ports that make up the region. This was likely because as one port enters the disaster state, another may be entering the recovery state providing regional continuity. This may suggest that port clusters rely upon each other during disruptive events to increase the overall resiliency of the waterborne commerce. In general, the study ports struggled to absorb the impact of the storm and subsequent closures, whereas adaptability and recovery were significantly larger.