

香港泳灘水質 2013

*Beach Water Quality
in Hong Kong*

為更佳泳灘水質而努力

Strive for better beach water quality



環境保護署

香港特別行政區政府

Environmental Protection Department

The Government of the Hong Kong Special Administrative Region

Our Mission :

To safeguard the health and welfare of the community and meet conservation goals by working to achieve and maintain the Water Quality Objective for bathing beaches



Beaches in Hong Kong are popular spots for a wide range of outdoor activities

Introduction

Hong Kong has many beautiful and attractive beaches with white sands along its long and twisting coastline. Each year, millions of beach-goers enjoy bathing in these beaches with clean water.

The objective of the Environmental Protection Department (EPD)'s Beach Water Quality Monitoring Programme is to monitor beach water quality and protect the health of bathers. The background and details of the EPD's monitoring activities can be found at its [Hong Kong Water Quality Resource Centre \(HKWQRC\) website \(http://wqrc.epd.gov.hk\)](http://wqrc.epd.gov.hk) or its [beach water quality thematic website \(http://www.beachwq.gov.hk\)](http://www.beachwq.gov.hk).



Kids playing together at Butterfly Beach



This report summarises the beach monitoring data collected in 2013, the gradings of the beaches and their annual compliance with the Water Quality Objective (WQO) for bathing beaches. In 2013, the EPD monitored 41 gazetted beaches and three non-gazetted beaches in different parts of the territory. The gazetted beaches were monitored weekly during the bathing season from March to October. EPD staff made field observations and collected samples for laboratory analyses of *Escherichia coli* (*E. coli*) as the bacteriological water quality indicator. EPD staff also took measurements of dissolved oxygen, pH, salinity, temperature and turbidity of beach water.



EPD staff monitoring beach water quality



Bacterial testing of beach water
at EPD's laboratory



Beach water quality
grading board

Hong Kong's beaches are assessed using a dual system: annual ranking and weekly grading which are both based on the *E. coli* level in beach water to indicate potential health risks associated with swimming. The annual ranking reflects the overall water quality of the beach over the entire bathing season, while the weekly grading denotes the recent water quality of the beach. Under the dual rating system, beaches are categorised into "Good", "Fair", "Poor" and "Very Poor". Those ranked "Good" and "Fair" meet the WQO for bathing waters.

Annual Beach Ranking in 2013

All 41 gazetted beaches in Hong Kong complied with the WQO in 2013. Although the total rainfall recorded during the bathing season in 2013 (2671 mm) was 54% higher than that in 2012 (1733 mm), there were only occasional increases in the *E. coli* levels in beach water, which were recorded mostly for beaches in the western side of Hong Kong. Compared with the ranking in 2012, the number of beaches ranked as "Good" has increased from 23 (or 56 %) to 24 (or 59 %) and the number of beaches ranked as "Fair" has changed from 18 (or 44%) to 17 (or 41%). No beach was ranked as "Poor" or "Very Poor" in 2013.



Scenic Clear Water Second Bay Beach





Stanley Main Beach - bathers enjoying the clean sand

The beaches with a "Good" water quality ranking were largely located in the Southern District (Hong Kong Island South), Outlying Islands and Sai Kung. All 12 beaches in the Southern District were ranked as "Good" in 2013. Of the nine beaches on the Outlying Islands, seven were "Good" while Silver Mine Bay Beach and Pui O Beach were rated as "Fair". The ranking of Pui O Beach has changed

to "Fair" but the change was not statistically significant. In the Sai Kung area, five beaches were "Good" in 2013 with Silverstrand Beach rated as "Fair". On the western side, all six beaches along the Tuen Mun coast and all eight beaches in the Tsuen Wan District received a "Fair" ranking in 2013.

The water quality of the Tsuen Wan beaches has been stable in 2013 following improvement in previous years, which is mainly due to the smooth operation of the Advance Disinfection Facilities (ADF) of the Stonecutters Island Sewage Treatment Works since March 2010, and the completion of the sewerage works in the hinterland of the beaches.

Since all the Tsuen Wan beaches have achieved the WQO for bathing, four previously closed beaches, namely Approach Beach, Casam Beach, Hoi Mei Wan Beach and Lido Beach, have been reopened to the public for swimming since June 2011. After the upgrading of beach facilities, Anglers' Beach has also been reopened for swimming since September 2013. For the remaining Ting Kau Beach and Gemini Beaches, the Leisure and Cultural Services Department plans to reopen them for public use after the completion of the improvement works in the swimming season of 2014.

EPD also monitored three non-gazetted beaches in Hong Kong: Discovery Bay (a popular beach on Lantau Island), a sandy beach adjacent to Kiu Tsui Beach in Sai Kung, and a planned artificial beach in Lung Mei, Tai Po. Discovery Bay and the beach adjacent to Kiu Tsui Beach continued to be ranked as "Good" in 2013. Similar to 2012, Lung Mei was ranked as "Poor" in 2013. The public sewerage network is being extended to villages in the Lung Mei area, and other pollution abatement measures will be implemented to improve the water quality.

Weekly Beach Grading in 2013

The EPD issues weekly gradings of gazetted beaches which are open for swimming. The information is disseminated to the public through weekly press release, EPD's websites, the beach enquiry hotline, GeoInfo Map of the GovHK website and beach noticeboards.



Hong Kong beaches offer respite from
hustle and bustle of city life

In 2013, the water quality of beaches in the Southern District was largely satisfactory. Ten gazetted beaches received mostly "Good" or "Fair" grading in the bathing season, while St. Stephen's Beach and Stanley Main Beach were rated as "Very Poor" on a few occasions after heavy rain. South Bay Beach had the best water quality, achieving "Good" gradings on all rating occasions.





The water quality of the Sai Kung beaches was also generally good with weekly grading mostly "Good" or "Fair". Kiu Tsui Beach was rated as "Very Poor" on two occasions after heavy rain.

The beaches on the Outlying Islands were generally very suitable for swimming, with Hung Shing Yeh and Upper Cheung Sha Beaches achieving 100% "Good" gradings. Cheung Chau Tung Wan, Kwun Yam, Lo So Shing and Tong Fuk Beaches achieved "Good" gradings over 80% of the rating occasions. Cheung Chau Tung Wan, Kwun Yam, Lo So Shing and Pui O Beaches were rated once as "Very Poor" after heavy rain.

The water quality of the beaches in the Tuen Mun area was generally fine and nearly all graded as "Good" or "Fair".

The water quality of beaches in Tsuen Wan was generally satisfactory with gradings maintained mostly at either "Good" or "Fair". Except Approach Beach, other open beaches were rated as "Very Poor" on one or a few occasions after heavy rain.



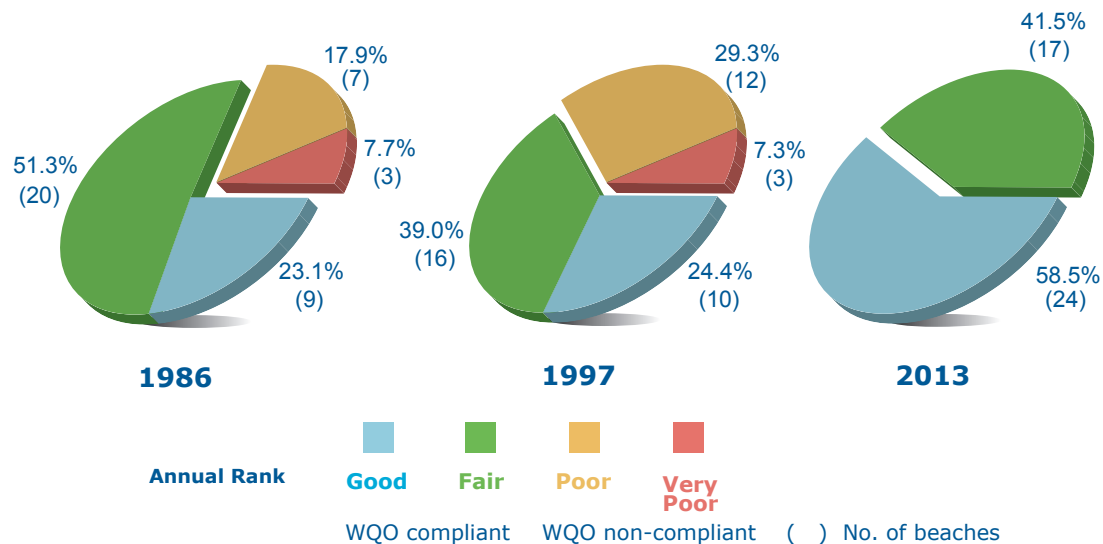
Scenic Lo So Shing Beach (Lamma Island)



Water Quality Trend

The beach water quality in Hong Kong is able to fully comply with the WQO for the last four years. The percentage of beaches complying with the WQO had changed from 74% in 1986 (29 of 39 beaches) to 63% (26 of 41 beaches) in 1997, and then improved to 100% since 2010 for all 41 gazetted beaches.

Comparison of annual beach ranking of gazetted beaches in 1986, 1997 and 2013



Note: Two beaches degazetted in 1995 were excluded from the calculation.

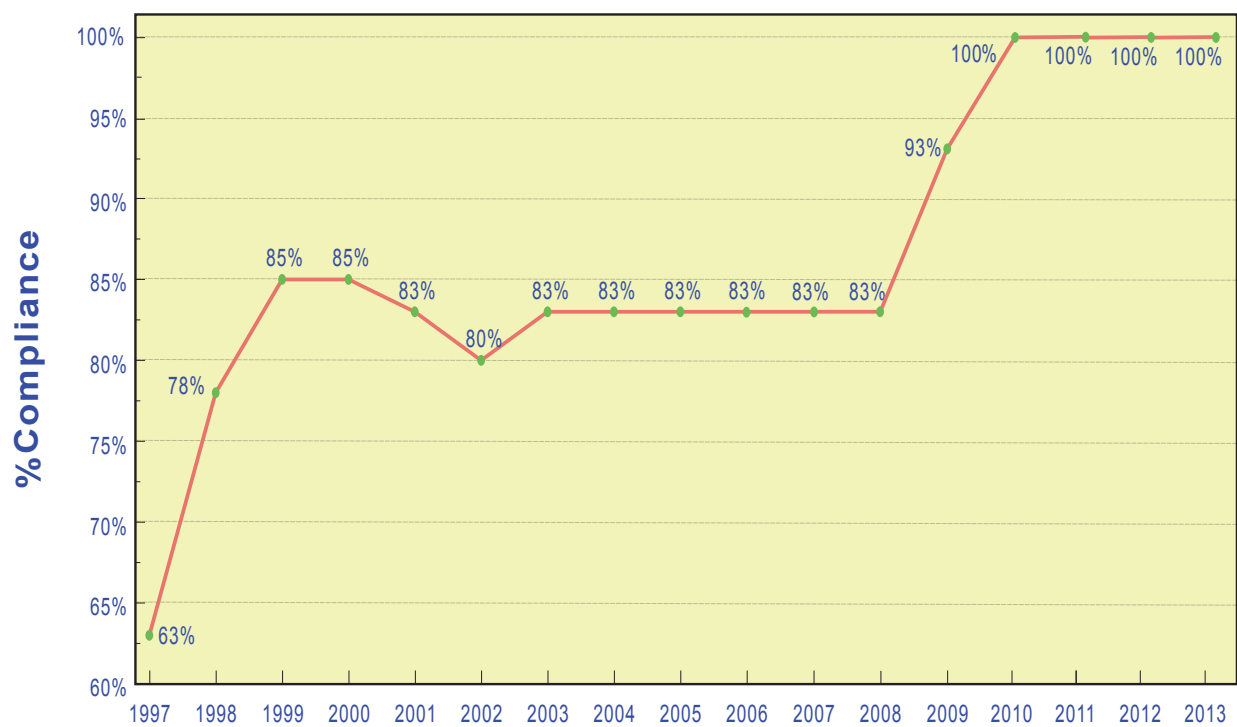
Back in the 1980s, many beaches were either closed, such as Cafeteria Old Beach, Castle Peak Beach and Silver Mine Bay Beach, or on the verge of being closed (e.g. Middle Bay Beach and Repulse Bay Beach) because of poor water quality.

There was a further drop in compliance rate in the mid-1990s due to population growth particularly in the new town areas. Since then, there has been progressive improvement in the last decade as a result of enforcement of environmental legislation, extension of the sewerage network and provision of new sewage treatment facilities across the territory including the beach hinterland. Major improvement measures implemented in the past are summarized in the following table.

Major improvement measures for the beaches since the implementation of beach water quality monitoring programme in 1986	
1986 – 1990	
✱ Implementation of the Livestock Waste Control Scheme under the Waste Disposal (Livestock Waste) Regulation.	Most beaches, particularly Silver Mine Bay Beach
✱ Declaration of the Southern Water Control Zone (WCZ) under the Water Pollution Control Ordinance (WPCO) and legislative enforcement.	Southern beaches
✱ Interception and diversion of polluted storm drains at beaches in Southern District.	Southern beaches
1991- 1995	
✱ Implementation of chemical waste control.	All beaches
✱ Declaration of the North Western WCZ under the WPCO and legislative enforcement.	Tuen Mun beaches
✱ Diversion of polluted storm water drains away from Castle Peak Beach.	
✱ Provision of public sewers for So Kwun Wat and Sam Shing Estate.	
✱ Commissioning of Stanley Sewage Treatment Works (STW).	Stanley Main Beach
1996- 2000	
✱ Full implementation of the WPCO in all WCZs.	All beaches
✱ Commissioning of the Shek O Sewage Screening Plant and diversion of polluted storm water drains at Shek O Village .	Shek O Beach
✱ Completion of all major works under the Southern Sewerage Master Plan.	Southern beaches
✱ Commissioning of the new 2 km long Pillar Point sewage submarine outfall.	Tuen Mun beaches
2001 - 2005	
✱ Completion of Harbour Area Treatment Scheme Stage 1.	Big Wave Bay, Shek O, Rocky Bay Beaches
✱ Provision of public sewers in the Silverstrand area.	Silverstrand Beach
✱ Full operation of the Sham Tseng STW .	Beaches along the Tsuen Wan coast
2006 - 2013	
✱ Commissioning of the Advance Disinfection Facilities at the Stonecutters Island STW.	All Tsuen Wan beaches
✱ Extension of the public sewerage network to the beach hinterland along Castle Peak Road.	Beaches along the Tsuen Wan coast

Through continuous efforts of the government to implement pollution abatement measures over the years, there was significant improvement at the beaches in various districts in the last few years. Improvement at Silver Mine Bay Beach, Castle Peak Beach and Repulse Bay Beach was most remarkable as the beaches have consistently complied with the WQO in recent years. All beaches in Tsuen Wan have met the WQO since 2010. To sum up, all of Hong Kong's bathing beaches have now achieved the required standard for swimming.

