appendix B

SUPPORTING DATA

Table B-1. Comparison of surfzone total coliform bacterial data to the 30-day median California Ocean Plan benchmark, July 2011 through June 2012.

Orange County Sanitation District, California.

Month	Number of Times the 30-Day Median of Total Coliform Bacteria Exceeded the California Ocean Plan Benchmark at Surfzone Sampling Stations																	(A) Total Number of 30-Day Median Calculations With MPN>70	(B)* Total Number of 30-Day Median Calculations	(A/B)X100 Monthly Percentage
	39N	33N	27N	21N	15N	9N	6N	3N	0	3S	6S	9S	15S	21S	27S	29S	39S			
2011																				
July	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	527	0.0
August	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	527	0.0
September	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	510	0.0
October	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	527	0.0
November	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	510	0.0
December	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	527	0.0
2012																				
January	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	527	0.0
February	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	493	0.0
March	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	527	0.0
April	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	510	0.0
May	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	527	0.0
June	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	510	0.0
Annual Totals																				
Totals	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6222	0.0

Note: For stations 39N through 39S, the more restrictive shellfish standard (median of the total coliform organisms over a 30-day period shall not exceed an MPN of 70/100 mL) was used. Samples influenced by rain runoff, flood control channel flows, or the Santa Ana River are excluded; see monthly District's Discharge Monitoring Reports.

* Days in the month X number of surfzone sampling stations.

Table B-2. Comparison of surfzone total coliform bacterial data to the 30-day 10% California Ocean Plan benchmark, July 2011 through June 2012.

Orange County Sanitation District, California.

Month	Number of Times the 30-Day 10% Limit for Total Coliform Bacteria Exceeded the California Ocean Plan Benchmark at Surfzone Sampling Stations																	(A) Monthly Total Number Exceeding the 30-Day 10% Limit	(B)* Total Number of Monthly 30-Day 10% Limit Calculations	(A/B)X100 Monthly Percentage
	39N	33N	27N	21N	15N	9N	6N	3N	0	3S	6S	9S	15S	21S	27S	29S	39S			
2011																				
July	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	527	0.0
August	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	527	0.0
September	0	0	0	0	0	17	17	11	15	0	0	0	0	0	0	0	0	60	510	11.8
October	0	7	0	0	3	20	26	2	13	0	0	0	0	0	0	0	0	71	527	13.5
November	0	8	0	0	0	8	10	0	0	0	0	0	0	0	0	0	0	26	510	5.1
December	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	527	0.0
2012																				
January	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15	0	15	527	2.8
February	0	0	0	0	0	0	3	0	0	0	2	0	0	5	0	7	0	17	493	3.4
March	0	0	0	0	0	0	30	0	9	0	3	0	0	3	0	0	0	45	527	8.5
April	0	0	0	0	0	0	18	0	0	0	0	0	0	0	0	0	0	18	510	3.5
May	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	527	0.0
June	0	0	0	0	0	0	1	12	0	0	0	0	0	0	0	0	0	13	510	2.5
Annual Totals																				
Totals	0	15	0	0	3	45	105	25	37	0	5	0	0	8	0	22	0	265	6222	4.3

Note: For stations 39N through 39S, the more restrictive shellfish standard (not more than 10% of the samples in a 30-day period shall exceed a total coliform MPN of 230/100 mL) was used. Samples influenced by rain runoff, flood control channel flows, or the Santa Ana River are excluded; see monthly District's Discharge Monitoring Reports.

* Days in the month X number of surfzone sampling stations.

Table B-3. Comparison of surfzone fecal coliform bacterial data to the monthly geometric mean California Ocean Plan benchmark, July 2011 through June 2012.

Orange County Sanitation District, California.

Month	Number of Times the Monthly Geometric Mean of Fecal Coliform Bacteria Exceeded the California Ocean Plan Benchmark at Surfzone Sampling Stations																	(A) Total Number of Geometric Mean Calculations with MPN >200	(B)* Total Number of Monthly Geometric Mean Calculations	(A/B)X100 Monthly Percentage
	39N	33N	27N	21N	15N	9N	6N	3N	0	3S	6S	9S	15S	21S	27S	29S	39S			
2011																				
July	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	527	0.0
August	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	527	0.0
September	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	510	0.0
October	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	527	0.0
November	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	510	0.0
December	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	527	0.0
2012																				
January	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	527	0.0
February	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	493	0.0
March	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	527	0.0
April	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	510	0.0
May	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	527	0.0
June	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	510	0.0
Annual Totals																				
Totals	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6222	0.0

Note: For stations 39N through 39S, the geometric mean of the fecal coliform organisms over a one-month period shall not exceed an MPN of 200/100 mL
Samples influenced by rain runoff, flood control channel flows, or the Santa Ana River are excluded; see monthly District's Discharge Monitoring Reports.
* Days in the month X number of surfzone sampling stations.

Table B-4. Comparison of surfzone fecal coliform bacterial data to the 60-day 10% California Ocean Plan benchmark*, July 2011 through June 2012.

Orange County Sanitation District, California.

Month	Number of Times the 60-Day 10% Limit for Fecal Coliform Bacteria Exceeded the California Ocean Plan Benchmark at Surfzone Sampling Stations																	(A) Monthly Total Number Exceeding the 60-Day 10% Limit	(B)* Total Number of Monthly 60-Day 10% Limit Calculations	(A/B)X100 Monthly Percentage
	39N	33N	27N	21N	15N	9N	6N	3N	0	3S	6S	9S	15S	21S	27S	29S	39S			
2011																				
July	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	527	0.0
August	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	527	0.0
September	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	510	0.0
October	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	527	0.0
November	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	510	0.0
December	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	527	0.0
2012																				
January	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	527	0.0
February	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	493	0.0
March	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	527	0.0
April	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	510	0.0
May	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	527	0.0
June	0	0	0	0	0	0	0	9	0	0	0	0	0	0	0	0	0	9	510	1.8
Annual Totals																				
Totals	0	0	0	0	0	0	0	9	0	0	0	0	0	0	0	0	0	9	6222	0.1

Note: For stations 39N through 39S, not more than 10% of the samples in a 60-day period shall exceed a fecal coliform MPN of 400/100 mL.
Samples influenced by rain runoff, flood control channel flows, or the Santa Ana River are excluded; see monthly District's Discharge Monitoring Reports.
* Days in the month X number of surfzone sampling stations.

Table B-5. Comparison of surfzone enterococci bacteria data to the 30-day geometric mean California Ocean Plan benchmark, July 2011 through June 2012.

Orange County Sanitation District, California.

Month	Number of Times the 30-Day Geometric Mean for Enterococci Bacteria Exceeded the California Ocean Plan Benchmark at Surfzone Sampling Stations																	(A) Total Number of 30-Day Geometric Mean Calculations >24 CFU/100 mL	(B)* Total Number of 30-Day Geometric Mean Calculations	(A/B)X100 Monthly Percentage
	39N	33N	27N	21N	15N	9N	6N	3N	0	3S	6S	9S	15S	21S	27S	29S	39S			
2011																				
July	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	527	0.0
August	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	527	0.0
September	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	510	0.0
October	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	527	0.0
November	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	510	0.0
December	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	527	0.0
2012																				
January	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	527	0.0
February	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	493	0.2
March	0	0	0	0	0	0	21	0	0	0	0	0	0	0	0	0	0	21	527	4.0
April	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	510	0.0
May	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	527	0.0
June	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	4	510	0.8
Annual Totals																				
Totals	0	0	0	0	0	0	22	4	0	0	0	0	0	0	0	0	0	26	6222	0.4

Note: For stations 39N through 39S, the geometric mean of the enterococci organisms over a 30-day period shall not exceed 24 CFU/100 mL.

Samples influenced by rain runoff, flood control channel flows, or the Santa Ana River are excluded; see monthly District's Discharge Monitoring Reports.

* Days in the month X number of surfzone sampling stations.

Table B-6. Comparison of surfzone enterococci bacteria data to the six-month geometric mean California Ocean Plan benchmark, July 2011 through June 2012.

Orange County Sanitation District, California.

Month	Number of Times the Six-Month Geometric Mean of Enterococci Bacteria Exceeded the California Ocean Plan Benchmark at Surfzone Sampling Stations																	(A) Total Number of Six-Month Geometric Mean Calculations >12 CFU/100 mL	(B)* Total Number of Six-Month Geometric Mean Calculations	(A/B)X100 Monthly Percentage
	39N	33N	27N	21N	15N	9N	6N	3N	0	3S	6S	9S	15S	21S	27S	29S	39S			
2011																				
July	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	527	0.0
August	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	527	0.0
September	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	510	0.0
October	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	527	0.0
November	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	510	0.0
December	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	527	0.0
2012																				
January	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	527	0.0
February	0	0	0	0	0	0	7	0	0	0	0	0	0	0	0	0	0	7	493	1.4
March	0	0	0	0	0	0	31	0	0	0	0	0	0	0	0	0	0	31	527	5.9
April	0	0	0	0	0	0	30	0	0	0	0	0	0	0	0	0	0	30	510	5.9
May	0	0	0	0	0	0	14	0	0	0	0	0	0	0	0	0	0	14	527	2.7
June	0	0	0	0	0	0	0	7	0	0	0	0	0	0	0	0	0	7	510	1.4
Annual Totals																				
Totals	0	0	0	0	0	0	82	7	0	0	0	0	0	0	0	0	0	89	6222	1.4

Note: For stations 39N through 39S, the geometric mean of the enterococci organisms over a six-month period shall not exceed 12 CFU/100 mL.
Samples influenced by rain runoff, flood control channel flows, or the Santa Ana River are excluded; see monthly District's Discharge Monitoring Reports.
* Days in the month X number of surfzone sampling stations.

Table B-7. Total coliform bacteria (MPN/100 mL) collected in offshore waters and used for comparison with REC-1 compliance criteria, July 2011 through June 2012.

Orange County Sanitation District, California.

Station	Date					Geometric Mean	Meets 20% of samples less than 1,000/100mL	Meets single sample max of <10,000/100 mL
	07/26/11	**07/27/11**	**08/09/11**	**08/10/11**	**08/22/11**			
2103	<10	<10	<10	<10	<10	<10	YES	YES
2104	<10	10	<10	<10	<10	<10	YES	YES
2183	<10	<10	<10	<10	<10	<10	YES	YES
2203	<10	<10	<10	<10	<10	<10	YES	YES
2223	<10	<10	<10	<10	<10	<10	YES	YES
2303	<10	<10	<10	<10	<10	<10	YES	YES
2351	<10	<10	<10	<10	<10	<10	YES	YES
2403	<10	<10	<10	<10	<10	<10	YES	YES
C2	<10	<10	<10	<10	<10	<10	YES	YES
	10/27/11	**11/02/11**	**11/03/11**	**11/08/11**	**11/09/11**			
2103	<10	<10	<10	<10	<10	<10	YES	YES
2104	<10	<10	10	<10	<10	<10	YES	YES
2183	<10	14	11	<10	<10	<10	YES	YES
2203	14	<10	<10	20	<10	10	YES	YES
2223	<10	<10	<10	14	<10	<10	YES	YES
2303	<10	<10	<10	<10	<10	<10	YES	YES
2351	<10	<10	<10	<10	<10	<10	YES	YES
2403	<10	<10	<10	11	<10	<10	YES	YES
C2	12	<10	<10	<10	<10	<10	YES	YES
	02/07/12	**02/09/12**	**02/15/12**	**02/16/12**	**03/07/12**			
2103	<10	15	11	16	13	12	YES	YES
2104	<10	14	<10	<10	19	10	YES	YES
2183	<10	<10	14	14	13	11	YES	YES
2203	<10	<10	11	<10	<10	<10	YES	YES
2223	<10	<10	<10	<10	<10	<10	YES	YES
2303	<10	<10	<10	<10	<10	<10	YES	YES
2351	11	<10	<10	<10	<10	<10	YES	YES
2403	11	<10	<10	<10	15	<10	YES	YES
C2	11	<10	13	24	17	13	YES	YES
	04/18/12	**05/02/12**	**05/03/12**	**05/08/12**	**05/10/12**			
2103	21	<10	<10	<10	<10	<10	YES	YES
2104	11	<10	<10	<10	<10	<10	YES	YES
2183	19	<10	<10	<10	<10	<10	YES	YES
2203	12	<10	<10	<10	<10	<10	YES	YES
2223	<10	<10	<10	<10	<10	<10	YES	YES
2303	<10	<10	<10	12	<10	<10	YES	YES
2351	<10	<10	<10	<10	<10	<10	YES	YES
2403	<10	<10	<10	<10	<10	<10	YES	YES
C2	13	<10	<10	<10	<10	<10	YES	YES

California Ocean Plan Recreational Water Standards

Total Coliform: No single sample shall exceed >10,000 organisms/100 mL when verified by a repeat sample taken within 48 hours; not more than 20% of the samples in any 30-day period shall exceed 1,000 organisms/100 mL.

Table B-8. Fecal coliform bacteria (MPN/100 mL) collected in offshore waters and used for comparison with REC-1 compliance criteria, July 2011 through June 2012.

Orange County Sanitation District, California.

Station	Date					Geometric Mean	Meets geometric mean less than 200/100 mL	Meets 10% of samples less than 400/100 mL
	07/26/11	**07/27/11**	**08/09/11**	**08/10/11**	**08/22/11**			
2103	12	<10	<10	<10	10	<10	YES	YES
2104	<10	<10	<10	<10	<10	<10	YES	YES
2183	<10	<10	<10	<10	<10	<10	YES	YES
2203	<10	<10	<10	<10	<10	<10	YES	YES
2223	<10	<10	<10	<10	<10	<10	YES	YES
2303	<10	<10	<10	<10	<10	<10	YES	YES
2351	<10	<10	<10	<10	<10	<10	YES	YES
2403	<10	<10	<10	<10	<10	<10	YES	YES
C2	<10	<10	<10	<10	<10	<10	YES	YES
	10/27/11	**11/02/11**	**11/03/11**	**11/08/11**	**11/09/11**			
2103	<10	<10	<10	<10	<10	<10	YES	YES
2104	<10	<10	<10	<10	<10	<10	YES	YES
2183	<10	10	<10	<10	<10	<10	YES	YES
2203	<10	<10	<10	<10	<10	<10	YES	YES
2223	<10	<10	<10	<10	<10	<10	YES	YES
2303	<10	<10	<10	<10	<10	<10	YES	YES
2351	<10	<10	<10	<10	<10	<10	YES	YES
2403	<10	<10	<10	<10	<10	<10	YES	YES
C2	<10	<10	<10	<10	<10	<10	YES	YES
	02/07/12	**02/09/12**	**02/15/12**	**02/16/12**	**03/07/12**			
2103	<10	<10	<10	<10	<10	<10	YES	YES
2104	<10	<10	<10	<10	15	<10	YES	YES
2183	<10	<10	<10	<10	<10	<10	YES	YES
2203	<10	<10	10	<10	<10	<10	YES	YES
2223	<10	<10	<10	<10	<10	<10	YES	YES
2303	<10	<10	<10	<10	<10	<10	YES	YES
2351	<10	<10	<10	<10	<10	<10	YES	YES
2403	11	<10	<10	<10	13	<10	YES	YES
C2	<10	<10	10	11	11	<10	YES	YES
	04/18/12	**05/02/12**	**05/03/12**	**05/08/12**	**05/10/12**			
2103	11	<10	<10	<10	<10	<10	YES	YES
2104	<10	<10	<10	<10	<10	<10	YES	YES
2183	12	<10	<10	<10	<10	<10	YES	YES
2203	10	<10	<10	<10	<10	<10	YES	YES
2223	<10	<10	<10	<10	<10	<10	YES	YES
2303	<10	<10	<10	<10	<10	<10	YES	YES
2351	<10	<10	<10	<10	<10	<10	YES	YES
2403	<10	<10	<10	<10	<10	<10	YES	YES
C2	<10	<10	<10	<10	<10	<10	YES	YES

California Ocean Plan Recreational Water Standards

Fecal Coliform: Fecal coliform density based on not less than five samples for any 30-day period shall not exceed a geometric mean of 200/100 mL, nor shall more than 10% of the total samples during any 60-day period exceed 400/100 mL.

Table B-9. Enterococci bacteria (MPN/100 mL) collected in offshore waters, July 2011 through June 2012.

Orange County Sanitation District, California.

Station	Date					Geometric Mean	Comment
	07/26/11	**07/27/11**	**08/09/11**	**08/10/11**	**08/22/11**		
2103	<10	<10	<10	<10	<10	<10	MONITORING ONLY. No offshore zone compliance limits apply at this time
2104	<10	<10	10	<10	<10	<10	
2183	<10	<10	<10	<10	<10	<10	
2203	<10	<10	<10	<10	<10	<10	
2223	<10	<10	<10	<10	<10	<10	
2303	<10	<10	12	<10	<10	<10	
2351	<10	<10	<10	<10	<10	<10	
2403	<10	<10	<10	<10	<10	<10	
C2	<10	<10	<10	<10	<10	<10	
	10/27/11	**11/02/11**	**11/03/11**	**11/08/11**	**11/09/11**		
2103	<10	<10	<10	<10	10	<10	MONITORING ONLY. No offshore zone compliance limits apply at this time
2104	<10	<10	<10	<10	<10	<10	
2183	<10	<10	<10	<10	<10	<10	
2203	<10	<10	<10	<10	<10	<10	
2223	<10	<10	<10	<10	<10	<10	
2303	<10	<10	<10	<10	<10	<10	
2351	<10	<10	<10	<10	<10	<10	
2403	<10	<10	<10	<10	<10	<10	
C2	<10	<10	<10	<10	<10	<10	
	02/07/12	**02/09/12**	**02/15/12**	**02/16/12**	**03/07/12**		
2103	<10	<10	<10	<10	<10	<10	MONITORING ONLY. No offshore zone compliance limits apply at this time
2104	<10	<10	<10	<10	<10	<10	
2183	<10	<10	<10	<10	<10	<10	
2203	<10	<10	<10	<10	<10	<10	
2223	<10	<10	<10	<10	<10	<10	
2303	<10	<10	<10	<10	<10	<10	
2351	<10	<10	<10	<10	<10	<10	
2403	13	11	<10	<10	<10	<10	
C2	11	<10	<10	11	<10	<10	
	04/18/12	**05/02/12**	**05/03/12**	**05/08/12**	**05/10/12**		
2103	<10	<10	<10	<10	<10	<10	MONITORING ONLY. No offshore zone compliance limits apply at this time
2104	<10	<10	<10	<10	<10	<10	
2183	<10	<10	11	<10	<10	<10	
2203	<10	<10	<10	<10	<10	<10	
2223	<10	<10	<10	<10	<10	<10	
2303	<10	<10	<10	<10	<10	<10	
2351	<10	<10	<10	<10	<10	<10	
2403	<10	<10	<10	<10	<10	<10	
C2	<10	<10	<10	<10	<10	<10	

Table B-10. Comparison of surfzone particulate grease data, July 2011 through June 2012.

Orange County Sanitation District, California.

Month	Number of Times the Monthly Percentage of Grease Particles Exceeded the NPDES Permit Standard at Surfzone Sampling Stations																	(A) Total Number of Visible Grease Particles	(B)** Total Number of Grease Particle Calculations	(A/B)X100 Monthly Percentage
	39N	33N	27N	21N	15N	9N	6N	3N	0	3S	6S	9S	15S	21S	27S	29S	39S			
2011																				
July	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	527	0.0
August	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	527	0.0
September	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	510	0.0
October	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	527	0.0
November	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	510	0.0
December	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	527	0.0
2012																				
January	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	527	0.0
February	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	493	0.0
March	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	527	0.0
April	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	510	0.0
May	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	527	0.0
June	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	510	0.0
Annual Totals																				
Totals	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6222	0.0

* Compliance Criteria: For stations 39N through 39S, floating particles and oil and grease shall not be visible.

** Days in the month X number of surfzone sampling stations.

Table B-11. Summary of floatable material by station group (station) observed during 29-station grid water quality surveys, July 2011 through June 2012. Individual stations may have multiple types of debris.

Orange County Sanitation District, California.

Surface Observation	Station Group								Totals
	Downcoast Nearshore	Downcoast Offshore	Upcoast Nearshore	Upcoast Offshore	Newport Canyon	Nearfield Nearshore	Nearfield Offshore	Within ZID	
	2103, 2104, 2183, 2184	2105, 2106, 2185, 2186	2223, 2224, 2303, 2304, 2351, 2352, 2403, 2404	2225, 2226, 2305, 2306, 2353, 2354, 2405, 2406	C2	2203, 2204	2206	2205	
Trash/Debris (black tar, ash from brush fires) [1]	0	0	0	0	0	O	0	0	0
Biological Material (kelp)	0	0	0	0	0	0	0	0	0
NFMO [2]	48	48	96	96	12	24	12	12	348
Totals	48	48	96	96	12	24	12	12	348

[1] Concluded to be not of sewage origin.

[2] No floatable material observed.

Table B-12. Summary of floatable material by station group (station) observed during REC-1 water quality surveys, July 2011 through June 2012. Individual stations may have multiple types of debris.

Orange County Sanitation District, California.

Surface Observation	Station Group					Totals
	Downcoast Nearshore	Upcoast Nearshore	Newport Canyon	Nearfield Nearshore	Within ZID	
	2103, 2104, 2183	2223, 2303 2351, 2403	C2	2203	2205	
Trash/Debris (black tar, ash from brush fires) [1]	0	0	0	0	0	0
Biological Material (kelp)	0	0	0	0	0	0
NFMO [2]	36	48	12	12	11	119
Totals	36	48	12	12	11	119

[1] Concluded to be not of sewage origin.

[2] No floatable material observed.

Table B-13. Total abundance of demersal fish by family and species sampled in summer (August 2011) and winter (February 2012).

Orange County Sanitation District

Family	*Species*	T0	T2	T6	T18	T1	T3	T22	T12	T17	T13	T11	T21	T10	T14	T19	T20	Total Abundance By Species	Total Abundance By Family
	Depth	18	35	36	36	55	55	60	57	60	60	60	90	137	137	137	220		
	# Reps	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2		
Paralichthyidae (Sand Flounders)																			6,863
	Citharichthys sordidus		4	139	191	436	377	205	229	135	100	650	137	862	1,843	721	1	6,030	
	Citharichthys stigmaeus	104	12	29	219		1											365	
	Citharichthys xanthostigma	3	36	77	44	45			59	39	6	9						318	
	Hippoglossina stomata		15	12	2	9	23	6	1	3	8	12	5	11	2	1		110	
	Xystreurys liolepis		6	5		8	1		4	1	2	10						37	
	Citharichthys sp						3											3	
Pleuronectidae (Righteye flounders)																			2,583
	Lyopsetta exilis							1						137	76	307	514	1,035	
	Parophrys vetulus	6	10	16	14	121	19	29	27	130	104	70	23	21	32	32		654	
	Microstomus pacificus						5	2	5	2	12	1	73	106	50	267	58	581	
	Pleuronichthys verticalis	4	12	10	9	59	9	3	9	12	22	66	8		1			224	
	Glyptocephalus zachirus													1	1	12	63	77	
	Pleuronichthys decurrens					1	6				1							8	
	Eopsetta jordani													1	2			3	
	Pleuronichthys ritteri	1																1	
Cottidae (Sculpins)																			2,379
	Icelinus quadriseriatus		67	58	3	111	232	137	271	271	317	679	5	1		4		2,156	
	Chitonotus pugetensis	2	18	14	4	6	25	14	10	34	31	54	6	5				223	
Hexagrammidae (Greenlings)																			1,338
	Zaniolepis latipinnis		50	13	31	54	147	29	97	209	250	28	127	39	20	12	1	1,107	
	Zaniolepis frenata						14	9		2			3	54	35	104	7	228	
	Ophiodon elongatus						1		1			1						3	
Synodontidae (Lizardfish)																			1,214
	Synodus lucioceps	6	90	322	108	33	452	18	51	42	20	50	19	1	1	1		1,214	

Table B-13 continues.

Table B-13 Continued.

Family	*Species*	T0	T2	T6	T18	T1	T3	T22	T12	T17	T13	T11	T21	T10	T14	T19	T20	Total Abundance By Species	Total Abundance By Family
	Depth	18	35	36	36	55	55	60	57	60	60	60	90	137	137	137	220		
	# Reps	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2		
Scorpaenidae (Scorpionfishes)																			890
	Sebastes saxicola						20	2	1	13	6	24	37	188	105	133	35	564	
	Sebastes semicinctus					2	31	2			3	2	31	74	46	19		210	
	Sebastes diploproa																39	39	
	Scorpaena guttata					2	8	7		3	4	4	4	1				33	
	Sebastes elongatus													9	11	1		21	
	Sebastes dallii					1	3			4	5							13	
	Sebastes rosenblatti													5	1			6	
	Sebastes levis				1		1											2	
	Sebastes eos																1	1	
	Sebastes miniatus								1									1	
Soleidae (Soles)																			404
	Symphurus atricaudus		17	8	15	121	12	15	38	16	33	62	64		2	1		404	
Zoarcidae (Eelpouts)																			334
	Lycodes pacificus						1							30	19	173	76	299	
	Lyconema barbatum															2	33	35	
Embiotocidae (Surfperches)																			283
	Zalembius rosaceus		40			70	73	17	18	12	20	5	19	5	4			283	
Batrachoididae (Toadfishes)																			143
	Porichthys notatus						6	6	9	17	57	1	6	6	34	1		143	
Agonidae (Poachers)																			79
	Odontopyxis trispinosa		3	3		13	12	1	7	3	5	18	3					68	
	Agonopsis sterletus											2		1		2	6	11	
Argentinidae (Argentines)																			41
	Argentina sialis													7	29	5		41	
Moridae (Codlings)																			34
	Physiculus rastrelliger														2	1	31	34	

Table B-13 continues.

Table B-13 Continued.

Family	*Species*	T0	T2	T6	T18	T1	T3	T22	T12	T17	T13	T11	T21	T10	T14	T19	T20	Total Abundance By Species	Total Abundance By Family
	Depth	18	35	36	36	55	55	60	57	60	60	60	90	137	137	137	220		
	# Reps	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2		
Ophidiidae (Cusk-eels)																			29
	Chilara taylori					3	8			1			8	2	4	3		29	
Rajidae (Skates)																			16
	Raja inornata		5	1	2		1			1	1	2	1			1	1	16	
Gadidae (Cods)																			13
	Merluccius productus																13	13	
Pomacentridae (damselfishes)																			5
	Chromis punctipinnis	5																5	
16,663Sciaenidae (Drums)																			5
	Genyonemus lineatus		5															5	
Scyliorhinidae (cat sharks)																			3
	Cephaloscyllium ventriosum						3											3	
Anoplopomatidae (sablefishes)																			1
	Anoplopoma fimbria							1										1	
Bythitidae (viviparous brotulas)																			1
	Brosmophycis marginata																1	1	
Gobiidae (Gobies)																			1
	Rhinogobiops nicholsii						1											1	
Serranidae (sea basses and groupers)																			1
	Paralabrax clathratus	1																1	
Stichaeidae (Pricklebacks)																			1
	Plectobranchus evides															1		1	
Torpedinidae (torpedo electric rays)																			1
	Torpedo californica									1								1	
Uranoscopidae (stargazers)																			1
	Kathetostoma averruncus														1			1	
	Total Abundance	132	390	707	643	1,095	1,495	504	838	951	1,007	1,750	579	1,567	2,321	1,804	880	16,663	
	Total No. of Species	9	16	14	13	18	29	19	18	22	21	21	19	23	23	23	16	52	

Data for each family are ranked by number of species and abundance for all stations and surveys combined.
UI = Unidentified, unidentified species were not included in the total number of species calculations.

