

Darina Nosova
I. M. Garkusha, research supervisor
N. V. Poperechna, language adviser
SHEI «National Mining University», Dnipropetrovsk

Developing Disaster Management Capacity

The image of hurricanes in the public perception is shaped in large part by the widespread coverage of weather satellites that capture movement, shape and extent of the menacing cloud formations associated with these powerful natural phenomena.

Great strides have been made to analyse and predict the behavior of hurricanes. Still, the destructive forces of excessive rain, high wind and pounding waves usually associated with hurricanes can endanger many people and wreak havoc along their path. The hurricane threat demands careful preparation in order to protect the population and safeguard against damage and loss of properties and livelihoods.

The Group on Earth Observations (GEO) has chosen to address the challenge of hurricane and more generally disaster management in the Caribbean through its regional end-to-end pilots. The Caribbean Satellite Disaster Pilot (CSDP) is a regional project under GEO Task DI-09-02B. The objectives of the pilot are threefold:

- to demonstrate the effectiveness of satellite imagery to strengthen regional, national and community level capacity for mitigation, management and coordinated response to natural hazards;
- to identify specific satellite-based products that can be used for disaster mitigation and response on a regional level;
- to identify capacity building activities that will increase the ability of the region to integrate satellite-based information into disaster management initiatives.

Researchers from North Carolina State University have developed a new method for forecasting seasonal hurricane activity that is 15 percent more accurate than previous techniques. This approach should give policymakers more reliable information than current state-of-the-art methods and more confidence in planning for the hurricane season. The researchers have developed a “network motif-based model” that evaluates historical data for all of the variables in all of the places at all of the times in order to identify those combinations of factors that are most predictive of seasonal hurricane activity. For example, some combinations of factors may correlate only to low activity, while other may correlate only to high activity.

The groups of important factors identified by the model are then plugged into a program to create an ensemble of statistical models that present the hurricane activity for the forthcoming season on a probability scale.

Thus, the researchers plan to use the newly identified groups of relevant factors to advance the understanding of the mechanisms that influence hurricane variability and behavior. This could ultimately improve the ability to predict the track of hurricanes, their severity and how global climate change may affect hurricane activity well into the future.