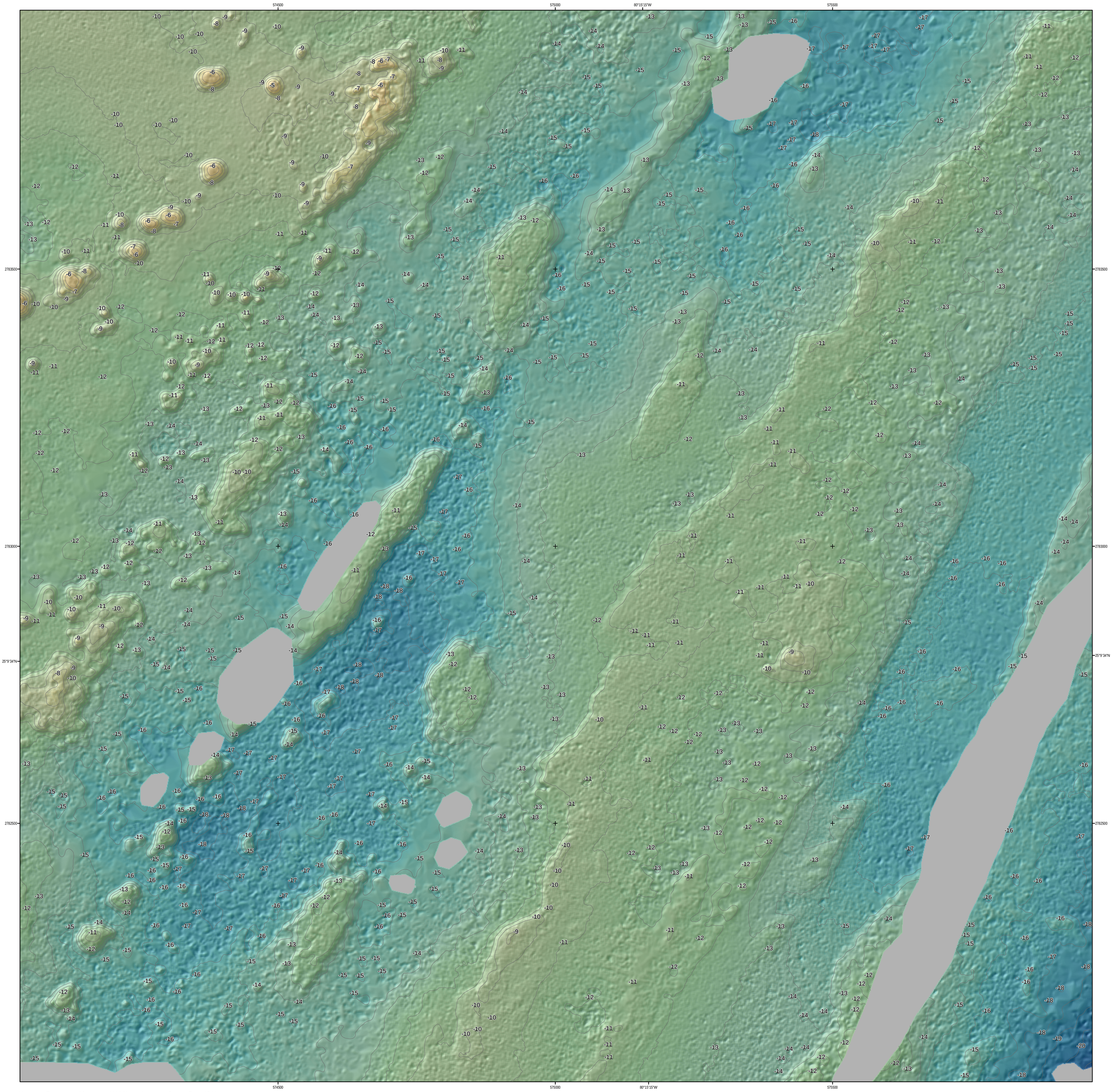
U.S. DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

Prepared in cooperation with the
NATIONAL PARK SERVICE (NPS) AND
THE NATIONAL AERONAUTICS AND SPACE ADMINISTRATION (NASA)

OPEN FILE REPORT 2007-1432
TILE 28 of 32 (ST)

Brock, J.C., Wright, C.W., Nayegandhi, A., Patterson, M., Wilson, I., and Travers, L.J., 2007,
USGS-NPS-NASA EAARL Submarine Topography,
Northern Florida Keys Reef Tract,
U. S. Geological Survey Open File Report 2007-1432 (On DVD).



Universal Transverse Mercator. 1983 North American Datum-Zone 17 North
Topography mapped using NASA Experimental Advanced Airborne Research Lidar (EAARL) July 2001, September 2001, and August 2002.
This map is not intended for use in navigation.

