

PERTH SEAWATER DESALINATION PLANT

**NEAR SEABED DISSOLVED OXYGEN REPORTING IN ACCORDANCE
WITH THE PERTH SEAWATER DESALINATION PLANT
MARINE MONITORING AND MANAGEMENT PLAN**

6 MONTH REPORT

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INTRODUCTION

In accordance with the Perth Seawater Desalination Plant's (PSDP) Marine Monitoring and Management Plan (MMMP), the Water Corporation submits this report to the Office of Environmental Protection Authority (OEPA) as per Section 7.

Near Sea Bed Loggers (NSDO) were deployed on the 29 April 2011 at two sites – North and South. At each site, dissolved oxygen sensors were placed at 0.2m and 0.5m above the seabed (ASB) in order to establish whether any empirical relationships exist between dissolved oxygen saturation at the two depths.

The coordinates and plotted locations of the sites are provided in Figure 2 and Attachment 8 of the MMMP. Data was collected fortnightly for 3 months. On 8 August 2011, the Water Corporation formally requested that the NSDO data collection frequency be reduced to monthly intervals and this request was granted.

This report covers the first 6 months of monitoring to determine if any trends can be seen over a longer period. The results cover the period from 29 April to 1 November 2011.

RESULTS

Dissolved oxygen saturation measured at 0.2m and 0.5m above the seabed at North and South NSDO sites are graphed in Appendix A and Appendix B respectively.

In summary, the difference in dissolved oxygen saturation recorded between the two depths is presented below:

	Average Difference 0.5m – 0.2m	Standard Deviation	Maximum Difference
North	0.98%	1.56%	13.4%
South	1.35%	2.21%	20.6%

Table 1: Summary of NSDO Data 29/4/11 – 1/11/11

SUMMARY

During the 6 months from 29 April to 1 November 2011, the NSDO data shows very good agreement between the NSDO at 0.5m and 0.2m ASB at both North and South NSDO monitoring sites. Please refer appendix A and B for graphical representation. The average difference at North was 0.98 % and at South 1.35% both of these are within expected error ranges for the NSDO loggers. The average differences are calculated based on the difference being the dissolved oxygen saturation at 0.5 m minus the DO saturation at 0.2 m. The graphs clearly show a shift between a negative difference to a positive difference over the course of the 6 months. For this reason the average of the absolute differences were calculated. The absolute average difference between the two depths was 1.44% for North NSDO and 2.00% for South NSDO.

The shift in the difference from being negative during the first few months of sampling, to being positive may indicate there was some increased fouling on the 0.2 m ASB instruments. However the instruments are visually checked during each data download and no visual fouling has been observed. Before each data download the calibration of each instrument is also checked via a drop sample. To date the NSDO loggers have not had to be re-calibrated as there has been good agreement between the calibration and NSDO logger results. However during the last data download the difference between the calibration sample and the NSDO result at South NSDO was up to 5% so this will be monitored in subsequent downloads to determine if these instruments need to be re-calibrated.

Based on the information collected so far the data shows that there is generally good agreement between the dissolved oxygen levels measured at 0.5 and 0.2 m ASB. The trend in the difference between the two depths will be closely monitored in the coming months to determine if the NSDOs need to be re-calibrated prior to the peak season for low dissolved oxygen events in late summer or early autumn.

