Cover photograph: Worbarrow
L.Saggers
Southeast Strategic Regional Coastal Monitoring Programme

Annual Report 2012 – Durlston Head to Portland Bill

1. **Introduction**
Analysis presented in this interim report provides an overview of beach changes and wave and tidal measurements since the commencement of the Southeast Strategic Regional Coastal Monitoring Programme. The first beach surveys took place during the winter of 2003 and changes are reported until spring/summer 2013.

Data are presented at several levels:
- Process cell summary of profile change from 2011 to 2012
- Process cell summary of profile change from 2003/4/5 to 2012
- Detailed beach profile change from 2011 to 2012
- Detailed beach profile change from 2003/4/5 to 2012
- Difference models where applicable between previous topographic baseline surveys and 2012
- Profile envelope graphs (on CD)
- Trend analysis of beach cross-sectional area (on CD)

The process cell summary maps provide an at-a-glance summary of the changes during the past year and over the longer term. It is recommended that the user should use the maps to identify areas of interest and then examine the individual profile plots and trends. Colour-coded lines highlight areas of maximum change and identify profiles which might need closer examination.

2. **Hydrodynamic data**
   a. **Waves**
   A directional Waverider buoy was deployed in Weymouth Bay on 18 December 2006. The full wave report is given at Annex A.

   b. **Tides**
   A tide gauge was installed on Swanage Pier in March 2007 with kind permission of Swanage Pier Trust.

3. **Survey data – topographic**
From Worbarrow Tout around to Weymouth most changes have been relatively minor over the past year. Over the longer term the most notable erosion has occurred at the western end of survey units.

Dates of the surveys are given in Annex E and the detailed topographic survey report is given in Annex F.
4. **Survey data - bathymetry**

A swath bathymetry survey was conducted in conjunction with the Maritime and Coastguard Agency’s Civil Hydrography Programme, Dorset Wildlife Trust and the Royal Navy, with contributions from Viridor Credits Environmental Company (the DORIS survey) in 2011.

- **Annex A** Weymouth Interim Wave Report
- **Annex B** N/A
- **Annex C** N/A
- **Annex D** N/A
- **Annex E** High Level Report – field data collection (SCOPAC)
- **Annex F** Topographic Survey Report for Dorset.
- **Annex G** N/A

**Explanatory Notes**
Weymouth Directional Waverider Buoy

Location
OS: 370833E 80423N
WGS84: Latitude: 50° 37.366' N Longitude: 02° 24.820' W

Water Depth
~10 m CD

Instrument Type
Datawell Directional Waverider Mk III

Data Quality

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Monthly Statistics – 2012/13

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Storm Analysis

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* Tidal information is obtained from the nearest recording tide gauge (the National Network gauge at Weymouth). The surge shown is the residual at the time of the highest $H_s$. The maximum tidal surge is the largest positive surge during the storm event.
Distribution plots

The distribution of wave parameters are shown in the accompanying graphs of:

- Wave roses (Direction vs. $H_s$) from July 2012 to June 2013 (top) and for all measured data (bottom)
- Percentage of occurrence of $H_s$, $T_p$, $T_z$ and Direction from July 2012 to June 2013
- Monthly time series of $H_s$ (red line is 2.4 m storm threshold)
- Incidence of storms during the reporting period and for all previous years. Storm events are defined using the Peaks-over-Threshold method. The highest $H_s$ of each storm event is shown

Summary

This reporting period was relatively quiet with only one storm exceeding the 2.4m threshold in January. However, there were no data for almost a month from November to December when the buoy went missing following a suspected collision with a large vessel in the vicinity. The wave direction continued to predominate from SSE.

General

The buoy was first deployed on 18 December 2006.

Acknowledgements

The shore station is kindly hosted by the Weymouth and Portland National Sailing Academy. Tidal data were supplied by the British Oceanographic Data Centre as part of the function of the National Tidal and Sea Level Facility, hosted by the Proudman Oceanographic Laboratory and funded by DEFRA and the Natural Environment Research Council.
## Southeast Regional Coastal Monitoring Programme - Phase III - Channel Coastal Observatory Topographic Surveys

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**Notes:**
- **Year:** 15 (2016/17) refers to Post-storm Year 15.
- **Post-storm:** Measurements taken after a specified event.
- **Survey Unit:** Identifies the survey unit or location.
- **Due By:** Dates for the completion of each survey phase.
- **Profile:** Baseline and profile measurements.
- **Baseline Profile:** Baseline survey with profile measurements.
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### Southeast Regional Coastal Monitoring Programme - Phase III - Channel Coastal Observatory Topographic Surveys

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**Notes:**

1. Access restricted during Olympics, re-scheduled to autumn 2012
2. To be done by lidar, February 2013
3. Re-scheduled due to nesting birds
Annex F – Topographic Survey Report for Durlston Head to Portland Bill

1. Introduction
Analysis has been conducted for those sites where a minimum of four surveys have been recorded. In general, changes are measured relative to the Mean Low Water Springs level, although this has not been possible for much of the historic data at many of the sites. Where possible, longer-term records from earlier programmes are also presented in the profile analysis, although historical data was often collected using significantly different survey techniques, specifications and even datums. Continuity of record has been attempted but is not always possible.

