

Channel Coast News

Issue 11 - March 2004

The newsletter for the Southeast Strategic Regional Coastal Monitoring Programme www.channelcoast.org

Regional News

South East Coastal Group

The spring topographic profile campaign is about to commence with all designated profiles being re-measured during the coming weeks. Results should be available early in May.

The new WaveRex wave/tide radar for Deal Pier has been delivered and is awaiting completion and installation of the supporting framework. This should be completed by early May and installation and commissioning will follow shortly after.

South Downs Coastal Group

Gardline Environmental is currently processing the bathymetric data for the SDCG frontage, with the entire dataset expected to be delivered by the end of March 2004. Regarding the baseline surveys, The EA have now received the original film from the March 2003 flight BKS. This will be forwarded to Kampsax who will extracting the required profiles to meet the baseline specification.

Halcrow are to commence the Beach Management Plan Survey of the MU2 & 2A (Pagham) frontages during the week commencing 22 March 2004, using their Land-based Laser scanning system. Following discussions with the EA regarding the BMP surveys being undertaken in conjunction with the ABMS flight in July/August, it has been decided to go ahead and undertake all future BMP surveys in this way.

Creation of an Access Point GIS Layer is ongoing to aid our Post Storm and Beach Management Plan Survey contractor, Halcrow, to locate and gain access to the entire frontage. This, as with the structural datasets that have also been created, may also be useful for inclusion in the EA's Nation Flood and Coastal Defence Database (NFCDD).

SCOPAC

The spring profile surveys are now well under way, and the recent period of calm weather meant that Titan could make considerable inroads into the hydrographic survey of the Isle of Wight. To date, the area between Ventnor and Ryde has been completed and the data sent to the CCO where it has been quality checked and prepared for the archive.

Environment Agency (Southern Region)

The tender documents for the LiDAR contract have now been circulated to the shortlisted consultants and responses are due by 13 April.

The aerial photography contractor, Kampsax, has indicated that 12 additional photo control points (PCPs) are required on the Isle of Grain. These are being collected by BKS, to the same specification as the other PCPs within the regional monitoring programme. Discussions are also ongoing with Arun District Council with regard to quality assuring the aerial photography and photogrammetry deliverables.

Channel Coastal Observatory

A paper entitled "Applications of GIS and web delivery of coastal monitoring data" was presented at the GIS in the Marine and Coastal Environment Conference at Oceanology International. The paper was received with much interest and many questions, including from other European oceanographic institutions.

A training day in MapInfo was held at the CCO; a similar course for ArcView is planned for next month (date to be decided). Any project partners who wish to take part, please contact their area representative.

Contacts

If you have any queries about the Strategic Regional Coastal Monitoring Programme, or would like a personal copy of this newsletter by email, please contact your area representative:

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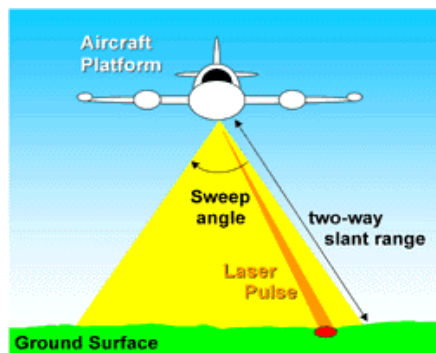
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Light Detection and Ranging (LiDAR)

Light Detection and Ranging (LiDAR) is an airborne mapping technique, which uses a laser to measure the distance between the aircraft and the ground. This technique obtains details of the location and height of features in order to produce a terrain map.

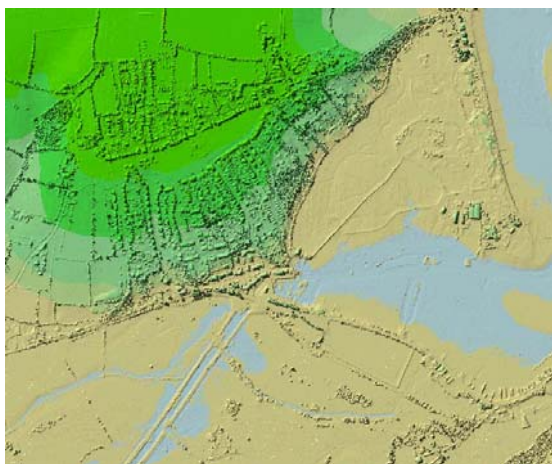
The aircraft is positioned and navigated using Global Positioning System (GPS) corrected to known ground reference points (*see Issue 4 for details*). The distance to the ground surface is derived by measuring the time it takes for the emitted light (LiDAR return) to reach the earth's surface and reflect back to the instrument onboard the aircraft.