Table B-14. Total biomass (kg) of demersal fish by species and station sampled in summer (August 2011) and winter (February 2012).

Orange County Sanitation District, California.

Station	T0	T2	T6	T18	T1	T3	T22	T12	T17	T13	T11	T21	T10	T14	T19	T20	Total	%
Depth	18	35	36	36	55	55	60	57	60	60	60	90	137	137	137	220		
Reps	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2		
Citharichthys sordidus		2.586	6.511	2.714	29.975	10.869	8.622	3.780	7.639	3.285	18.798	1.854	18.194	27.255	13.807	2.683	158.572	36.6
Parophrys vetulus	1.010	3.363	1.407	3.399	9.205	3.281	2.348	2.016	7.047	4.432	4.292	0.563	1.886	5.193	3.659	1.538	54.639	12.6
Synodus lucioceps	0.348	4.697	4.540	0.903	2.041	14.227	0.283	1.151	1.255	0.236	1.553	0.243	0.334	0.391	0.070	0.306	32.578	7.5
Citharichthys xanthostigma	0.368	4.861	1.440	1.103	3.852	0.210		4.565	5.715	0.286	1.031		0.799			1.748	25.978	6.0
Lyopsetta exilis							3.039			2.425		1.523	2.084	1.607	3.268	7.952	21.898	5.0
Pleuronichthys verticalis	0.454	1.257	0.611	1.657	6.064	1.058		0.592	1.218	0.324	0.341	0.110	1.347	5.110	0.085	0.743	20.971	4.8
Microstomus pacificus		0.034		0.227		1.545	0.206	0.108	0.071	1.216	0.044	2.163	2.694	1.490	1.384	0.883	12.065	2.8
Zaniolepis latipinnis		1.814	0.499	0.829	0.922	2.146	0.177	0.587	0.934	1.368	0.395	1.175	0.339	0.146	0.481	0.048	11.860	2.7
Icelinus quadriseriatus		0.142	0.592	0.543	0.647	0.280	0.306	1.485	1.561	1.125	3.445	0.032	0.271	1.068	0.021	0.014	11.532	2.7
Symphurus atricaudus		0.765	0.518	0.916	3.881	1.615	0.090	0.153	0.969		0.296	0.033	0.058	1.428	0.065	0.243	11.030	2.5
Sebastes saxicola						0.576	0.707	0.003	0.048	1.316	0.136	0.719	2.634	1.123	1.899	0.101	9.262	2.1
Scorpaena guttata			1.030		0.350	2.550	1.035		0.618	1.009	1.340						7.932	1.8
Hippoglossina stomata		0.602	1.551	0.748	0.218	0.283	0.125	0.016	0.089	0.831	1.180		0.982	0.211	0.238		7.074	1.6
Zalembius rosaceus		1.548	0.221	0.210	1.081	1.010	0.191	0.347	0.284	0.243	0.154	0.530	0.079	0.012	0.127		6.037	1.4
Porichthys notatus		0.230	0.015	0.773		0.325	0.107	0.137	0.266	1.391	0.096	0.005		0.291	1.465		5.101	1.2
Xystreurys liolepis		0.148		0.151	1.842			0.468	0.397		0.255		0.821	0.883			4.965	1.1
Lycodes pacificus						0.017	0.350			0.588		1.337	0.328	0.608	0.657	0.973	4.858	1.1
Raja inornata		0.650	0.600	0.305		0.052	0.069		0.330		1.342	0.105	0.321	0.175		0.225	4.174	1.0
Citharichthys stigmaeus	1.234	0.065	0.048	1.364				0.211					0.038			0.981	3.941	0.9
Zaniolepis frenata		0.054	0.167			0.227	0.180			0.398	0.242	0.819	0.595	0.205	0.594	0.202	3.683	0.8
Sebastes semicinctus				0.001	0.012	0.668	0.033			0.170	0.022	0.230	1.366	0.071	1.041		3.614	0.8
Chitonotus pugetensis	0.025	0.029		0.036	0.069	0.314	0.183	0.207	0.393	0.367	0.524	0.082	0.295	0.097		0.012	2.633	0.6
Glyptocephalus zachirus							0.234					0.244	0.046		0.117	0.508	1.149	0.3
Pleuronichthys decurrens				0.090	0.200	0.146					0.526						0.962	0.2
Eopsetta jordani													0.285	0.200	0.355		0.840	0.2
Torpedo californica									0.590								0.590	0.1
Chilara taylori					0.053	0.122			0.015		0.152	0.052	0.030	0.050	0.088		0.562	0.1

Table B-14 continues.

Table B-14 continued.

Station	T0	T2	T6	T18	T1	T3	T22	T12	T17	T13	T11	T21	T10	T14	T19	T20	Total	%
Depth	18	35	36	36	55	55	60	57	60	60	60	90	137	137	137	220		
Reps	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2		
Physiculus rastrelliger														0.047	0.101	0.378	0.526	0.1
Genyonemus lineatus		0.524															0.524	0.1
Sebastes diploproa																0.500	0.500	0.1
Merluccius productus							0.267									0.220	0.487	0.1
Sebastes rosenblatti										0.167			0.244		0.027		0.438	0.1
Chromis punctipinnis	0.358																0.358	0.1
Odontopyxis trispinosa		0.006	0.001	0.005	0.033	0.205	0.002	0.013	0.020	0.013	0.024			0.014			0.336	0.1
Sebastes elongatus										0.111			0.043	0.075	0.086		0.315	0.1
Sebastes dallii		0.048		0.103	0.060	0.006					0.081						0.298	0.1
Cephaloscyllium ventriosum											0.282						0.282	0.1
Paralabrax clathratus	0.275																0.275	0.1
Ophiodon elongatus						0.066			0.147		0.061						0.274	0.1
Argentina sialis										0.008		0.027		0.125	0.023		0.183	<0.1
Pleuronichthys ritteri	0.122																0.122	<0.1
Lyconema barbatum												0.025				0.083	0.108	<0.1
Agonopsis sterletus							0.064				0.003	0.010	0.016		0.008		0.101	<0.1
Brosmophycis marginata																0.072	0.072	<0.1
Plectobranchus evides															0.042		0.042	<0.1
Sebastes levis						0.023										0.001	0.024	<0.1
Sebastes miniatus									0.022								0.022	<0.1
Kathetostoma averruncus														0.018			0.018	<0.1
Sebastes eos							0.015										0.015	<0.1
Rhinogobiops nicholsii											0.011						0.011	<0.1
Anoplopoma fimbria							0.003										0.003	<0.1
Citharichthys sp											0.003						0.003	<0.1
Total Biomass	4.194	23.423	19.751	16.077	60.505	41.821	18.636	15.839	29.628	21.309	36.629	11.881	36.129	47.893	29.708	20.414	433.837	100

Table B-15. Total abundance of epibenthic macroinvertebrates by species and station sampled in summer (August 2011) and winter (February 2012).

Orange County Sanitation District, California.

Station	T0	T2	T6	T18	T1	T3	T22	T12	T17	T13	T11	T21	T10	T14	T19	T20	Total
Depth	18	35	36	36	55	55	60	57	60	60	60	90	137	137	137	220	
Reps	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
Ophiura luetkenii		2,059	59	131	1,322	24	33	671	6	6	365						4,676
Lytechinus pictus		2	207	998	40	365	48	29	42	117	53	26	17	34	4		1,982
Brisaster townsendi														2	1	1,785	1,788
Sicyonia ingentis		2	1		1	26	2	4	107	1	2	6	158	167	41		518
Strongylocentrotus fragilis													16			479	495
Hamatoscalpellum californicum		34	17		8	1	37	134	2	11	39			89			372
Thesea sp		33	72	3	37	11	80	23	13	9	27	4		1			313
Brissopsis pacifica														2		191	193
Neocrangon resima															135	45	180
Luidia foliolata		15	9	4	10	16	17	11	17	7	17	14	19	3	14	5	178
Spatangus californicus													1			161	162
Pleurobranchaea californica		10	6	5	5	8	19	2	4	4	8	10	13	21	7	7	129
Philine auriformis		2	1	3			3	1				2	14		58		84
Acanthodoris brunnea	1			1	5	6	3	2	4	1	4	4	11	15	18		75
Neocrangon zacae													8	5	30	22	65
Hinea insculpta						1	1					1	7			34	44
Astropecten verrilli	7	1	2	1	9		10	1	2	1	2	1					37
Dromalia alexandri																36	36
Spirontocaris holmesi																31	31
Luidia asthenosoma		2	7	2	1	1	8	2	2	1			1	3			30
Ophiothrix spiculata			2			4	2	1	1	10	4					5	29
Parastichopus californicus					5	6	3	1	2	3	5	3					28
Rossia pacifica													3		18	4	25
Octopus rubescens	1					1		1	2	3		2		5	4	3	22
Acanthoptilum sp					9						1	6					16
Pandalus platyceros																16	16
Octopus californicus												1	1		1	10	13

Table B-15 continues.

Table B-15 Continued.

Station	T0	T2	T6	T18	T1	T3	T22	T12	T17	T13	T11	T21	T10	T14	T19	T20	Total
Depth	18	35	36	36	55	55	60	57	60	60	60	90	137	137	137	220	
Reps	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
Orthopagurus minimus						13											13
Parastichopus sp A													1		4	7	12
Amphichondrius granulatus						3					1	1	1		2		8
Corynactis californica	2			4													6
Loxorhynchus crispatus		3	1						1	1							6
Crangon nigromaculata	5																5
Megasurcula carpenteriana										1					1	2	4
Metacarcinus anthonyi	1				1	1									1		4
Neosimnia sp							4										4
Ptilosarcus gurneyi							4										4
Cancellaria cooperii															1	2	3
Lamellaria diegoensis		1									2						3
Neocrangon sp																3	3
Paguristes turgidus		1					1									1	3
Pentamera pseudocalcigera																3	3
Platymera gaudichaudii						1			1			1					3
Podochela hemphillii			3														3
Podochela lobifrons		1	1					1									3
Boreotrophon bentleyi															2		2
Dendronotus frondosus			1					1									2
Heterocrypta occidentalis	1		1														2
Luidia armata	2																2
Metacrangon spinosissima															2		2
Metridium gigantea							1						1				2
Muricea californica	2																2
Stylatula elongata													2				2
Aglaophenia sp						1											1
Amphiodia urtica						1											1
Antiplanes catalinae													1				1

Table B-15 continues.

Table B-15 Continued.

Station	T0	T2	T6	T18	T1	T3	T22	T12	T17	T13	T11	T21	T10	T14	T19	T20	Total
Depth	18	35	36	36	55	55	60	57	60	60	60	90	137	137	137	220	
Reps	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
Asteroidea												1					1
Barbarofusus barbarensis						1											1
Calliostoma gloriosum	1																1
Crangon sp																1	1
Dendronotus iris														1			1
Erileptus spinosus			1														1
Heterogorgia tortuosa			1														1
Leptogorgia chilensis							1										1
Paralithodes rathbuni																1	1
Parastichopus sp						1											1
Pisaster brevispinus	1																1
Scyra acutifrons			1														1
Sicyonia penicillata		1															1
Spirontocaris sp														1			1
Synidotea magnifica			1														1
Tritonia diomedea																1	1
Zonaria spadicea	1																1
Asteroidea												1					1
Total Abundance	25	2167	394	1,152	1,453	492	277	885	206	176	530	83	275	349	344	2,855	11,663
Total No. of Species	12	15	20	10	13	21	19	16	15	15	14	16	18	14	19	25	73

Table B-16. Total biomass (kg) of epibenthic macroinvertebrates by species and station sampled in summer (August 2011) and winter (February 2012).

Orange County Sanitation District, California.

Station	T0	T2	T6	T18	T1	T3	T22	T12	T17	T13	T11	T21	T10	T14	T19	T20	Total
Depth	18	35	36	36	55	55	60	57	60	60	60	90	137	137	137	220	
Reps	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
Brisaster townsendi														0.023	0.017	37.677	37.717
Strongylocentrotus fragilis													1.925			15.573	17.498
Spatangus californicus													0.085			16.973	17.058
Pleurobranchaea californica		0.045	0.080	0.105	0.001	0.297	0.755	0.995	0.185	0.181	0.265	2.943	5.033	3.648	0.590	0.334	15.457
Parastichopus californicus					0.310	2.890	1.995	0.395	1.215	1.595	2.798	1.643					12.841
Luidia foliolata		0.385	0.352	0.031	0.107	0.870	0.199	0.250	0.585	0.251	2.343	1.130	2.233	0.231	1.205	0.396	10.568
Muricea californica	9.840																9.840
Sicyonia ingentis		0.002	0.001		0.080	0.696	0.002	0.060	1.848	0.004	0.004	0.098	3.390	2.868	0.610		9.663
Metridium gigantea							0.595						7.500				8.095
Ophiura luetkenii		2.469	0.054	0.100	2.990	0.014	0.030	0.784	0.004	0.004	0.467						6.916
Parastichopus sp A													0.525		2.748	2.490	5.763
Brissopsis pacifica														0.080		5.218	5.298
Lytechinus pictus		0.001	0.294	2.576	0.775	0.470	0.038	0.040	0.088	0.116	0.049	0.065	0.024	0.056	0.003		4.595
Octopus californicus												0.285	0.285		0.050	1.878	2.498
Metacarcinus anthonyi	0.001				1.651	0.230									0.575		2.457
Dromalia alexandri																0.920	0.920
Pandalus platyceros																0.810	0.810
Pisaster brevispinus	0.695																0.695
Octopus rubescens	0.002					0.006		0.017	0.029	0.165		0.075		0.320	0.039	0.037	0.690
Paralithodes rathbuni																0.625	0.625
Platymera gaudichaudii						0.230			0.190			0.150					0.570
Luidia asthenosoma		0.010	0.005	0.002	0.317	0.001	0.004	0.003	0.005	0.001			0.006				0.354
Thesea sp		0.048	0.065	0.001		0.005	0.117	0.036	0.025	0.012	0.033	0.002		0.001			0.345
Astropecten verrilli	0.046	0.008	0.009	0.002	0.128		0.051	0.001	0.016	0.001	0.021	0.016					0.299
Neocrangon resima															0.135	0.045	0.180
Rossia pacifica													0.025		0.123	0.020	0.168
Paguristes turgidus		0.115					0.027									0.001	0.143

Table B-16 continues.

Table B-16 Continued.

Station	T0	T2	T6	T18	T1	T3	T22	T12	T17	T13	T11	T21	T10	T14	T19	T20	Total
Depth	18	35	36	36	55	55	60	57	60	60	60	90	137	137	137	220	
Reps	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
Hamatoscalpellum californicum		0.008	0.003		0.002	0.001	0.010	0.034	0.001	0.004	0.016			0.033			0.112
Ptilosarcus gurneyi							0.104										0.104
Acanthodoris brunnea	0.001			0.001	0.005	0.003	0.002	0.001	0.003	0.001	0.003	0.007	0.010	0.014	0.012		0.063
Megasurcula carpenteriana										0.020					0.015	0.021	0.056
Neocrangon zacae													0.008	0.004	0.022	0.022	0.056
Hinea insculpta						0.001	0.001					0.001	0.006			0.037	0.046
Philine auriformis		0.001	0.001	0.001			0.001	0.001				0.002	0.009		0.030		0.046
Zonaria spadicea	0.033																0.033
Spirontocaris holmesi																0.031	0.031
Leptogorgia chilensis							0.026										0.026
Tritonia diomedea																0.025	0.025
Loxorhynchus crispatus		0.017	0.001						0.001	0.004							0.023
Ophiothrix spiculata			0.002			0.003	0.001	0.001	0.001	0.004	0.003					0.004	0.019
Crangon nigromaculata	0.019																0.019
Sicyonia penicillata		0.019															0.019
Acanthoptilum sp					0.011						0.001	0.007					0.019
Heterocrypta occidentalis	0.011		0.003														0.014
Barbarofusus barbarensis						0.013											0.013
Cancellaria cooperii															0.001	0.006	0.007
Luidia armata	0.004				0.001												0.005
Amphichondrius granulatus						0.001					0.001	0.001	0.001		0.001		0.005
Boreotrophon bentleyi															0.004		0.004
Lamellaria diegoensis		0.001									0.002						0.003
Neocrangon sp																0.003	0.003
Orthopagurus minimus						0.003											0.003
Pentamera pseudocalcigera																0.003	0.003
Corynactis californica	0.001			0.001													0.002
Metacrangon spinosissima	0.002																0.002
Neosimnia sp							0.002										0.002

Table B-16 continues.

Table B-16 Continued.

Station	T0	T2	T6	T18	T1	T3	T22	T12	T17	T13	T11	T21	T10	T14	T19	T20	Total
Depth	18	35	36	36	55	55	60	57	60	60	60	90	137	137	137	220	
Reps	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
Podochela hemphillii			0.002														0.002
Podochela lobifrons		0.001	0.001					0.001									0.003
Aglaophenia sp						0.001											0.001
Antiplanes catalinae													0.001				0.001
Calliostoma gloriosum	0.001																0.001
Crangon sp																0.001	0.001
Dendronotus frondosus			0.001					0.001									0.002
Dendronotus iris														0.001			0.001
Erileptus spinosus			0.001														0.001
Scyra acutifrons			0.001														0.001
Spirontocaris sp														0.001			0.001
Stylatula elongata													0.001				0.001
Synidotea magnifica			0.001														0.001
Amphiodia urtica						0.001											0.001
Asteroidea												0.001					0.001
Heterogorgia tortuosa			0.001														0.001
Parastichopus sp						0.001											0.001
Total Biomass	10.656	3.130	0.878	2.820	6.378	5.737	3.960	2.620	4.196	2.363	6.006	6.426	21.067	7.280	6.180	83.150	172.847

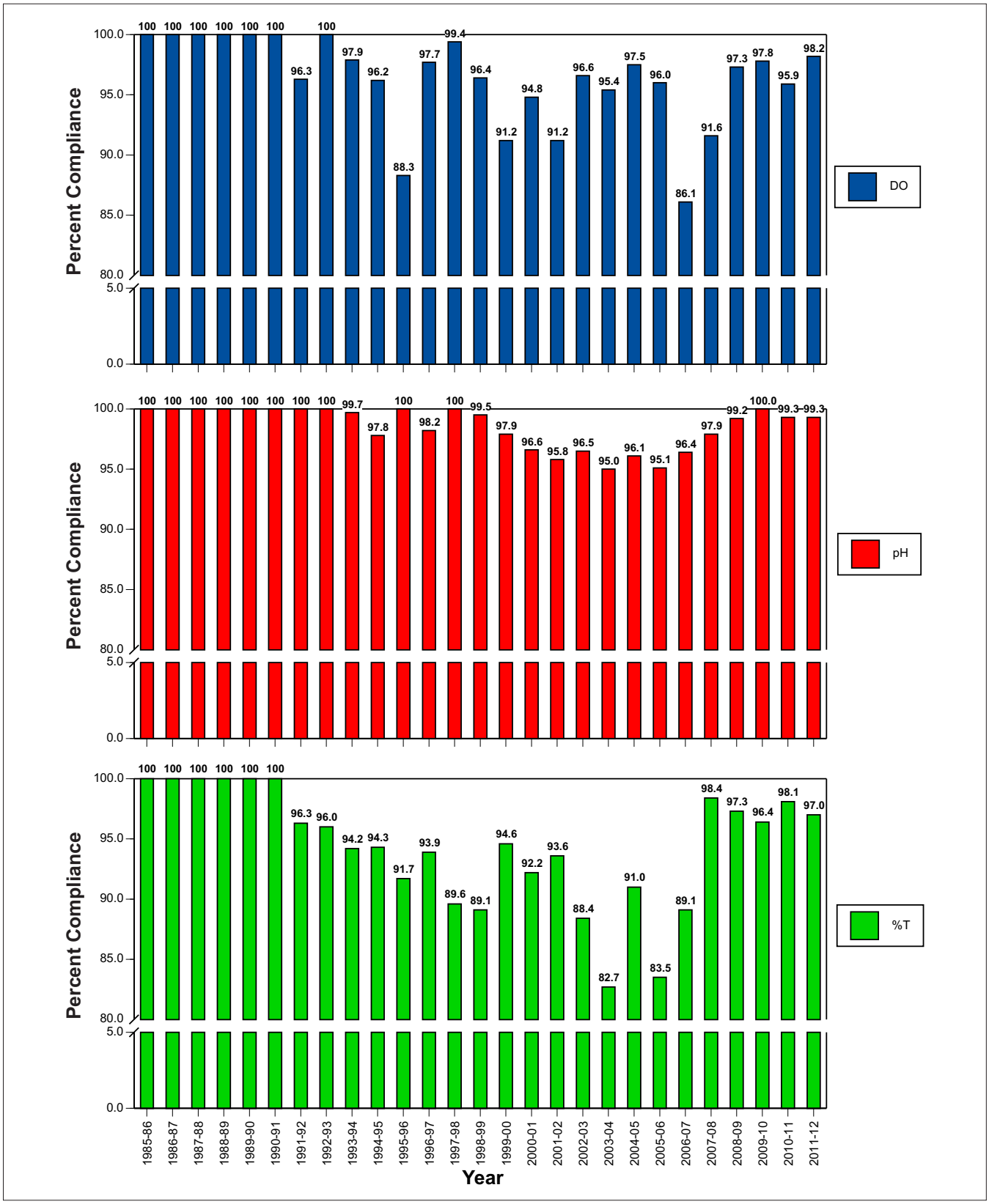

Figure B-1. Summary of mean percent compliance for dissolved oxygen, pH, and light transmissivity for all stations compared to reference stations, 1985–2012.

Orange County Sanitation District, California.

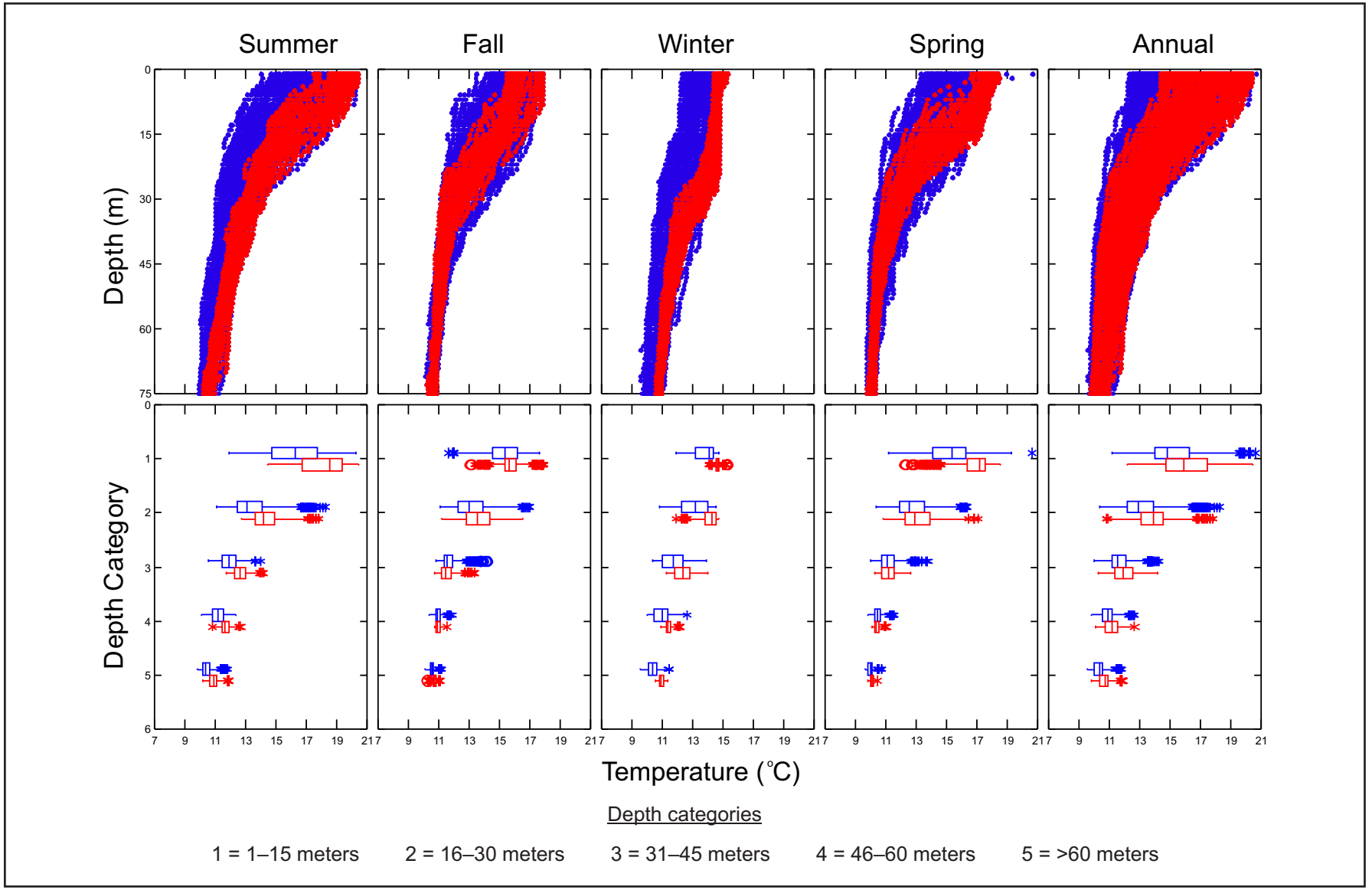

Figure B-2. **Seasonal scatter and box plots of temperature (°C) for the Central Bight Regional Water Quality Monitoring Program (blue) and OCSD stations (red), July 2011 through June 2012.**

Central Bight data includes the City of Oxnard, City of Los Angeles, LACSD, and OCSD.

Orange County Sanitation District, California.