The profile envelope, along with the two most recent profiles at each profile location, is shown superimposed and relative to a Master Profile (on the accompanying CD). The Master Profile provides the basis for calculation of beach cross-section area changes. Where possible, identical depth boundaries have been used for all profiles within a Management Unit. However, even where this has not been possible, direct comparisons can be made for the beach cross sectional area at one profile over time, since the master profile is constant for each profile (Figure 1). In some instances, raising the lower depth of the Master Profile may reduce the overall cross sectional area of the profile. This may cause small changes in the beach profile to have a large impact on the percentage change. This effect has been taken into account in the analysis of change to beach profiles. The trend in cross-sectional area (CSA) is presented as a graph for each profile (Figure 2).

![Figure 1: Example Master Profile with CSA calculated from the surveyed GPS profile](image)

Figure 1: Example Master Profile with CSA calculated from the surveyed GPS profile
As part of the monitoring programme specification, each management unit receives a full topographic baseline survey once every 5 years, with the exception of Beach Management Plan (BMP) sites which receive an annual baseline. Baseline surveys include a full profile survey at 50m intervals and continuous spot height data collected at approximately 1m intervals across the whole beach to the level of MLWS.

Where there are at least two baseline surveys for each management unit a topographic difference model has been produced based on the spot height elevations. The raw spot height data has been processed into a grid model and successive models have been subtracted from one another to produce a difference model for the management unit.

2. **Condition of process sub-cell**

The Beach Change Summary map contains an at-a-glance condition of the whole of the Durlston Head to Portland Bill area, with the lines representing the percentage of accretion, no change or erosion within each Management Unit for which there is topographic data.
3. **Condition of individual Management Units**

Changes within each Survey Unit are summarised on up to four maps: Beach change maps (Spring to Spring and Baseline to Spring), and topographic difference models (year to year where possible and baseline to this year).

Beach Change maps show the location of each beach profile, superimposed on 2008 aerial photography (note that the line may have been extended for clarity). Where possible, the annual change in cross-sectional area has been calculated from spring 2011 to spring 2012 and from baseline 2003/04 to spring 2012.

In CPU5c, 5b and 5a, as in previous years, spring to spring analysis was conducted to the Mean Low Water Spring level of -0.83mOD while baseline (2003) to Spring uses a level of 0mOD as the earlier surveys were not measured to the MLWS depth. It is also worth noting that sediment is routinely moved from CPU5c to CPU5b and re-profiling occurs in these units; consequently change in this area is not entirely natural.

**5gSU05: Arish Mell (East) to Worbarrow Tout**

**Spring 2011 to Spring 2012**
Profiles to the west and through the central section of the bay generally show some erosion over the year. The considerable increase in area to profile 5g00119 is has largely occurred at the back of the profile, possibly due to cliff erosion during the last year.

**Baseline 2003 to Spring 2012**
A similar pattern of erosion to the west, and accretion to the most easterly profile can be seen, with little change to those between them.

**Topographic Difference Model, 2007 to 2012**
The bay shows relatively minor changes over the last five years; apparently a general movement westwards has taken place assuming cliff slumping accounts for the accretion to the eastern end.

**Topographic Difference Model, 2003 to 2012**
Over the longer period of nine or ten years, a shift in sediment in an easterly direction appears to have taken place.

**5gSU06: Lulworth Cove**

**Spring 2011 to Spring 2012**
This analysis shows Lulworth Cove to have been stable over the year.

**Baseline 2003 to Spring 2012**
Over the longer-term all profiles show some erosion, particularly a section to the west of the cove, adjacent to the café and slipway where erosion has occurred to the top of the beach.

**Topographic Difference Model, 2011 to 2012**
The majority of this unit shows no change but on the eastern side towards the back of the beach there has been some slight erosion and some slight accretion, possibly due to build-up of eroded cliff material. Despite this, the cross-sectional area (CSA) change to all profiles is minimal.
Topographic Difference Model, 2003 to 2012
Over the longer term some pockets of erosion can be seen but generally some slight accretion has occurred.

5gSU07: Bats Head to Stair Hole
Spring 2011 to 2012/2013
In contrast again to the previous year’s report, the western end of this unit shows some erosion to the top of the profile. Generally within each bay, minor erosion has occurred to the west with little change to the eastern ends. The surveys had to be postponed here and were carried out during winter months which may account for some differences.

Baseline 2003 to 2012
All profiles show some erosion over the longer term. However, the annual fluctuations of all profiles appear to balance out, making the unit generally stable. Again it’s worth noting that the recent surveys were carried out during the winter months.

Topographic Difference Model, 2007 to 2012
To the west of Durdle Door the eastern end of the bay has eroded over the last five years while the western end has accreted. To the east of the Door a similar trend has occurred.

Baseline 2003 to 2012
Over the longer period of nine to ten years the opposite can be seen, although there is limited overlap in the coverage to the far eastern end of the survey unit.

5gSU08: White Nothe to Ringstead Bay (west)
Spring 2011 to Spring 2012
The most westerly profile shows an increase in volume while the remainder of the unit has been stable over the year.