Compliance with WQO at gazetted beaches, 1997 - 2013

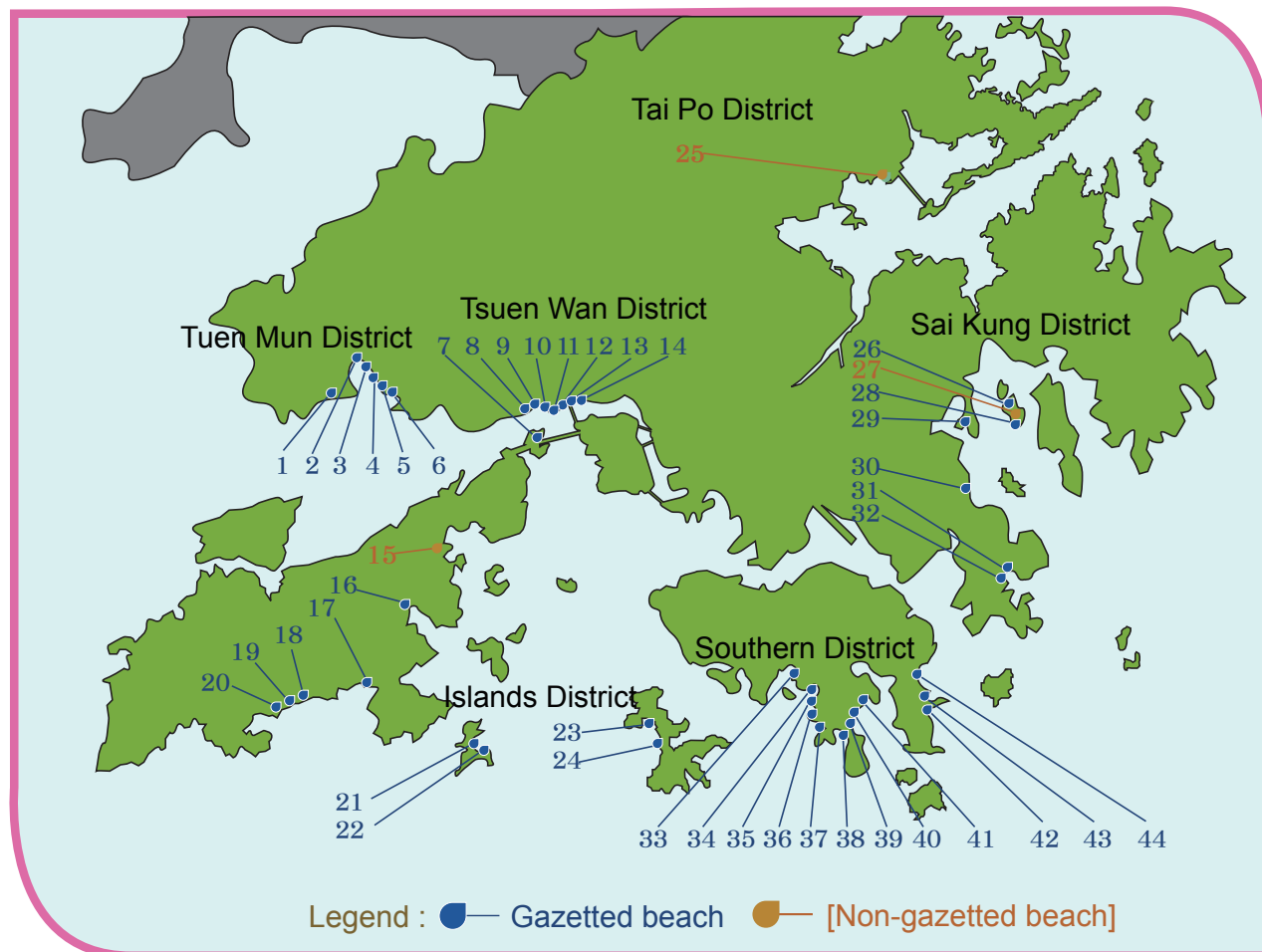


Water quality trend lines of gazetted beaches over the last 28 years are included in this report to show the changes over the years. More in-depth background and details of the beach monitoring programme are available at the EPD's [Hong Kong Water Quality Resource Centre \(HKWQRC\) website \(http://wqrc.epd.gov.hk\)](http://wqrc.epd.gov.hk) or its [beach water quality thematic website \(http://www.beachwq.gov.hk\)](http://www.beachwq.gov.hk), which provides user-friendly access to the annual beach reports as well as data published since 2000.



Fun for all ages at Castle Peak Beach

Beaches monitored by the EPD



Tuen Mun District

1. Butterfly
2. Castle Peak
3. Kadoorie
4. Cafeteria Old
5. Cafeteria New
6. Golden

Tsuen Wan District

7. Ma Wan Tung Wan
8. Anglers'
9. Gemini
10. Hoi Mei Wan
11. Casam
12. Lido
13. Ting Kau
14. Approach

Islands District

15. [Discovery Bay]
16. Silver Mine Bay
17. Pui O
18. Lower Cheung Sha
19. Upper Cheung Sha
20. Tong Fuk
21. Cheung Chau Tung Wan
22. Kwun Yam
23. Hung Shing Yeh
24. Lo So Shing

Tai Po District

25. [Lung Mei]

Sai Kung District

26. Kiu Tsui
27. [Kiu Tsui (New)]
28. Hap Mun Bay
29. Trio
30. Silverstrand
31. Clear Water Bay First
32. Clear Water Bay Second

Southern District

33. Deep Water Bay
34. Repulse Bay
35. Middle Bay
36. South Bay
37. Chung Hom Kok
38. St. Stephen's
39. Stanley Main
40. Hairpin
41. Turtle Cove
42. Shek O
43. Rocky Bay
44. Big Wave Bay



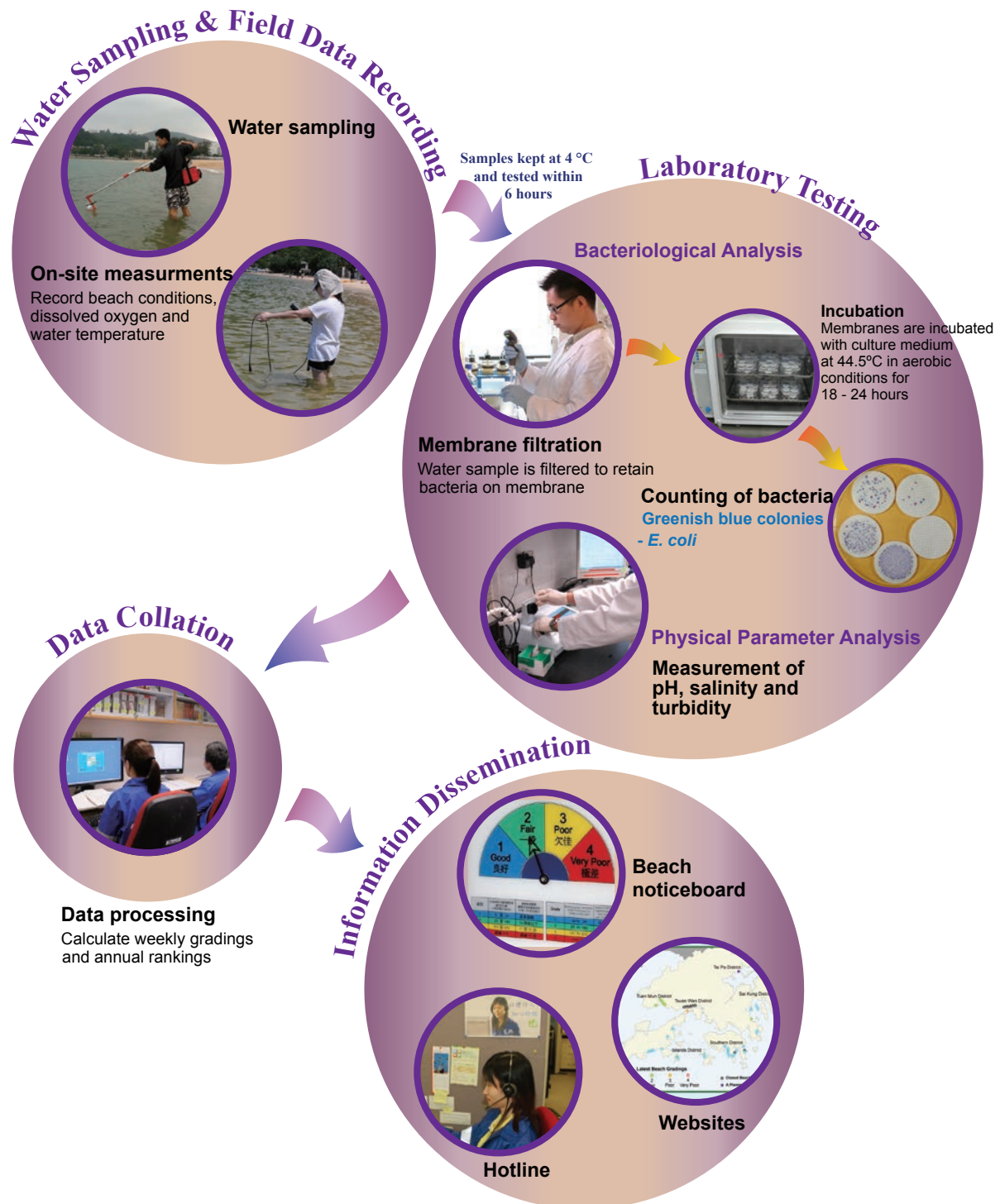
Beach monitoring frequencies

Beach	Monitoring frequency per month	
	Bathing season*	Non-bathing season
Gazetted beaches open all year round **	at least 3 times	at least 3 times
Other gazetted beaches	at least 3 times	once
Non-gazetted beaches	at least 3 times	once

* March to October

** Clear Water Bay Second, Deep Water Bay, Golden and Silverstrand Beaches

Overview of various stages of the Beach Monitoring Programme



Hong Kong's annual beach ranking system

Rank	<i>E. coli</i> counts per 100 mL*	Minor illness rate** (Cases per 1,000 swimmers)	WQO Compliance
Good	≤24	Undetectable	Compliant
Fair	25-180	≤10	
Poor	181-610	11-15	Non-compliant
Very Poor	>610	>15	

* Geometric mean *E. coli* count calculated based on all data collected between March and October.

** Skin and gastrointestinal illnesses

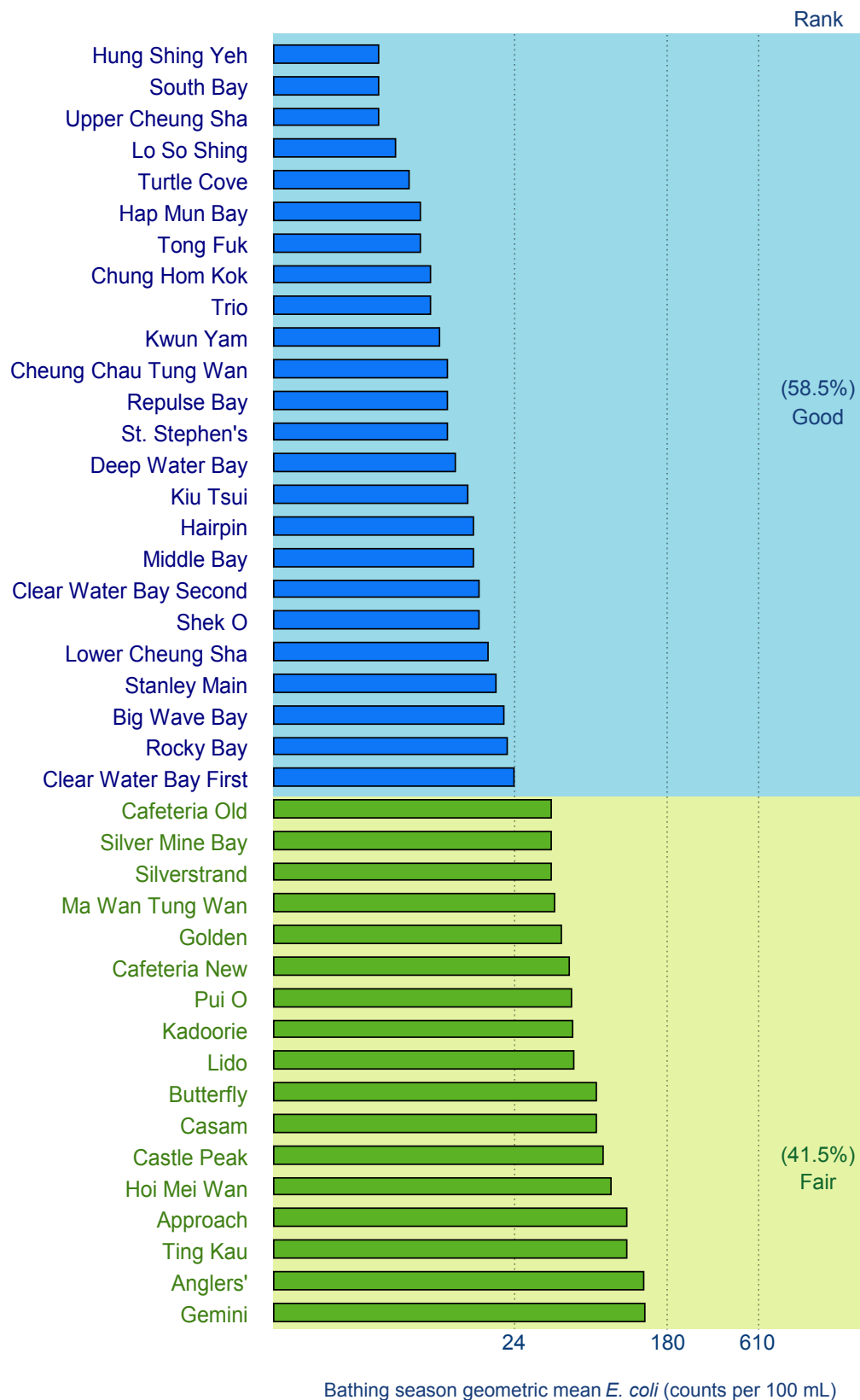
Hong Kong's weekly beach grading system

Grade	Beach water quality	<i>E. coli</i> counts per 100 mL*	Minor illness rate** (Cases per 1,000 swimmers)
1	Good	≤24	Undetectable
2	Fair	25-180	≤10
3	Poor	181-610	11-15
4	Very Poor	>610 or last reading >1,600	>15

