Tsunami modeling was performed by the Tsunami Research Group at Texas A&M University at Galveston (TAMUG). The tsunami modeling process utilized the 3D model TSUNAMI3D (Horrillo et al., 2013) to model landslide-generated tsunamis, compared with the 3D model NEOWAVE (Tran et al., 2005) which simulated wave propagation and detailed runup for inundation mapping. The tsunami generation phase (TSUNAMI3D) used a 15 arc-second (~450m) resolution grid with bathymetry obtained from the National Oceanic and Atmospheric Administration (NOAA) National Geophysical Data Center (NGDC). Coastal inundation modeling phase (NEOWAVE) consisted of a series of nested grids from 15 arc-second (~450m) resolution to 1/3 arc-second (~10m) resolution. Bathymetric/topographic data used in the 15 arc-second (~450m) resolution grids were obtained from NOAA NGDC CRM. Near-shore grids with a 3 arc-second (~10m) or higher resolution were obtained from the NOAA NGDC Tsunami Inundation Digital Elevation Models (DEMs) with a 1/3 arc-second (~10m) resolution and were adjusted to Mean High Water sea level conditions, representing a conservative sea level for the intended use of tsunami modeling.

Local submarine landslides are considered to be the primary potential source of tsunami generation in the Gulf of Mexico (Tran et al., 2005). A suite of seven tsunami source events was established for tsunami modeling, including three identified ancient events (Tran et al., 2005) and four synthetic probabilistic submarine landslides (PSL-A, PSL-B1, PSL-B2, PSL-C), which represent the range of credible landslide events in the Gulf of Mexico. A suite of numerical simulations were performed to model landslide-generated tsunamis, considering a range of possible events. The resulting tsunami generation and propagation were expressed in the models. This map represents a comprehensive assessment of Landslide Tsunami Hazard for the Northern Gulf of Mexico, including tsunami source information, and the current scientific understanding of tsunami generation in the Gulf of Mexico (ten Brink et al., 2009). A suite of tsunami source events was used for tsunami modeling, including three identified ancient events (ten Brink et al., 2009) and four synthetic probabilistic submarine landslides (PSL-A, PSL-B1, PSL-B2, PSL-C) which represent the range of credible landslide events in the Gulf of Mexico. 

The location of these sources is indicated in the adjacent table. The accuracy of the flow depth and inundation line shown on this map is subject to limitations including accuracy of available bathymetric/topographic data, tsunami source information, and the current scientific understanding of tsunami generation and propagation as expressed in the models. This map represents a comprehensive assessment of Landslide Tsunami Hazard for the Northern Gulf of Mexico, including tsunami source information, and the current scientific understanding of tsunami generation in the Gulf of Mexico (ten Brink et al., 2009). A suite of tsunami source events was used for tsunami modeling, including three identified ancient events (ten Brink et al., 2009) and four synthetic probabilistic submarine landslides (PSL-A, PSL-B1, PSL-B2, PSL-C) which represent the range of credible landslide events in the Gulf of Mexico.

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METHOD OF PREPARATION

Tsunami modeling was performed by the Tsunami Research Group at Texas A&M University at Galveston (TAMUG). The tsunami modeling process utilized the 3D model TSUNAMI3D (Horrillo et al., 2013) to model landslide-generated tsunamis, compared with the 3D model NEOWAVE (Tran et al., 2005) which simulated wave propagation and detailed runup for inundation mapping. The tsunami generation phase (TSUNAMI3D) used a 15 arc-second (~450m) resolution grid with bathymetry obtained from the National Oceanic and Atmospheric Administration (NOAA) National Geophysical Data Center (NGDC). Coastal inundation modeling phase (NEOWAVE) consisted of a series of nested grids from 15 arc-second (~450m) resolution to 1/3 arc-second (~10m) resolution. Bathymetric/topographic data used in the 15 arc-second (~450m) resolution grids were obtained from NOAA NGDC CRM. Near-shore grids with a 3 arc-second (~10m) or higher resolution were obtained from the NOAA NGDC Tsunami Inundation Digital Elevation Models (DEMs) with a 1/3 arc-second (~10m) resolution and were adjusted to Mean High Water sea level conditions, representing a conservative sea level for the intended use of tsunami modeling.

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