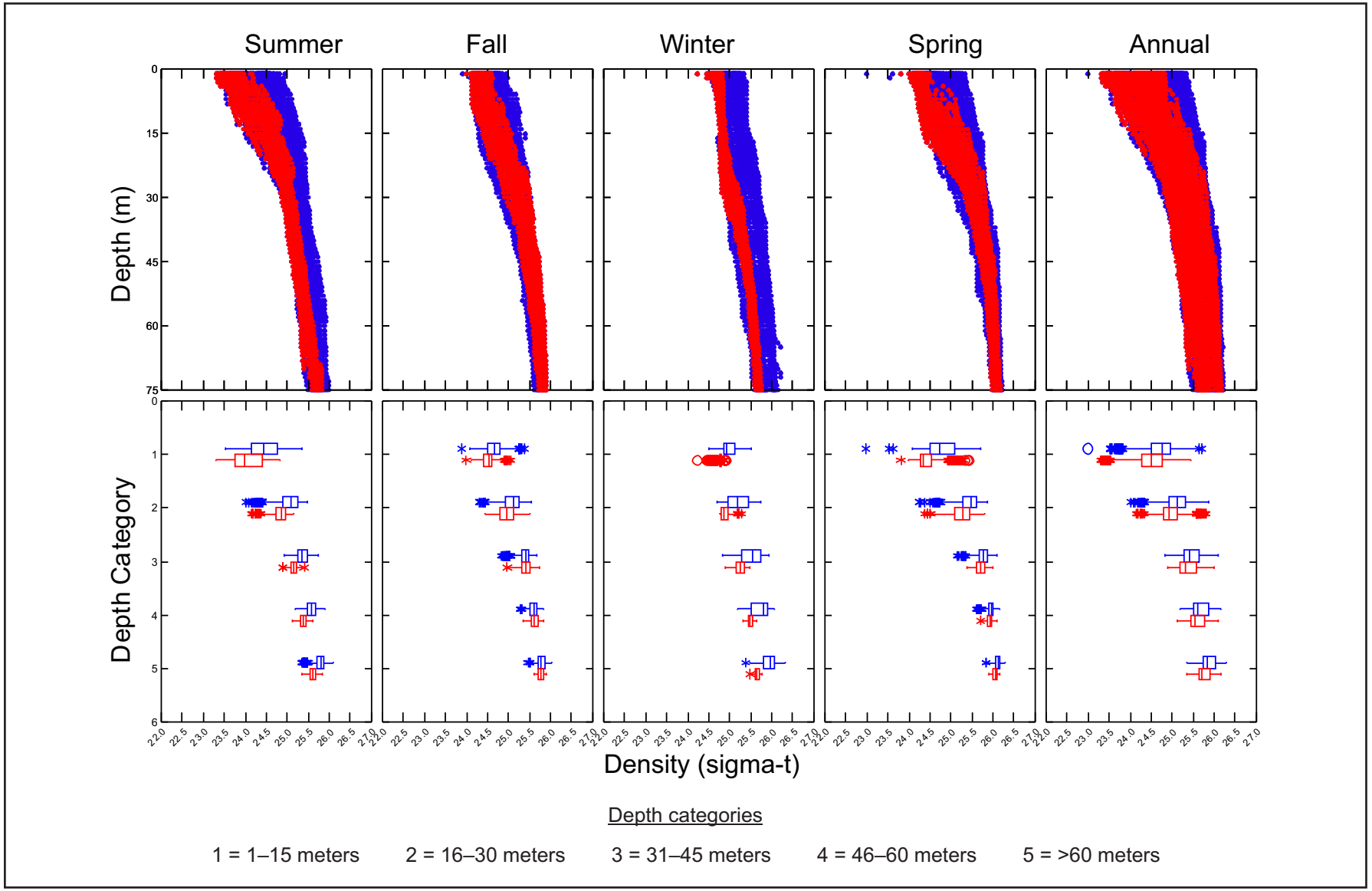

Figure B-3. **Seasonal scatter and box plots of density (kg/m^3) for the Central Bight Regional Water Quality Monitoring Program (blue) and OCSD stations (red), July 2011 through June 2012.**

Central Bight data includes the City of Oxnard, City of Los Angeles, LACSD, and OCSD.

Orange County Sanitation District, California.

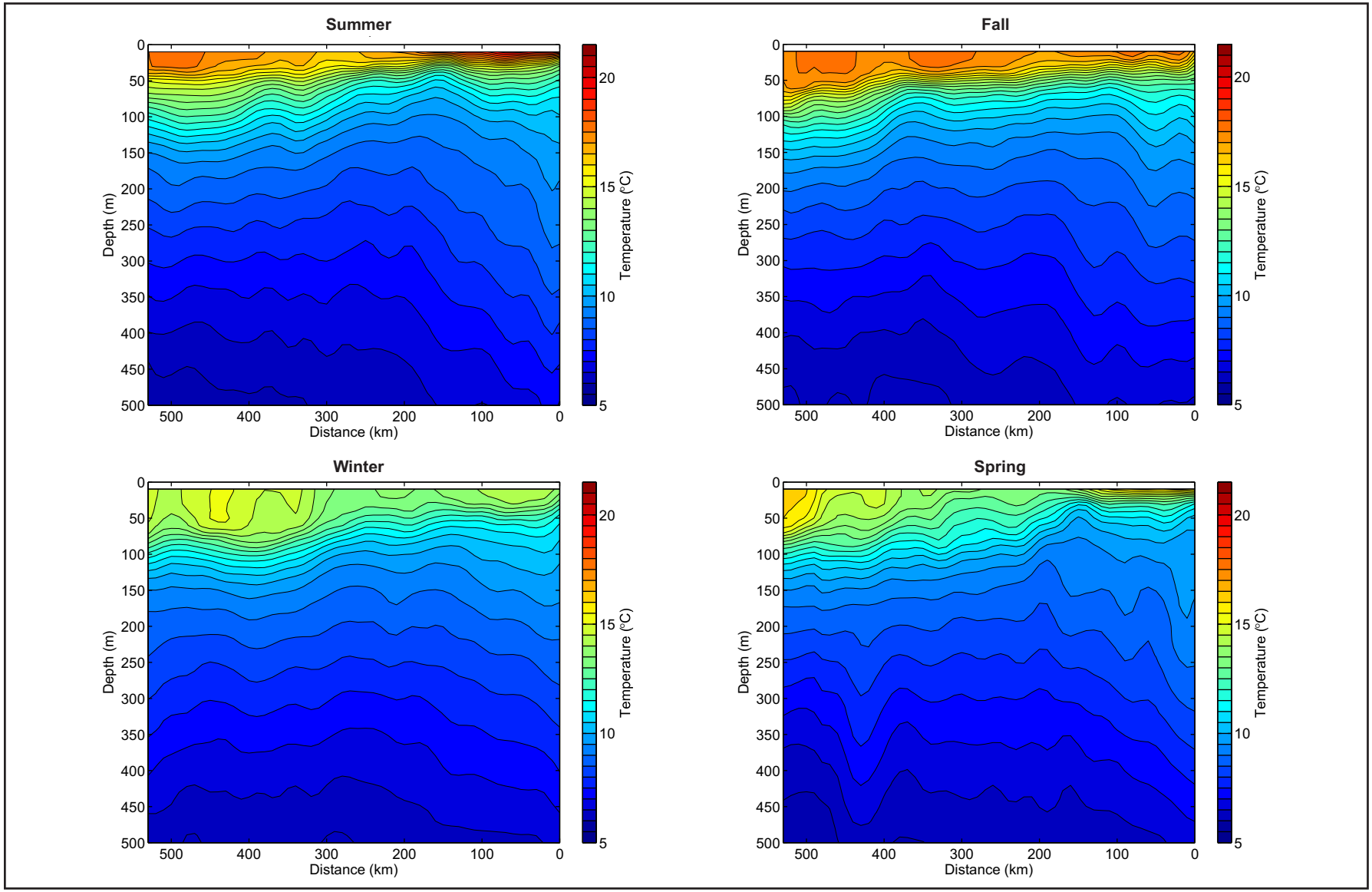

Figure B-4. **Quarterly plots of temperature (°C) from the SCRIPP's Spray Glider from measurements in 2012 along CalCOFI line 90. The distance on the horizontal axis increases offshore from the CalCOFI Station 90.30.**

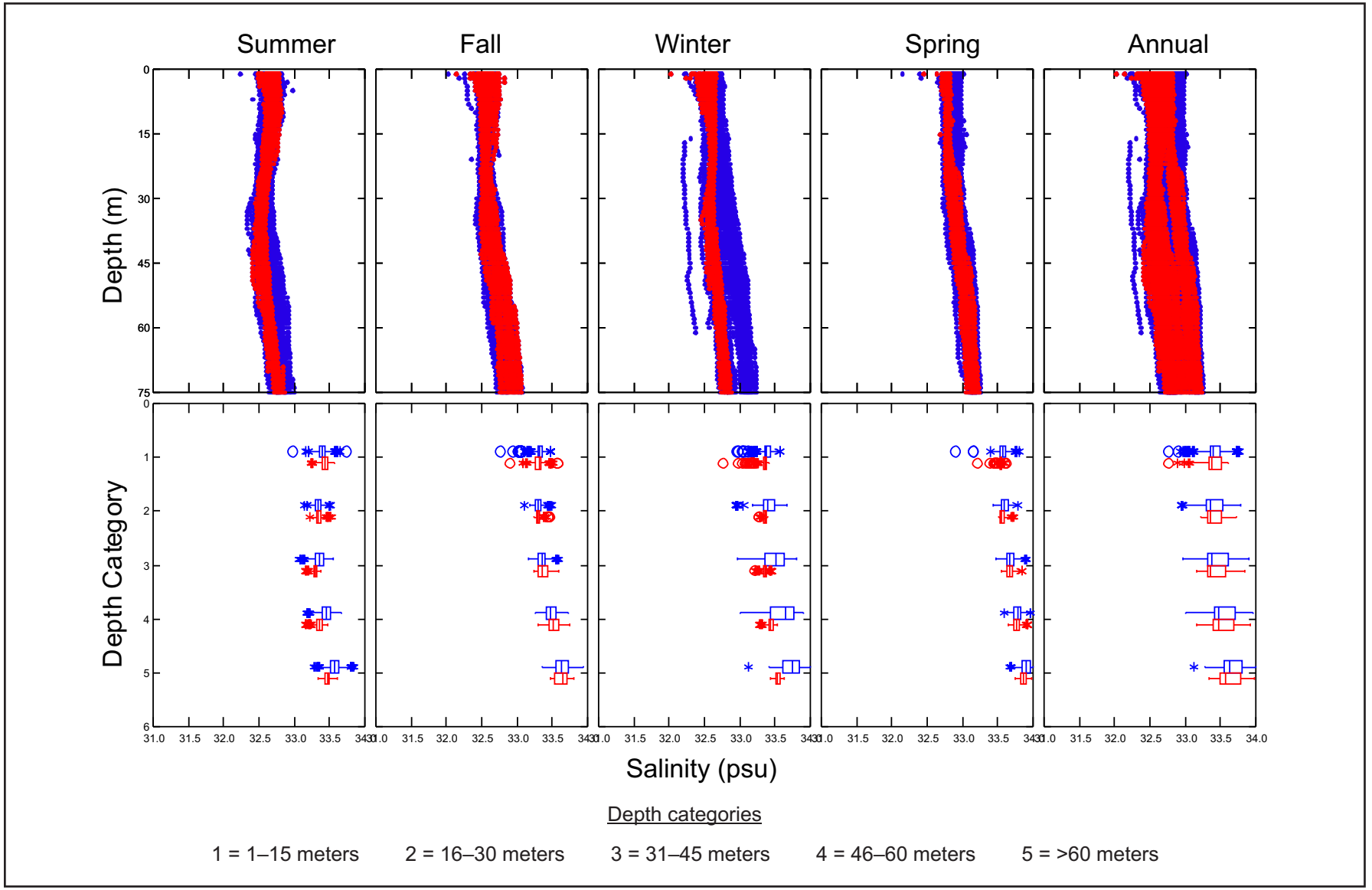

Figure B-5. Seasonal scatter and box plots of salinity (psu) for the Central Bight Regional Water Quality Monitoring Program (blue) and OCSD stations (red), July 2011 through June 2012.

Central Bight data includes the City of Oxnard, City of Los Angeles, LACSD, and OCSD.

Orange County Sanitation District, California.

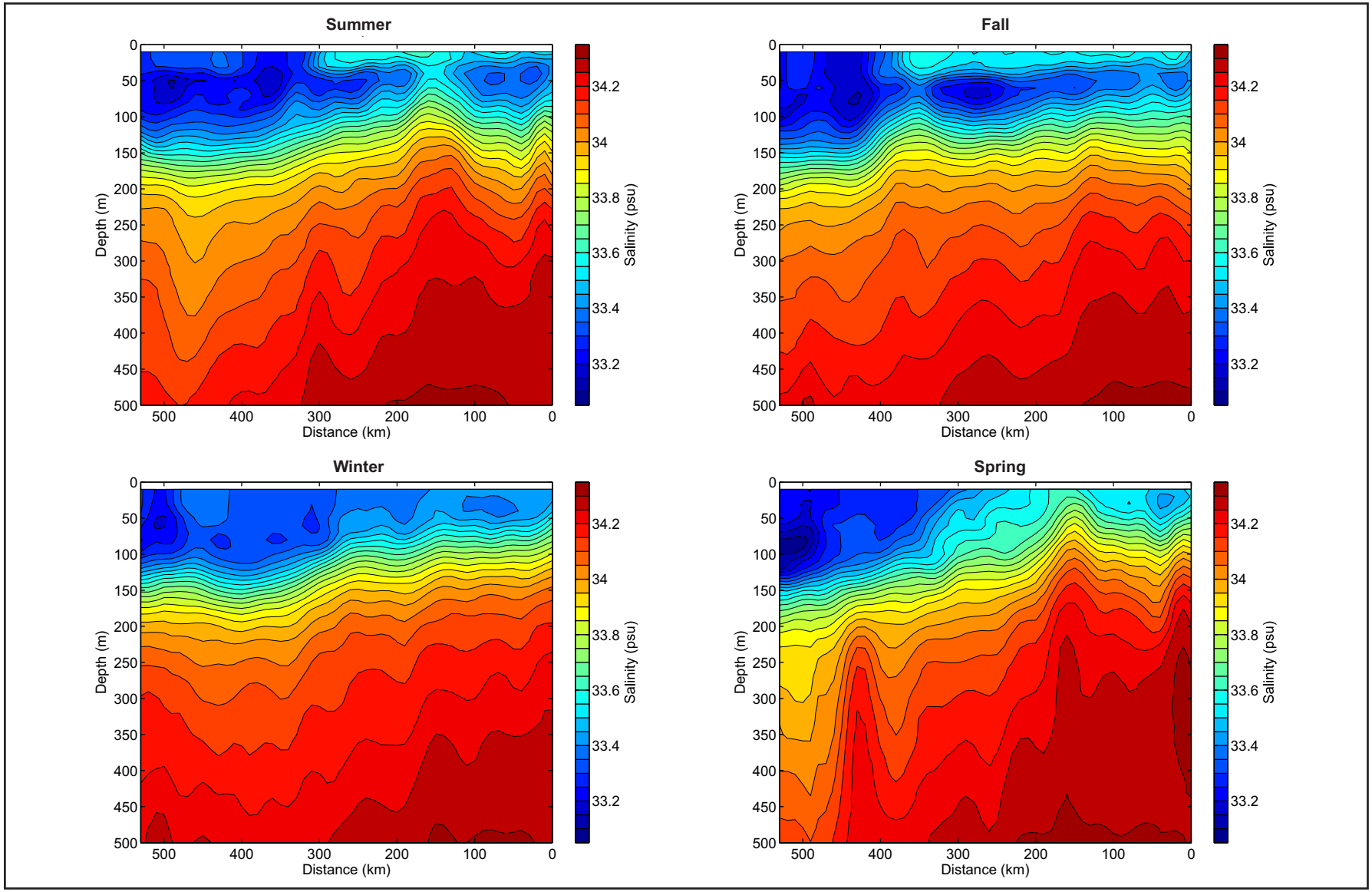

Figure B-6. **Quarterly plots of salinity (psu) from the SCRIPP's Spray Glider from measurements in 2012 along CalCOFI line 90. The distance on the horizontal axis increases offshore from the CalCOFI Station 90.30.**

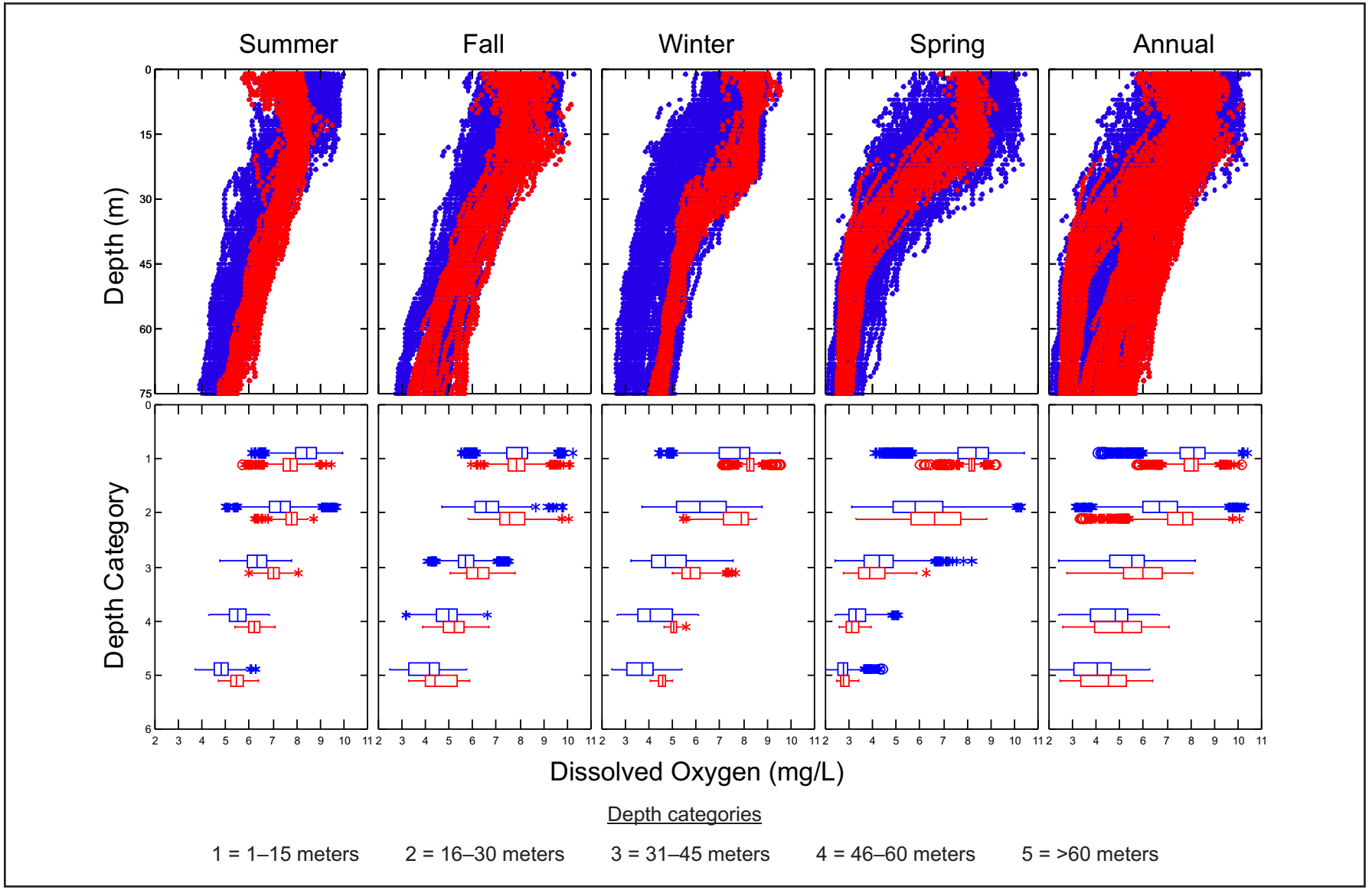

Figure B-7. **Seasonal scatter and box plots of dissolved oxygen (mg/L) for the Central Bight Regional Water Quality Monitoring Program (blue) and OCSD stations (red), July 2011 through June 2012.**

Central Bight data includes the City of Oxnard, City of Los Angeles, LACSD, and OCSD.

Orange County Sanitation District, California.

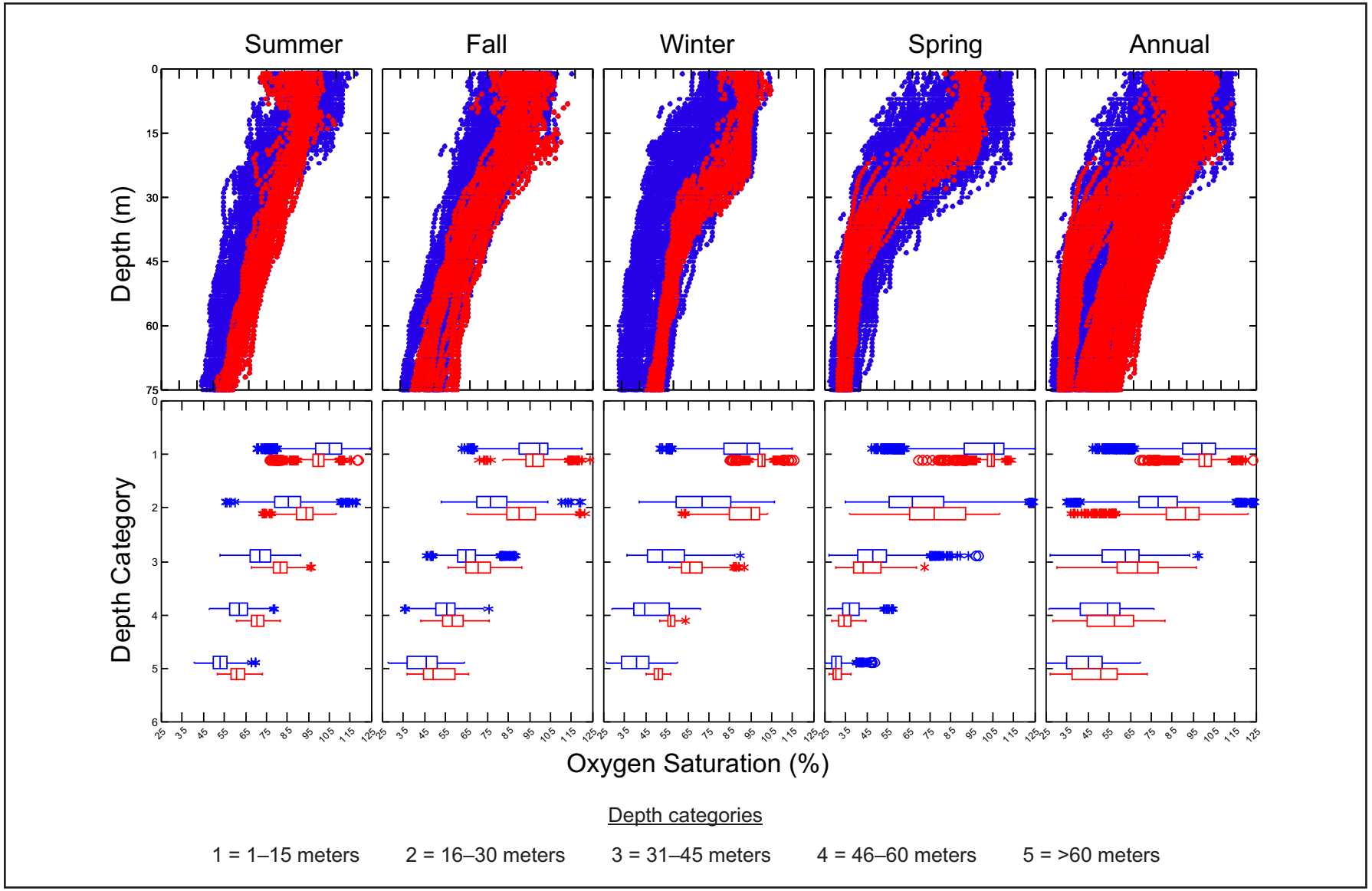

Figure B-8. **Seasonal scatter and box plots of oxygen saturation (%) for the Central Bight Regional Water Quality Monitoring Program (blue) and OCSD stations (red), July 2011 through June 2012.**

Central Bight data includes the City of Oxnard, City of Los Angeles, LACSD, and OCSD.

Orange County Sanitation District, California.

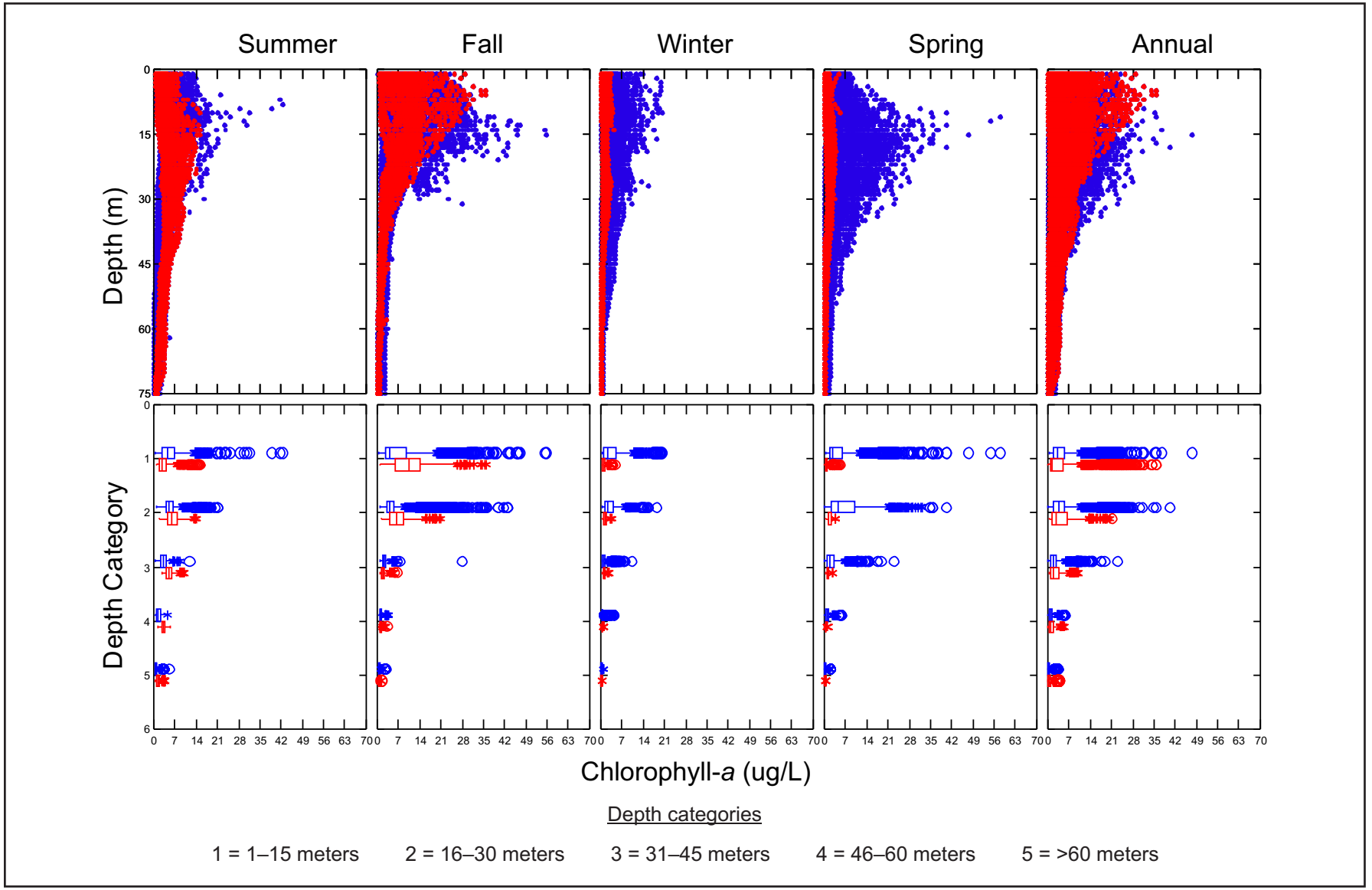

Figure B-9. Seasonal scatter and box plots of chlorophyll-*a* (µg/L) for the Central Bight Regional Water Quality Monitoring Program (blue) and OCSD stations (red), July 2011 through June 2012.

Central Bight data includes the City of Oxnard, City of Los Angeles, LACSD, and OCSD.

Orange County Sanitation District, California.