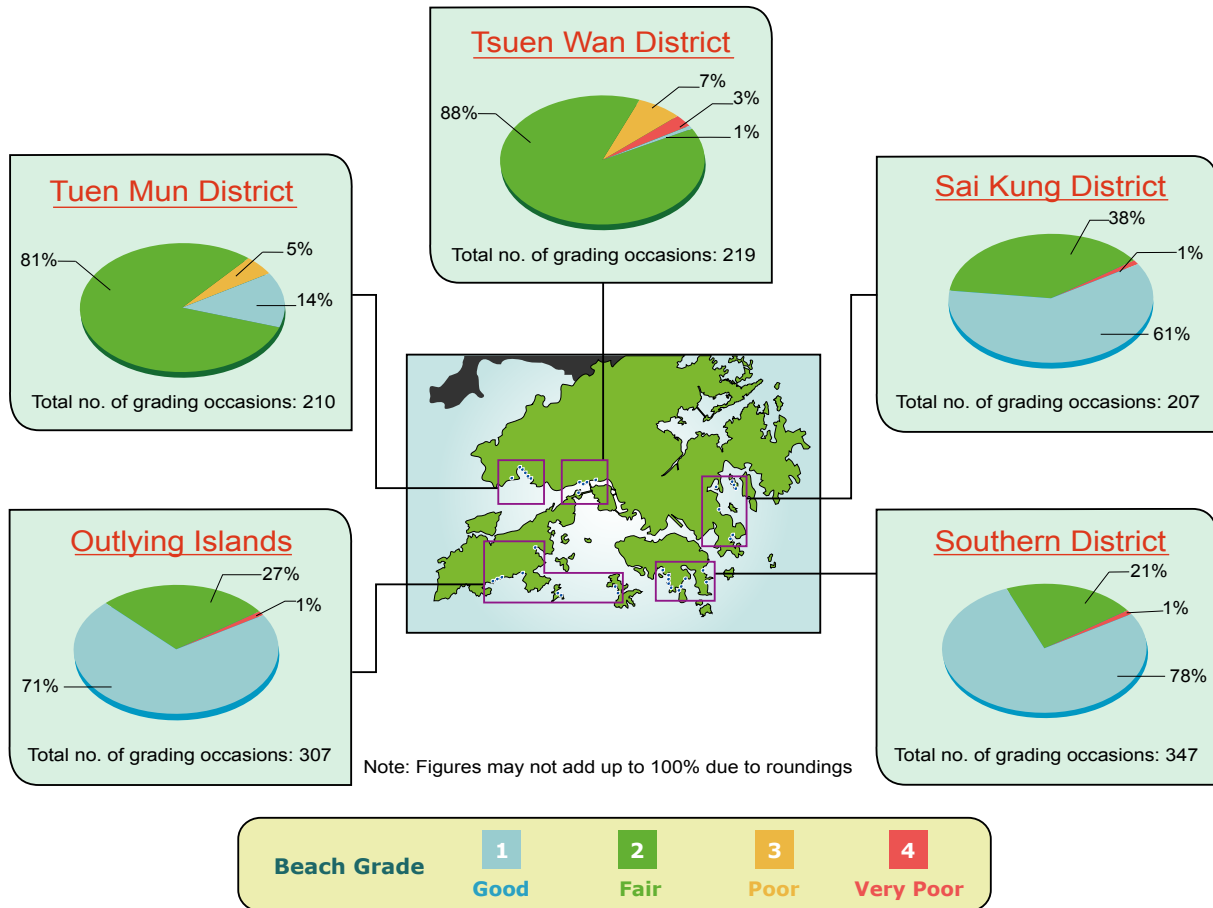
* Unless otherwise indicated, the *E. coli* count represents the geometric mean of the 5 most recent sampling occasions.

** Skin and gastrointestinal illnesses

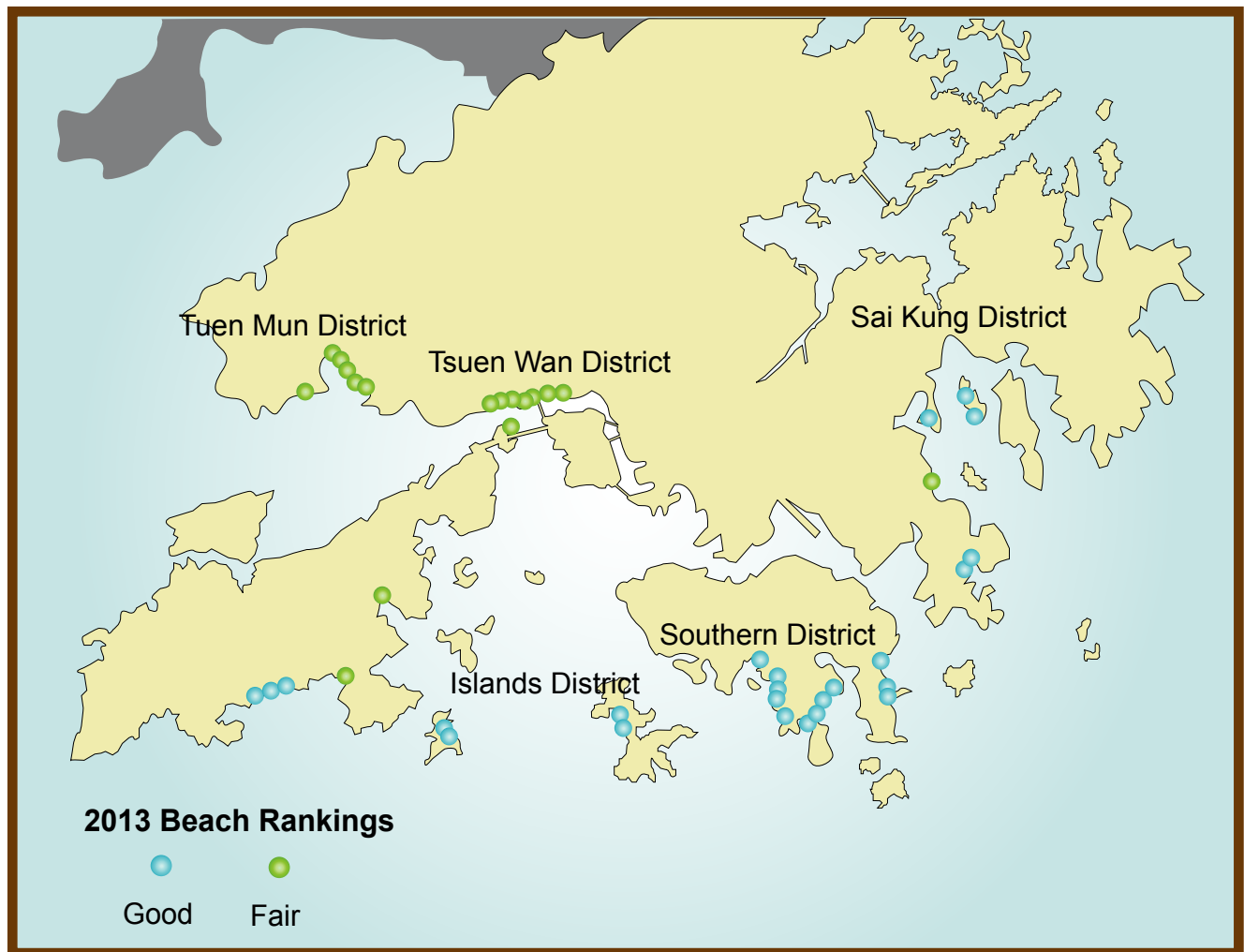
Hong Kong's gazetted beaches 2013 annual ranking