APPENDIX A: NSDO North

Near Seabed Dissolved Oxygen: North 29/4/11 - 1/11/11

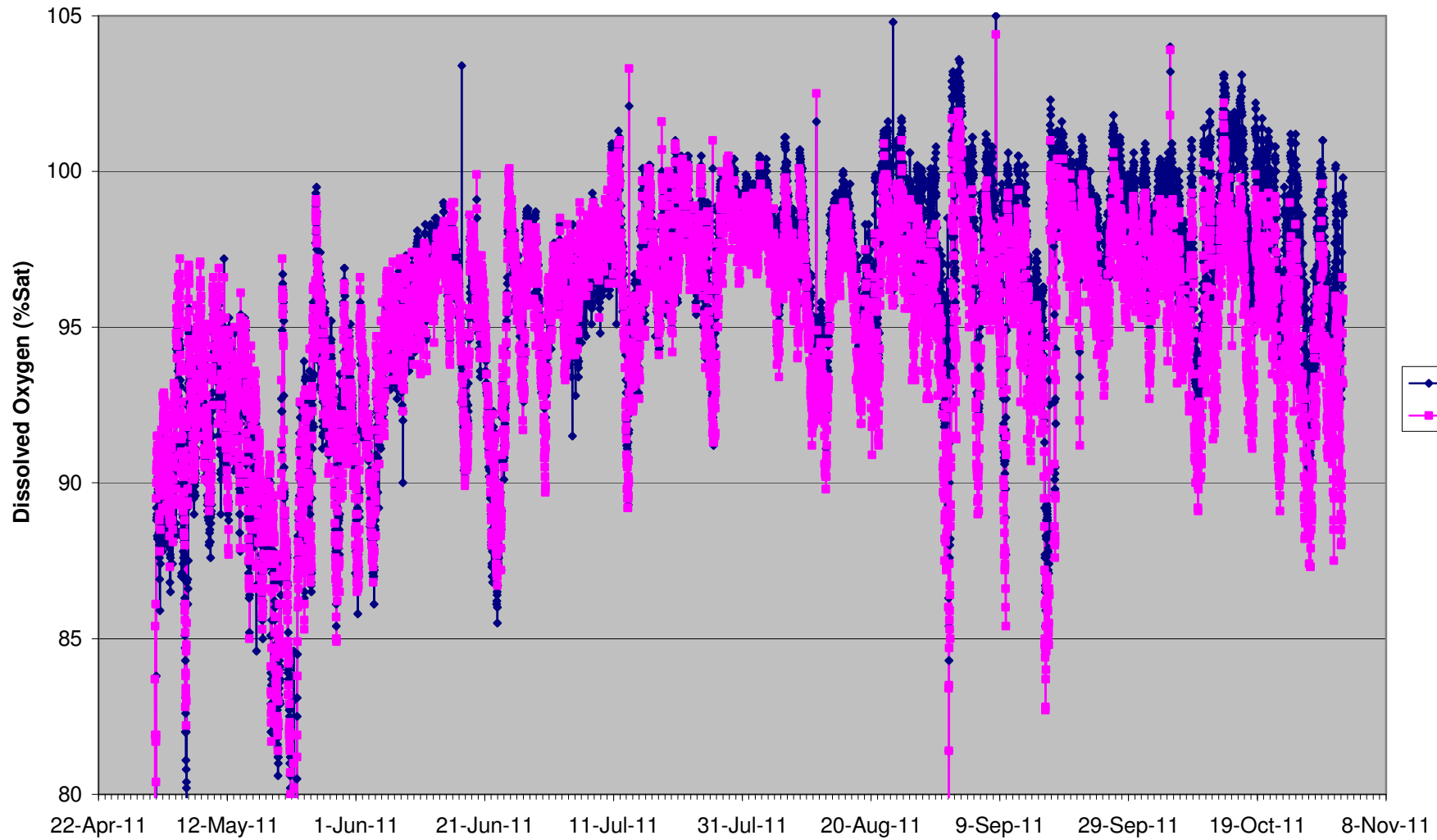


