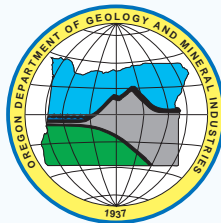


**A GEOGRAPHICAL INFORMATION SYSTEM (GIS) DATA SET
OF BEACH MORPHODYNAMICS DERIVED FROM
1997, 1998, AND 2002 LIDAR DATA FOR THE
CENTRAL TO NORTHERN OREGON COAST:**

**TECHNICAL REPORT TO THE OREGON DEPARTMENT OF
LAND CONSERVATION AND DEVELOPMENT**

by

Jonathan C. Allan and Roger Hart



Oregon Department of Geology and Mineral Industries,
Coastal Field Office, 313 SW Second Street, Suite D,
Newport, OR 97365

Cover Photo — View south overlooking the beach at Manzanita and along Nehalem Spit. Photo taken by J. C. Allan, July 2004.

State of Oregon
Department of Geology and Mineral Industries
Vicki S. McConnell, State Geologist

Open File Report

OFR O-05-09

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NOTICE

The Oregon Department of Geology and Mineral Industries is publishing this paper because the information furthers the mission of the Department. To facilitate timely distribution of the information, this report is published as received from the authors and has not been edited to our usual standards.

Oregon Department of Geology and Mineral Industries Open File Report
Published in conformance with ORS 516.030

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EXECUTIVE SUMMARY

The objective of this study is to develop a coastwide GIS database containing information on the morphology of beaches and dunes along the Oregon coast from an analysis of Light Detection and Ranging (LIDAR) data that were measured jointly by the U.S. Geological Survey (USGS), the National Aeronautics and Space Administration (NASA), and the National Oceanic and Atmospheric Administration (NOAA) in 1997, 1998, and 2002. The objective has been successfully accomplished for the central to northern Oregon coast. The general purpose of this type of work is to develop fundamental baseline information using virtual beach profiles (cross-sections) in a geographical information system (GIS) and shoreline proxy information for each littoral cell mapped along the Oregon coast using LIDAR, and for each year in which LIDAR data have been measured that can be subsequently accessed by staff from regulatory state agencies (e.g., the Department of Land Conservation and Development [DLCD] and Oregon State Parks and Recreation Department [OPRD]), coastal managers, local government planning authorities, geotechnical firms, and the public. The development of such a database has yielded an unprecedented volume of information (1783 beach profiles), which may be used to assess the state of beaches along the Oregon coast as of September 2002 and, in particular, the response of beaches to the 1997-98 El Niño event as well as the gross response of beaches to extreme storms that occurred between 1997 and 2002. It is hoped that in time, such a database can be expanded further to include sites along the southern Oregon coast, which would complete the study by providing a coastwide GIS database of the state of Oregon's beaches. In addition, as new LIDAR flights are flown, it will be relatively straightforward to update beach database files, shorelines, and profile images to accommodate the new information, thereby further expanding the usefulness of such a database.

Viewing the LIDAR Data

This CD contains a free utility, MapInfo® ProViewer, that allows you to view the LIDAR data for this report. See the readme.txt file on the CD for instructions on installing and using the viewer.

You can also view the LIDAR data online at:

Oregon Coastal Atlas

(http://www.coastalatlantlas.net/maps/dogami/lidar/dogami_lidar_maps.php)