Weekly beach grading summary of gazetted beaches by district in 2013



Annual Ranking of gazetted beaches at a glance



Southern District beaches

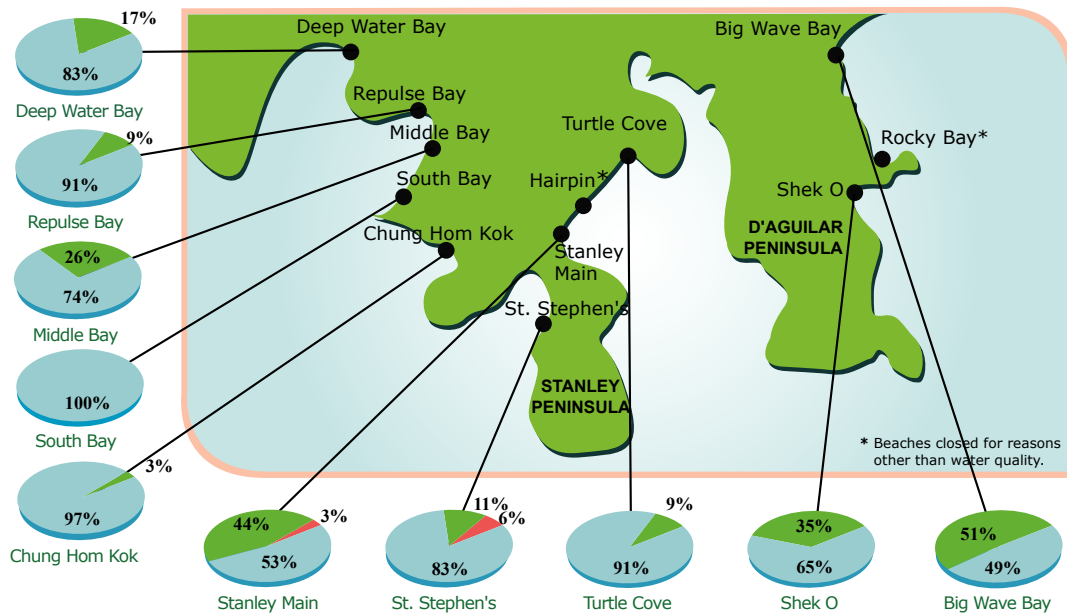
Annual ranking



Annual Rank

●	●	●	●
Good	Fair	Poor	Very Poor

Weekly grading



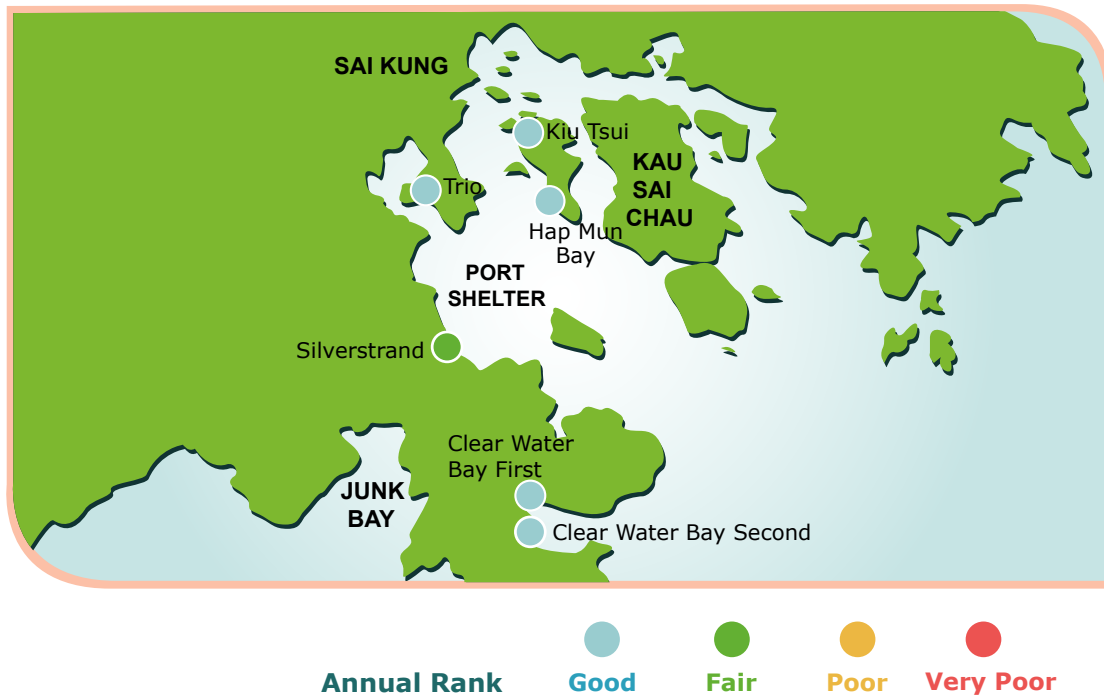
Beach Grade

1	2	3	4
Good	Fair	Poor	Very Poor

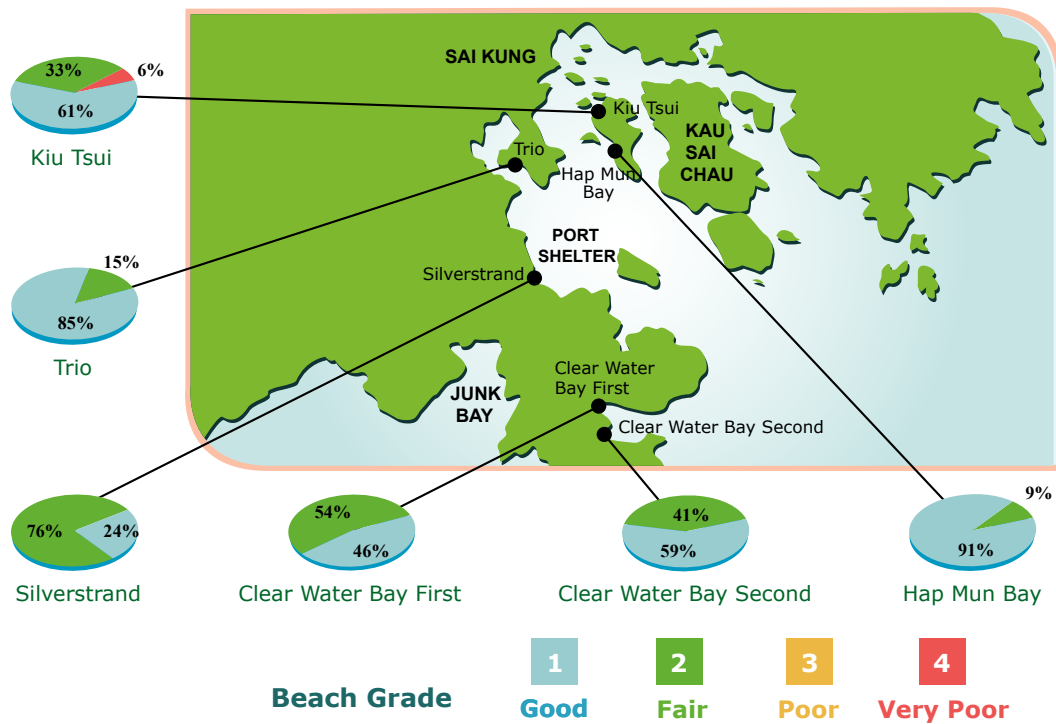
Note: "*" Closed beaches. No grading was made

Sai Kung beaches

Annual ranking

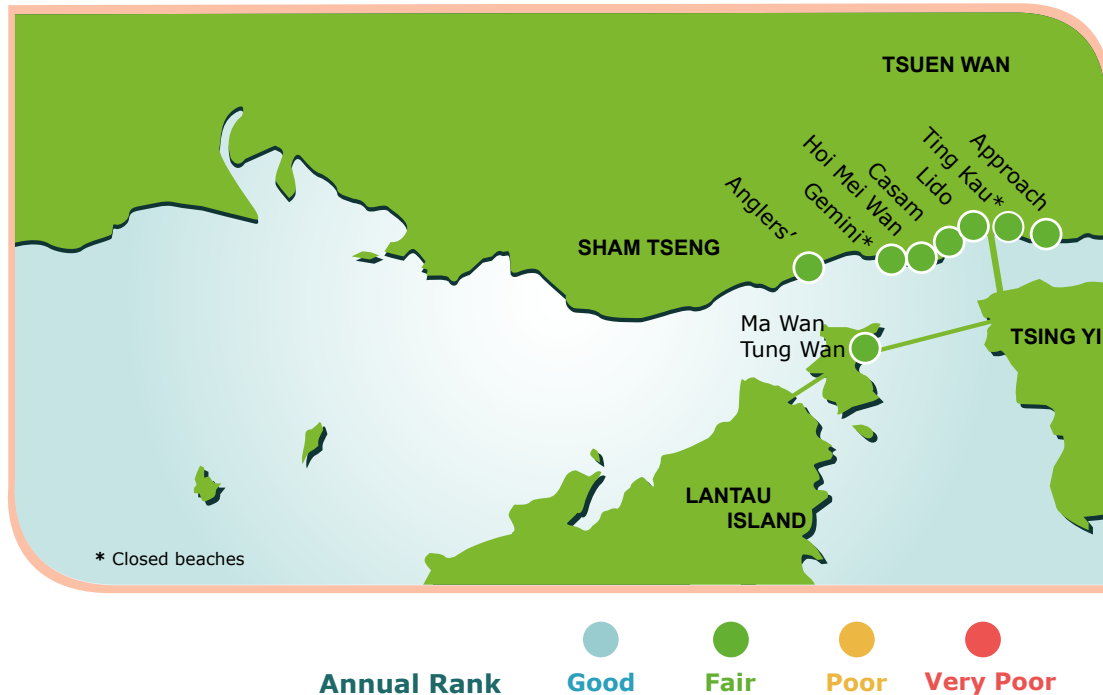


Weekly grading

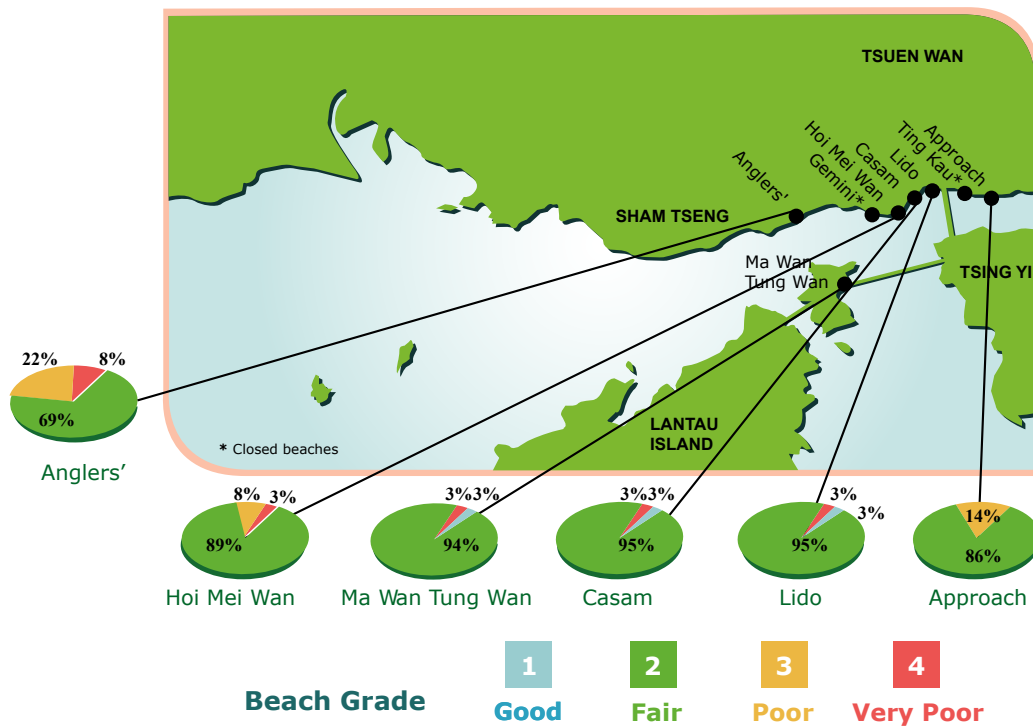


Tsuen Wan beaches

Annual ranking



Weekly grading



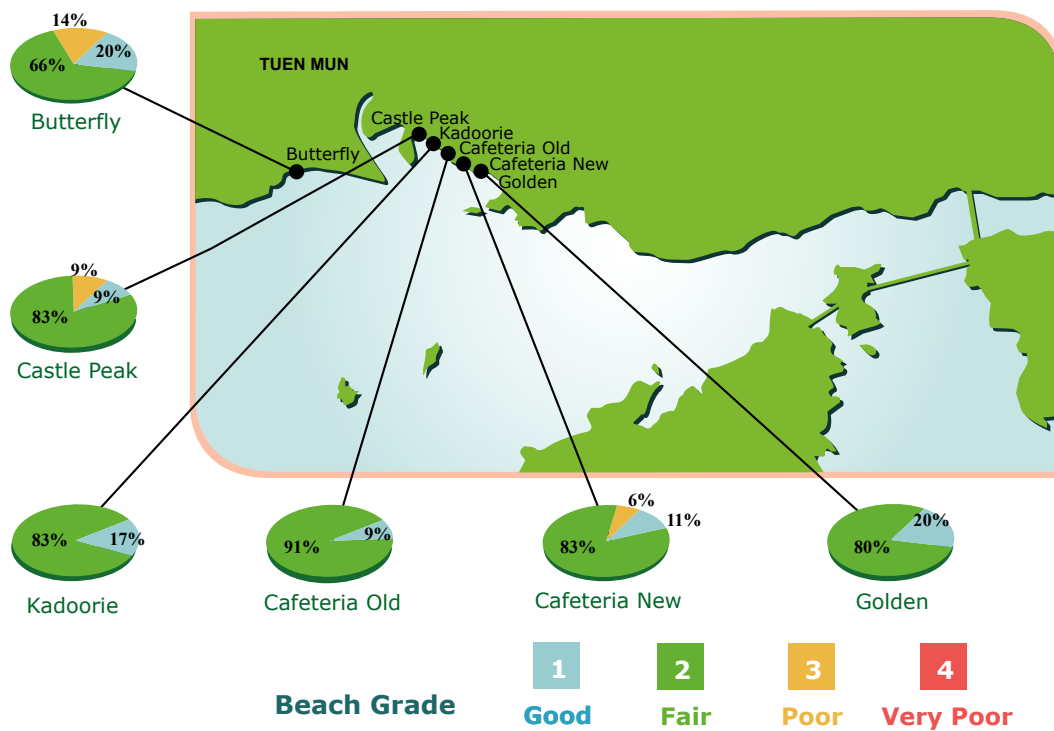
Note: Figures may not add up to 100% due to roundings; "*" Closed beaches. No grading was made.

Tuen Mun beaches

Annual ranking



Weekly grading



Note: Figures may not add up to 100% due to roundings

Outlying Islands beaches

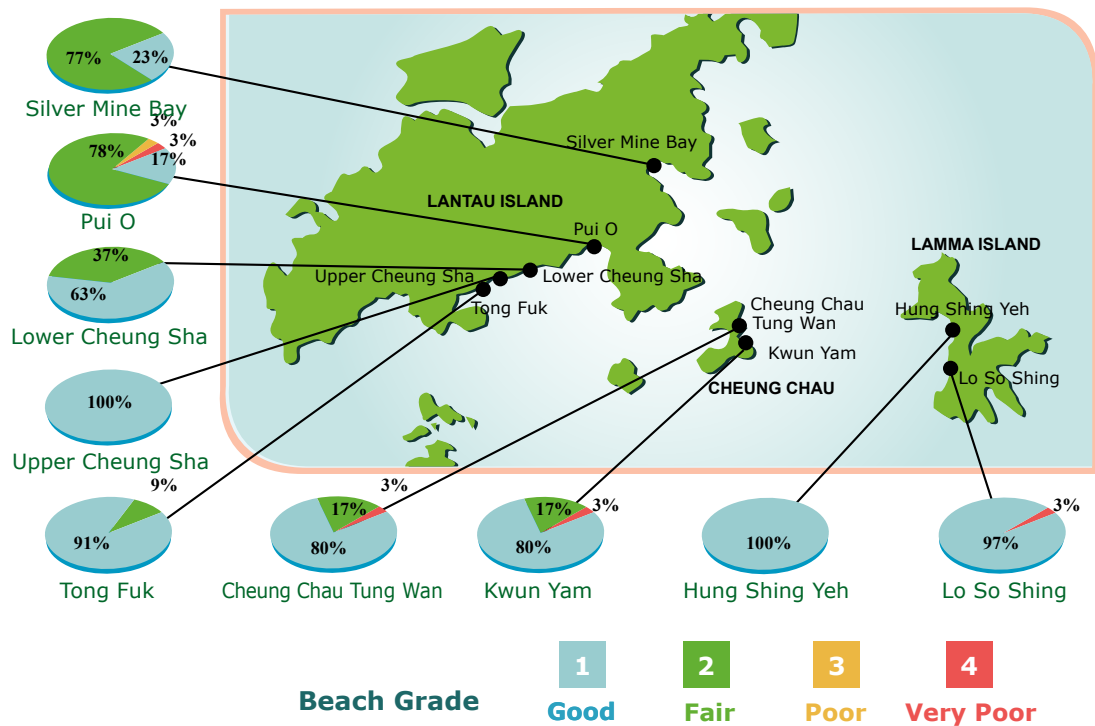
Annual ranking



Annual Rank

Good	Fair	Poor	Very Poor
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Weekly grading