Figure 1(a): Near Seabed Dissolved Oxygen: North 29/4/11 – 1/11/11

Difference in DO % Saturation between 0.5m & 0.2m: North

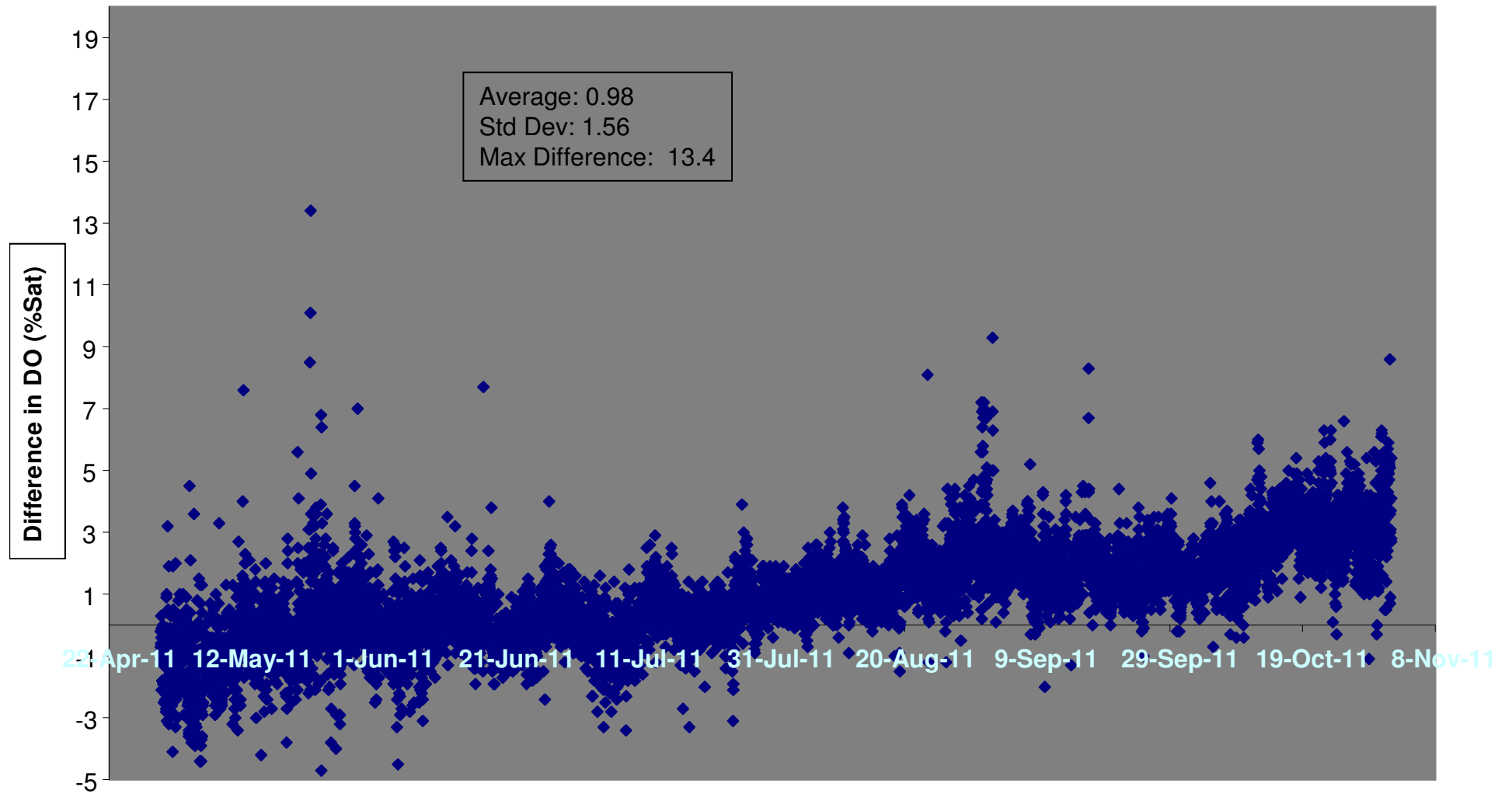
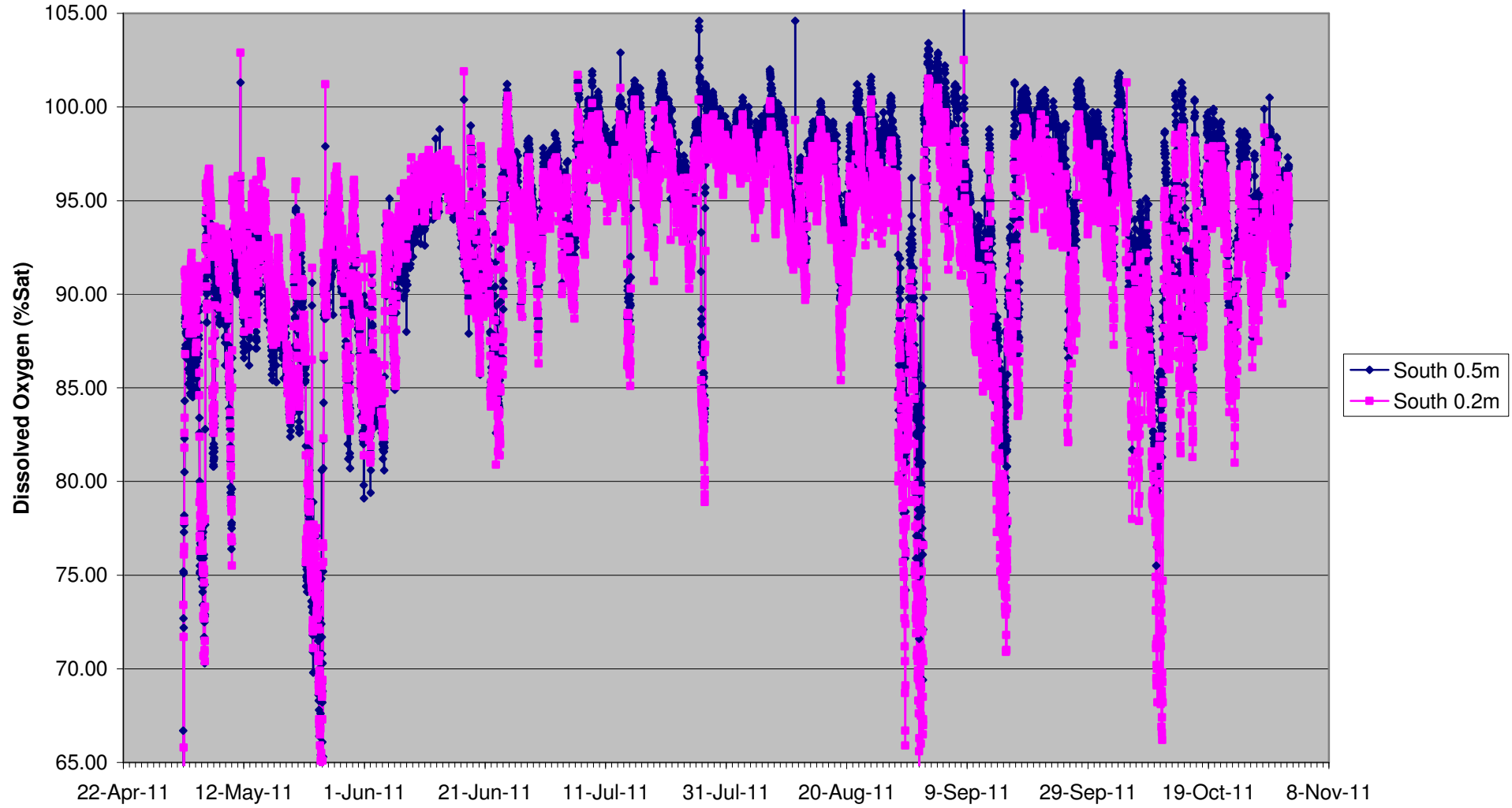