The aircraft flies at a height of about 800 metres above ground level and the instrument measures the range to a small area on the ground. The laser then scans rapidly across the scan width (the ground surface in the diagram marked in yellow) giving a series of point measurements.

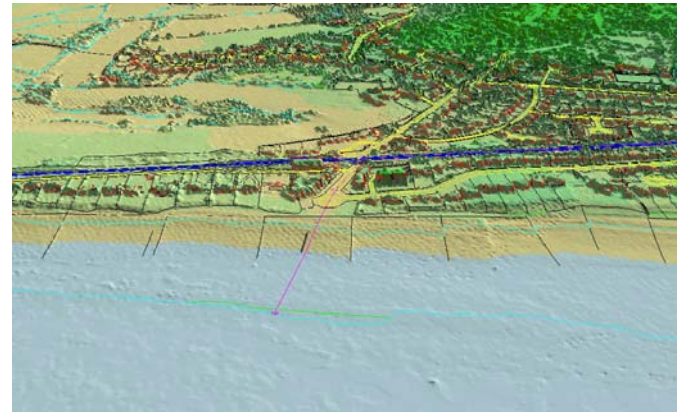
The scan width will vary depending on the purpose of the data collection, the required density and spacing of data readings, weather conditions and other factors. A scanning width of approximately 600m is usual, which produces individual measurements on the ground at 2 metre intervals. This density of measurements is sufficient to generate a highly resolved terrain model, such as this 2D colour-coded elevation model of Bembridge Harbour.

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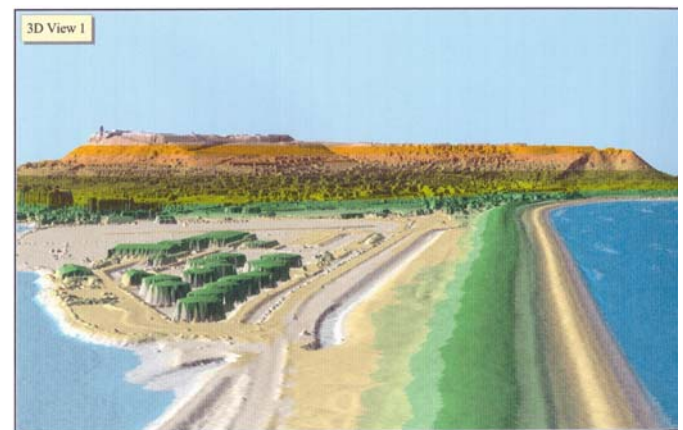


A recent LiDAR survey of Chesil Beach had a resolution of 0.5m, giving 4 million points per km².

Other products that can be generated from the LiDAR data include height contour plots and also 3D perspective views which provide easy visualisation of surveyed areas.



3D image of Cooden Bay



3D image of Portland

One of the most useful applications for LiDAR is to provide topographic data for inaccessible areas such as cliff faces or mudflats. Repeated LiDAR surveys can then be used to look at cliff erosion, geomorphology and land being set aside for managed retreat.

Recent work undertaken by English Nature and the National Centre for Environmental Data and Surveillance (NCEDS) investigated another potential use for LiDAR data. Their research indicated that LiDAR data can be used in combination with other remote sensing techniques to monitor vegetation within intertidal habitats¹. At certain test sites, using the LiDAR data together with the multi-spectral information from a CASI image improved significantly the accuracy of saltmarsh classification.

Another development is to use LiDAR for bathymetric surveying in shallow water. The technique has been used successfully in the clear waters of Australia and in the US and research is underway to apply laser measuring in the sediment-laden waters around the UK.

¹ English Nature, 2003. *The development of remote sensing techniques for marine SAC monitoring. Research Report 552.*