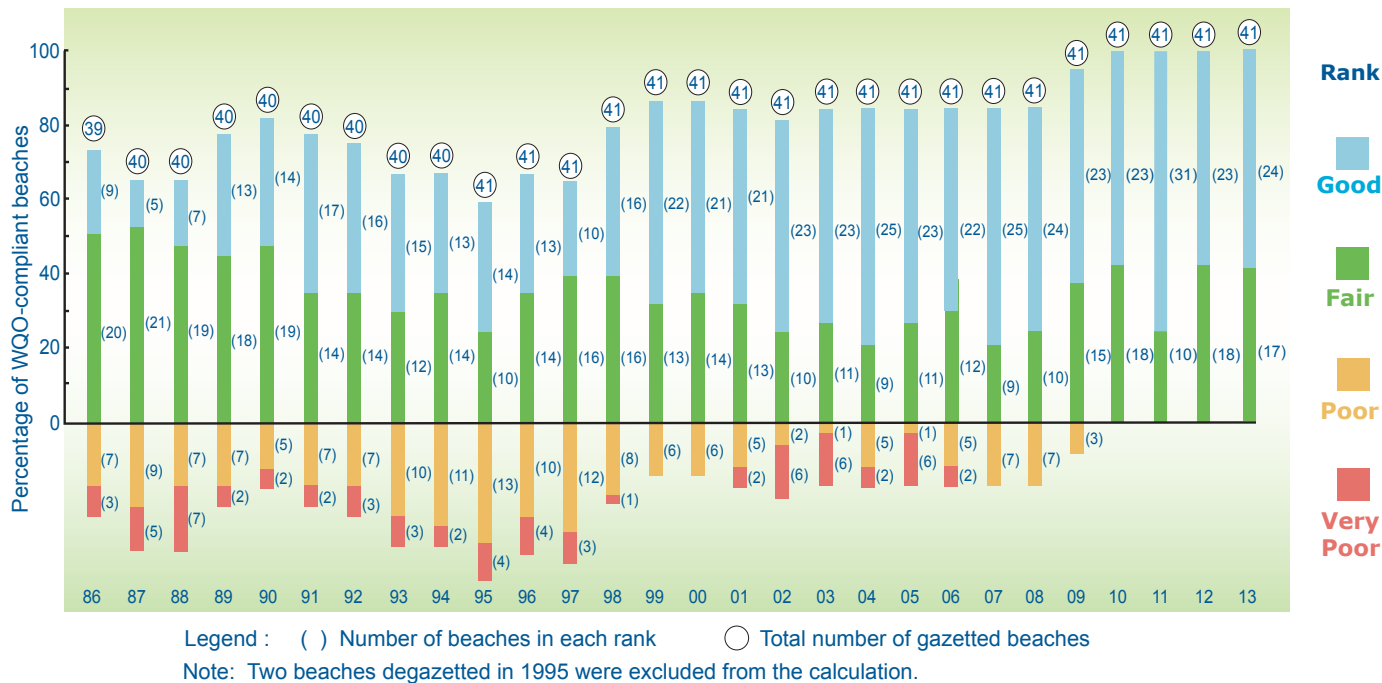


Beach Grade

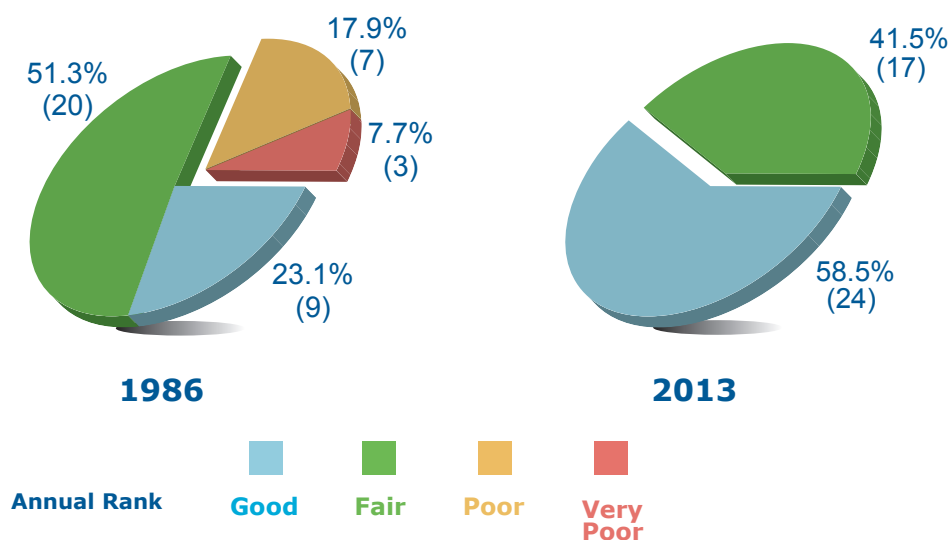
1	2	3	4
Good	Fair	Poor	Very Poor

Note: Figures may not add up to 100% due to roundings

Annual beach rankings of gazetted beaches from 1986 to 2013

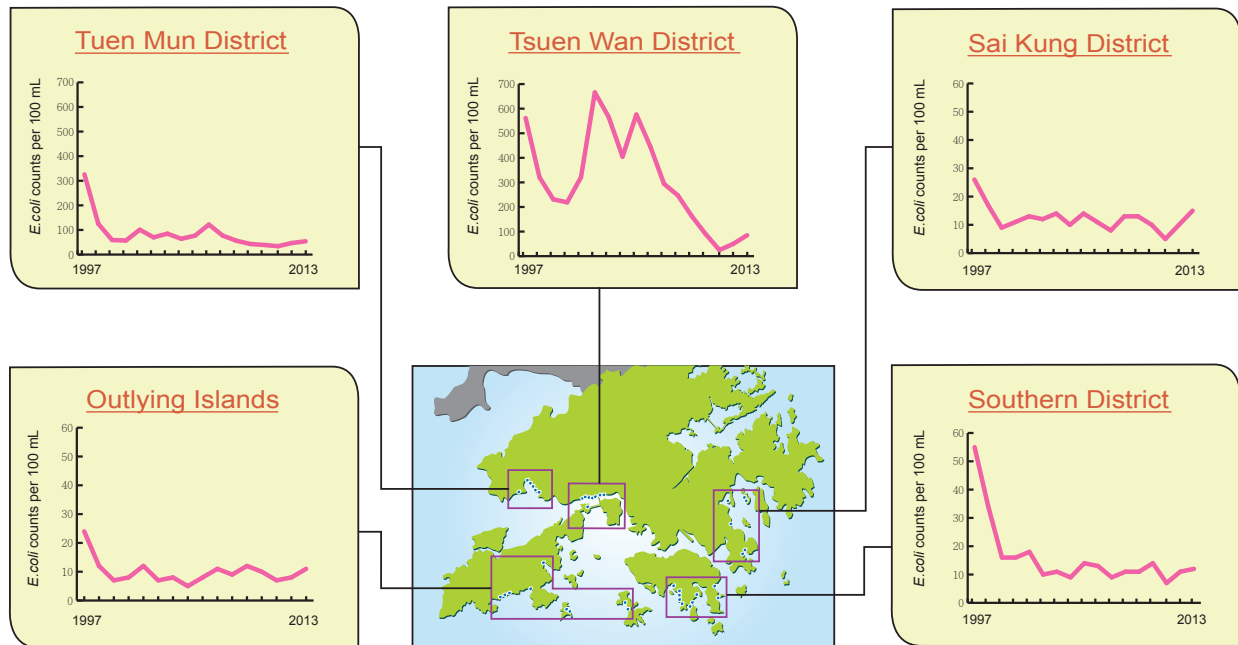


Comparison of annual beach ranking of gazetted beaches in 1986 and 2013



Note: Two beaches degazetted in 1995 were excluded from the calculation.

Annual geometric mean *E. coli* levels of gazetted beaches by district, 1997 - 2013



Note: Annual geometric mean *E. coli* levels calculated based on all the data collected between March and October.

Appendix A - Annual geometric mean *E. coli* levels (1997-2013)

Southern District Annual geometric mean *E.coli* levels

	<i>E. coli</i> counts per 100mL																
	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Big Wave Bay	179	114	77	98	106	23	33	26	101	50	17	31	46	149	17	31	21
Chung Hom Kok	22	40	14	8	15	13	14	9	13	10	9	13	14	9	5	5	8
Deep Water Bay	55	46	14	16	18	9	9	7	8	7	7	9	12	9	6	9	11
Hairpin	44	72	17	18	10	6	7	7	13	11	19	10	12	33	6	9	14
Middle Bay	40	16	11	11	8	9	14	12	20	18	9	11	12	12	6	15	14
Repulse Bay	23	11	8	9	13	9	12	4	8	12	7	14	11	7	6	7	10
Rocky Bay	399	223	72	80	118	43	28	19	30	33	17	15	13	50	23	30	22
Shek O	102	70	32	29	31	13	11	16	19	24	18	22	11	19	11	16	15
South Bay	17	6	4	7	5	5	11	9	7	7	5	5	4	4	4	5	4
St. Stephen's	40	26	11	6	7	5	9	4	12	11	6	9	6	4	4	4	10
Stanley Main	72	24	13	12	9	8	6	5	7	10	9	10	13	20	6	34	19
Turtle Cove	40	14	12	11	15	8	4	5	8	7	5	5	5	8	4	6	6

Note: Figure in red indicates that the beach was closed in that year

Sai Kung District

Annual geometric mean *E.coli* levels

	<i>E. coli</i> counts per 100mL																
	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Clear Water Bay First	62	41	11	16	28	28	17	9	16	20	14	11	15	10	7	8	24
Clear Water Bay Second	66	44	12	26	22	14	21	10	19	13	9	19	27	13	5	18	15
Hap Mun Bay	3	2	2	2	1	2	4	3	4	4	3	5	3	3	2	2	7
Kiu Tsui	5	4	4	5	5	4	5	17	14	11	6	13	16	13	9	10	13
Silverstrand	148	99	32	61	100	133	97	74	67	30	33	35	51	28	18	30	39
Trio	30	21	17	10	12	6	10	2	6	5	2	12	5	6	2	9	8

Tsuen Wan District

Annual geometric mean *E.coli* levels

	<i>E. coli</i> counts per 100mL																
	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Anglers'	691	502	442	326	621	1169	693	619	895	772	496	510	276	134	27	69	133
Approach	1009	435	387	316	411	696	762	470	663	599	352	251	208	124	59	83	106
Casam	609	239	231	209	233	741	702	594	716	426	305	289	144	102	21	50	71
Gemini	458	399	350	258	323	1155	875	1102	1042	853	566	481	410	137	19	40	135
Hoi Mei Wan	471	280	109	177	199	547	442	287	641	308	286	271	130	87	23	51	86
Lido	600	262	231	181	269	683	734	523	782	459	280	296	178	87	21	32	53
Ma Wan Tung Wan	110	92	51	39	133	201	159	101	132	171	78	53	60	17	10	24	41
Ting Kau	1583	1045	515	593	739	742	831	412	512	469	405	258	145	141	58	88	107

Note: Figure in red indicates that the beach was closed in that year

Tuen Mun District Annual geometric mean *E.coli* levels

	<i>E. coli</i> counts per 100mL																
	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Butterfly	259	121	44	61	74	60	74	55	55	94	84	56	49	30	41	42	71
Cafeteria New	309	100	60	51	104	62	80	54	70	120	68	48	38	31	27	47	50
Cafeteria Old	435	138	58	57	125	74	76	61	81	150	67	45	46	34	29	48	39
Castle Peak	332	199	57	58	105	58	64	80	90	139	64	47	35	63	49	48	78
Golden	352	98	44	50	87	66	84	46	62	117	87	63	42	37	26	62	45
Kadoorie	290	130	109	68	120	114	160	98	117	118	101	87	48	45	37	40	52

Note: Figure in red indicates that the beach was closed in that year

Outlying Islands Annual geometric mean *E.coli* levels

	<i>E. coli</i> counts per 100mL																
	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Cheung Chau Tung Wan	24	19	11	12	16	17	11	12	14	37	21	15	17	12	6	13	10
Hung Shing Yeh	5	3	3	5	6	2	5	4	4	4	6	4	6	4	3	4	4
Kwun Yam	32	21	6	10	11	9	7	5	10	13	9	10	9	8	5	5	9
Lo So Shing	3	2	4	2	5	2	3	2	3	4	3	5	7	3	3	4	5
Lower Cheung Sha	85	23	10	12	22	10	14	7	12	11	12	20	13	11	9	10	17
Pui O	36	16	10	10	17	10	15	9	10	16	30	24	12	14	13	22	51
Silver Mine Bay	481	123	39	50	67	42	50	14	34	52	22	43	45	31	28	38	39
Tong Fuk	14	10	4	5	6	4	3	4	5	5	4	10	5	5	4	4	7
Upper Cheung Sha	8	3	2	3	5	3	3	3	3	4	4	7	5	4	3	4	4

Appendix B - 2013 Beach visitor number

Southern District

Visitor numbers during the 2013 bathing season

Beach	Daily average		Peak day	Peak month	Total
	Weekdays	Weekends & public holidays			
Big Wave Bay	418	870	3,500	27,790	138,610
Chung Hom Kok	267	707	2,300	17,200	100,580
Deep Water Bay	920	4,668	15,000	122,850	525,150
Hairpin	167	267	600	8,150	48,980
Middle Bay	239	317	780	14,500	64,730
Repulse Bay	10,838	14,806	21,000	421,480	2,972,680
Rocky Bay	-	-	-	-	-
Shek O	2,761	6,382	24,000	296,700	966,150
South Bay	248	623	2,900	27,540	90,870
St. Stephen's	167	455	1000	11,000	64,000
Stanley Main	850	2,690	16,000	78,810	355,380
Turtle Cove	65	385	1,340	7,230	41,450

Note: Information provided by the Leisure and Cultural Services Department

Sai Kung District

Visitor numbers during the 2013 bathing season

Beach	Daily average		Peak day	Peak month	Total
	Weekdays	Weekends & public holidays			
Clear Water Bay First	154	496	1,380	12,600	65,120
Clear Water Bay Second	1,991	6,416	24,000	235,700	841,720
Hap Mun Bay	398	803	2,770	41,390	129,890
Kiu Tsui	106	781	2,250	12,280	80,010
Silverstrand	431	1,251	6,400	47,750	171,160
Trio	263	1,035	3,700	30,800	126,170