Baseline 2003 to Spring 2012
Profile 5g00261 to the west displays a lower CSA to that of 2003 due to a significant drop in in 2007 but has been showing a general trend of accretion since then; the central section has been relatively stable and an increase in volume of the two profiles to the east can be seen over the long-term.

5gSU09: Ringstead Bay (west) to Ringstead
Spring 2011 to Spring 2012
Overall this survey unit appears to be stable with an increase in CSA to the central profile. The offshore reefs offer considerable protection at this site.

Baseline 2007 to Spring 2012
Using a comparison with the autumn 2007 survey data, most profiles show accretion to the top of the beach, most significantly to the central profiles but slight erosion has occurred to the eastern profiles.

5gSU12: Bowleaze Cove
Spring 2011 to Spring 2012
Some accretion has occurred here over the year. This unit now incorporates the adjacent profile.
Baseline 2003 to Spring 2012
A general trend of accretion can be seen for these two profile lines; note the date for comparison for 5g00289 is April 2006 as this is when it was first surveyed.

Topographic Difference Model, 2011 to 2012
Little change has occurred across this small unit with a strip of accretion towards the foreshore. Bowleaze Cove is now given a full baseline survey each year as it is the down drift end of Preston Beach.

Topographic Difference Model, 2006 to 2012
A larger area of slight accretion can be seen over the longer term but generally no significant change.

5gSU13: Bowleaze Cove (west) to Overcombe
February 2011 to January 2012
All profiles show small increases in their cross-sectional areas. This area is used for the extraction of material but no record of material being moved alongshore has been received this year which may account for the increase. Re-profiling has occured so the changes seen here are not necessarily due to natural processes.

Baseline 2003 to Spring 2011
Over the longer period, all profiles show accretion, more significantly towards the western end.

Topographic Difference Model, 2011 to 2012
Little change appears to have occurred in this unit over the year with just some minor accretion towards the back of the beach.

Topographic Difference Model, 2005 to 2012
Over the longer term accretion has occurred above the crest apart from an area towards the northeast end which appears to have eroded at the base of the cliffs.

5gSU14: Overcombe to Preston Beach Groyne
Spring 2011 to Spring 2012
Preston Beach has shown only minor changes over the year with just two profile towards the western end showing more than 5% decrease in cross-sectional area. Note that re-profiling occurs across this unit as part of the on-going management scheme.

Baseline 2003 to Spring 2011
The majority of profiles in this unit have generally been stable over the long term but generally all show some slight erosion with the notable exception of 5g00297 which shows a considerable increase in cross-sectional area, possibly due to the movement of material in this direction.

Topographic Difference Model, 2011 to 2012
The difference model shows a strip of erosion along the crest for the majority of the unit, possibly because the survey took place early in the year before re-profiling had taken place, and an area of accretion towards the north eastern end which could be due to natural processes.
Topographic Difference Model, 2005 to 2012
Similar changes can be seen over the longer term but with generally less pronounced erosion along the crest.

5gSU15: Preston Beach Groyne to Commercial Pier
Spring 2011 to Spring 2012
The majority of this unit shows very little change with some slight accretion at either end of the unit.

Baseline 2003 to Spring 2012
Overall, the majority of this management unit has been stable or accreting over the longer term, with the exception of profile 5g00318 which shows a decrease in volume. However, the 2003 value was relatively high for this particular profile on the survey used in this analysis which accounts for this.
% Change in Cross-sectional Area

- Aerial Photography: 2008
- Dorset Annual Survey Report 2012

% change in cross-sectional area

- > 30%
- 15 - 30%
- 5 - 15%
- Less than 5%
- No Change

Legend:
- Survey Unit Boundary
- Line name (actual change, m²)

Eg: 5f00420 (45)

Southeast Regional Coastal Monitoring Programme
% Change in Cross-sectional Area

<table>
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<th>% change in cross-sectional area</th>
<th>Accretion</th>
<th>Erosion</th>
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<td>&gt; 30 %</td>
<td>&gt; 30 %</td>
<td>&gt; 30 %</td>
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<tr>
<td>15 - 30 %</td>
<td>15 - 30 %</td>
<td>15 - 30 %</td>
</tr>
<tr>
<td>5 - 15 %</td>
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<td>Less than 5 %</td>
<td>Less than 5 %</td>
</tr>
<tr>
<td>No Change</td>
<td>No Change</td>
<td>No Change</td>
</tr>
</tbody>
</table>

eg: 5f00420 (45) Line name (actual change, m²)
Actual Change in Cross-sectional Area (m²)

Actual change in cross-sectional area 2011 to 2012

- Accretion
- Erosion
- No Change
- Less than 5m²
- 5 - 15m²
- 15 - 30m²
- > 30m²

SU Boundary

Aerial Photography: 2008
Actual change in cross-sectional area Baseline to 2012

- Accretion: 15 - 30m²
- Erosion: > 30m²
- No Change: Less than 5m²
- Less than 5m²

Map showing actual change in cross-sectional area with specific markers for different changes.
% change in cross-sectional area September 2011 to August 2012

Dorset Annual Report 2012
Southeast Strategic Regional Coastal Monitoring Programme

% change in cross-sectional area May 2003 to August 2012

Dorset Annual Report 2012

% change in cross-sectional area

- > 30 %
- 15 - 30 %
- 5 - 15 %
- Less than 5 %
- 5 - 15 %
- 15 - 30 %
- > 30 %
- No Change

