Assessment
The following are the captions from the USGS website where these photos are archived. Some possible answers are based on the USGS captions. Images, captions, and links to more recent storms can be found on the USGS web page: http://coastal.er.usgs.gov/hurricanes/irene/lidar/

Major things to look for in student answers and development:
• They are making their own observations and noting on the figures where they see changes.
• They are making estimates of the depth of erosion or accretion at particular locations.
• They are describing to each other what the main changes are for each area.
• (optional) They are making observations, using the pre-storm image, about what might be a vulnerable area.

Location 1: Core Banks, NC. A relatively low beach section near the center of the pre-storm image likely indicates where breaches have been cut through the barrier island at previous times. The Irene breach is clearly seen in the post-storm LIDAR data. The difference image shows over 1 m of vertical erosion in the beaches that were breached.

Location 2: Portion of Ocracoke Island, NC. In the pre-storm image, the continuous, relatively high elevations, occurring just seaward of the road, appear to be either natural or human-made dunes. In the post-storm image, the central portion of these dunes was eroded. The difference image shows erosion of the beach and dunes and deposition landward of the road, signs of overwash when waves overtop the beaches and dunes and drive sand inland.

Location 3: Portion of Hatteras Village, NC. In the pre-storm image, note the prominent dunes (broad line of relatively high elevations) across the center of the image. In the post-storm, the band of dunes appears somewhat narrower. This is seen more clearly in the difference image, where landward of the eroded beach, there is a line of high erosion of the ocean side of the dunes, presumably caused by waves during Irene. There is also some indication of overwash, with a more landward line of erosion followed by a line of deposition.

Location 4: Portion of the Outer Banks near Rodanthe, NC. In the pre-storm image, note where the road bends seaward, approaching the Atlantic Ocean. Here, the road is protected by sand-filled bags that appear dune-like in the LIDAR topography. The post-storm image reveals where the waves and surge from Irene broke through the protection and carved a breach. The difference image shows the extensive erosion associated with breach formation.

Location 5: Portion of the Outer Banks in the Pea Island National Wildlife Refuge, NC. In the pre-storm image, note the two particularly low elevation areas between a relative high. During the storm, surge and waves were funneled through

the lower areas, carving two breaches (post-storm image). The difference image shows the intricate pattern of erosion associated with the formation of the breaches.