SCALE 1:2500

0.1 0.05 0 0.1 0.2 0.3 MILES

0.1 0.05 0 0.1 0.2 0.3 KILOMETERS

NORTH AMERICAN VERTICAL DATUM OF 1988

CONTOUR INTERVAL 1 METER

NAVD 88 Elevation (meters)

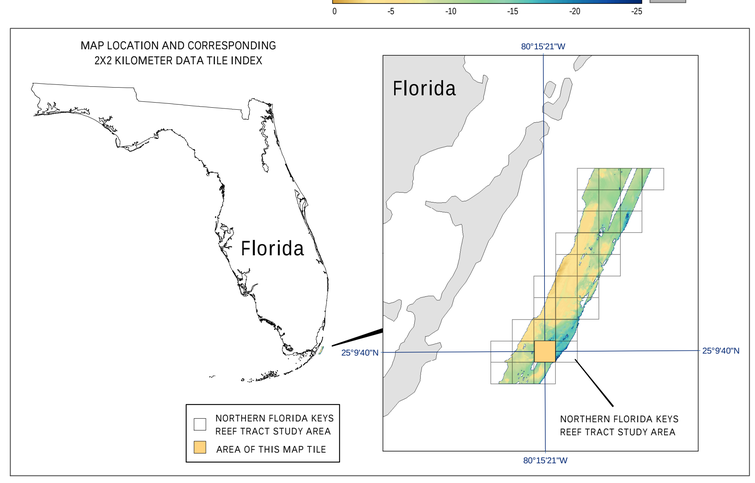
0 -5 -10 -15 -20 -25 NO DATA

Northern Florida Keys Reef Tract
USGS-NPS-NASA EAARL Submarine (ST) Topography
Map Tile 574000e_2784000n_17z

By John C. Brock[1], C. Wayne Wright[2], Amar Nayegandhi[3], Matt Patterson[4], Iris Wilson[4], and Laurinda J. Travers[5]

[1] U S Geological Survey, FISC, St. Petersburg, FL
[2] NASA Wallops Flight Facility, Wallops Island, VA
[3] ETI Professionals, Contracted to USGS, FISC, St. Petersburg, FL
[4] NPS, South Florida/Caribbean Network Inventory and Monitoring Program, Miami, FL
[5] Eckerd College, Contracted to USGS, FISC, St. Petersburg, FL

2007



Project Description
This lidar-derived topographic map was produced as a collaborative effort between the U.S. Geological Survey (USGS) Coastal and Marine Geology Program, FISC St. Peterburg Center, the Northeast Coastal and Barrier Network of the National Park Service (NPS) Inventory and Monitoring Program, the South Florida/Caribbean Network of the NPS Inventory and Monitoring Program, and the National Aeronautics and Space Administration (NASA) Wallops Flight Facility. The aims of the partnership that created this product are to develop advanced survey techniques for mapping barrier island geomorphology and habitats, and to enable the monitoring of ecological and geological change within National Seashores. This product is based on data from an innovative airborne lidar instrument under development at the NASA Wallops Flight Facility, the NASA Experimental Advanced Airborne Research Lidar (EAARL).

Data Description
The laser soundings used to create this map were collected during July 2001, September 2001 and August 2002 by the NASA EAARL system mounted on aCessna 310 aircraft. The EAARL uses a 'waveform-resolving' green laser capable of mapping submarine and subaerial (land) topography in a single overflight. The EAARL system is typically flown at 300 m altitude AGL, resulting in a 240 m swath for each flightline. Data collection occurred with approximately 50% overlap between flightlines, resulting in about one laser sounding per square meter. The data were processed by the USGS FISC St. Petersburg Center to produce 1-meter resolution raster images that can be easily ingested into a Geographic Information System (GIS). The data were organized as 2 km by 2 km data tiles in 32-bit floating-point integer GeoTiff format. Contour line and hillshade layers were generated from the lidar data tile and incorporated into this map product.

Further Reading
Brock, J.C., and Sallenger, A., 2001, Airborne topographic lidar mapping for coastal science and resource management: U.S. Geological Survey Open File Report 01-46, p. 4.

Brock, J.C., Wright, C.W., Nayegandhi, A., Clayton, T., Hansen, M., Longenecker, J., Gesch, D., and Crane, M., 2002, Initial results from a test of the NASA EAARL lidar in the Tampa Bay Region: Transactions of the Gulf Coast Association of Geological Societies, v. 52, p. 89-98.

Wright, C.W. and Brock, J.C., 2002, EAARL: A lidar for mapping shallow coral reefs and other coastal environments, *in* the Proceedings of the Seventh International Conference on Remote Sensing for Marine and Coastal Environments, Miami, May 20-22, 2002: Ann Arbor, MI, Veridian International Conferences, 1 computer optical disc.