Figure 1(b): Difference in Near Seabed Dissolved Oxygen at North Site (0.5m – 0.2m)

Near Seabed Dissolved Oxygen: South 29/4/11 - 1/11/11

APPENDIX B: NSDO South



Difference in DO % Saturation between 0.5m & 0.2m: South

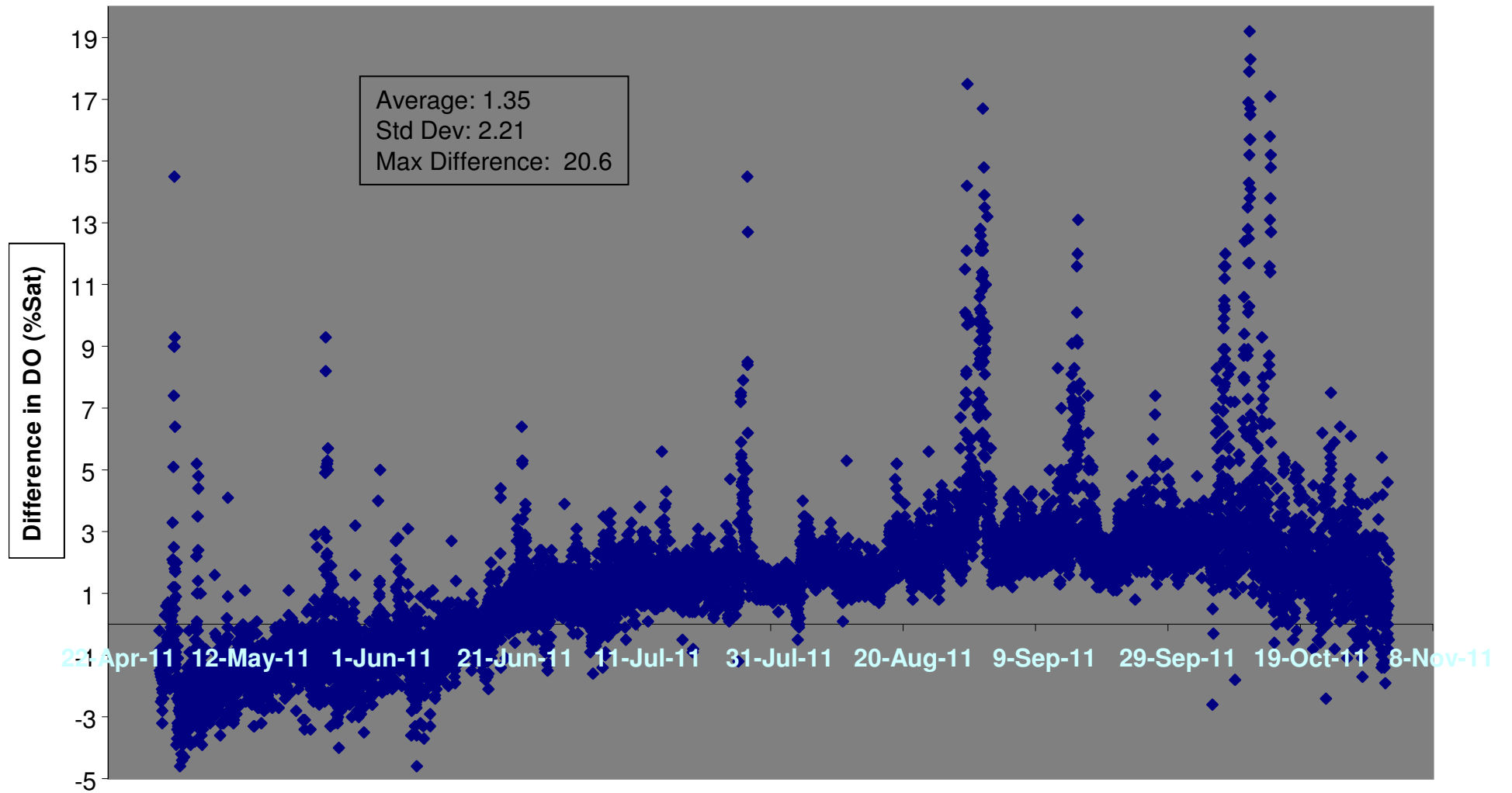


Figure 2(b): Difference in Near Seabed Dissolved Oxygen at South Site (0.5m – 0.2m)