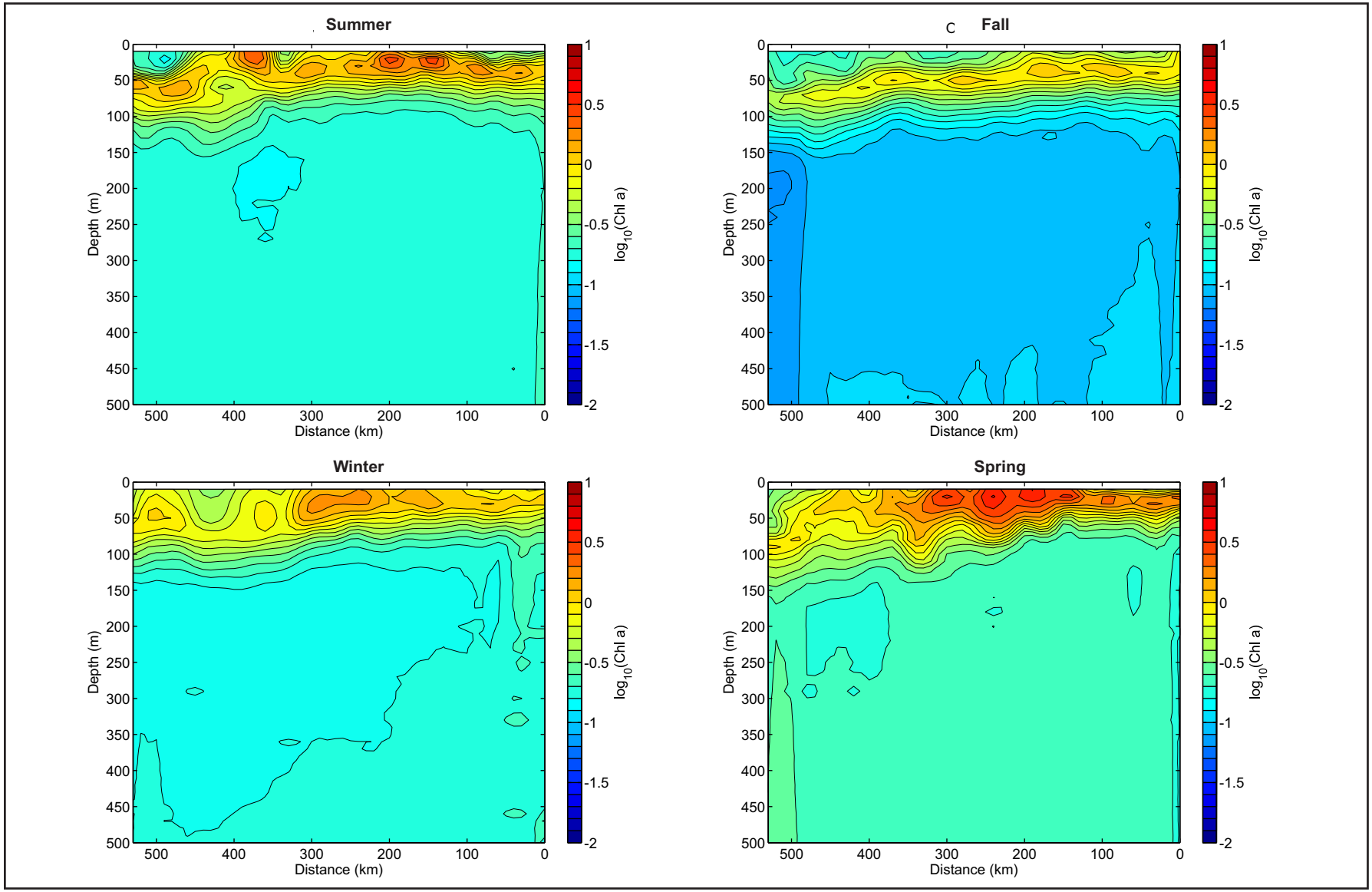

Figure B-10. **Quarterly plots of chlorophyll-*a* (log_{10}) from the SCRIPP's Spray Glider from measurements in 2012 along CalCOFI line 90. The distance on the horizontal axis increases offshore from the CalCOFI Station 90.30.**

The fluorometer should be considered uncalibrated, so differences from season to season are not meaningful. However, structure such as the depth of the fluorescence max is fairly resolved.

Orange County Sanitation District, California.

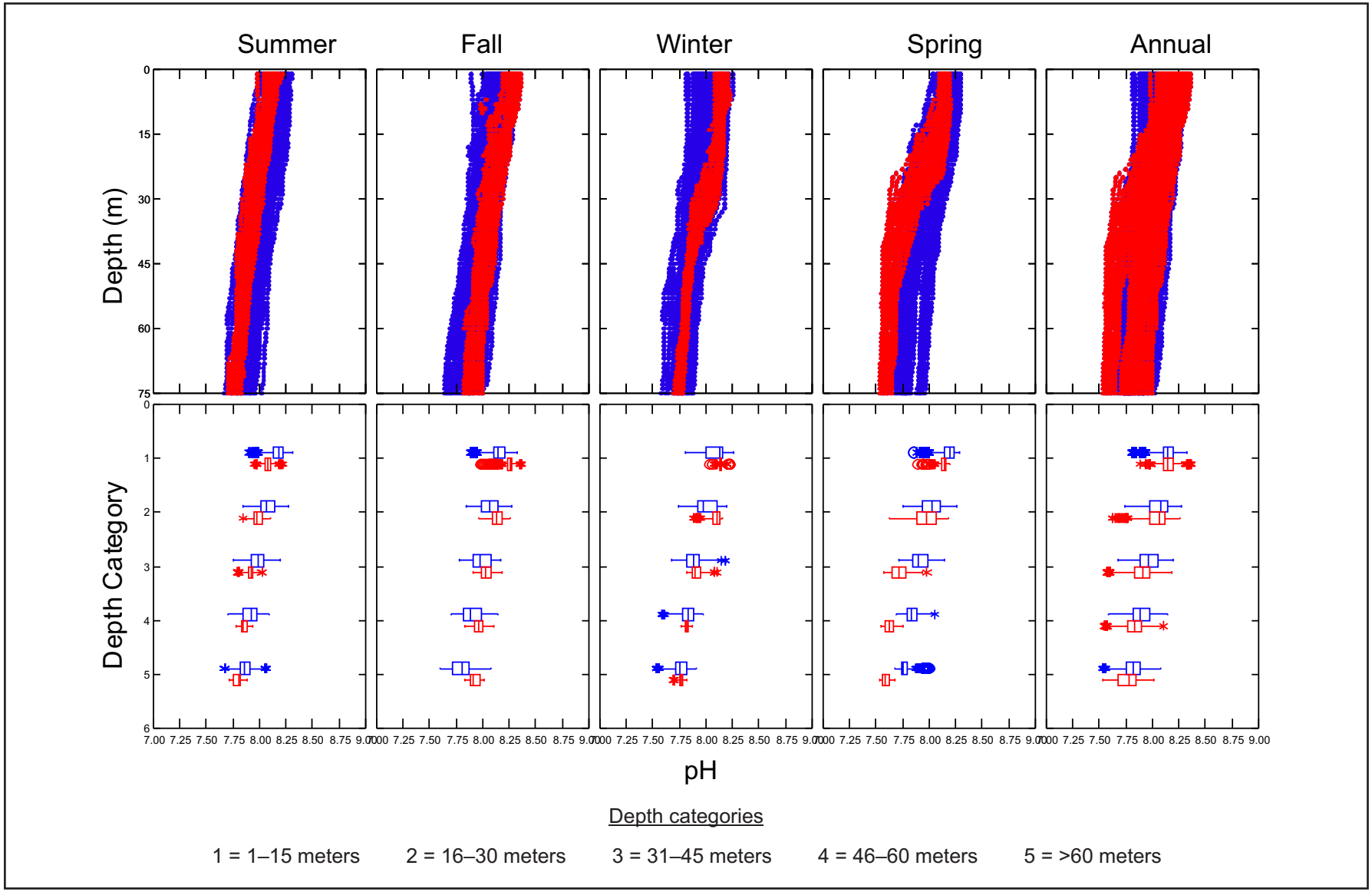

Figure B-11. Seasonal scatter and box plots of pH (pH units) for the Central Bight Regional Water Quality Monitoring Program (blue) and OCSD stations (red), July 2011 through June 2012.

Central Bight data includes the City of Oxnard, City of Los Angeles, LACSD, and OCSD.

Orange County Sanitation District, California.

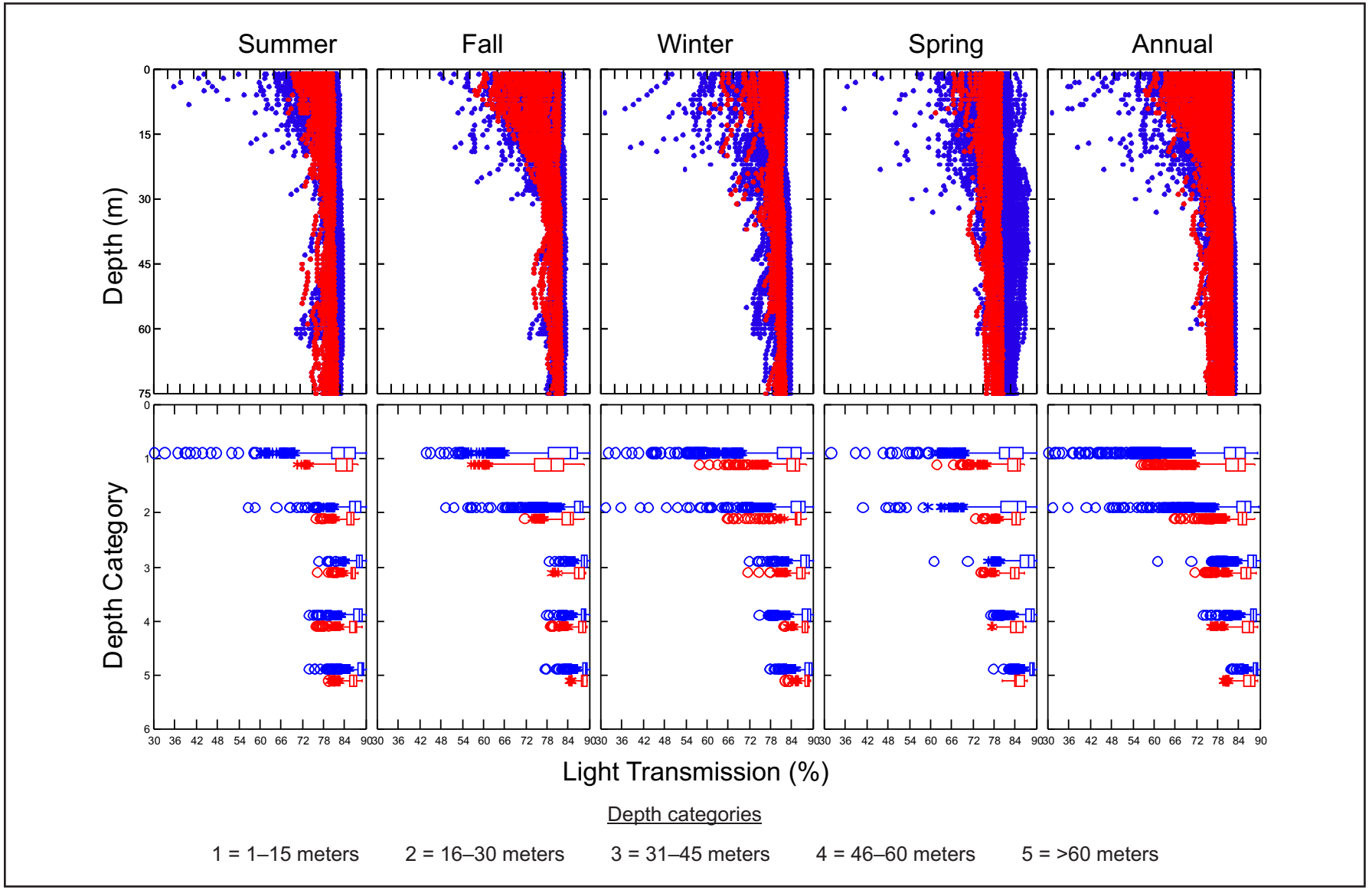

Figure B-12. Seasonal scatter and box plots of light transmission (%) for the Central Bight Regional Water Quality Monitoring Program (blue) and OCSD stations (red), July 2011 through June 2012.

Central Bight data includes the City of Oxnard, City of Los Angeles, LACSD, and OCSD.

Orange County Sanitation District, California.

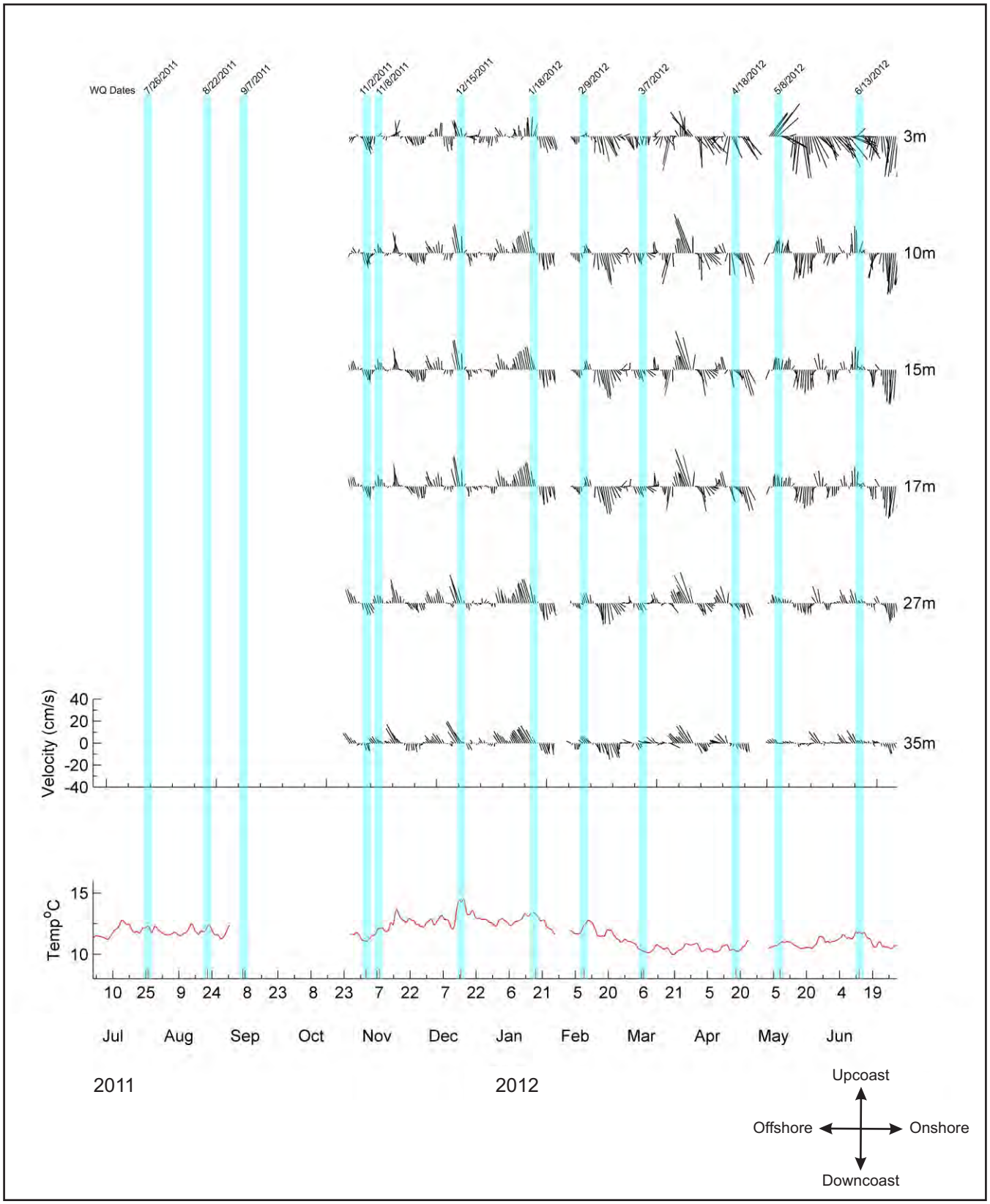

Figure B-13. Bottom temperature (°C) and current speed (cm/s) and direction by depth for mooring M-19, July 2011–June 2012. Data processed using a 40-hour low pass filter and rotated 302°.
Blue lines denote water quality sampling events.

Orange County Sanitation District, California.

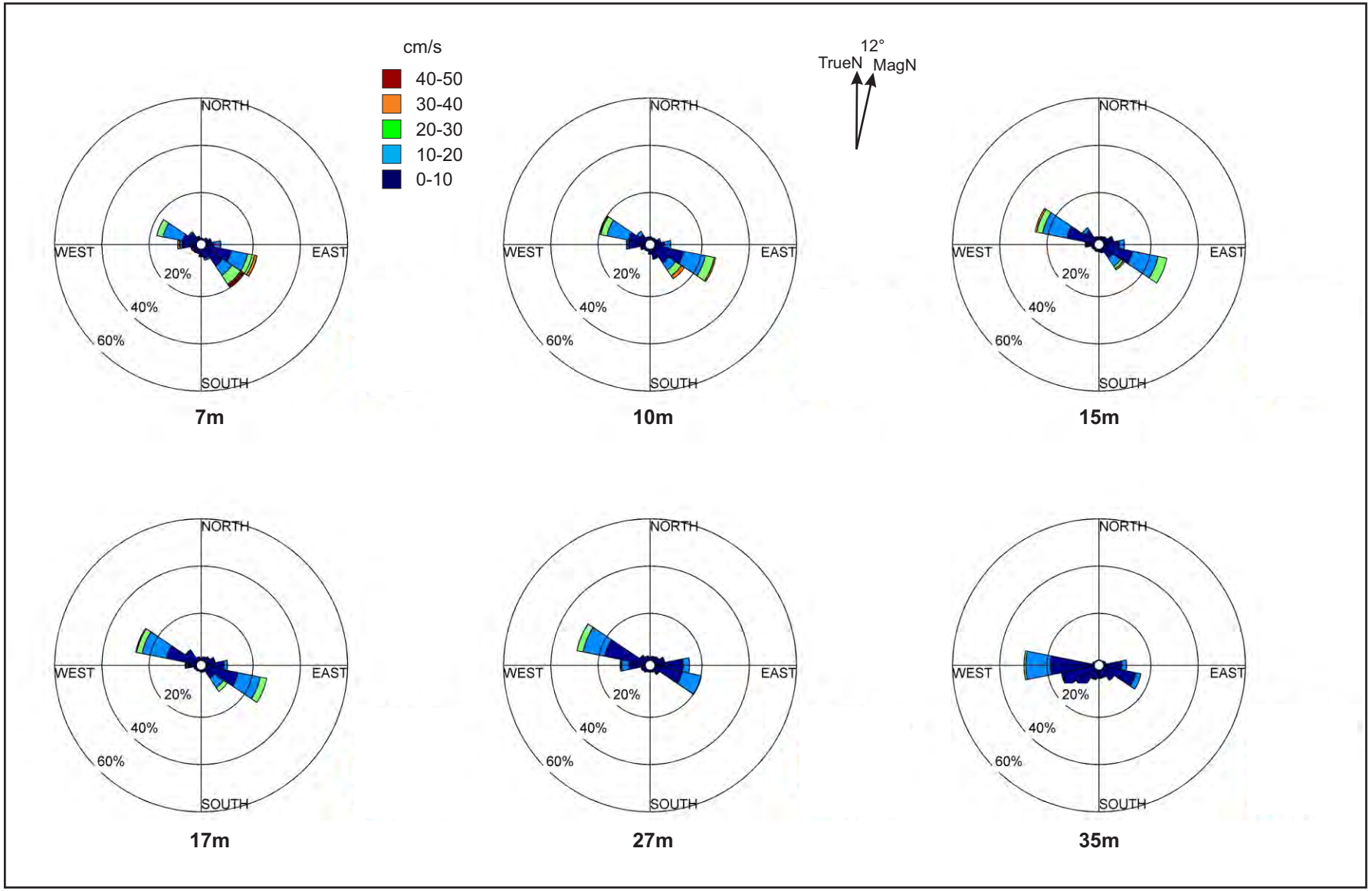

Figure B-14. **Average current speed (cm/s) and direction by depth for mooring M-19, July 2011–June 2012. Data processed using a 40-hour low pass filter. Direction oriented to true north.**

Orange County Sanitation District, California.

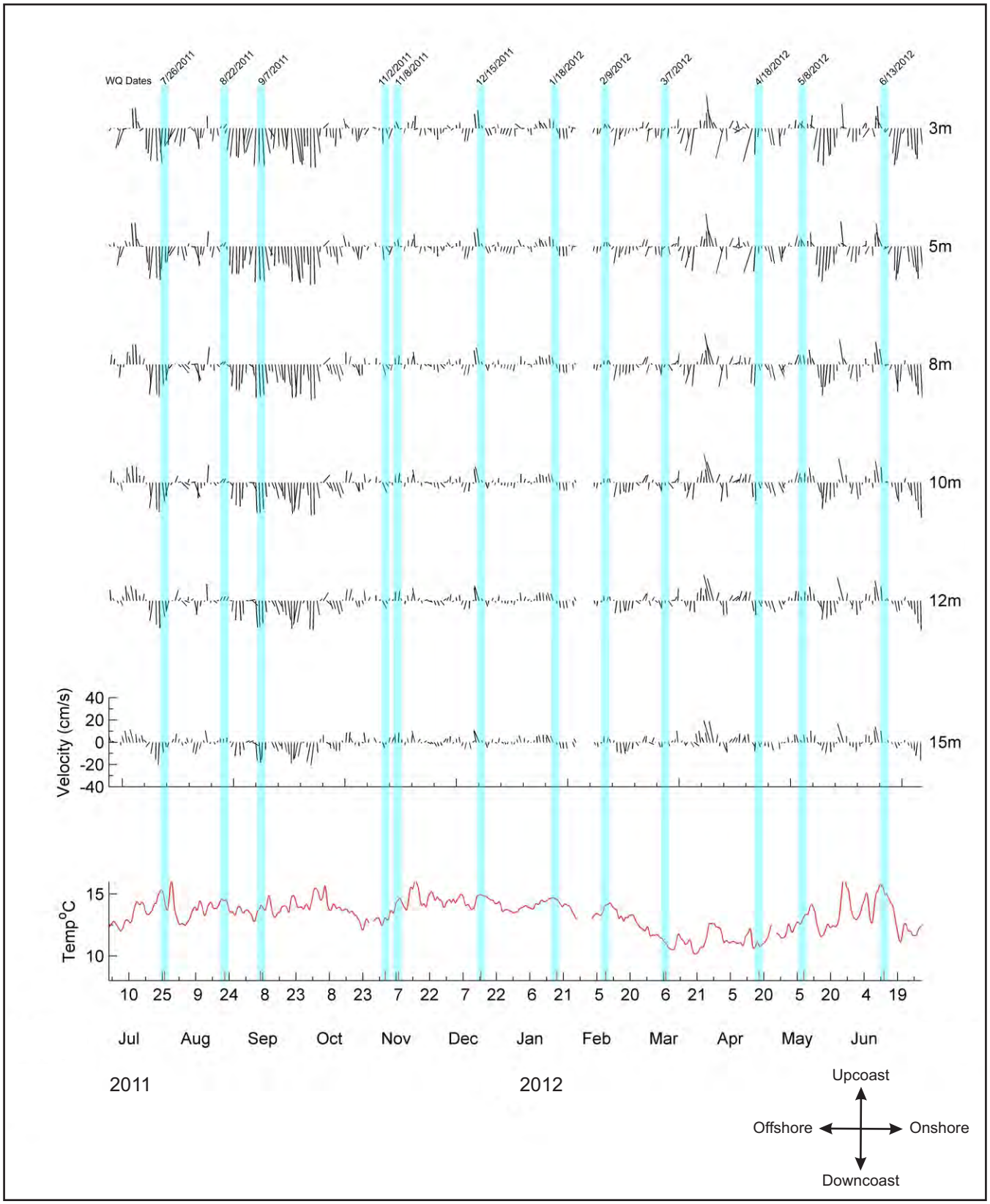

Figure B-15. Bottom temperature (°C) and current speed (cm/s) and direction by depth for mooring M-20, July 2011–June 2012. Data processed using a 40-hour low pass filter and rotated 302°.
Blue lines denote water quality sampling events.

Orange County Sanitation District, California.

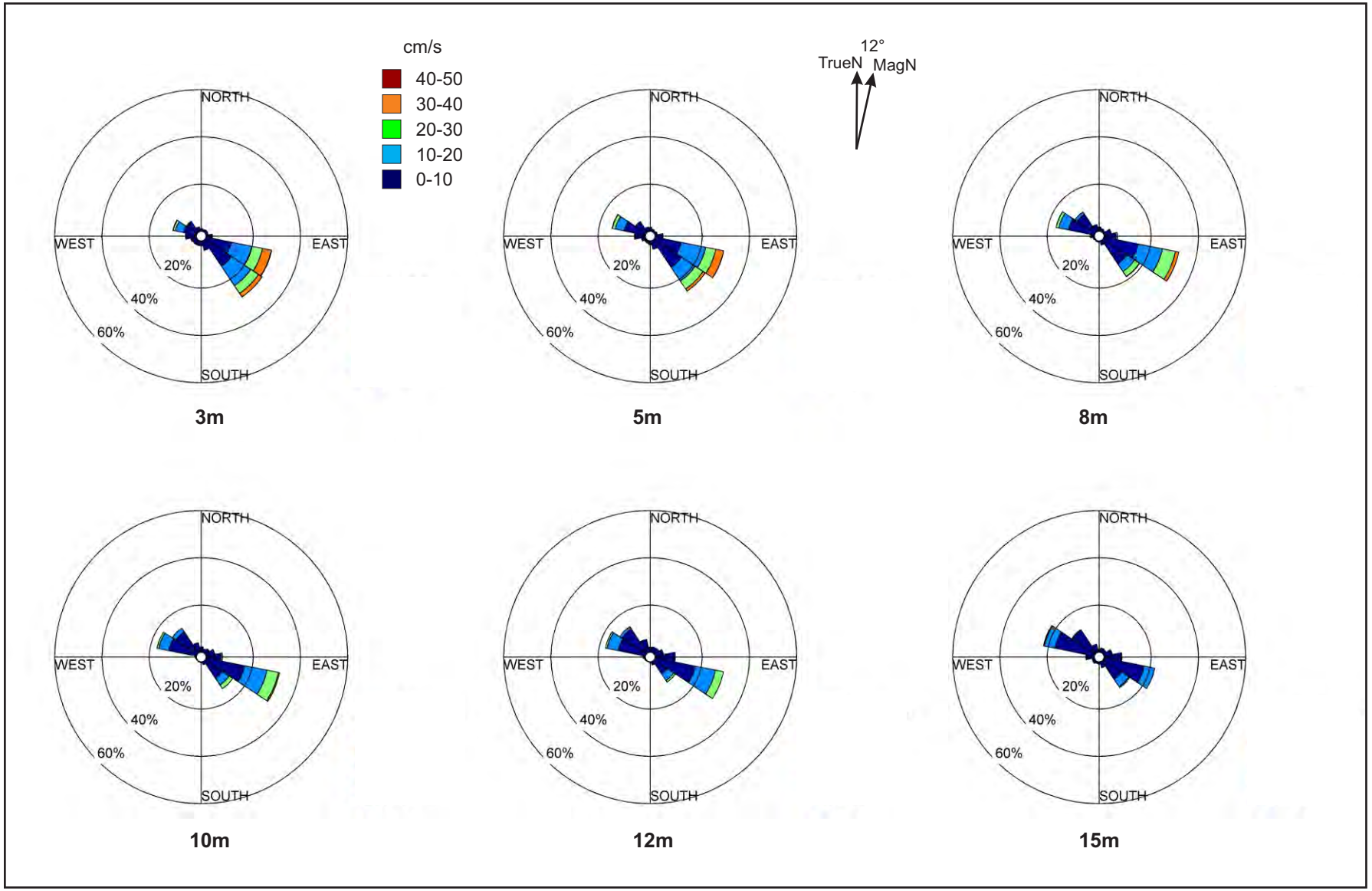

Figure B-16. **Average current speed (cm/s) and direction by depth for mooring M-20, July 2011–June 2012. Data processed using a 40-hour low pass filter. Direction oriented to true north.**

Orange County Sanitation District, California.