Line name (actual change, m²)

SU Boundary
Southeast Strategic Regional Coastal Monitoring Programme

% change in cross-sectional area April 2011 to October 2012

Dorset Annual Report 2012

% change in cross-sectional area

- > 30%
- 15 - 30%
- 5 - 15%
- Less than 5%
- No Change

eg: 5fo0420 (45)

Line name (actual change, m²)

SU Boundary

Aerial Photography: 2008

5gSU06
% change in cross-sectional area February 2003 to Ocotber 2012

Dorset Annual Report 2012

% change in cross-sectional area

- > 30%
- 15 - 30%
- 5 - 15%
- Less than 5%
- No Change

eg: 5f00420 (45)

Line name (actual change, m²)

SU Boundary

Aerial Photography: 2008

5gSU06
% change in cross-sectional area April 2011 to January 2013

Dorset Annual Report 2012

% change in cross-sectional area

- > 30 %
- 15 - 30 %
- 5 - 15 %
- Less than 5 %
- No Change
- 5 - 15 %
- 15 - 30 %
- > 30 %

eg: 5f00420 (45)
% change in cross-sectional area October 2003 to January 2013

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<td>Less than 5 %</td>
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Dorset Annual Report 2012

Aerial Photography: 2008

Southeast Strategic Regional Coastal Monitoring Programme
% change in cross-sectional area October 2003 to December 2012

Aerial Photography: 2008

Southeast Strategic Regional Coastal Monitoring Programme

Dorset Annual Report 2012
% change in cross-sectional area May 2011 to May 2012

- Less than 5%
- 5 - 15%
- 15 - 30%
- > 30%
- No Change

Line name (actual change, m²)

- 5f00420 (45)
% change in cross-sectional area August 2003 to May 2012

Aerial Photography: 2008
% change in cross-sectional area May 2011 to May 2012

- 5 - 15 %
- 15 - 30 %
- > 30 %

SU Boundary

eg: 5f00420 (45)
Line name (actual change, m²)

Aerial Photography: 2008
% change in cross-sectional area

Southeast Strategic Regional Coastal Monitoring Programme

Dorset Annual Report 2012

% change in cross-sectional area September 2003 to May 2012

SU Boundary

Aerial Photography: 2008
% change in cross-sectional area May 2011 to May 2012

Southeast Strategic Regional Coastal Monitoring Programme

Dorset Annual Report 2012

% change in cross-sectional area

- > 30 %
- 15 - 30 %
- 5 - 15 %
- Less than 5 %

No Change
- 5 - 15 %
- 15 - 30 %
- > 30 %

eg: 5f00420 (45)

Line name (actual change, m²)

SU Boundary

Aerial Photography: 2008
% change in cross-sectional area April 2003 for 5g00290 and April 2006 for 5g00289 to May 2012

eg: 5f00420 (45)

Line name (actual change, m²)

SU Boundary

Aerial Photography: 2008
% change in cross-sectional area February 2011 to January 2012

% change in cross-sectional area

- > 30%
- 15 - 30%
- 5 - 15%
- Less than 5%
- No Change

eg: 5g00420 (45)
% change in cross-sectional area April 2003 to January 2012

- SU Boundary

% change in cross-sectional area

- > 30%
- 15 - 30%
- 5 - 15%
- Less than 5%
- 15 - 30%
- > 30%
- No Change

eg: 5f00420 (45)

Line name (actual change, m²)
Southeast Strategic Regional Coastal Monitoring Programme

% change in cross-sectional area May 2011 to May 2012

Aerial Photography: 2008
Southeast Strategic Regional Coastal Monitoring Programme

% change in cross-sectional area April 2003 to May 2012

Dorset Annual Report 2012

% change in cross-sectional area

- > 30 %
- 15 - 30 %
- 5 - 15 %
- Less than 5 %
- No Change
- 5 - 15 %
- 15 - 30 %
- > 30 %

eg: 5f00420 (45)

Line name (actual change, m²)

Aerial Photography: 2008
% change in cross-sectional area May 2011 to May 2012

Southeast Strategic Regional Coastal Monitoring Programme

Dorset Annual Report 2012

% change in cross-sectional area

- > 30 %
- 15 - 30 %
- 5 - 15 %
- Less than 5 %

No Change
- 5 - 15 %
- 15 - 30 %
- > 30 %

eg: 5f00420 (45)

Line name (actual change, m²)

SU Boundary
Southeast Strategic Regional Coastal Monitoring Programme

Dorset Annual Report 2012

Aerial Photography: 2008

% change in cross-sectional area February 2003 to May 2012

% change in cross-sectional area
- > 30%
- 15 - 30%
- 5 - 15%
- Less than 5%
- 5 - 15%
- 15 - 30%
- > 30%
- No Change

eg: 5f00420 (45)

Line name (actual change, m²)

SU Boundary

Aerial Photography: 2008

5gSU15

% change in cross-sectional area February 2003 to May 2012
Change in elevation (Topographic Difference Models) 2003 to 2012