Note: Information provided by the Leisure and Cultural Services Department

Tsuen Wan District

Visitor numbers during the 2013 bathing season

Beach	Daily average		Peak day	Peak month	Total
	Weekdays	Weekends & public holidays			
Anglers'	71	243	970	13,120	31,200
Approach	129	513	960	9,440	62,290
Casam	43	127	470	2,890	17,260
Gemini	9	21	60	620	3,250
Hoi Mei Wan	76	164	370	4,590	25,720
Lido	310	914	2,980	20,200	124,310
Ma Wan Tung Wan	587	2,303	5,920	48,740	281,170
Ting Kau	35	127	310	2,620	15,930

Note: Information provided by the Leisure and Cultural Services Department

Tuen Mun District

Visitor numbers during the 2013 bathing season

Beach	Daily average		Peak day	Peak month	Total
	Weekdays	Weekends & public holidays			
Butterfly	833	1,537	2,100	38,000	260,450
Cafeteria New	860	1,773	4,750	61,950	283,700
Cafeteria Old	822	1,099	2,400	38,500	223,550
Castle Peak	405	1,311	1,800	23,260	171,710
Golden	2,045	4,734	9,500	116,000	716,200
Kadoorie	606	1,009	1,850	34,900	180,660

Note: Information provided by the Leisure and Cultural Services Department

Outlying Islands

Visitor numbers during the 2013 bathing season

Beach	Daily average		Peak day	Peak month	Total
	Weekdays	Weekends & public holidays			
Cheung Chau Tung Wan	206	562	2,700	15,620	78,940
Hung Shing Yeh	179	617	1,450	14,260	78,940
Kwun Yam	79	227	800	6,290	31,150
Lo So Shing	53	180	340	3,720	23,040
Lower Cheung Sha	156	568	1,410	15,740	71,130
Pui O	283	714	1,900	19,590	103,710
Silver Mine Bay	249	802	8,610	28,320	105,280
Tong Fuk	138	288	760	10,030	45,780
Upper Cheung Sha	113	413	1,700	11,060	51,710

Note: Information provided by the Leisure and Cultural Services Department



Appendix C - Physicochemical water quality data for gazetted beaches, 2013

Southern District :

Summary of physicochemical water quality data of gazetted beaches, 2013

Beach	pH	Salinity (psu) ¹	Turbidity (NTU) ²	Temperature (°C)	Dissolved Oxygen (mg/L) (% Saturation)	
Big Wave Bay Beach	8.33 (8.14 - 8.53)	29.6 (21.3 - 32.9)	2.32 (0.72 - 6.13)	26.0 (18.6 - 31.5)	6.8 (6.1 - 7.8)	96 (85 - 107)
Chung Hom Kok Beach	8.34 (8.13 - 8.59)	29.6 (21.6 - 33.4)	4.15 (0.87 - 31.40)	25.9 (17.9 - 31.0)	6.6 (5.4 - 8.4)	94 (80 - 117)
Deep Water Bay Beach	8.31 (8.04 - 8.62)	28.7 (21.3 - 33.3)	6.08 (1.15 - 21.80)	26.2 (18.6 - 31.0)	6.6 (4.2 - 8.1)	94 (65 - 119)
Hairpin Beach [Closed]	8.40 (8.21 - 8.72)	29.3 (21.9 - 33.0)	2.20 (0.55 - 6.34)	26.4 (17.4 - 32.2)	6.7 (5.3 - 8.2)	96 (73 - 110)
Middle Bay Beach	8.33 (8.10 - 8.62)	29.5 (22.6 - 33.2)	4.59 (1.02 - 29.40)	25.8 (17.7 - 30.0)	6.6 (4.6 - 8.6)	93 (68 - 116)
Repulse Bay Beach	8.34 (8.13 - 8.67)	29.7 (22.5 - 33.4)	3.95 (0.99 - 11.70)	25.6 (17.8 - 30.0)	6.7 (4.7 - 8.2)	94 (72 - 118)
Rocky Bay Beach [Closed]	8.27 (8.08 - 8.53)	30.1 (22.7 - 32.8)	2.15 (0.84 - 5.62)	25.7 (18.4 - 31.4)	6.7 (5.5 - 8.9)	94 (81 - 108)
Shek O Beach	8.34 (8.19 - 8.64)	30.7 (26.5 - 33.1)	2.32 (0.75 - 5.31)	25.9 (18.6 - 31.8)	6.6 (5.7 - 8.1)	95 (76 - 105)
South Bay Beach	8.33 (8.12 - 8.65)	29.6 (22.1 - 33.3)	3.36 (0.97 - 9.56)	25.9 (18.2 - 30.0)	6.7 (4.7 - 8.3)	94 (72 - 116)
St. Stephen's Beach	8.30 (8.04 - 8.64)	29.6 (21.3 - 33.4)	3.02 (0.93 - 19.60)	25.9 (17.9 - 30.0)	6.6 (5.1 - 8.2)	93 (78 - 117)
Stanley Main Beach	8.38 (8.20 - 8.78)	29.0 (21.9 - 32.5)	2.37 (0.85 - 5.72)	26.5 (17.7 - 32.5)	6.6 (4.2 - 8.0)	95 (63 - 111)
Turtle Cove Beach	8.37 (8.19 - 8.78)	29.5 (21.4 - 33.3)	4.30 (0.93 - 15.10)	26.3 (17.5 - 31.8)	6.6 (5.4 - 8.3)	95 (70 - 112)

1. Practical Salinity Unit ; 2. Nephelometric Turbidity Unit
Note: Data presented are arithmetic means; figures in brackets are ranges.

Sai Kung District :

Summary of physicochemical water quality data of gazetted beaches, 2013

Beach	pH	Salinity (psu) ¹	Turbidity (NTU) ²	Temperature (°C)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% Saturation)
Clear Water Bay First Beach	8.36 (7.98 - 8.65)	29.0 (22.4 - 32.3)	4.90 (1.39 - 21.70)	26.8 (18.7 - 31.5)	6.8 (5.2 - 8.4)	97 (74 - 114)
Clear Water Bay Second Beach	8.35 (7.93 - 8.65)	29.9 (24.2 - 32.5)	5.72 (1.90 - 20.60)	27.0 (18.8 - 31.4)	6.6 (5.1 - 7.6)	96 (73 - 111)
Hap Mun Bay Beach	8.37 (8.04 - 8.65)	30.3 (26.7 - 32.5)	2.35 (0.46 - 5.88)	27.2 (19.1 - 31.7)	6.7 (5.6 - 9.0)	98 (86 - 113)
Kiu Tsui Beach	8.37 (7.99 - 8.74)	29.4 (24.1 - 32.3)	2.19 (0.76 - 5.74)	27.3 (19.1 - 32.7)	7.0 (5.5 - 9.9)	100 (88 - 117)
Silverstrand Beach	8.37 (7.94 - 8.71)	28.6 (24.1 - 31.6)	3.49 (1.47 - 8.32)	26.6 (18.5 - 31.2)	6.7 (5.4 - 8.4)	95 (67 - 113)
Trio Beach	8.35 (8.09 - 8.65)	28.1 (19.4 - 32.1)	2.30 (0.96 - 5.77)	27.4 (19.2 - 32.2)	6.8 (5.9 - 8.7)	99 (90 - 116)

1. Practical Salinity Unit ; 2. Nephelometric Turbidity Unit

Note: Data presented are arithmetic means; figures in brackets are ranges.

Tsuen Wan District :

Summary of physicochemical water quality data of gazetted beaches, 2013

Beach	pH	Salinity (psu) ¹	Turbidity (NTU) ²	Temperature (°C)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% Saturation)
Anglers' Beach [Closed]	8.18 (8.00 - 8.42)	26.8 (13.3 - 31.5)	4.65 (1.67 - 10.50)	25.8 (19.4 - 30.8)	6.3 (4.9 - 7.6)	90 (72 - 115)
Approach Beach	8.17 (7.91 - 8.39)	25.5 (16.2 - 31.3)	3.97 (1.67 - 8.18)	25.8 (19.3 - 30.0)	6.5 (5.0 - 7.9)	90 (64 - 105)
Casam Beach	8.18 (7.97 - 8.38)	26.1 (18.0 - 31.5)	3.88 (1.32 - 14.20)	26.1 (19.5 - 30.7)	6.4 (5.1 - 7.5)	92 (68 - 105)
Gemini Beaches [Closed]	8.18 (7.91 - 8.42)	27.0 (15.8 - 31.7)	4.00 (1.31 - 8.91)	25.9 (19.4 - 30.8)	6.3 (4.7 - 7.4)	90 (68 - 108)
Hoi Mei Wan Beach	8.17 (7.96 - 8.40)	25.8 (18.3 - 31.5)	3.84 (1.29 - 10.20)	26.1 (19.3 - 30.8)	6.3 (4.5 - 7.5)	90 (66 - 103)
Lido Beach	8.17 (8.01 - 8.40)	26.1 (18.0 - 31.5)	4.10 (1.66 - 10.50)	26.0 (19.5 - 30.6)	6.4 (5.4 - 7.4)	91 (71 - 105)
Ma Wan Tung Wan Beach	8.16 (7.96 - 8.37)	27.4 (19.1 - 31.6)	5.82 (2.09 - 15.30)	25.8 (19.2 - 29.5)	6.1 (4.4 - 7.7)	86 (63 - 104)
Ting Kau Beach [Closed]	8.20 (7.99 - 8.43)	25.4 (16.8 - 31.4)	3.93 (1.12 - 10.90)	26.0 (19.3 - 30.4)	6.4 (5.2 - 7.5)	91 (68 - 112)

1. Practical Salinity Unit ; 2. Nephelometric Turbidity Unit

Note: Data presented are arithmetic means; figures in brackets are ranges.

Tuen Mun District :

Summary of physicochemical water quality data of gazetted beaches, 2013

Beach	pH	Salinity (psu) ¹	Turbidity (NTU) ²	Temperature (°C)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% Saturation)
Butterfly Beach	8.18 (7.90 - 8.44)	22.6 (9.3 - 30.8)	6.95 (3.05 - 25.40)	26.8 (19.9 - 30.7)	6.4 (4.6 - 8.1)	90 (66 - 114)
Cafeteria New Beach	8.18 (7.90 - 8.48)	22.6 (8.2 - 30.8)	11.1 (3.30 - 23.80)	26.5 (19.7 - 30.6)	6.4 (5.1 - 8.1)	89 (71 - 101)
Cafeteria Old Beach	8.18 (7.93 - 8.41)	22.4 (7.8 - 30.7)	8.89 (3.28 - 16.70)	26.5 (19.8 - 30.3)	6.4 (5.2 - 8.3)	88 (73 - 104)
Castle Peak Beach	8.20 (7.92 - 8.52)	21.9 (8.1 - 30.7)	5.93 (2.79 - 16.20)	26.8 (20.1 - 30.5)	6.7 (4.9 - 8.2)	93 (69 - 113)
Golden Beach	8.18 (7.90 - 8.44)	22.8 (8.2 - 30.8)	14.02 (5.56 - 37.10)	26.4 (19.6 - 30.3)	6.4 (5.2 - 7.5)	90 (73 - 102)
Kadoorie Beach	8.19 (8.00 - 8.45)	22.4 (8.1 - 30.7)	6.61 (2.71 - 20.70)	26.7 (20.2 - 30.5)	6.3 (5.0 - 8.1)	89 (62 - 104)

1. Practical Salinity Unit ; 2. Nephelometric Turbidity Unit
Note: Data presented are arithmetic means; figures in brackets are ranges.

Outlying Islands :

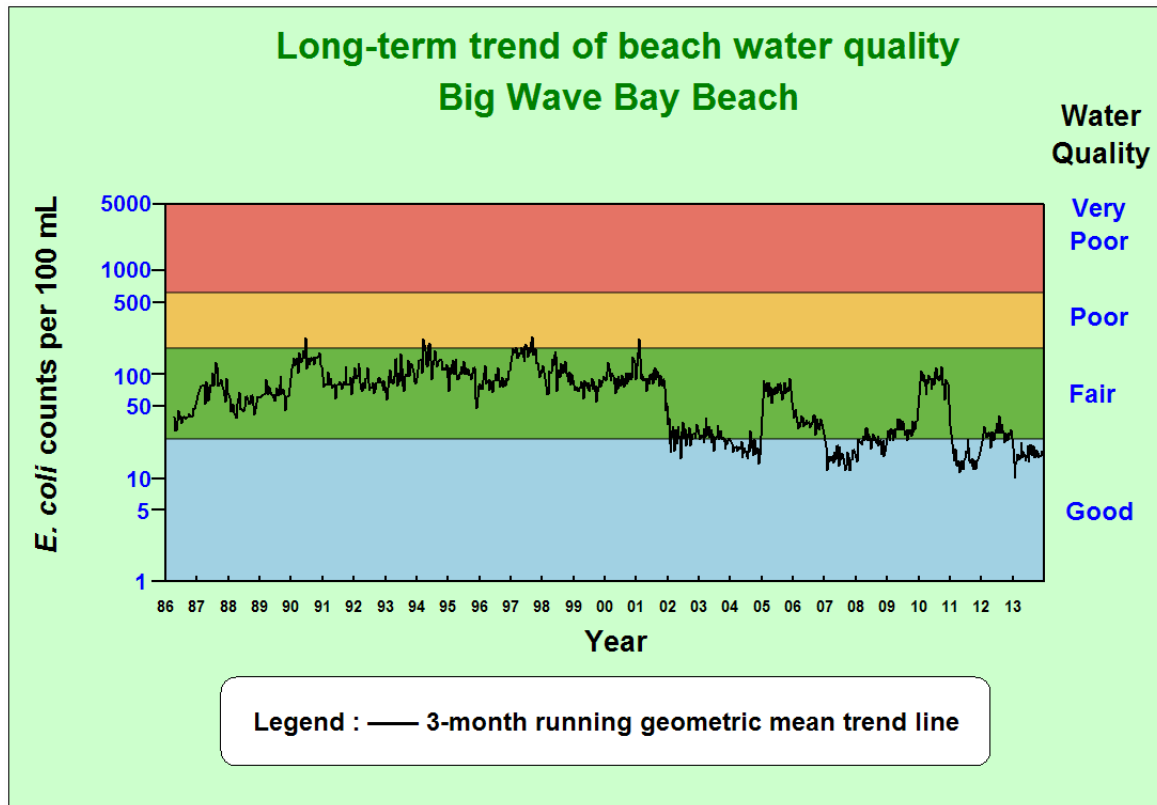
Summary of physicochemical water quality data of gazetted beaches, 2013