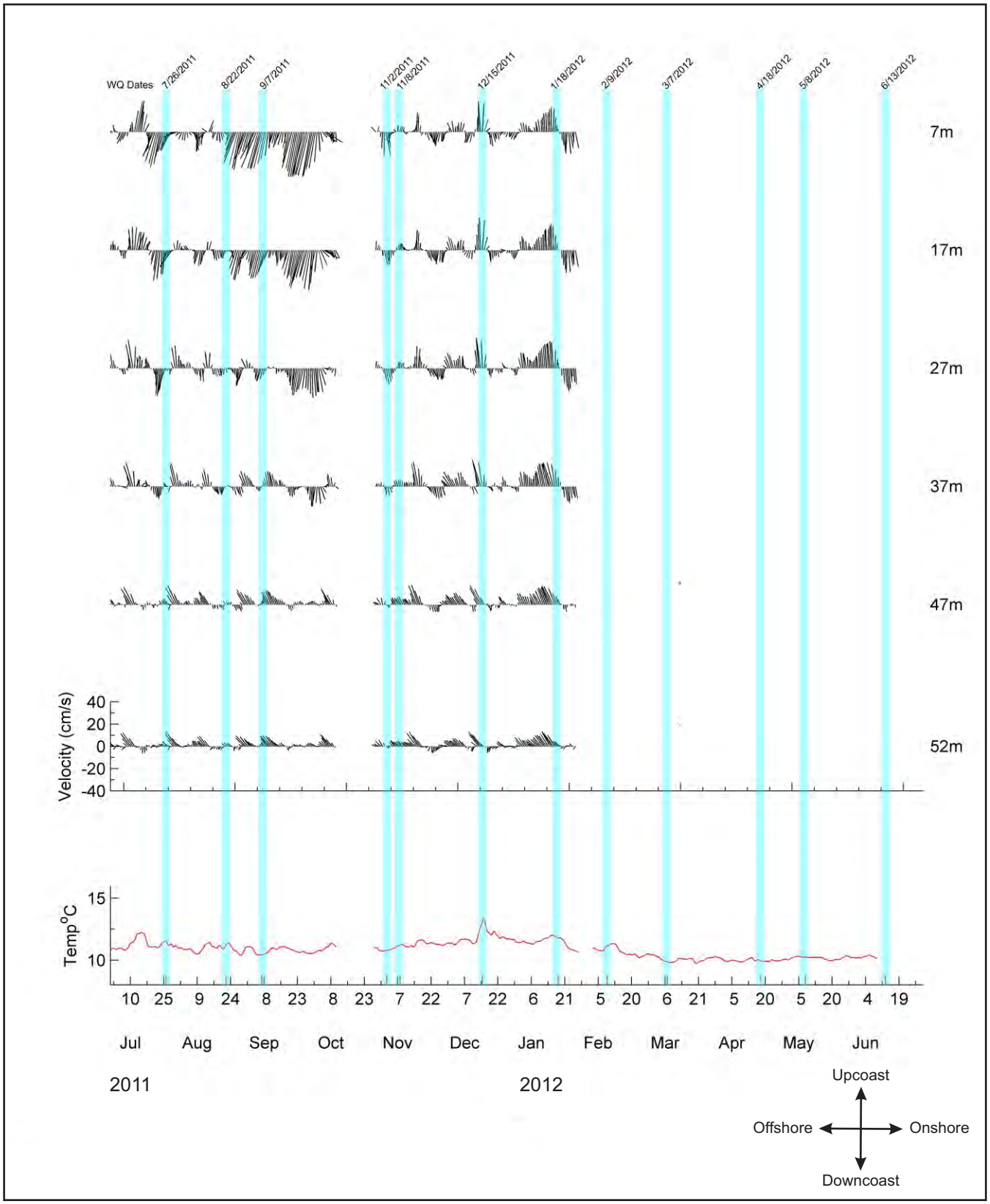

Figure B-17. Bottom temperature (°C) and current speed (cm/s) and direction by depth for mooring M-21, July 2011–June 2012. Data processed using a 40-hour low pass filter and rotated 287°.
Blue lines denote water quality sampling events.

Orange County Sanitation District, California.

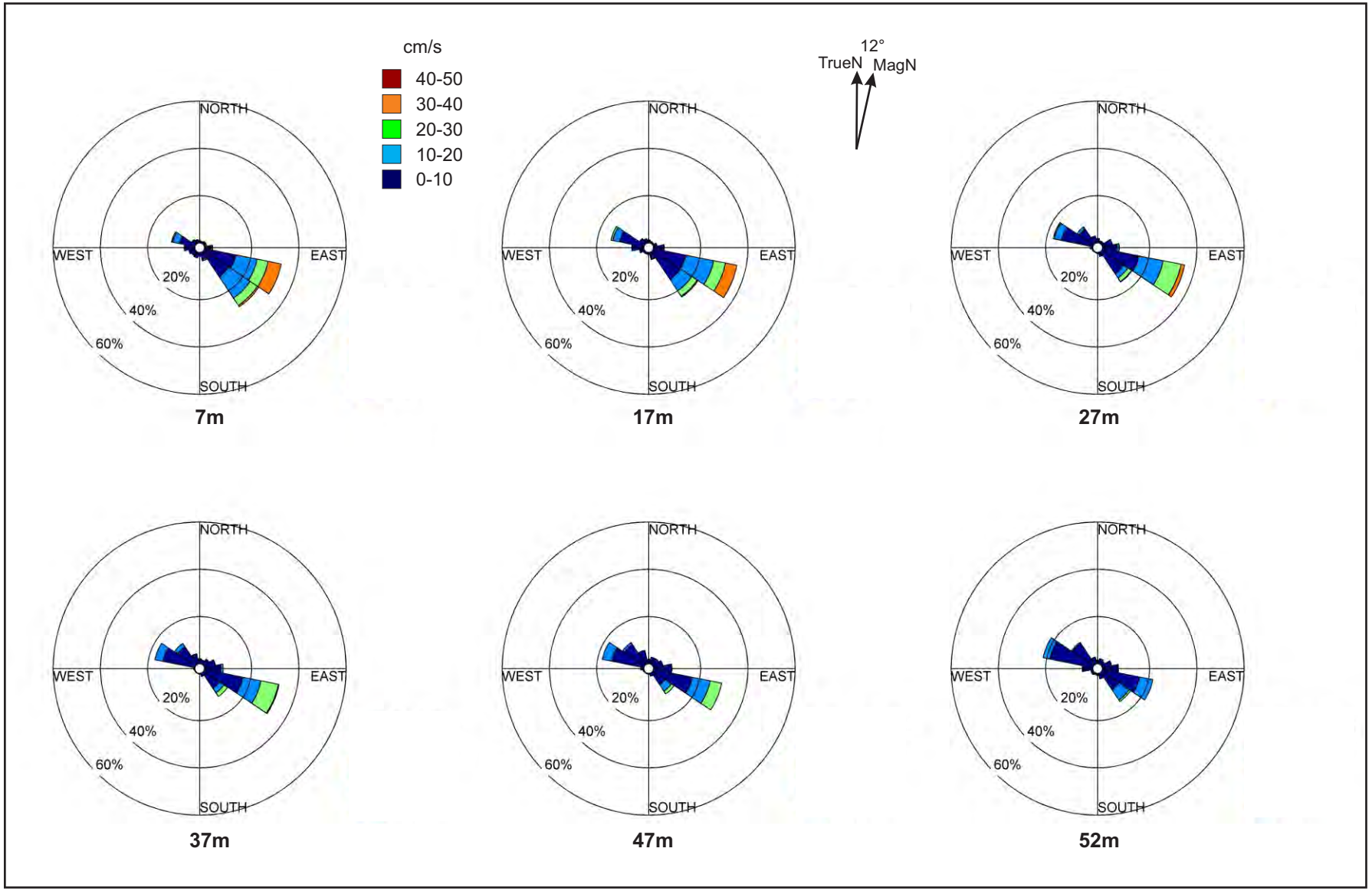

Figure B-18. **Average current speed (cm/s) and direction by depth for mooring M-21, July 2011–June 2012. Data processed using a 40-hour low pass filter. Direction oriented to true north.**

Orange County Sanitation District, California.

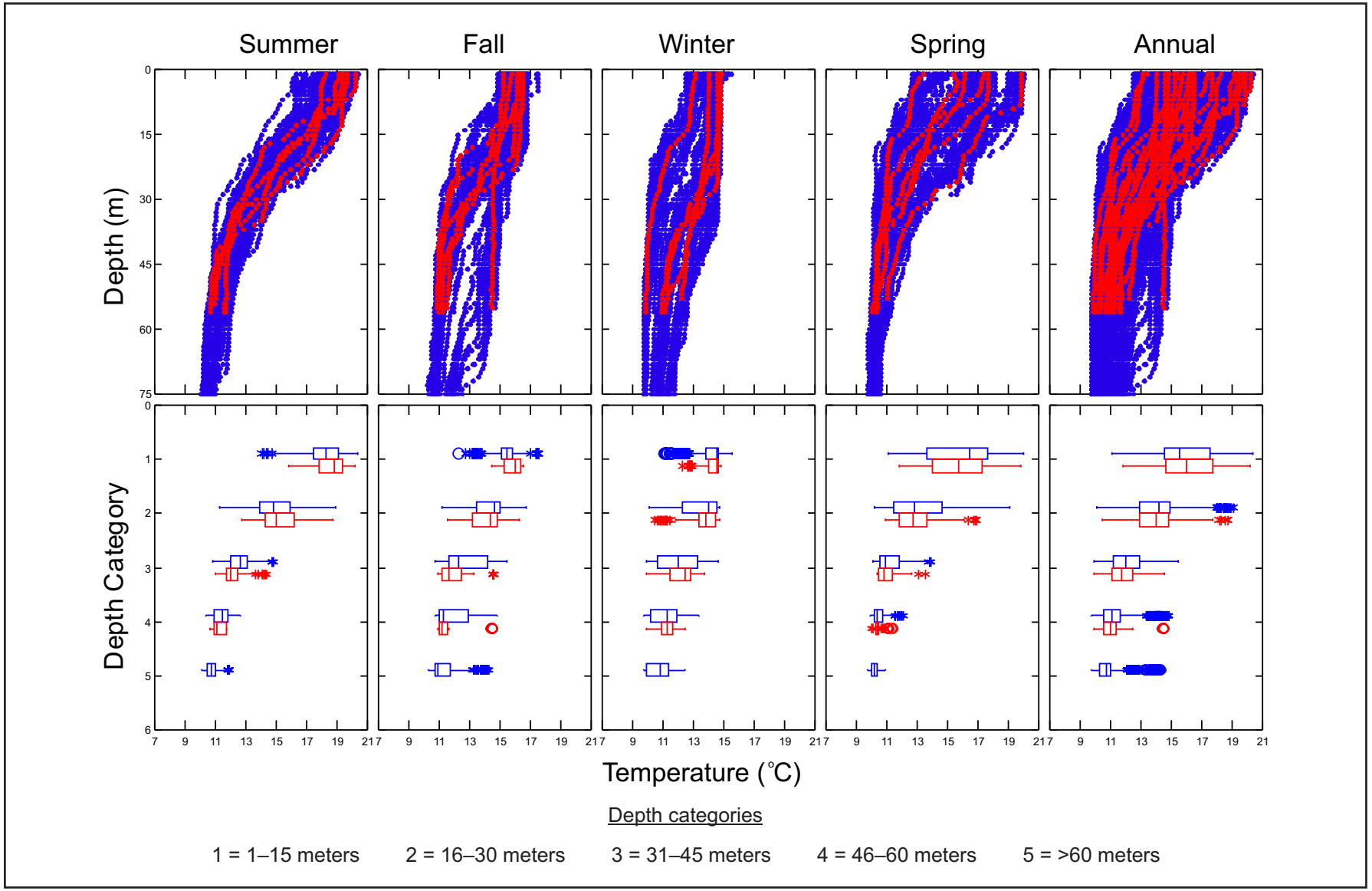

Figure B-19. **Seasonal scatter and box plots of temperature (°C) for all stations (blue) and outfall Station 2205 (red), July 2011 through June 2012.**

Orange County Sanitation District, California.

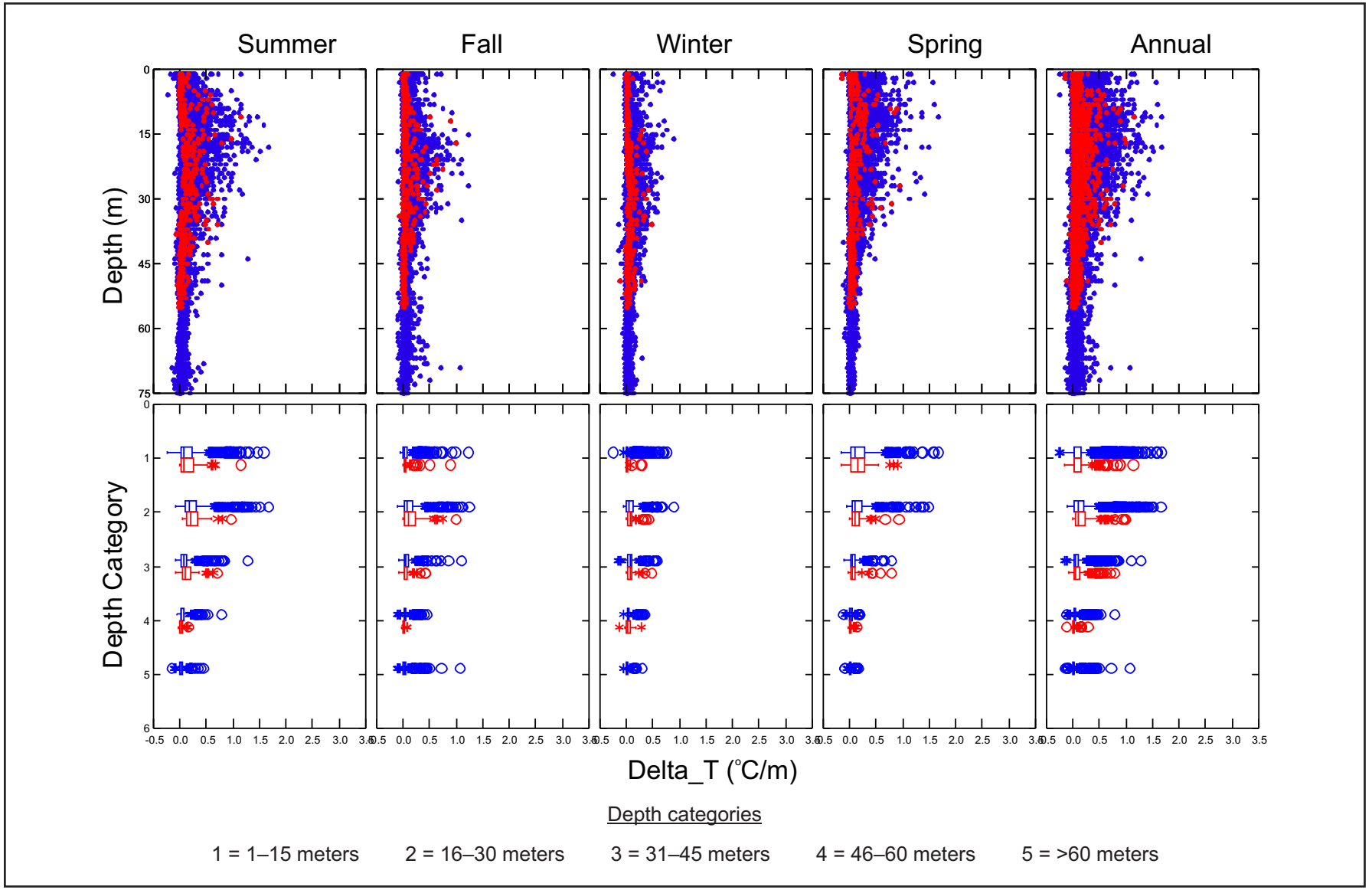

Figure B-20. **Seasonal scatter and box plots of delta T (°C) for all stations (blue) and outfall Station 2205 (red), July 2011 through June 2012.**

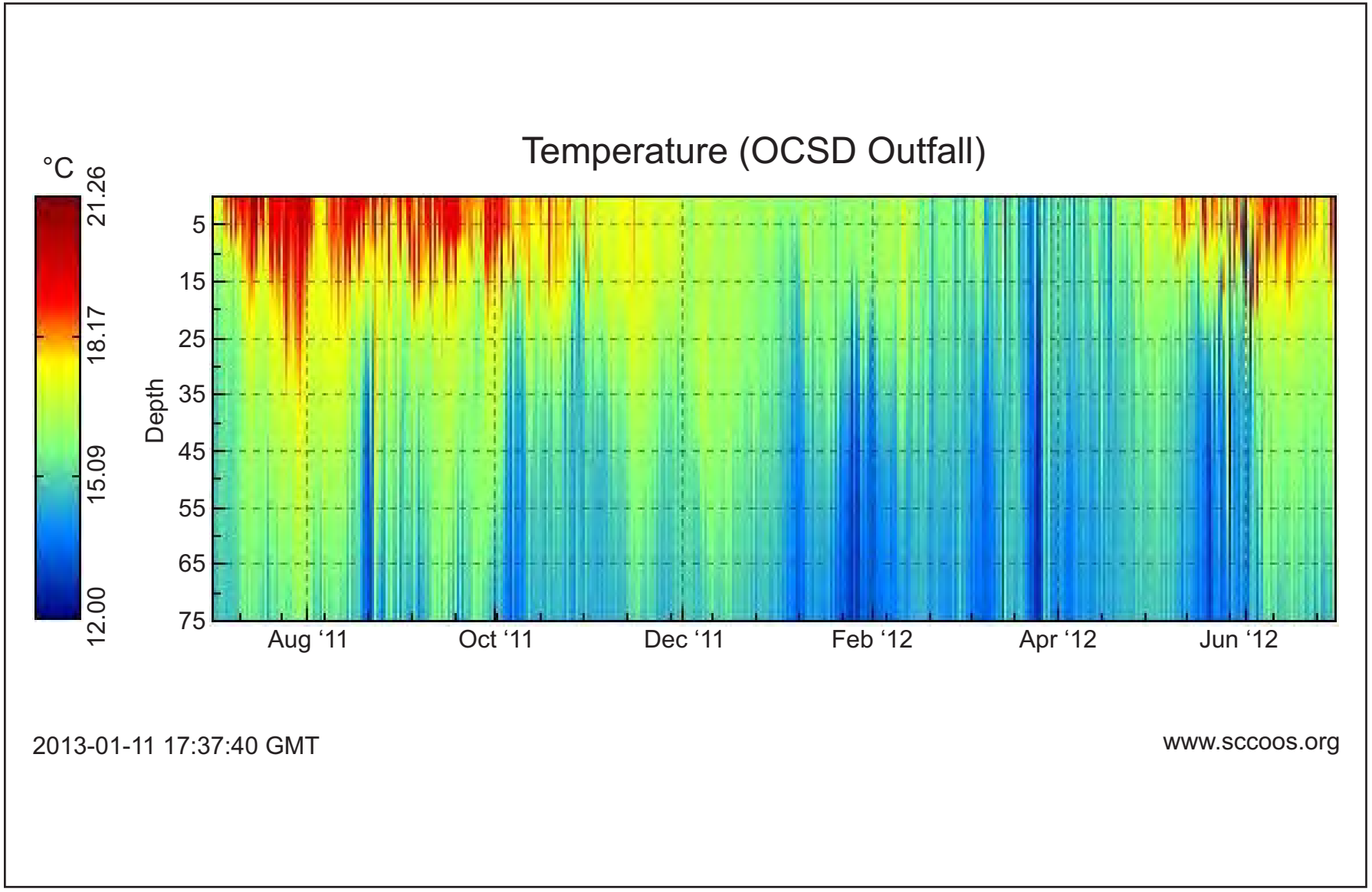

Figure B-21. Modeled hourly temperature patterns for OCSD Virtual Mooring, July 1, 2011 to June 30, 2012.

Source: Southern California Coastal Ocean Observing System (SCCOOS), January 2013.

Orange County Sanitation District, California.

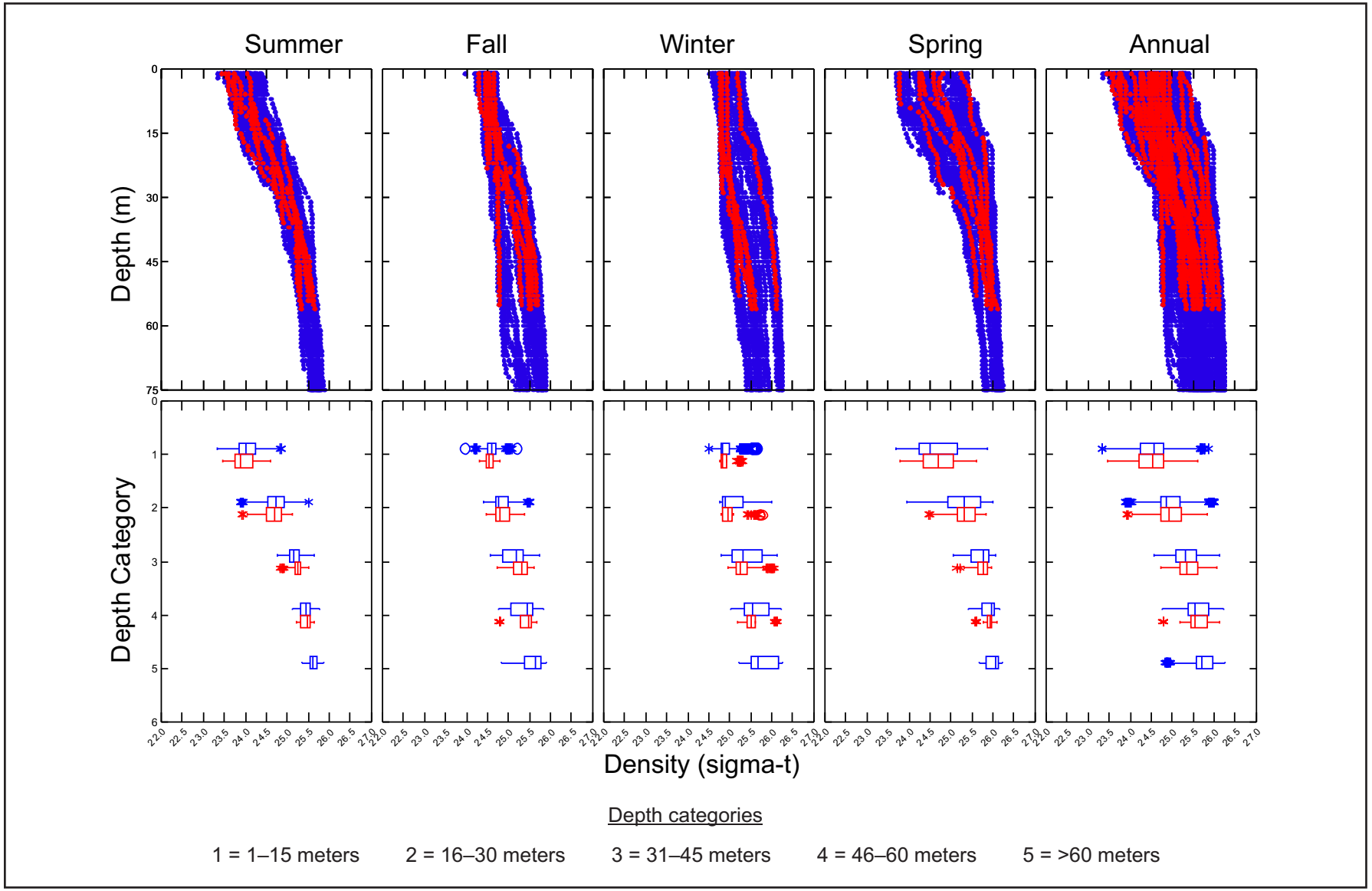

Figure B-22. **Seasonal scatter and box plots of density (kg/m^3) for all stations (blue) and outfall Station 2205 (red), July 2011 through June 2012.**

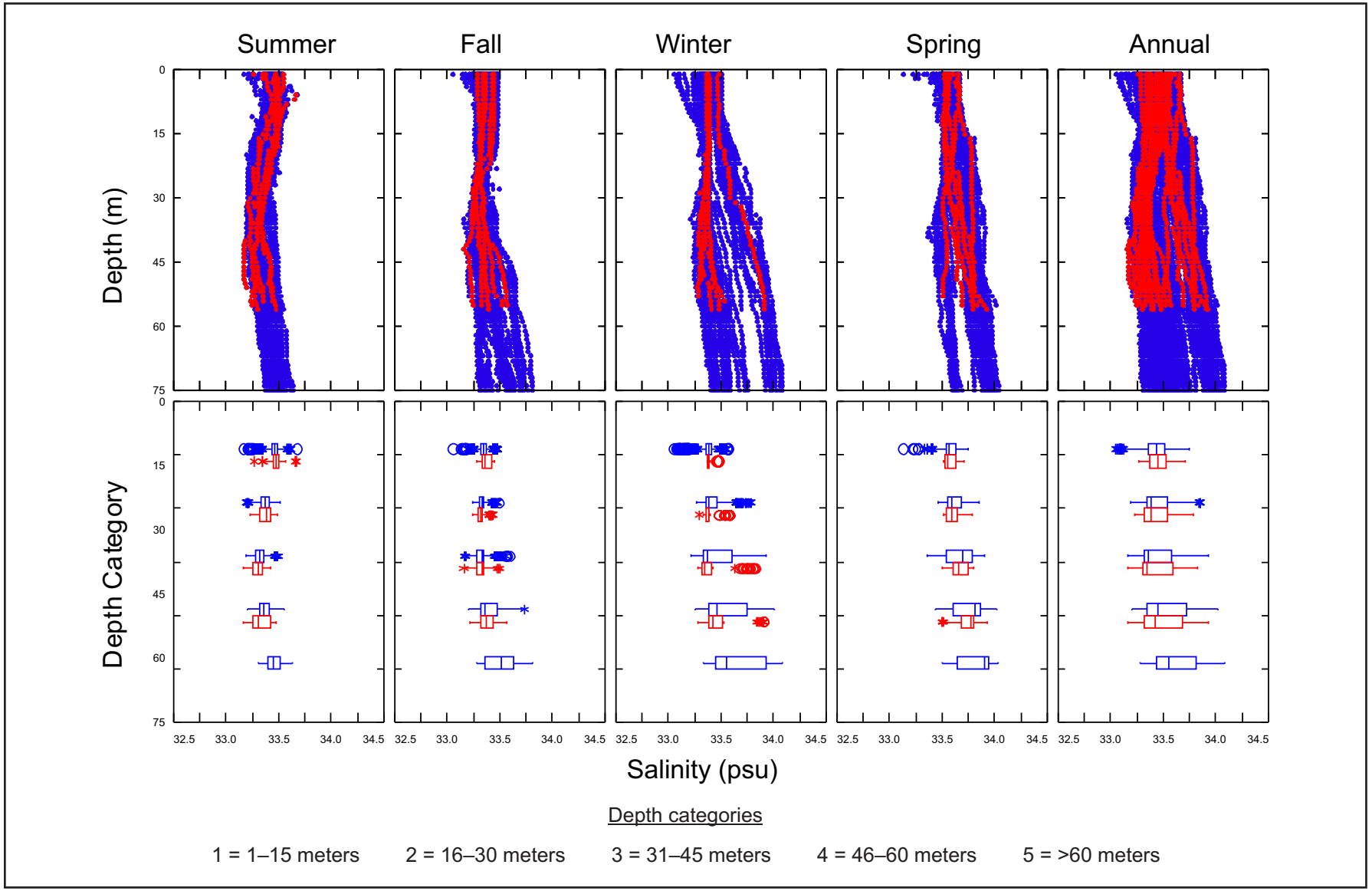

Figure B-23. Seasonal scatter and box plots of salinity (psu) for all stations (blue) and outfall Station 2205 (red), July 2011 through June 2012.