- Accretion:
  - >= 3
  - 2.5 - 3
  - 2 - 2.5
  - 1.5 - 2
  - 1 - 1.5
  - 0.5 - 1
  - 0.25 - 0.5
  - -0.25 - 0.25
  - -0.5 - -0.25
  - -1 - -0.5
  - -1.5 - -1
  - -2 - -1.5
  - -2.5 - -2
  - -3 - -2.5
  - <= -3

- Erosion:
  - 0.5 - 1
  - 0.25 - 0.5
  - -0.25 - 0.25
  - -0.5 - -0.25
  - -1 - -0.5
  - -1.5 - -1
  - -2 - -1.5
  - -2.5 - -2
  - -3 - -2.5
  - <= -3

Model Extent
Change in elevation (Topographic Difference Models) 2003 to 2012

Model Extent

Aerial Photography: 2008

Change in Elevation (m)

- >= 3
- 2.5 - 3
- 2 - 2.5
- 1.5 - 2
- 1 - 1.5
- 0.5 - 1
- 0.25 - 0.5
- 0.26 - 0.25
- -0.5 - -0.25
- -1 - -0.5
- -1.5 - -1
- -2 - -1.5
- -2.5 - -2
- -3 - -2.5
- <= -3
Change in Elevation (Topographic Difference Models) 2007 to 2013

- Accretion:
  - >= 3 m
  - 2.5 - 3 m
  - 2 - 2.5 m
  - 1.5 - 2 m
  - 1 - 1.5 m
  - 0.5 - 1 m
  - 0.25 - 0.5 m
  - -0.25 - 0.25 m
  - -0.5 - -0.25 m
  - -1 - -0.5 m
  - -1.5 - -1 m
  - -2 - -1.5 m
  - -2.5 - -2 m
  - -3 - -2.5 m

- Erosion:
  - <= -3 m

Model Extent

Aerial Photography: 2008
Change in elevation (Topographic Difference Models) 2003 to 2013

Aerial Photography: 2008
Change in elevation (Topographic Difference Models) 2007 to 2012

Accretion:

- >= 3 m
- 2.5 - 3 m
- 2 - 2.5 m
- 1.5 - 2 m
- 1 - 1.5 m
- 0.5 - 1 m
- 0.25 - 0.5 m
- -0.25 - 0.25 m
- -0.5 - -0.25 m
- -1 - -0.5 m
- -1.5 - -1 m
- -2 - -1.5 m
- -2.5 - -2 m
- -3 - -2.5 m
- <= -3 m

Erosion:

- 0.25 - 0.5 m
- -0.25 - 0.25 m
- -0.5 - -0.25 m
- -1 - -0.5 m
- -1.5 - -1 m
- -2 - -1.5 m
- -2.5 - -2 m
- -3 - -2.5 m
- <= -3 m
Change in elevation (Topographic Difference Models) 2003 to 2012

Model Extent

- <= -3
- -2.5 - -2
- -2 - -1.5
- -1.5 - -1
- -1 - -0.5
- -0.25 - -0.25
- -0.5 - 0
- 0.25 - 0.5
- 0.5 - 1
- 1 - 1.5
- 1.5 - 2
- 2 - 2.5
- 2.5 - 3
- 3 - =3

Aerial Photography: 2008
Change in elevation (Topographic Difference Models) 2007 to 2012

Accretion

- >= 3
- 2.5 - 3
- 2 - 2.5
- 1.5 - 2
- 1 - 1.5
- 0.5 - 1
- 0.25 - 0.5
- 0 - 0.25
- -0.25 - 0.25
- -0.5 - -0.25
- -1 - -0.5
- -1.5 - -1
- -2 - -1.5
- -2.5 - -2
- -3 - -2.5
- <= -3

Erosion

Model Extent

Aerial Photography: 2008

Southeast Strategic Regional Coastal Monitoring Programme

Dorset Annual Report 2012
Southeast Strategic Regional Coastal Monitoring Programme

Dorset Annual Report 2012

Change in elevation (Topographic Difference Models) 2003 to 2012

Change in Elevation (m)

- Model Extent

Aerial Photography: 2008

Accretion

- >= 3
- 2.5 - 3
- 2 - 2.5
- 1.5 - 2
- 1 - 1.5
- 0.5 - 1
- 0.25 - 0.5
- -0.25 - 0.25
- -0.5 - -0.25
- -1 - -0.5
- -1.5 - -1
- -2 - -1.5
- -2.5 - -2
- -3 - -2.5
- <= -3

Erosion
Aerial Photography: 2008
Southeast Strategic Regional Coastal Monitoring Programme
Change in elevation (Topographic Difference Models) 2007 to 2012
Dorset Annual Report 2012

Change in Elevation (m)

-3 <= -2
-2 <= -1.5
-1.5 <= -1
-1 <= -0.5
-0.5 <= -0.25
-0.25 <= 0.25
0.25 <= 0.5
0.5 <= 1
1 <= 1.5
1.5 <= 2
2 <= 2.5
2.5 <= 3
3 >= 3

Accretion
Erosion

Model Extent

Aerial Photography: 2008
Change in elevation (Topographic Difference Models) 2007 to 2012