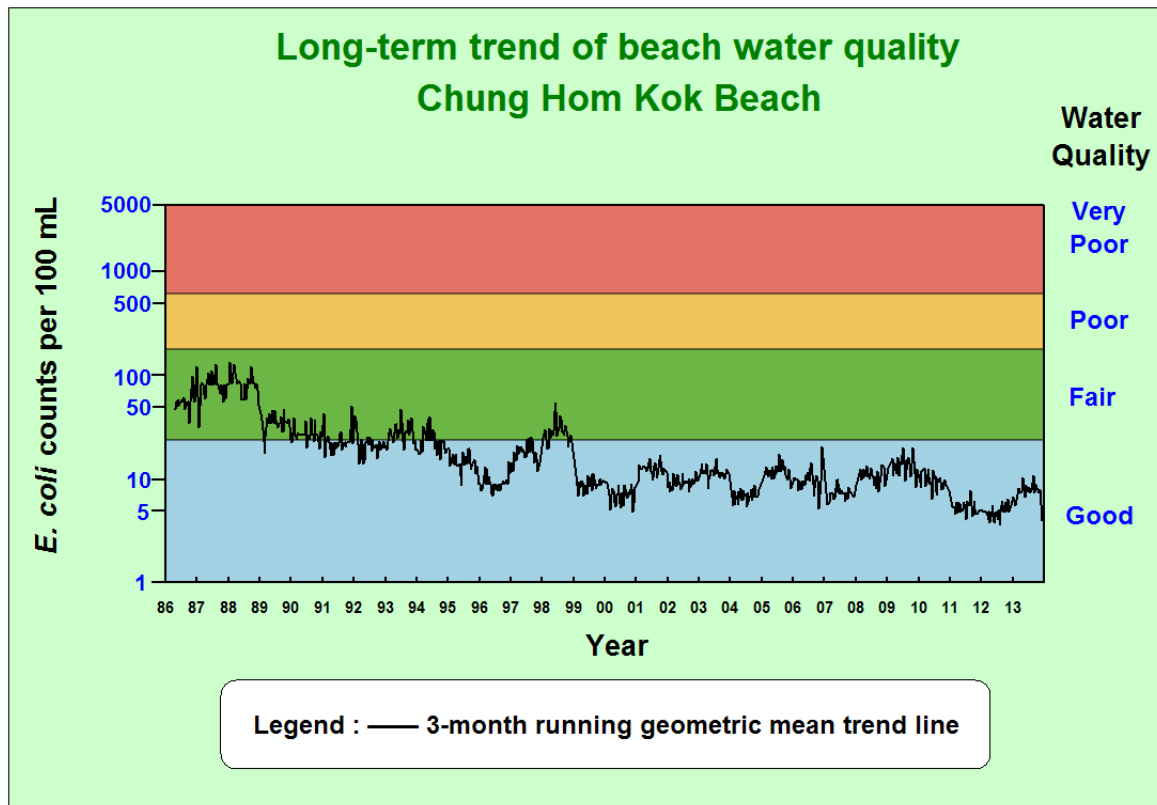
Beach	pH	Salinity (psu) ¹	Turbidity (NTU) ²	Temperature (°C)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% Saturation)
Cheung Chau Tung Wan Beach	8.29 (7.97 - 8.73)	28.0 (21.2 - 32.0)	3.81 (1.31 - 12.10)	26.0 (19.0 - 30.4)	6.8 (5.6 - 8.4)	96 (77 - 119)
Hung Shing Yeh Beach, Lamma	8.25 (8.02 - 8.64)	28.1 (14.0 - 33.1)	5.65 (1.94 - 15.20)	25.5 (19.3 - 30.4)	6.8 (5.5 - 8.0)	95 (83 - 121)
Kwun Yam Beach, Cheung Chau	8.30 (7.97 - 8.70)	27.5 (20.7 - 32.1)	3.91 (1.01 - 11.20)	25.9 (19.0 - 30.3)	6.8 (5.5 - 8.3)	95 (81 - 117)
Lo So Shing Beach, Lamma	8.26 (8.03 - 8.63)	28.5 (15.2 - 33.0)	3.64 (0.91 - 10.60)	26.0 (19.8 - 30.7)	6.7 (4.9 - 8.2)	95 (72 - 119)
Lower Cheung Sha Beach, Lantau	8.32 (8.10 - 8.73)	27.1 (17.9 - 32.0)	10.58 (1.87 - 34.10)	26.9 (18.3 - 31.6)	6.7 (5.7 - 7.8)	95 (84 - 104)
Pui O Beach, Lantau	8.32 (8.12 - 8.69)	27.0 (17.2 - 32.0)	15.18 (3.32 - 41.20)	27.4 (18.3 - 32.5)	6.6 (5.6 - 7.9)	95 (83 - 103)
Silver Mine Bay Beach, Lantau	8.27 (8.01 - 8.62)	23.4 (10.3 - 31.1)	7.17 (1.50 - 25.30)	27.4 (19.0 - 33.1)	6.9 (5.0 - 8.3)	97 (73 - 112)
Tong Fuk Beach, Lantau	8.31 (8.12 - 8.68)	27.4 (18.7 - 31.9)	6.72 (0.85 - 22.40)	26.7 (18.0 - 31.6)	6.8 (5.6 - 8.0)	96 (85 - 105)
Upper Cheung Sha Beach, Lantau	8.32 (8.11 - 8.67)	26.8 (18.7 - 31.8)	8.41 (1.26 - 22.10)	27.4 (18.3 - 31.5)	6.7 (5.8 - 7.4)	95 (84 - 105)

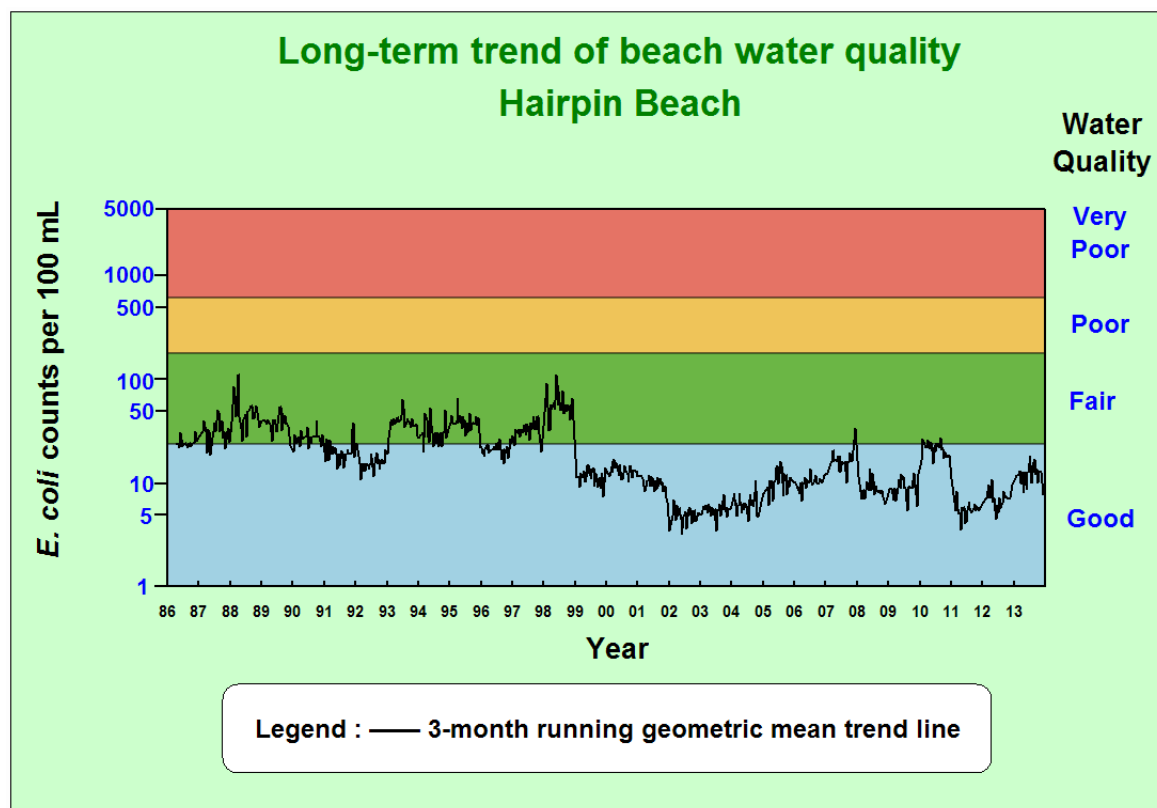
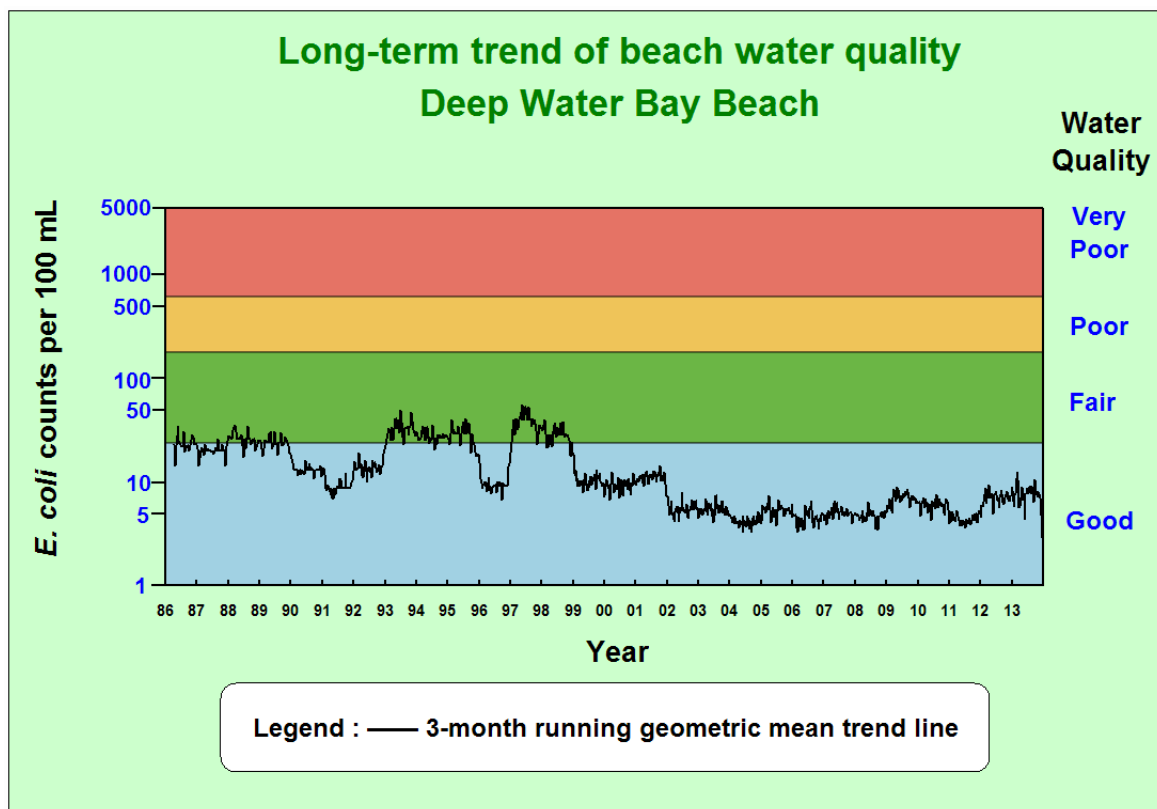
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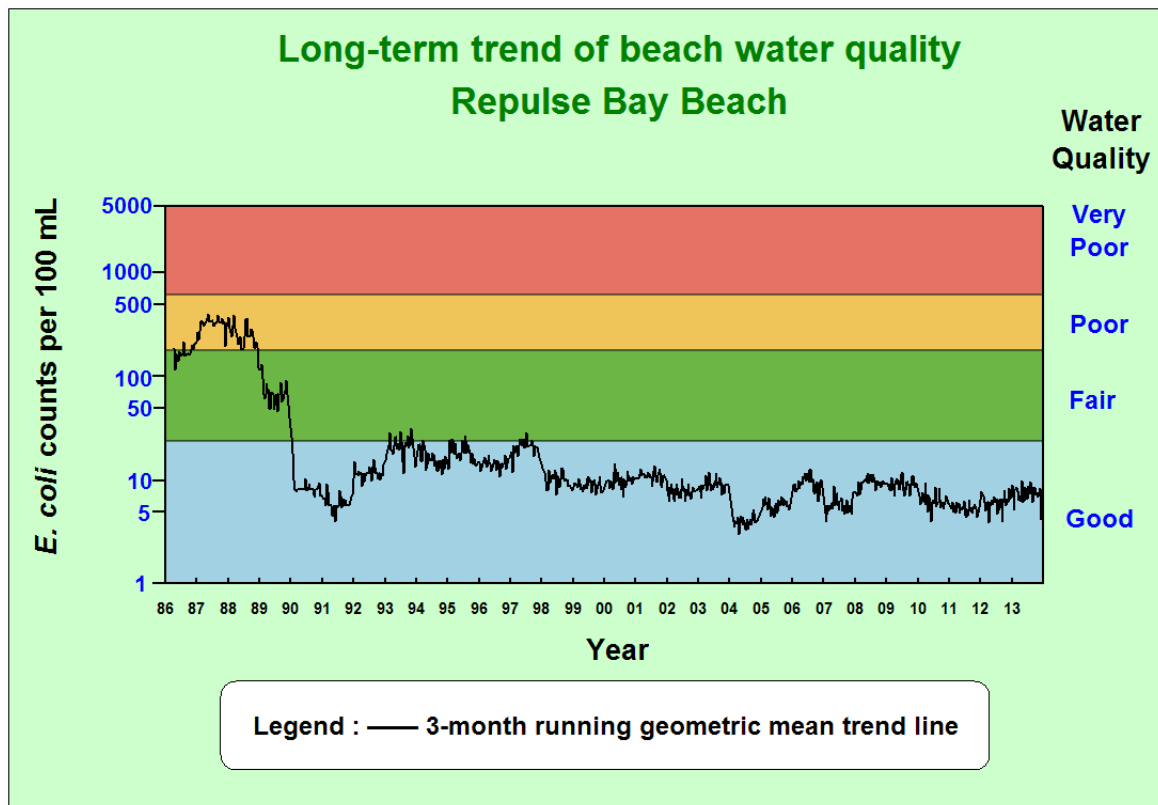
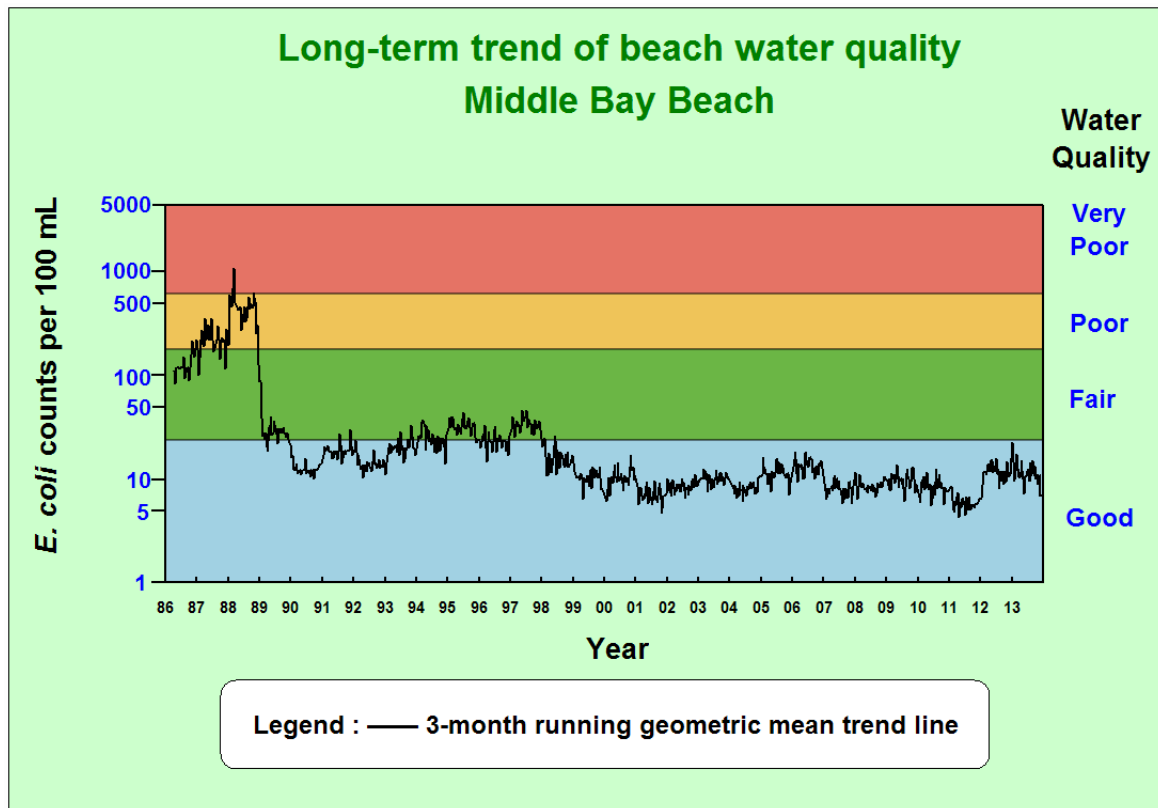
Appendix D - Long-term trend of beach water quality (1986 - 2013)