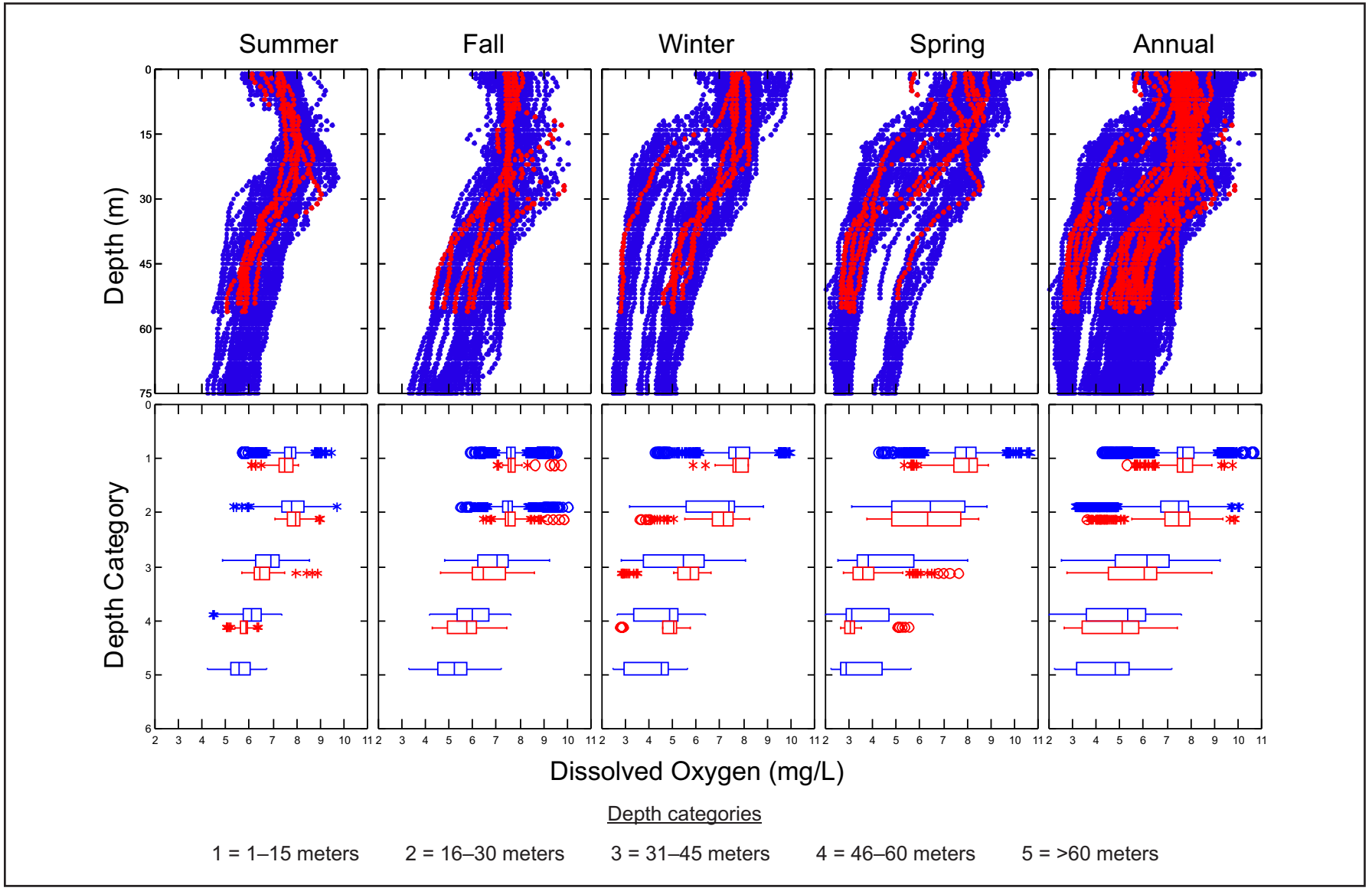

Figure B-24. **Seasonal scatter and box plots of dissolved oxygen (mg/L) for all stations (blue) and outfall Station 2205 (red), July 2011 through June 2012.**

Orange County Sanitation District, California.

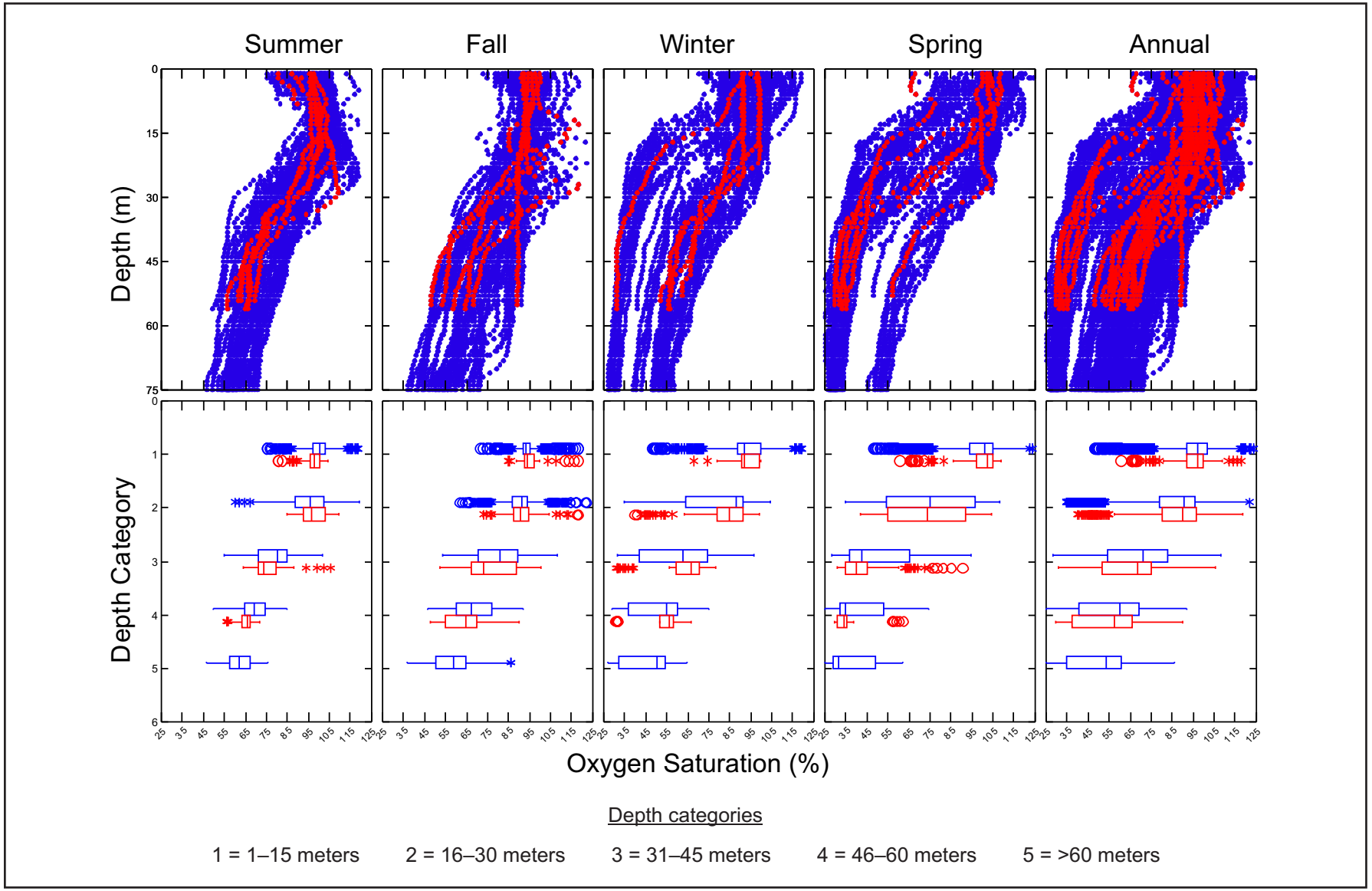

Figure B-25. **Seasonal scatter and box plots of oxygen saturation (%) for all stations (blue) and outfall Station 2205 (red), July 2011 through June 2012.**

Orange County Sanitation District, California.

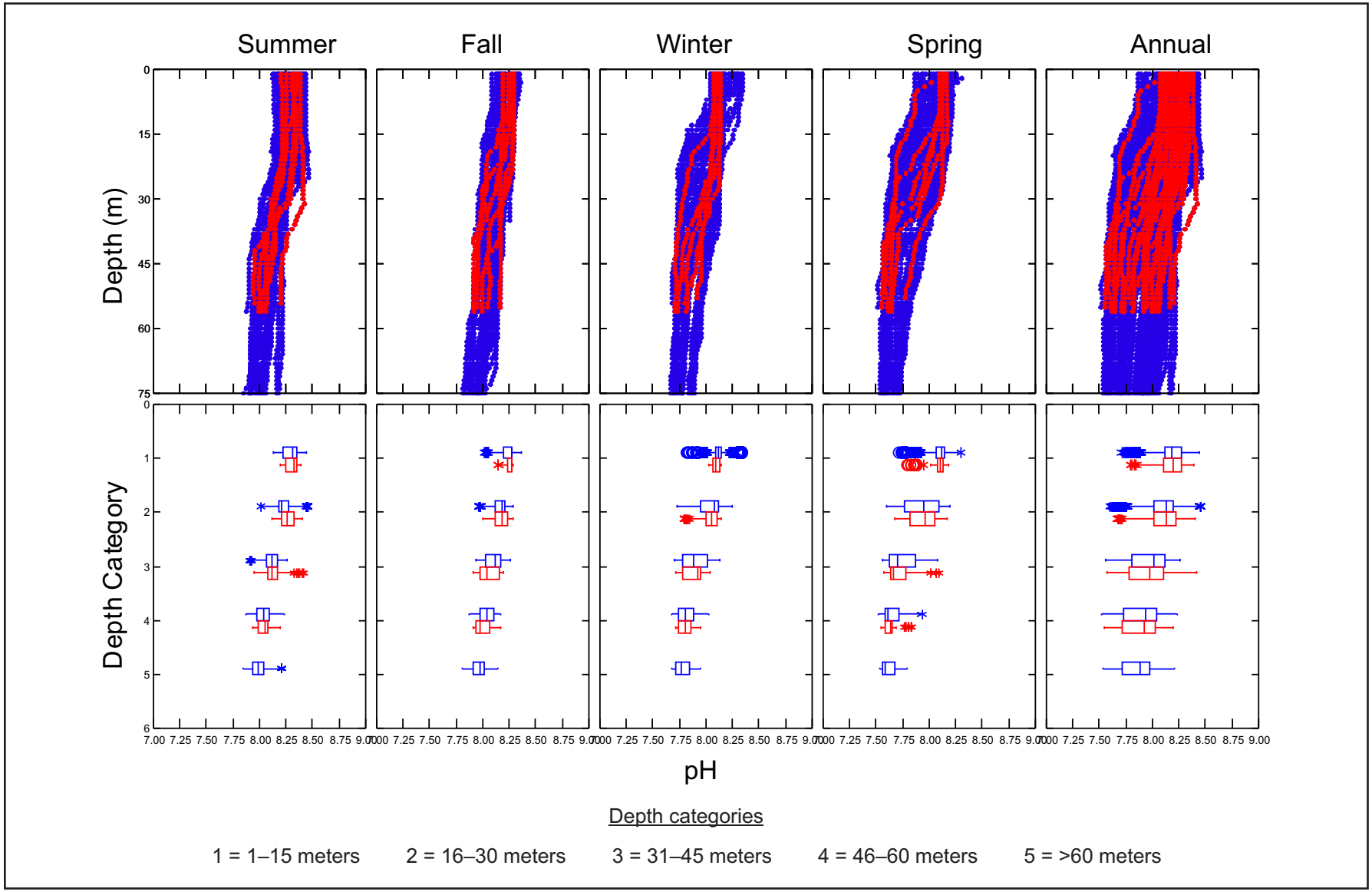

Figure B-26. **Seasonal scatter and box plots of pH (pH units) for all stations (blue) and outfall Station 2205 (red), July 2011 through June 2012.**

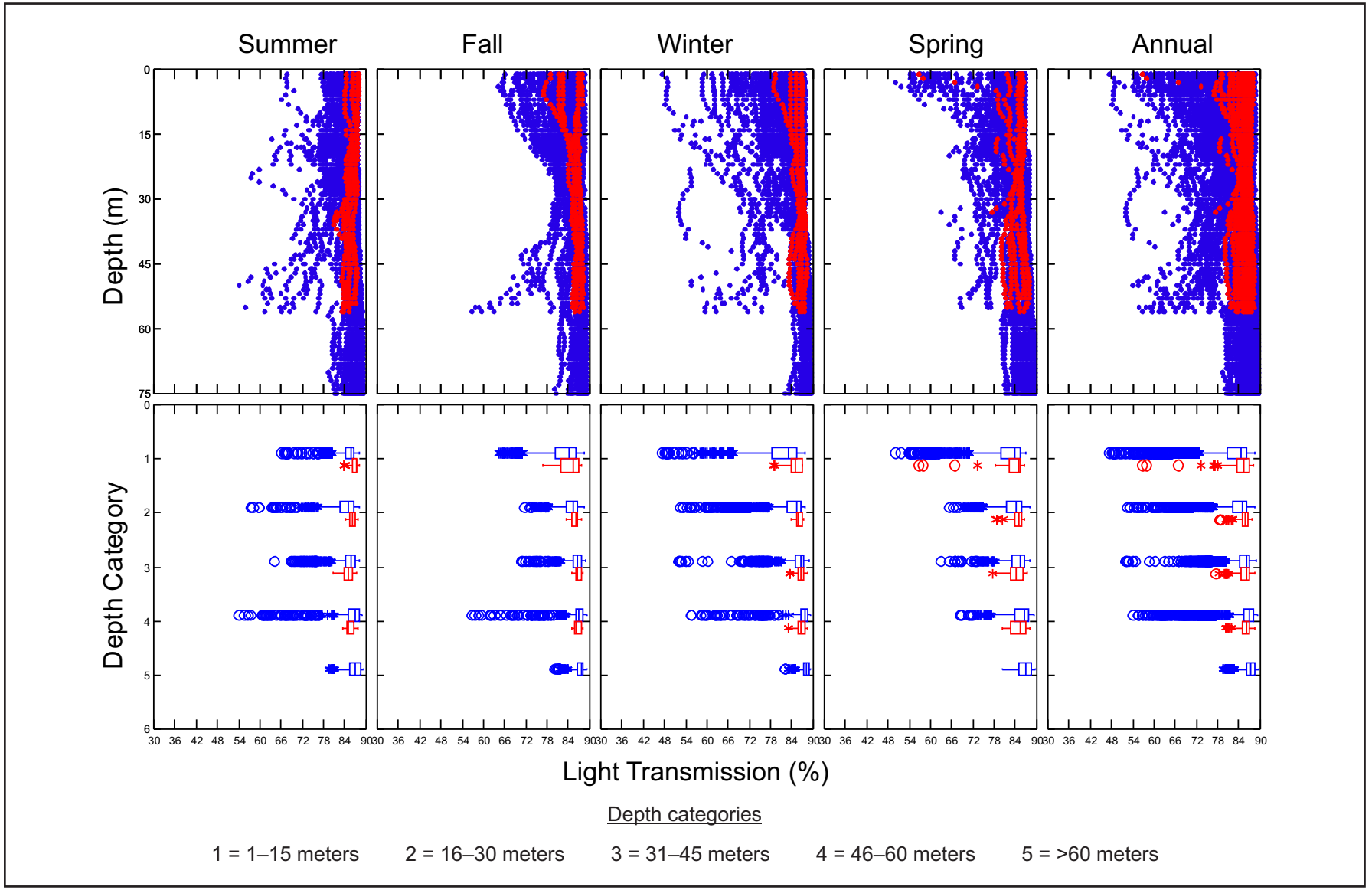

Figure B-27. Seasonal scatter and box plots of light transmission (%) for all stations (blue) and outfall Station 2205 (red), July 2011 through June 2012.

Orange County Sanitation District, California.

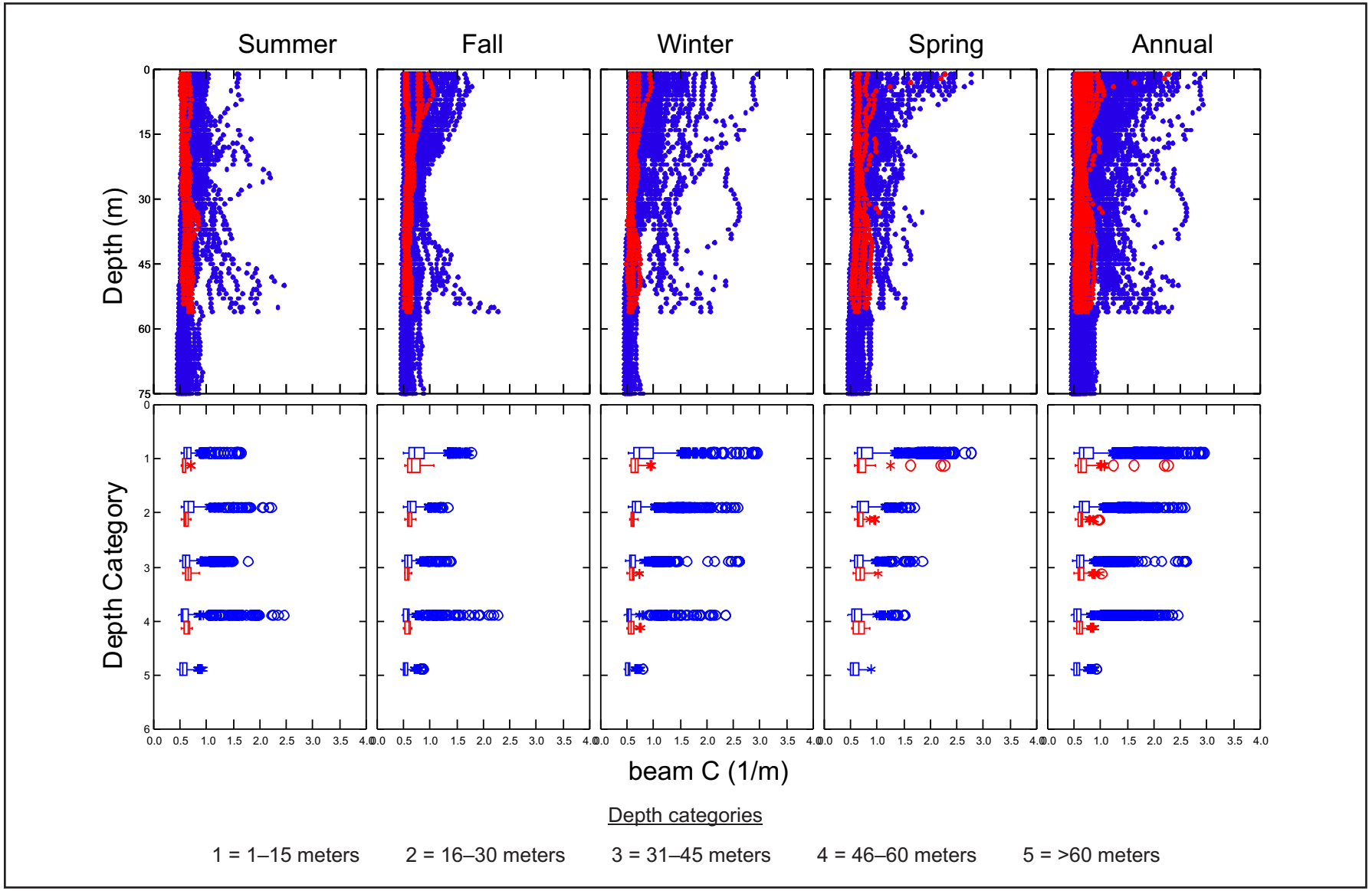

Figure B-28. **Seasonal scatter and box plots of beam C (1/m) for all stations (blue) and outfall Station 2205 (red), July 2011 through June 2012.**

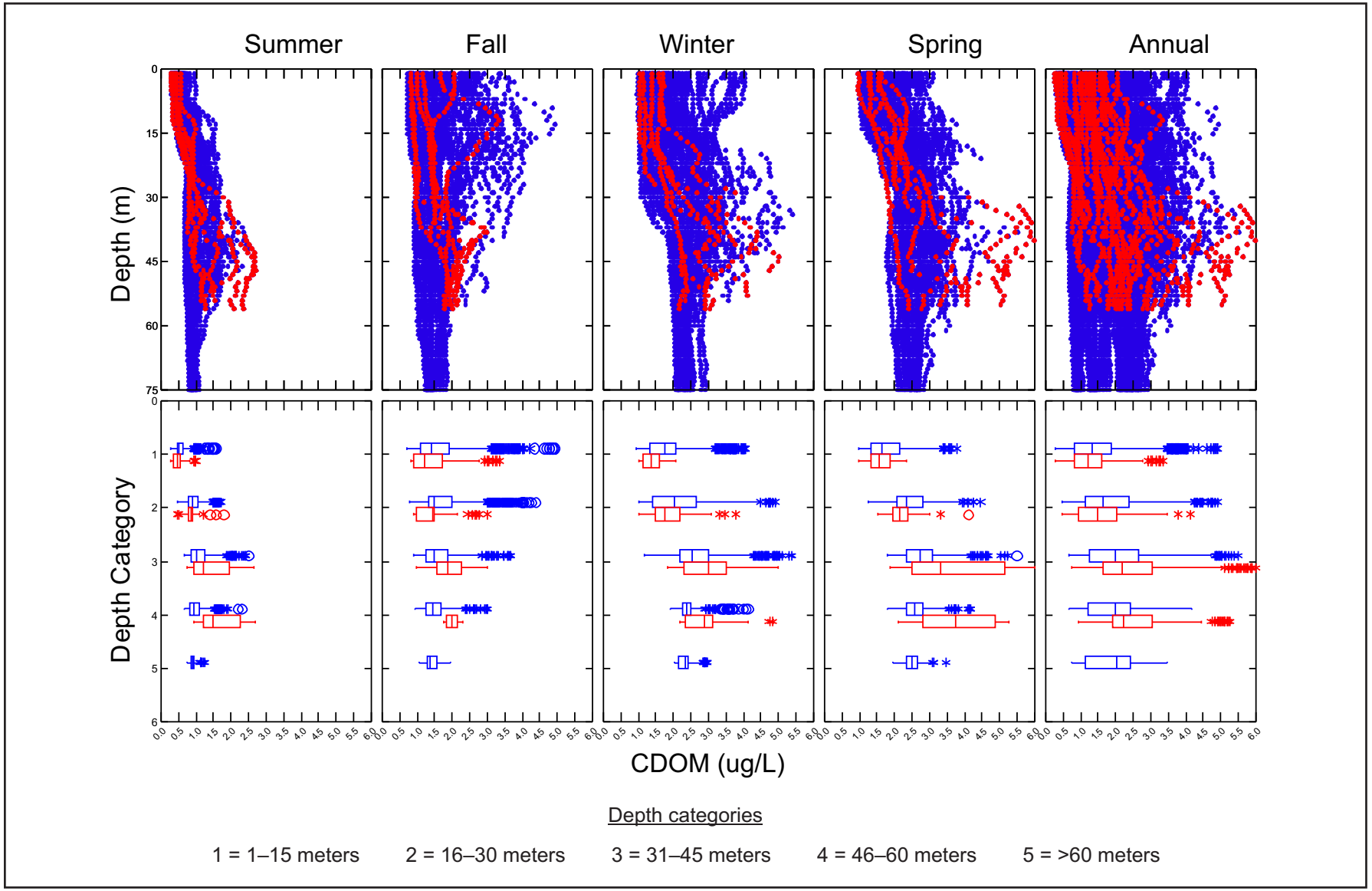

Figure B-29. **Seasonal scatter and box plots of color dissolved organic matter (CDOM, µg/L) for all stations (blue) and outfall Station 2205 (red), July 2011 through June 2012.**

Orange County Sanitation District, California.

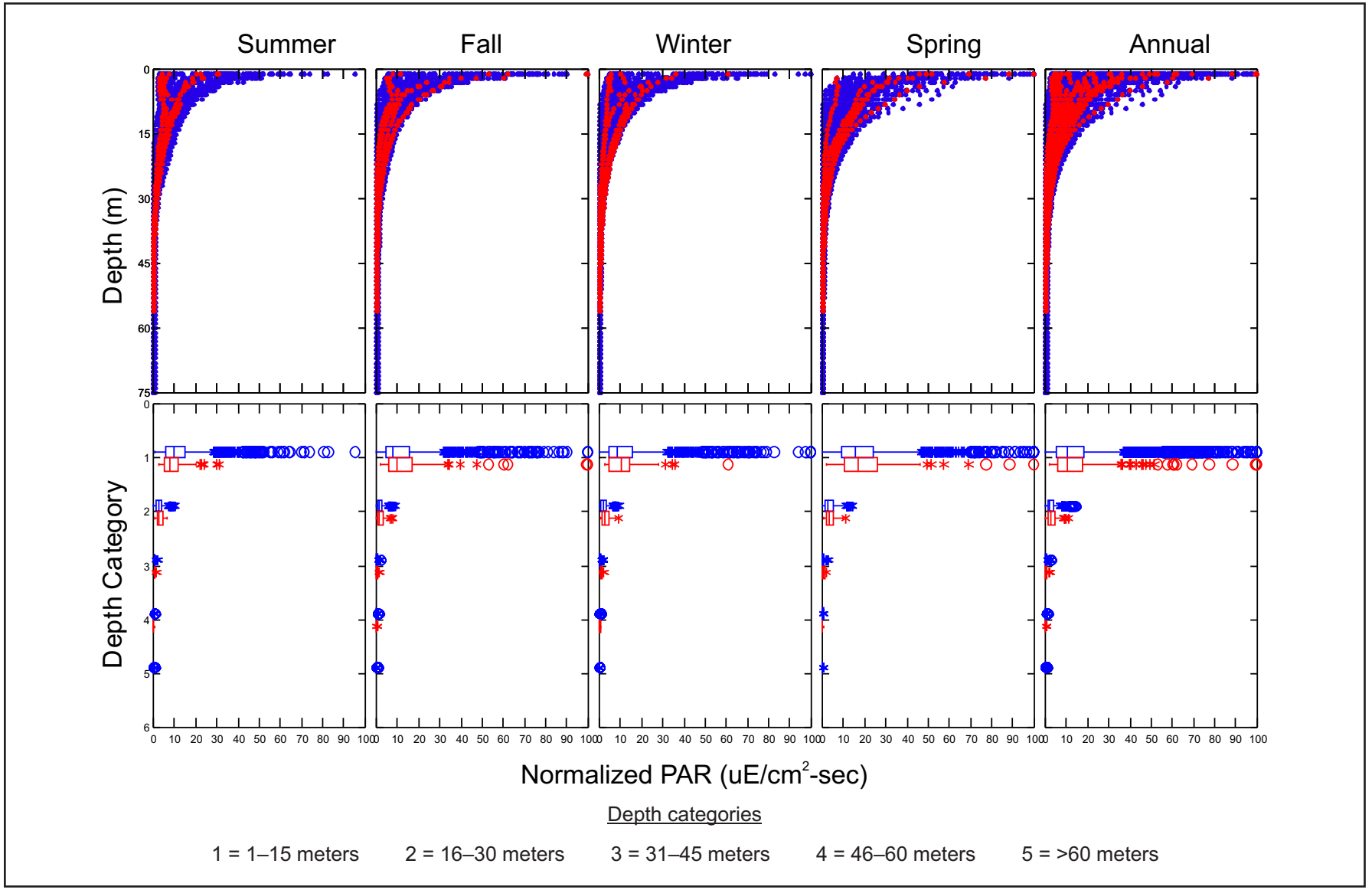

Figure B-30. **Seasonal scatter and box plots of normalized photosynthetically active radiation (PAR; µE/(cm^2·sec)) for all stations (blue) and outfall Station 2205 (red), July 2011 through June 2012.**

Orange County Sanitation District, California.