Model Extent

-3 to -2.5
-2.5 to -2
-2 to -1.5
-1.5 to -1
-1 to -0.5
-0.5 to -0.25
-0.25 to 0.25
0.25 to 0.5
0.5 to 1
1 to 1.5
1.5 to 2
2 to 2.5
2.5 to 3
3 to >= 3

Accretion
Erosion
Change in elevation (Topographic Difference Models) 2011 to 2012
Change in李升 (Topographic Difference Models) 2011 to 2012
Aerial Photography: 2008
Southeast Strategic Regional Coastal Monitoring Programme

Change in elevation (Topographic Difference Models) 2005 to 2012

Dorset Annual Report 2012

Change in Elevation (m)

-3 <= -2.5
-2.5 <= -2
-2 <= -1.5
-1.5 <= -1
-1 <= -0.5
-0.5 <= -0.25
-0.25 <= -0.25
0.25 <= 0.5
0.5 <= 1
1 <= 1.5
1.5 <= 2
2 <= 2.5
2.5 <= 3
3 <= 3

Accretion

Erosion

Model Extent

Aerial Photography: 2008
EXPLANATORY NOTES

Change in Cross-sectional Area (CSA)

The annual change in cross-sectional area is calculated as the difference in CSA between two surveys, expressed as a percentage change compared to the earlier CSA.

\[
\frac{CSA_1 - CSA_2}{CSA_2} \times 100
\]

Eqn (1)

where CSA\(_1\) = most recent springtime survey and CSA\(_2\) = spring survey previous year. Therefore, an annual change of −14% represents erosion during the last year of 14% of the area of last year’s survey.
Cross Sectional Area above MP Trend for Location: 5g00119 [Wor31] and Reference Profile Set

Area Above MP Trend: Accreting at 1.698 m²/Year
Cross Sectional Area above MP Trend for Location: 5g00126 [Wor24] and Reference Profile Set

Area Above MP Trend: Accreting at 1.199 m²/Year
Accretion = 1.90 (m2) Erosion = -9.90 (m2) Total = -7.99 (m2)
Cross Sectional Area above MP Trend for Location: 5g00133 [Wor17] and Reference Profile Set

Area Above MP Trend: Accreting at 1.064 m²/Year
Beach Profiles: 5g00133
Changes between 2011-09 and 2012-08

Accretion = 0.72 (m²) Erosion = -4.88 (m²) Total = -3.96 (m²)
Beach Profiles: 5g00140
Changes between 2011-09 and 2012-08

Accretion = 0.00 (m²) Erosion = -2.20 (m²) Total = -2.19 (m²)
Beach Profiles: 5g00161
Changes between 2011-04 and 2012-10

Accretion = 0.75 m³ Erosion = -1.23 m³ Total = -0.48 m³
Beach Profiles: 5g00162
Changes between 2011-04 and 2012-10

Accretion = 0.96 (m2) Erosion = -1.15 (m2) Total = -0.19 (m2)
Beach Profiles: 5g00163
Changes between 2011-04 and 2012-10

Accretion = 2.98 m² Erosion = -1.79 m² Total = 1.19 m²
Beach Profiles: 5g00164
Changes between 2011-04 and 2012-10

Accretion = 3.32 (m2) Erosion = -1.14 (m2) Total = 2.18 (m2)
Cross Sectional Area above MP Trend for Location: 5g00165 and Reference Profile Set

Area Above MP Trend: Eroding at 0.759 m²/Year
Beach Profiles: 5g00167
Changes between 2011-04 and 2012-10

Accretion = 1.75 (m^2) Erosion = -0.44 (m^2) Total = 1.32 (m^2)
Cross Sectional Area above MP Trend for Location: 5g00168 and Reference Profile Set

Area Above MP Trend: Eroding at ~0.177 m²/Year

Survey Date

05/12/2003 04/12/2004 04/12/2005 04/12/2006 04/12/2007 03/12/2008 03/12/2009 03/12/2010 03/12/2011

Beach Area (m²)

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25
Beach Profiles: 5g00169
Changes between 2011-04 and 2012-10

Accretion = 1.51 (m²) Erosion = -0.13 (m²) Total = 1.38 (m²)
Cross Sectional Area above MP Trend for Location: 5g00170 and Reference Profile Set

Area Above MP Trend: Eroding at -0.497 m²/Year
Cross Sectional Area above MP Trend for Location: 5g00171 and Reference Profile Set

Area Above MP Trend: Eroding at -0.691 m2/Year

Survey Date
05/12/2003 04/12/2004 04/12/2005 04/12/2006 04/12/2007 03/12/2008 03/12/2009 03/12/2010 03/12/2011

Beach Area (m²)
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22

Recycling Event  Area Above MP  Area Trend  Area Between MP & DP
Beach Profiles: 5g00171
Changes between 2011-04 and 2012-10

Accretion = 0.08 (m2) Erosion = -1.68 (m2) Total = -1.50 (m2)
Cross Sectional Area above MP Trend for Location: 5g00172 and Reference Profile Set

Area Above MP Trend: Eroding at -0.294 m2/Year
Cross Sectional Area above MP Trend for Location: 5g00179 [MOW19] and Reference Profile Set

