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Near-real-time Forensic Disaster Analysis: experiences from hurricane Sandy

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Hurricane Sandy was the last tropical cyclone of the 2012 Northern Atlantic Hurricane season that made landfall. It moved on an unusual track from the Caribbean to the East Coast of the United States from 24 to 30 October as a Category 1 and 2 Hurricane according to the Saffir-Simpson Scale. Along its path, the severe storm event caused widespread damage including almost 200 fatalities. In the early hours of 30 October, Sandy made landfall near Atlantic City, N.J.
Sandy was an extraordinary event due to its multihazard nature and several cascading effects in the aftermath. From the hydro-meteorological perspective, most unusual was the very large spatial extent of up to 1,700 km. High wind speeds were associated with record breaking storm surges at the U.S. Mid- Atlantic and New England Coast during high (astronomical) tide, leading to widespread flooding. Though Sandy was not the most severe storm event in terms of wind speed and precipitation, the impact in the U.S. was enormous with total damage estimates of up to 90 billion US$ (own estimate from Dec. 2012).
Although much better data emerge weeks after such an event, the Forensic Disaster Analysis (FDA) Task Force of the Center for Disaster Management and Risk Reduction Technology (CEDIM) made an effort to obtain a comprehensive and holistic overview of the causes, hazardous effects and consequences associated with Sandy immediately after landfall at the U.S. coast on 30 October 2012. This was done in an interdisciplinary way by collecting and compiling scattered and distributed information from available databases and sources via the Internet, by applying own methodologies and models for near-real time analyses developed in recent years, and by expert knowledge.

This contribution gives an overview about the CEDIM-FDA analyses' results. It describes the situation that led to the extraordinary event, highlights the interaction of the tropical cyclone with other hydro-meteorological events, and examines the impacts such as social and economic losses including cascading effects, for example, due to power outages. It is examined how Sandy compares to historic hurricane events in the U.S., both from the hydro-meteorological and impact perspective. Direct and indirect losses are estimated by comparison with past events and with the help of an economic loss model that describes the interdependencies between various economic sectors (input-output approach) combined with an assessment of the industrial vulnerability against indirect damages.