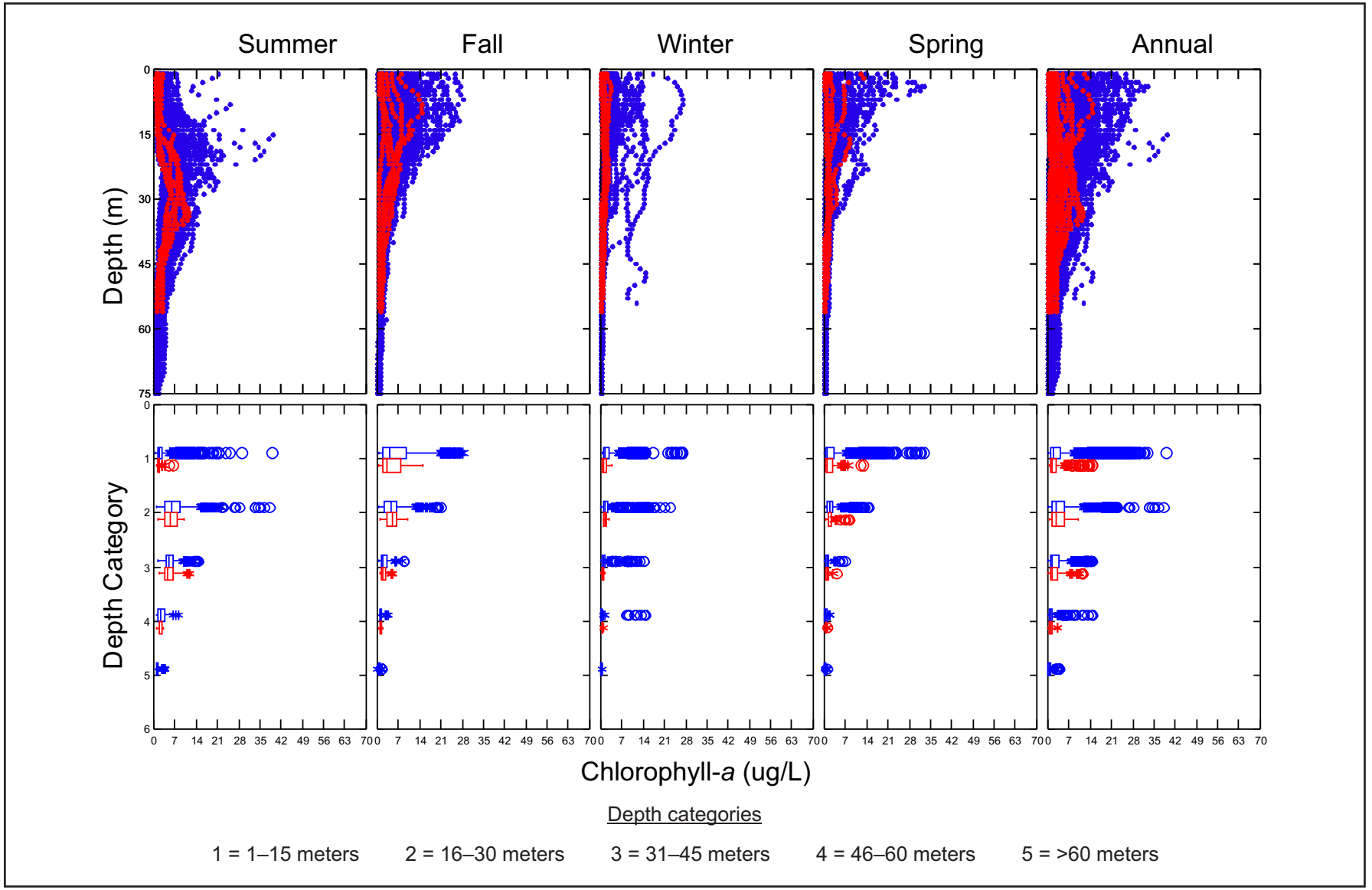

Figure B-31. **Seasonal scatter and box plots of chlorophyll-*a* (µg/L) for all stations (blue) and outfall Station 2205 (red), July 2011 through June 2012.**

Orange County Sanitation District, California.

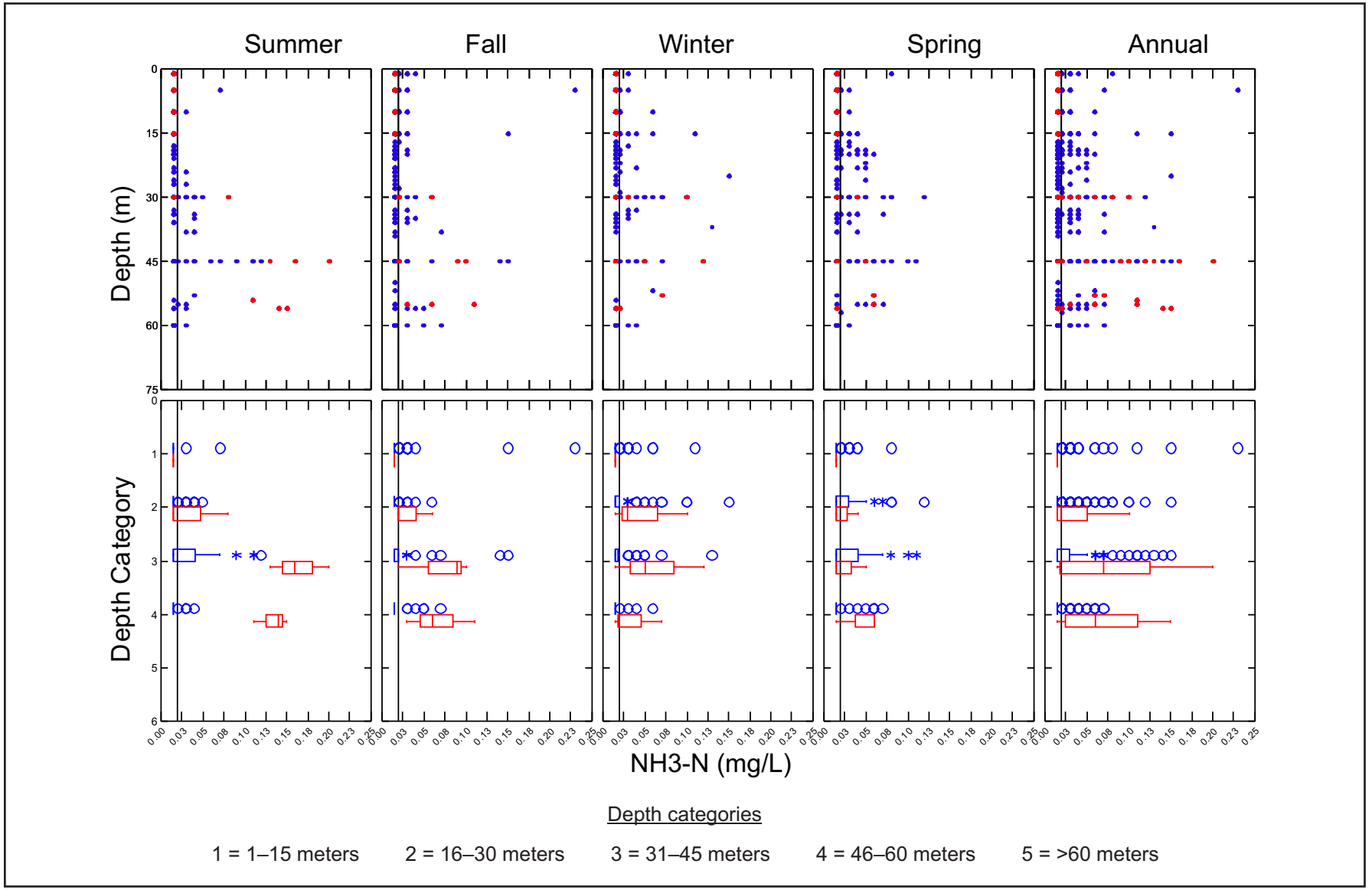

Figure B-32. **Seasonal scatter and box plots of ammonia (NH3-N, mg/L) for all stations (blue) and outfall Station 2205 (red), July 2011 through June 2012.**

Orange County Sanitation District, California.

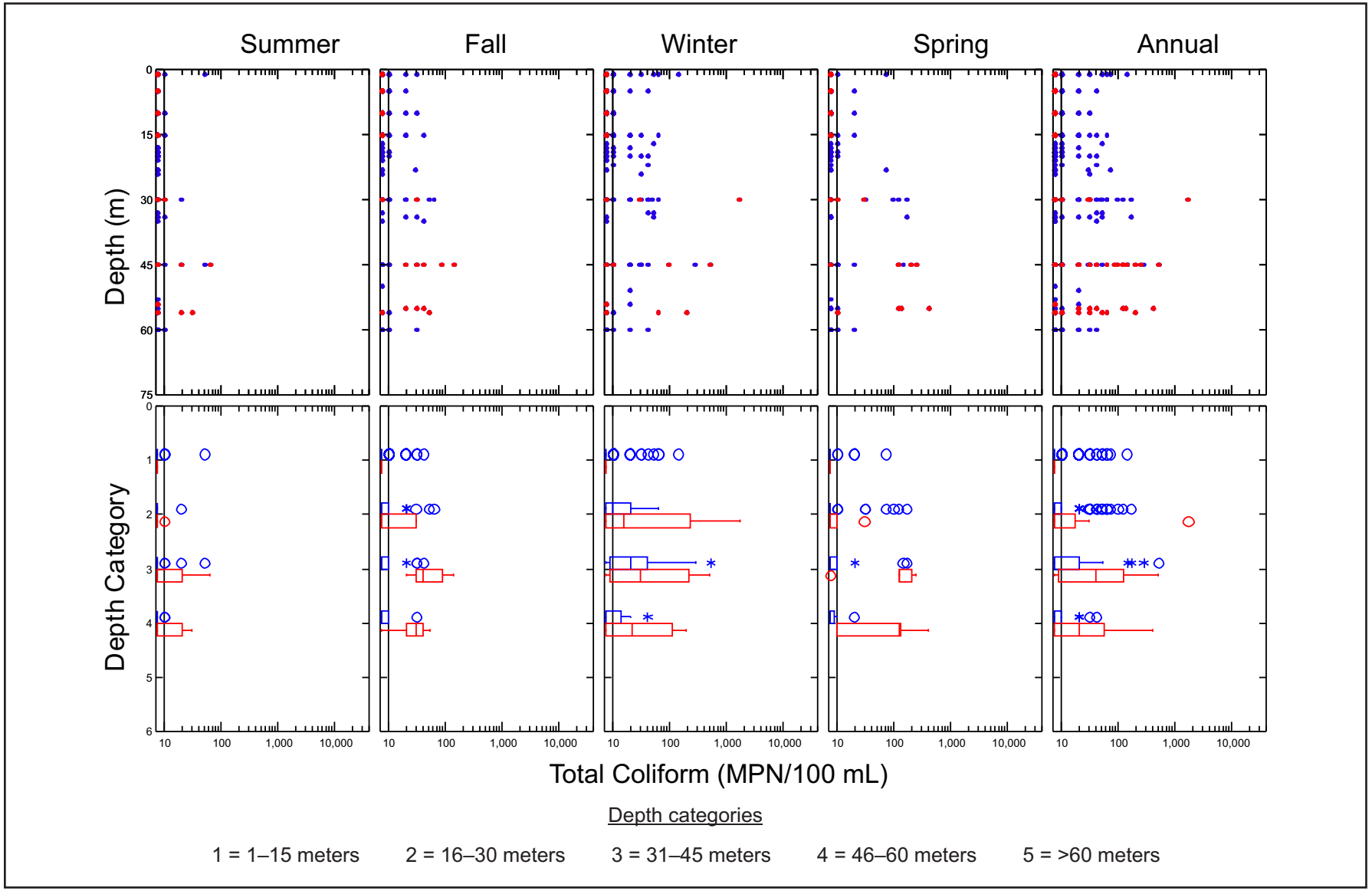

Figure B-33. **Seasonal scatter and box plots of total coliforms (MPN/100 mL) for all stations (blue) and outfall Station 2205 (red), July 2011 through June 2012.**

Orange County Sanitation District, California.

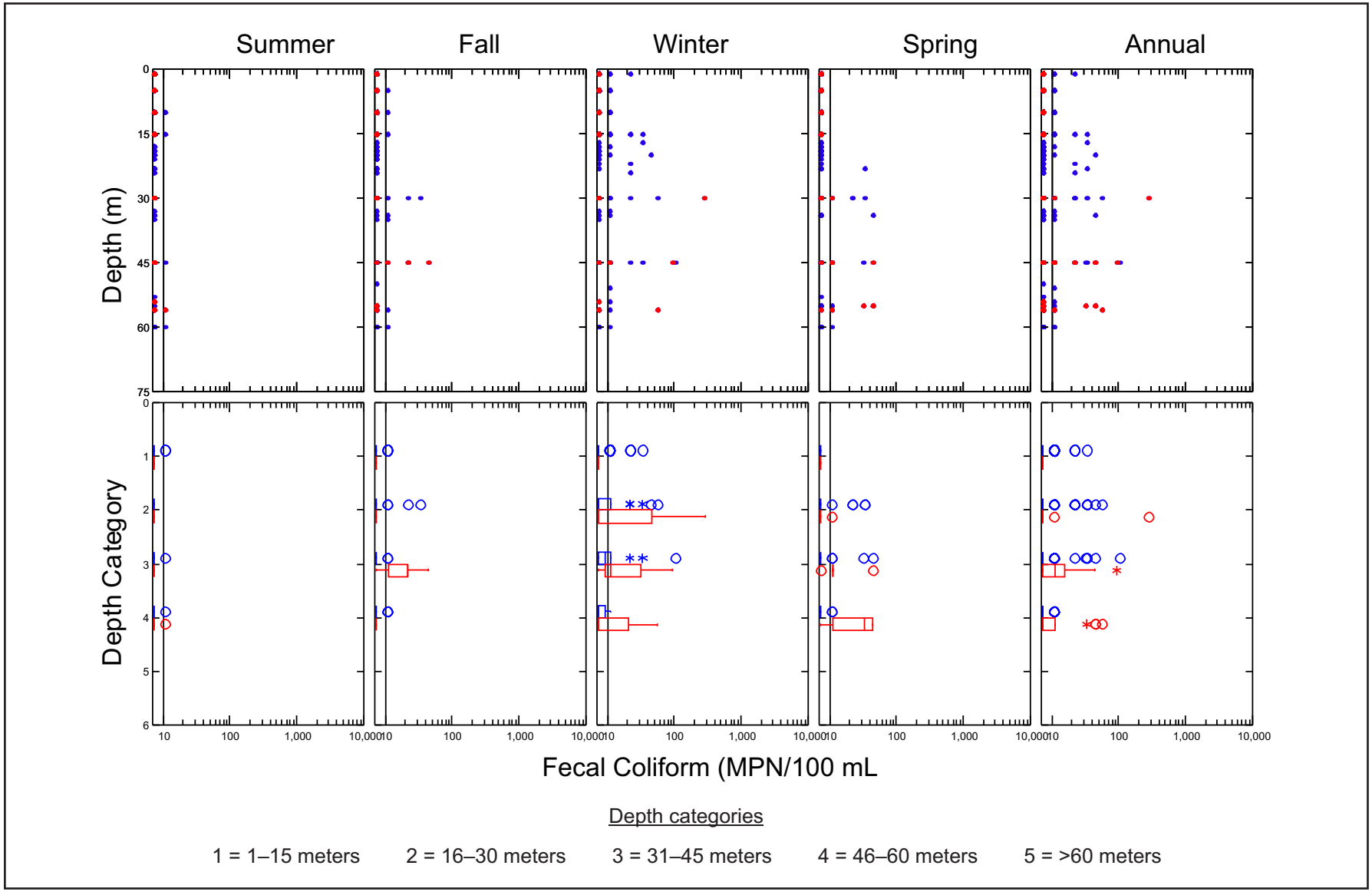

Figure B-34. **Seasonal scatter and box plots of fecal coliforms (MPN/100 mL) for all stations (blue) and outfall Station 2205 (red), July 2011 through June 2012.**

Orange County Sanitation District, California.

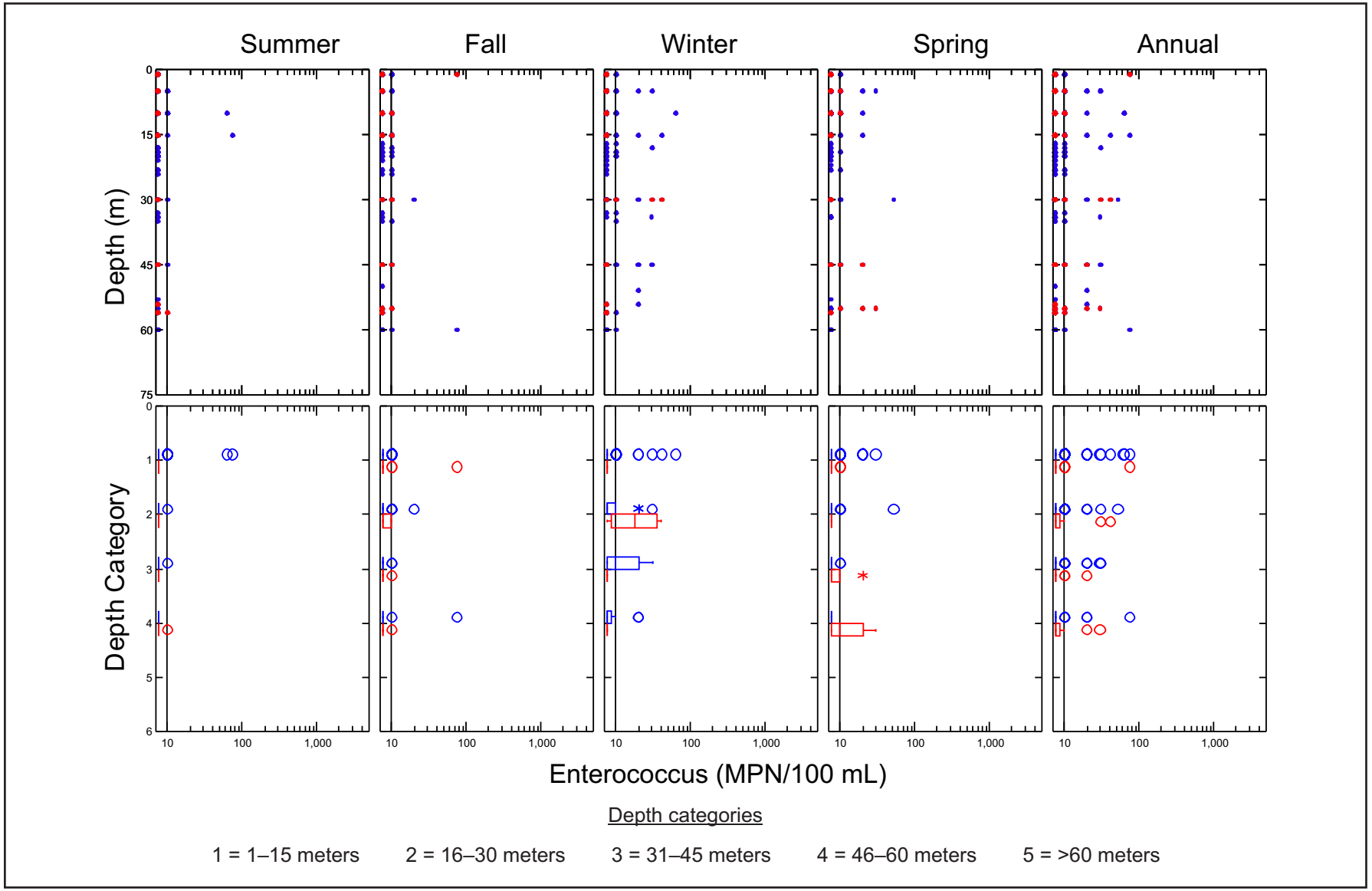

Figure B-35. **Seasonal scatter and box plots of enterococcus (MPN/100 mL) for all stations (blue) and outfall Station 2205 (red), July 2011 through June 2012.**

Orange County Sanitation District, California.

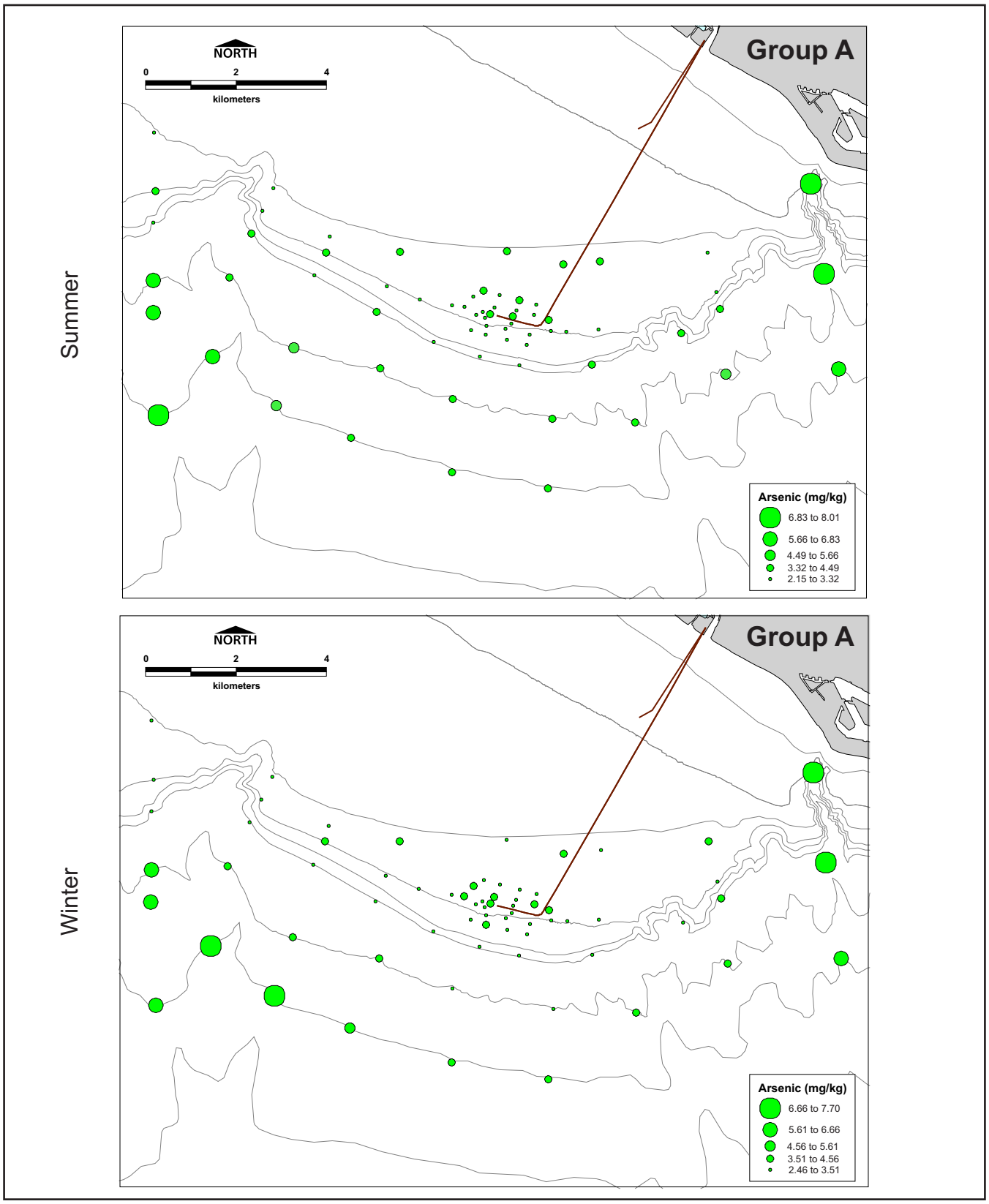

Figure B-36. Spatial distributions of Group A and Group B metals concentrations (mg/kg) in sediments during July 2011 and January 2012. Group A metals included arsenic, beryllium, chromium, lead, nickel, and selenium. Group B included cadmium, copper, mercury,

Orange County Sanitation District, California.

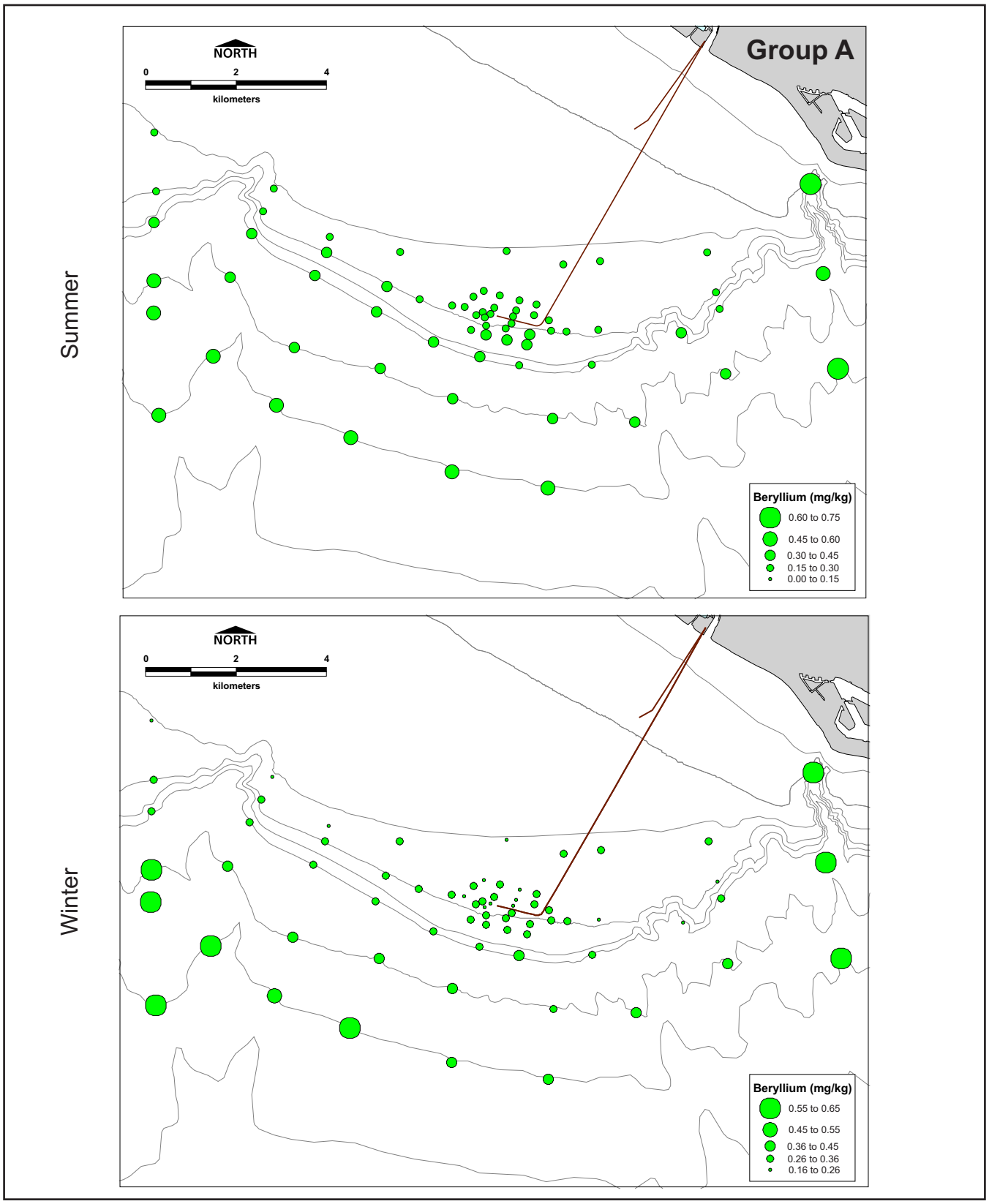

Figure B-36 continued.