Area Above MP Trend: Eroding at -1.139 m²/Year

Survey Date:
- 05/12/2003
- 04/12/2004
- 04/12/2005
- 04/12/2006
- 04/12/2007
- 03/12/2008
- 03/12/2009
- 03/12/2010
- 03/12/2011
- 02/12/2012

Area (m²):
- 0
- 10
- 20
- 30
- 40
- 50
- 60
- 70
- 80
- 90
- 100
- 110
- 120
- 130
- 140
- 150
- 160
- 170
- 180
- 190
- 200
- 210

Recycling Event:
- Yellow

Area Above MP:
- Green

Area Trend:
- Green

Area Between MP & DP:
- Blue
Beach Profiles: 5g00179
Changes between 2011-04 and 2013-01

Accretion = 3.03 (m2) Erosion = -0.92 (m2) Total = 2.11 (m2)
Cross Sectional Area above MP Trend for Location: 5g00187 [MOW11] and Reference Profile Set

Area Above MP Trend: Accreting at 0.006 m²/Year
Beach Profiles: 5g00187
Changes between 2011-04 and 2013-01

Accretion = 0.00 (m²) Erosion = -9.57 (m²) Total = -9.57 (m²)
Cross Sectional Area above MP Trend for Location: 5g00204 [DD14] and Reference Profile Set

Area Above MP Trend: Eroding at -0.144 m²/Year
Beach Profiles: 5g00204
Changes between 2011-04 and 2012-12

Accretion = 3.56 (m²) Erosion = -9.96 (m²) Total = -6.41 (m²)
Cross Sectional Area above MP Trend for Location: 5g00214 [DD4] and Reference Profile Set

Area Above MP Trend: Eroding at -1.120 m2/Year

Survey Date

Area (m²)

- Recycling Event
- Area Above MP
- Area Trend
- Area Between MP & DP
Accretion = 0.00 (m^2) Erosion = -14.81 (m^2) Total = -14.81 (m^2)
Beach Profiles: 5g00244
Changes between 2011-05 and 2012-05

Accretion = 3.30 (m2) Erosion = -4.45 (m2) Total = -1.15 (m2)
Cross Sectional Area above MP Trend for Location: 5g00251 and Reference Profile Set

Area Above MP Trend: Accreting at 1.045 m2/Year

Survey Date
05/12/2003  04/12/2004  04/12/2005  04/12/2006  04/12/2007  03/12/2008  03/12/2009  03/12/2010  03/12/2011

Beach Area (m2)
0  5  10  15  20  25  30  35  40  45  50  55  60  65  70  75  80  85  90

Recycling Event  Area Above MP  Area Trend  Area Between MP & DP
Beach Profiles: 5g00251
Changes between 2011-05 and 2012-05

Accretion = 4.00 (m2) Erosion = -6.07 (m2) Total = -2.07 (m2)
Cross Sectional Area above MP Trend for Location: 5g00256 and Reference Profile Set

Area Above MP Trend: Eroding at -10.946 m²/Year
Beach Profiles: 5g00261
Changes between 2011-05 and 2012-05

Accretion = 9.99 (m²) Erosion = -0.16 (m²) Total = 9.83 (m²)
Beach Profiles: 5g00262A
Changes between 2011-05 and 2012-05

Accretion = 3.44 (m²) Erosion = -1.86 (m²) Total = 1.58 (m²)
Beach Profiles: 5g00263
Changes between 2011-05 and 2012-05

Accretion = 0.32 (m²) Erosion = -5.51 (m²) Total = -5.19 (m²)
Cross Sectional Area above MP Trend for Location: 5g00263A and Reference Profile Set

Area Above MP Trend: Eroding at -4.687 m²/Year
Accretion = 2.17 (m2) Erosion = -0.86 (m2) Total = 1.31 (m2)
Cross Sectional Area above MP Trend for Location: 5g002645 and Reference Profile Set

Area Above MP Trend: Eroding at -0.411 m²/Year
Cross Sectional Area above MP Trend for Location: 5g00264C and Reference Profile Set

Area Above MP Trend: Eroding at -2.858 m²/Year
Beach Profiles: 5g00290
Changes between 2011-05 and 2012-05-09

Accretion = 7.24 (m²) Erosion = -0.69 (m²) Total = 6.55 (m²)
Cross Sectional Area above MP Trend for Location: 5g00292 and Reference Profile Set

- Area Above MP Trend: Accreting at 0.631 m²/Year
Beach Profiles: 5g00292
Changes between 2011-02 and 2012-01

Accretion = 4.77 (m²) Erosion = -0.04 (m²) Total = 4.73 (m²)
Beach Profiles: 5g00293
Changes between 2011-02 and 2012-01

Accretion = 4.10 (m2) Erosion = -0.81 (m2) Total = 3.49 (m2)
Beach Profiles: 5g00297
Changes between 2011-05 and 2012-05-09

Accretion = 3.14 m² Erosion = -8.31 m² Total = -5.17 m²
Beach Profiles: 5g00298
Changes between 2011-05 and 2012-05-09

Accretion = 4.87 (m²) Erosion = -5.38 (m²) Total = -0.51 (m²)
Accretion = 3.10 (m²) Erosion = -4.83 (m²) Total = -1.73 (m²)
Cross Sectional Area above MP Trend for Location: 5g00300 and Reference Profile Set