Orange County Sanitation District, California.

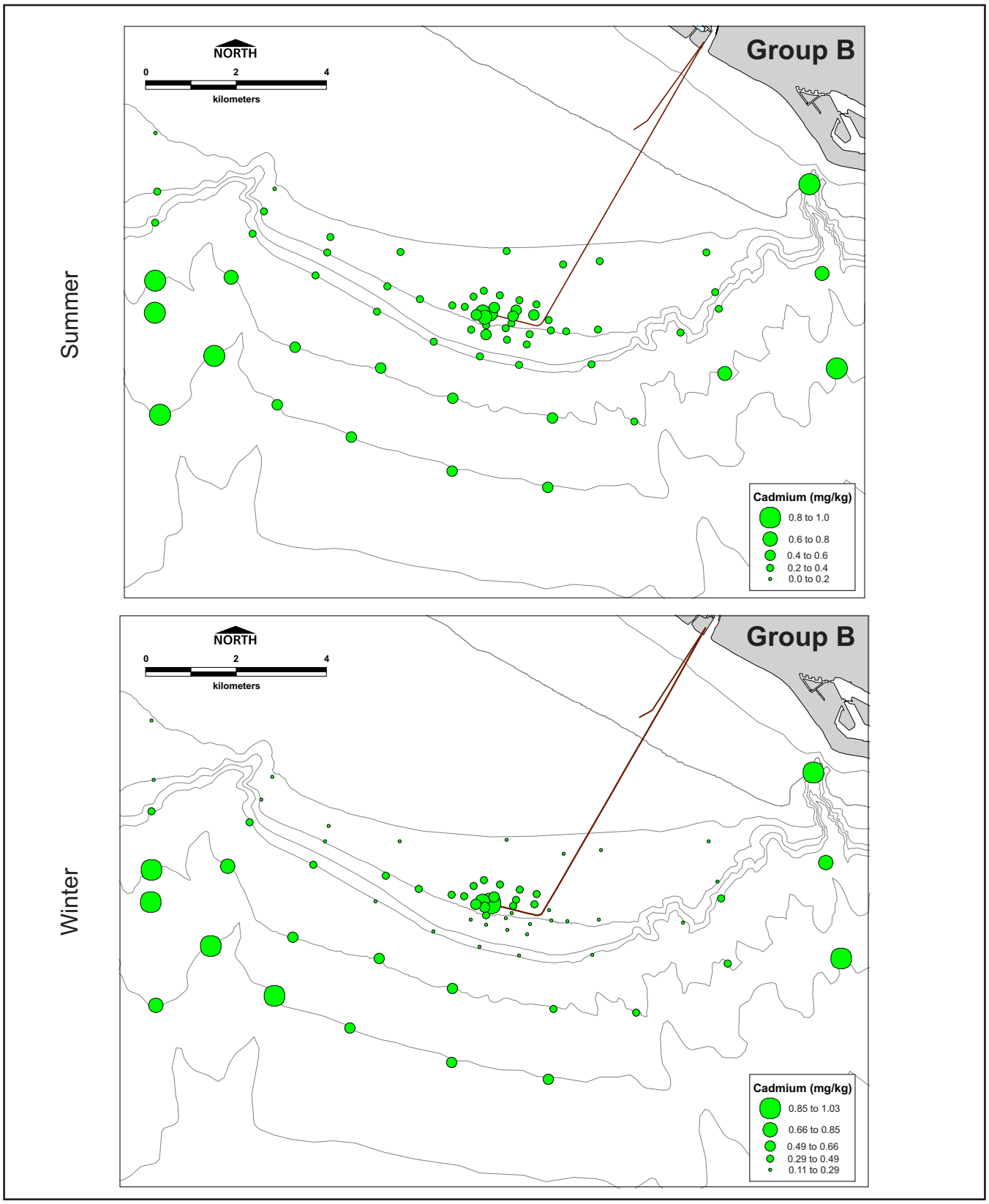

Figure B-36 continued.

Orange County Sanitation District, California.

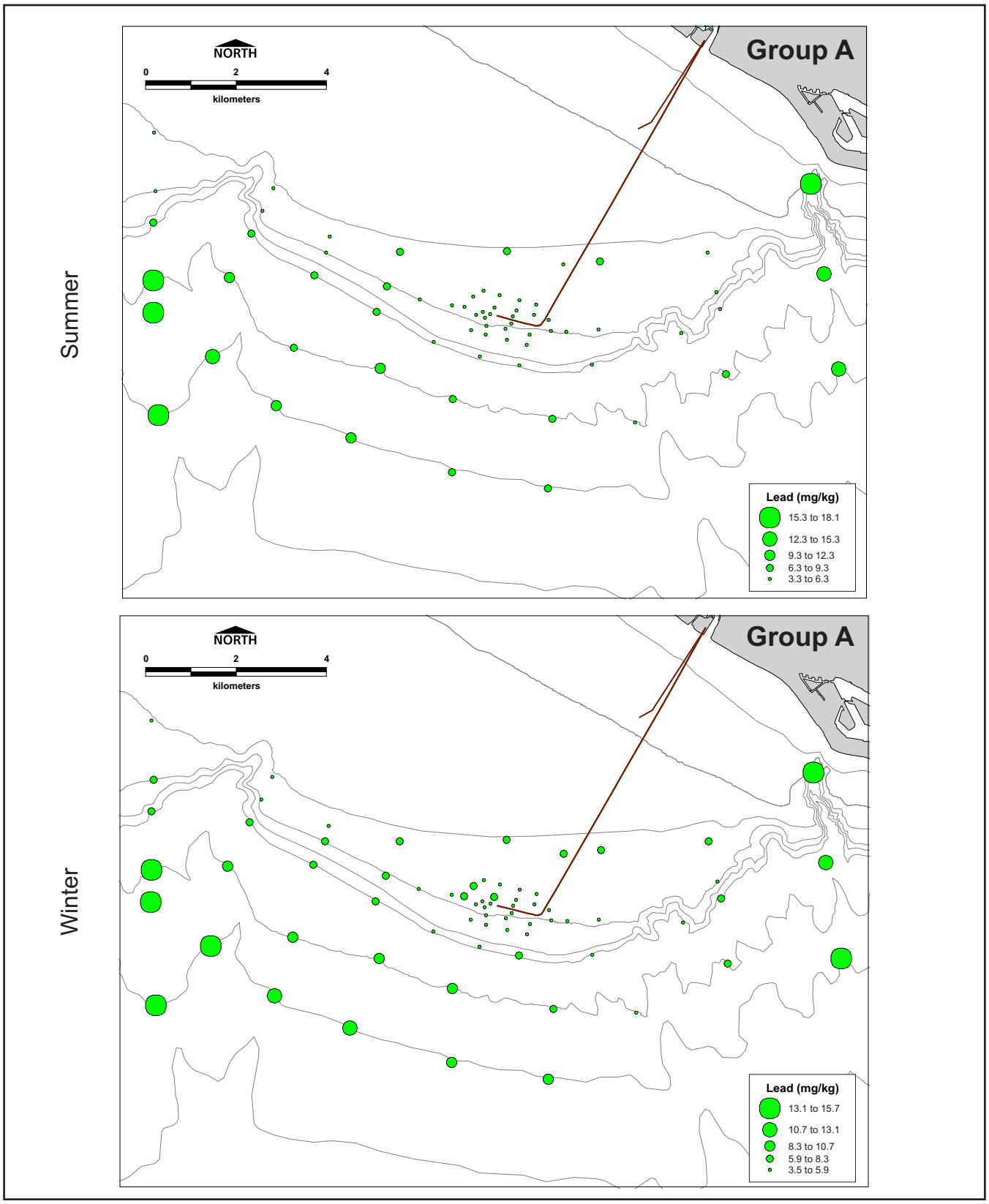

Figure B-36 continued.

Orange County Sanitation District, California.

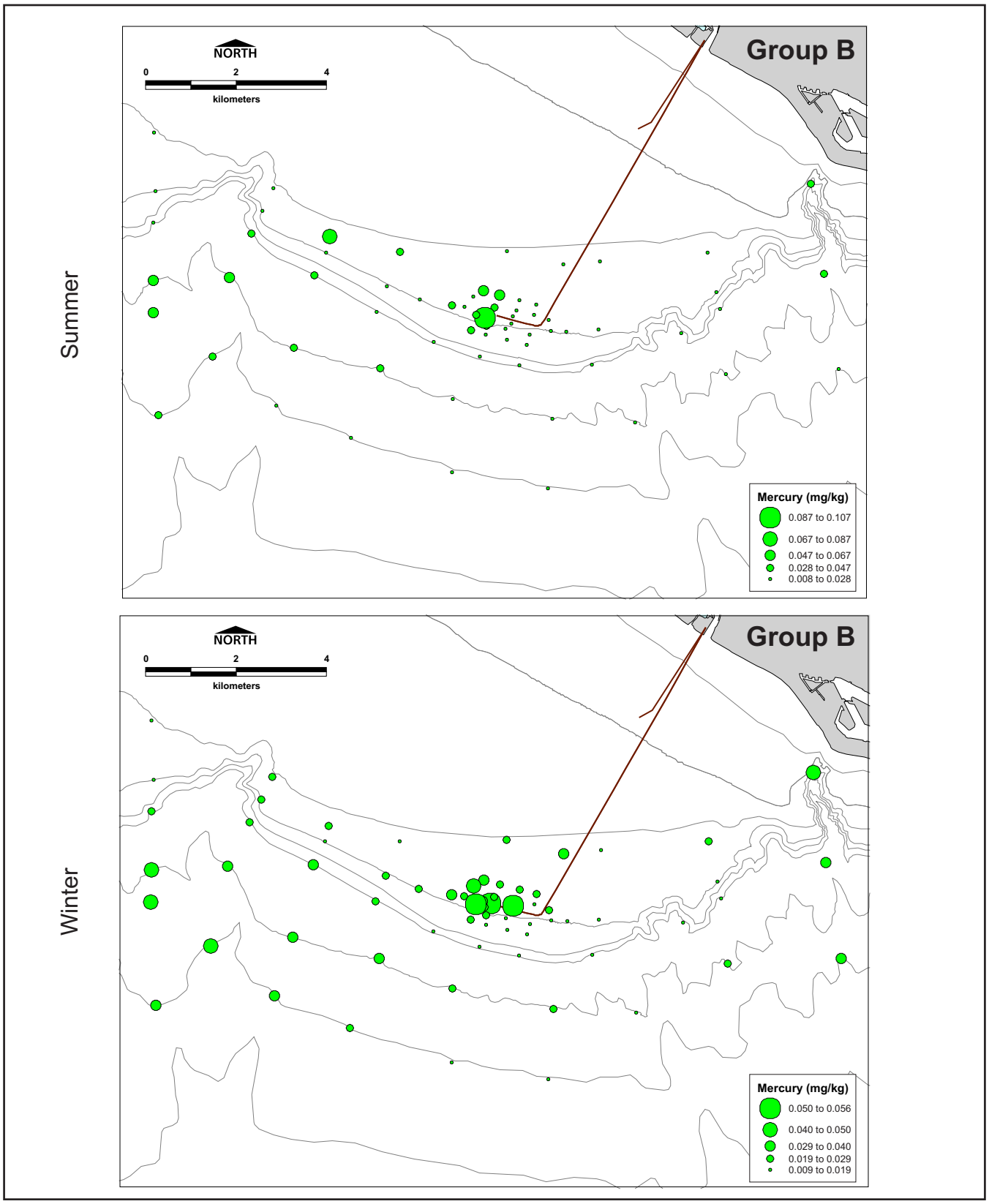

Figure B-36 continued.

Orange County Sanitation District, California.

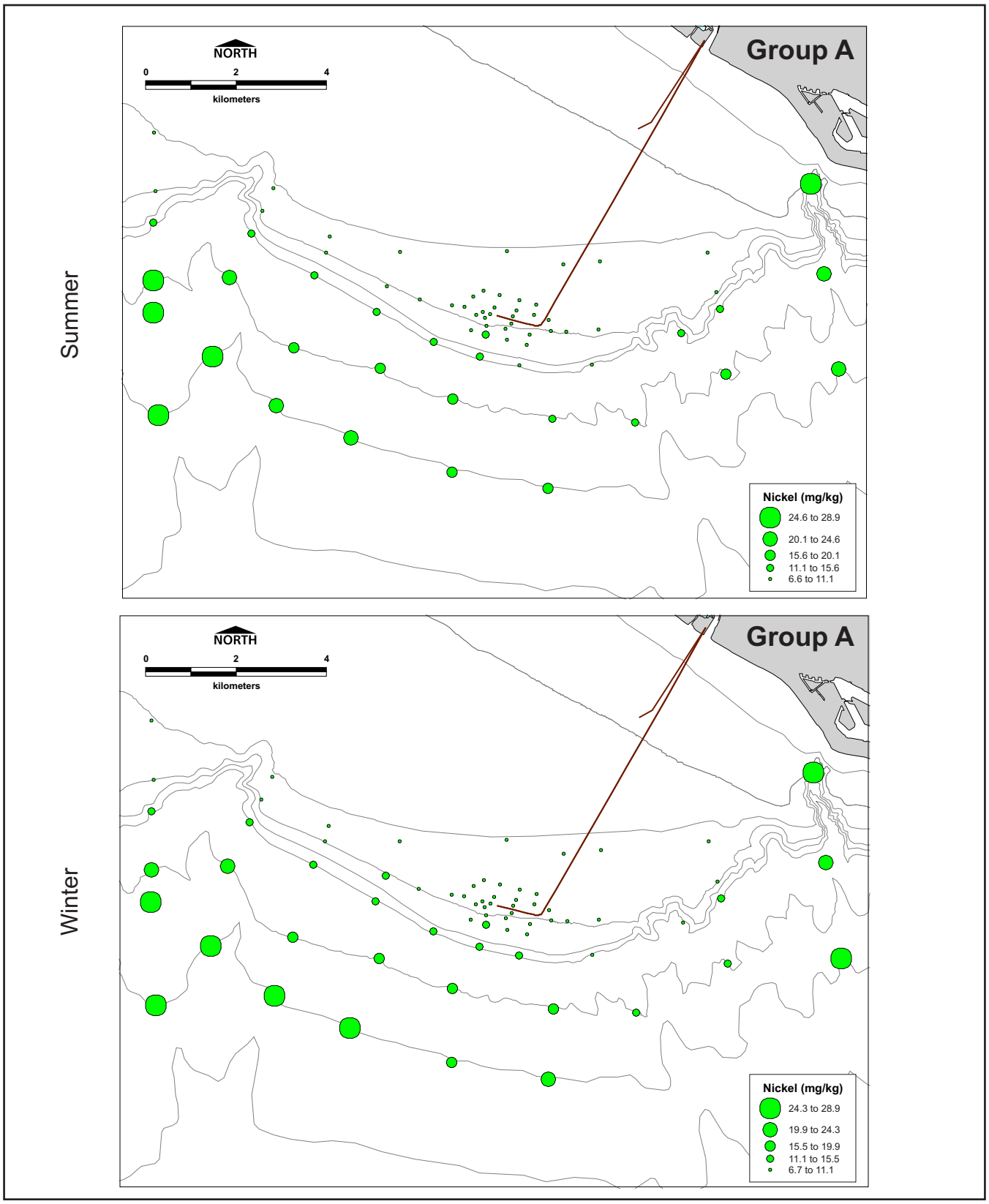

Figure B-36 continued.

Orange County Sanitation District, California.

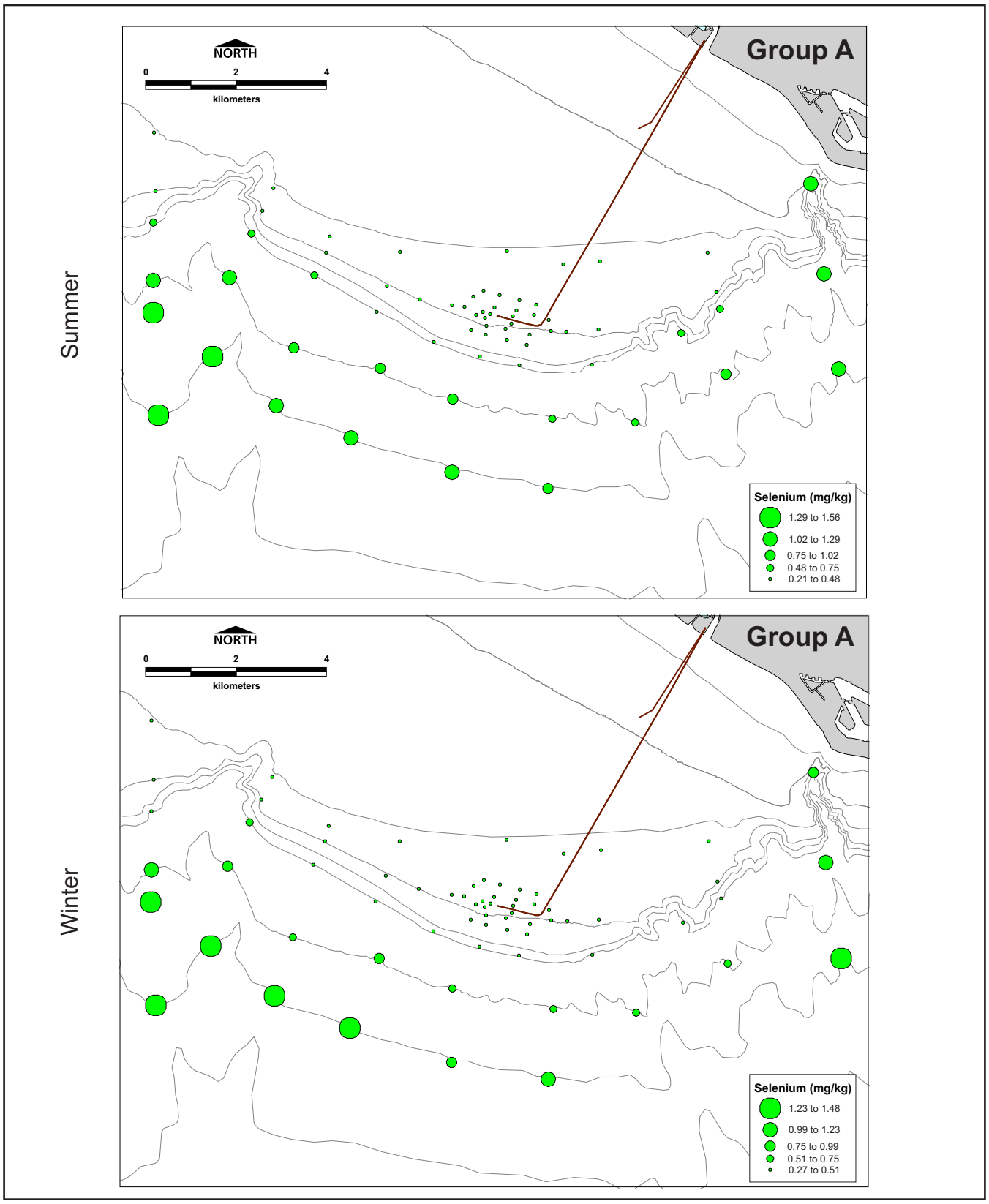

Figure B-36 continued.

Orange County Sanitation District, California.

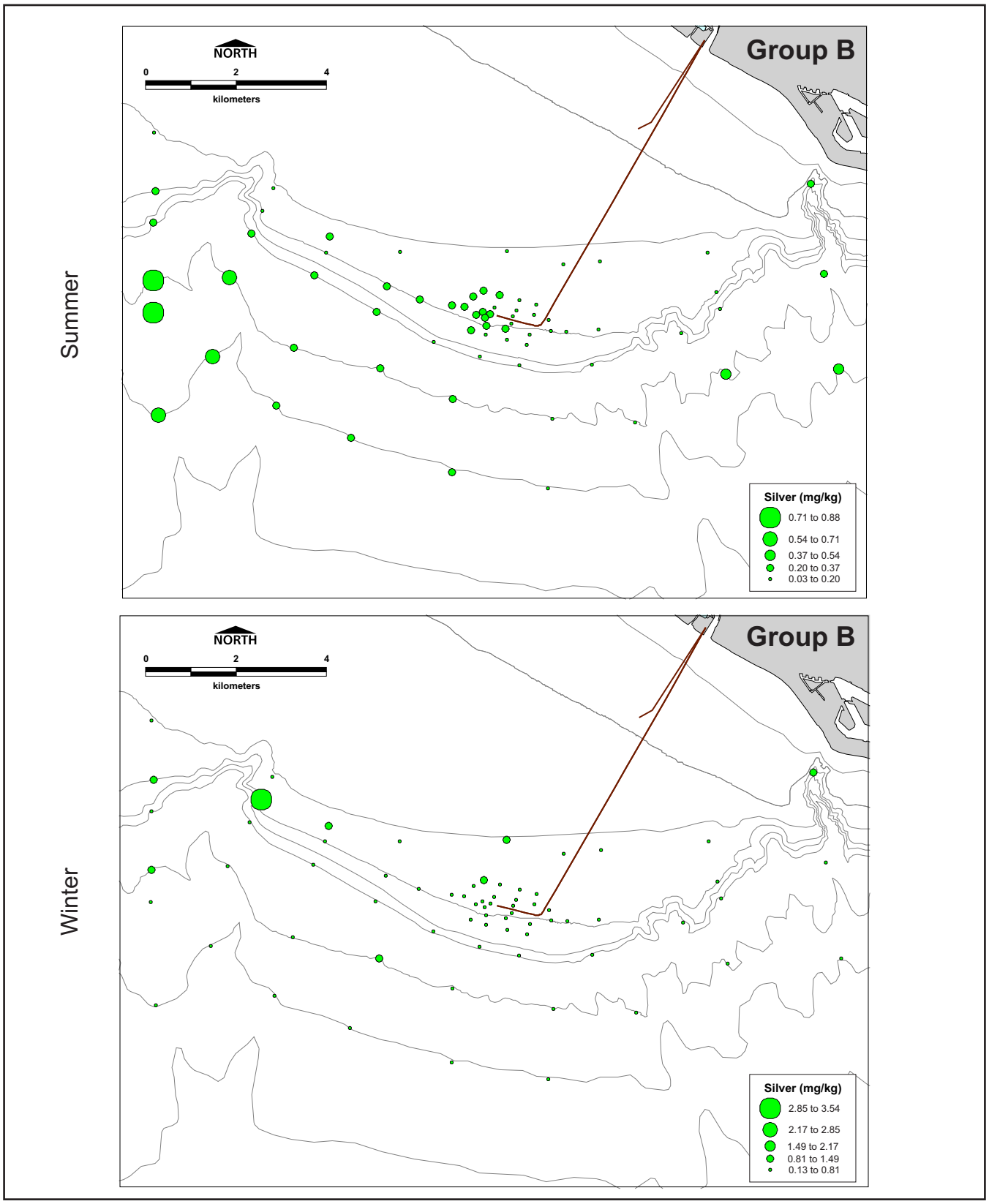

Figure B-36 continued.

Orange County Sanitation District, California.

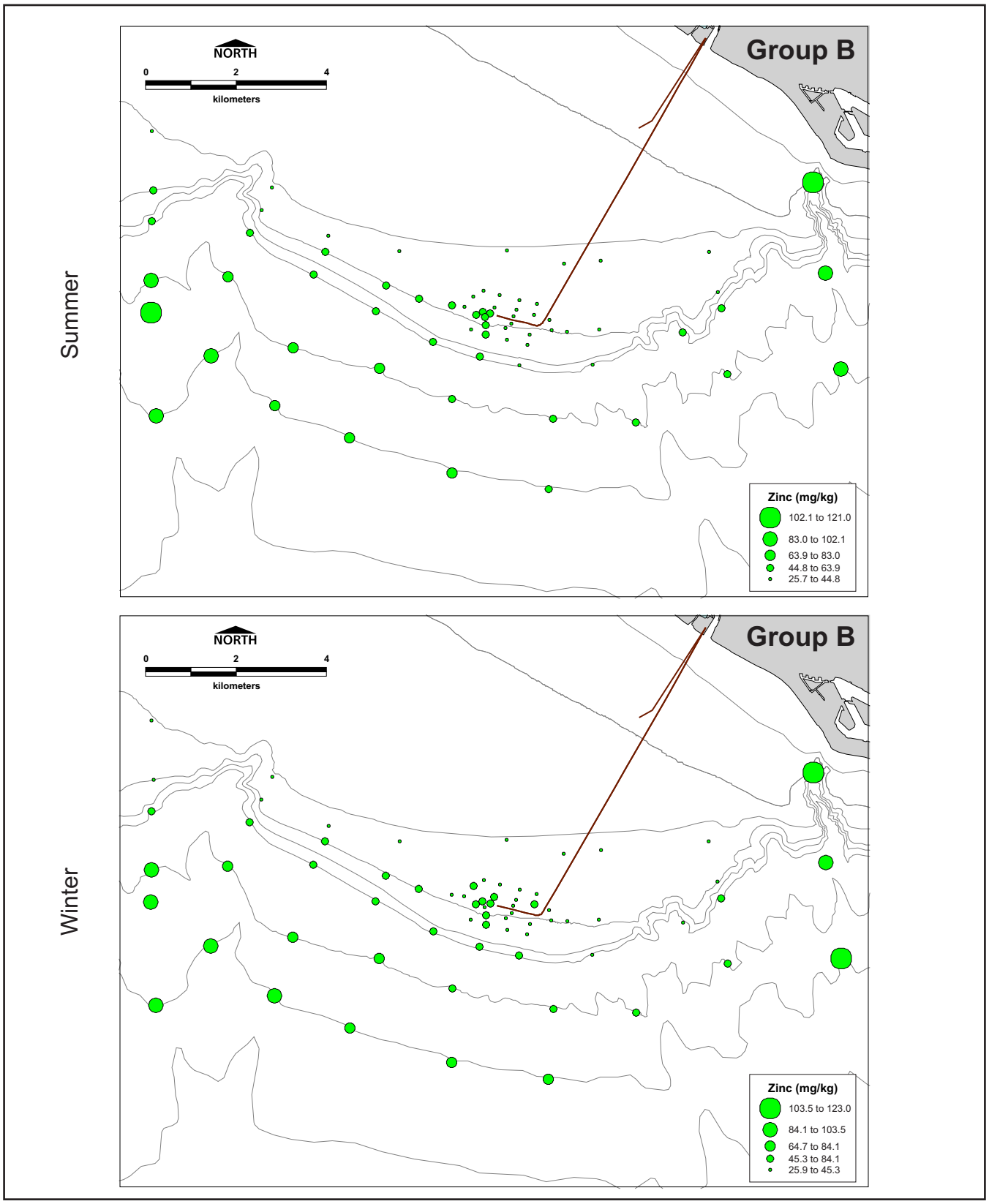

Figure B-36 continued.

Orange County Sanitation District, California.