Area Above MP Trend: Eroding at -1.394 m²/Year

Survey Date:
- 07/12/1993 to 03/31/2011

Legend:
- Yellow: Recycling Event
- Green Dash: Area Above MP
- Green Solid: Area Trend
- Blue Diamond: Area Between MP & DP
Beach Profiles: 5g00300
Changes between 2011-05 and 2012-05-09

Accretion = 2.22 (m2) Erosion = -5.81 (m2) Total = -3.40 (m2)
Cross Sectional Area above MP Trend for Location: 5g00301 and Reference Profile Set

Area Above MP Trend: Eroding at -1.997 m2/Year
Accretion = 1.56 (m²) Erosion = -6.06 (m²) Total = -4.51 (m²)
Beach Profiles: 5g00302
Changes between 2011-05 and 2012-05-09

Accretion = 1.71 (m2) Erosion = -4.72 (m2) Total = -3.01 (m2)
Cross Sectional Area above MP Trend for Location: 5g00303 and Reference Profile Set

Area Above MP Trend: Eroding at -1.146 m²/Year

Survey Date

07/12/1993 07/12/1995 06/12/1997 05/12/1999 05/12/2001 05/12/2003 05/12/2005 05/12/2007 05/12/2009 05/12/2011

Survey Date

07/12/1993 07/12/1995 06/12/1997 05/12/1999 05/12/2001 05/12/2003 05/12/2005 05/12/2007 05/12/2009 05/12/2011

Beach Area (m²)

Recycling Event  Area Above MP  Area Trend  Area Between MP & DP
Beach Profiles: 5g00303
Changes between 2011-05 and 2012-05-09

Accretion = 2.11 (m2) Erosion = -4.81 (m2) Total = -2.39 (m2)
Beach Profiles: 5g00304
Changes between 2011-05 and 2012-05-09

Accretion = 2.44 (m2) Erosion = -3.12 (m2) Total = -0.68 (m2)
Beach Profiles: 5g00305
Changes between 2011-05 and 2012-05-09

Accretion = 1.72 (m2) Erosion = -5.77 (m2) Total = -4.05 (m2)
Cross Sectional Area above MP Trend for Location: 5g00306 and Reference Profile Set

Area Above MP Trend: Accrualing at 0.067 m²/Year
Beach Profiles: 5g00308
Changes between 2011-05 and 2012-05-09

Accretion = 2.53 (m2) Erosion = -3.82 (m2) Total = -1.29 (m2)
Cross Sectional Area above MP Trend for Location: 5g00309 and Reference Profile Set

Area Above MP Trend: Eroding at -0.394 m²/Year

Survey Date
07/12/1993 07/12/1995 06/12/1997 05/12/1999 05/12/2001 05/12/2003 04/12/2005 04/12/2007 03/12/2008 03/12/2011

Beach Area (m²)
0 10 20 30 40 50 60 70 80 90 100 110 120 130

-30 -20 -10 0 10 20 30 40 50 60 70 80 90

Recycling Event
Area Above MP
Area Trend
Area Between MP & DP
Beach Profiles: 5g00309
Changes between 2011-05 and 2012-05-09

Accretion = 2.01 (m2) Erosion = -3.57 (m2) Total = -1.56 (m2)
Beach Profiles: 5g00310
Changes between 2011-05 and 2012-05-09

Accretion = 1.01 (m2) Erosion = -4.05 (m2) Total = -3.04 (m2)
Beach Profiles: 5g00311
Changes between 2011-05 and 2012-05-09

Accretion = 0.41 (m2) Erosion = -9.70 (m2) Total = -9.29 (m2)
Cross Sectional Area above MP Trend for Location : 5g00312 and Reference Profile Set

Area Above MP Trend: Accreting at 0.923 m²/Year
Accretion = 0.17 (m2) Erosion = -2.79 (m2) Total = -2.62 (m2)
Cross Sectional Area above MP Trend for Location: 5g00316 and Reference Profile Set

Area Above MP Trend: Acreating at 0.185 m²/Year
Cross Sectional Area above MP Trend for Location: 5g00320 and Reference Profile Set

Area Above MP Trend: Eroding at -.0416 m²/Year
Beach Profiles: 5g00320
Changes between 2011-05 and 2012-05

Accretion = 3.18 (m²) Erosion = -6.62 (m²) Total = -3.44 (m²)
Cross Sectional Area above MP Trend for Location: 5g00324 and Reference Profile Set.

Area Above MP Trend: Accrualing at 0.595 m²/Year.
Beach Profiles: 5g00324
Changes between 2011-05 and 2012-05

Accretion = 5.26 (m²) Erosion = -3.09 (m²) Total = 2.16 (m²)
Cross Sectional Area above MP Trend for Location: 5g00326 and Reference Profile Set

Area Above MP Trend: Accreting at 2.126 m²/Year
Beach Profiles: 5g00328
Changes between 2011-05 and 2012-05

Accretion = 2.48 (m2) Erosion = -9.37 (m2) Total = -6.89 (m2)
Beach Profiles: 5g00330
Changes between 2011-05 and 2012-05

Accretion = 16.82 (m$^2$) Erosion = -2.86 (m$^2$) Total = 13.97 (m$^2$)