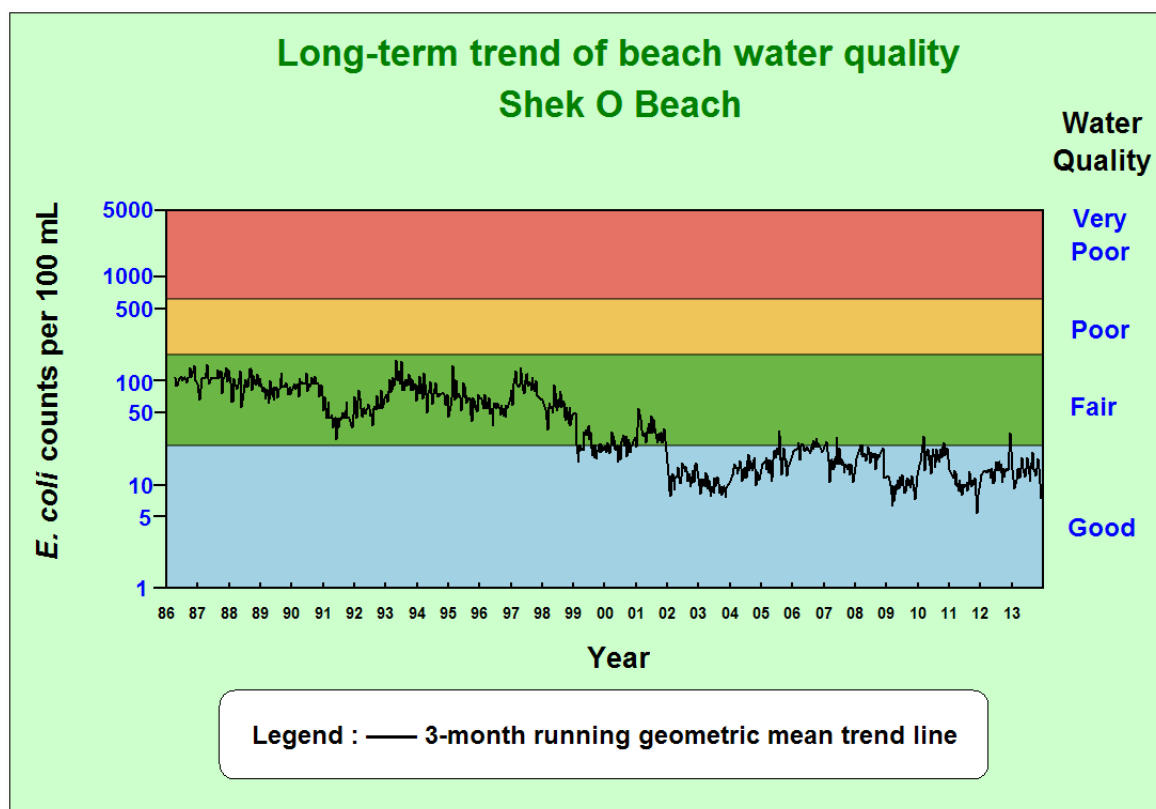
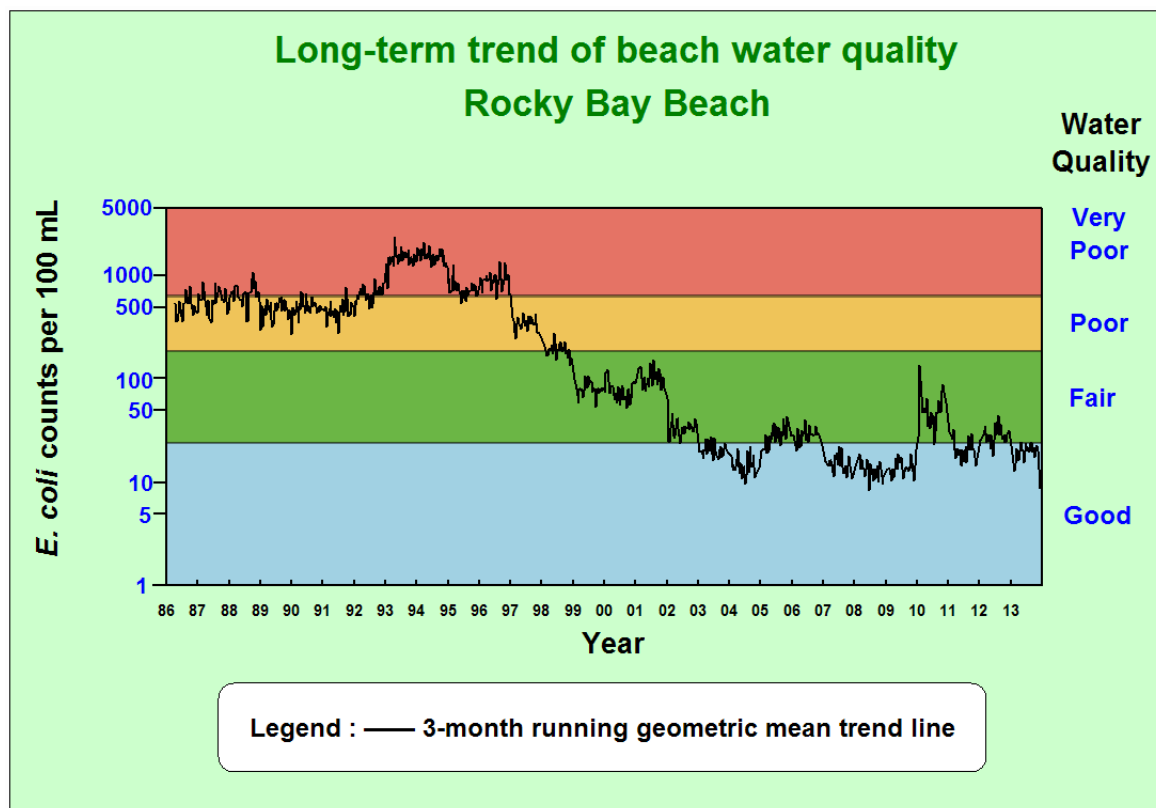
Southern District

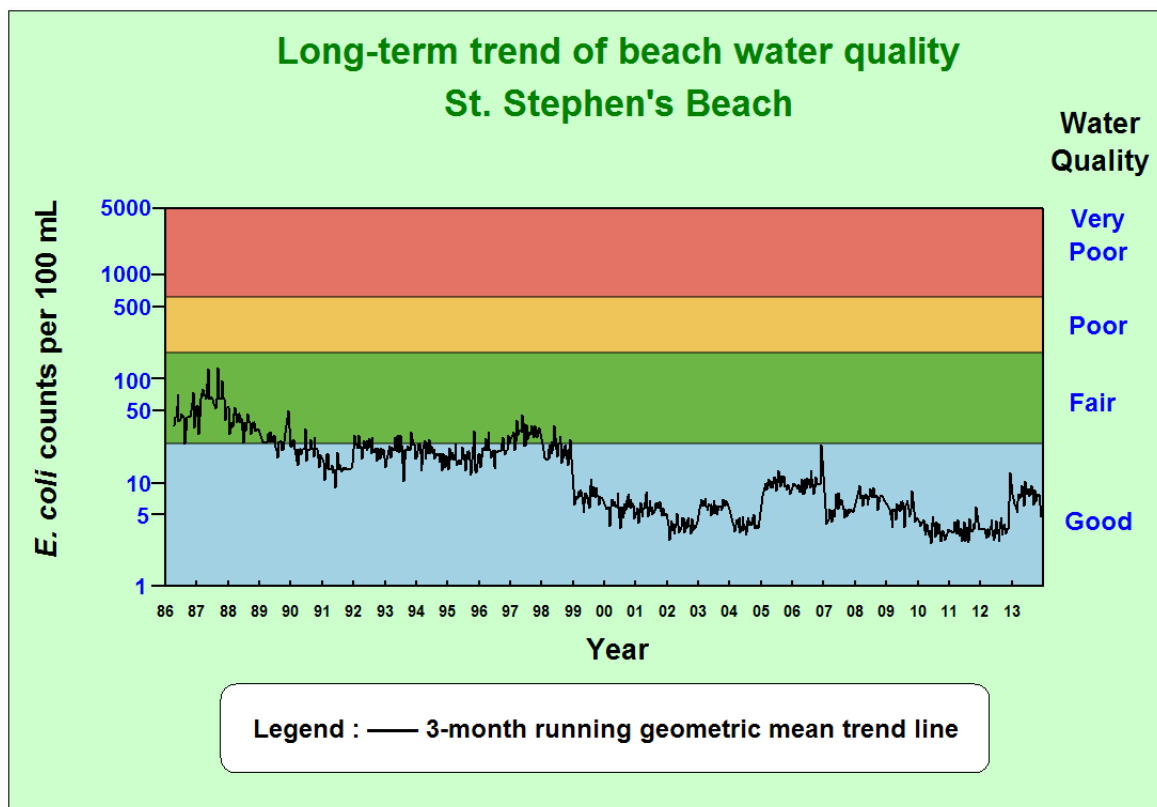
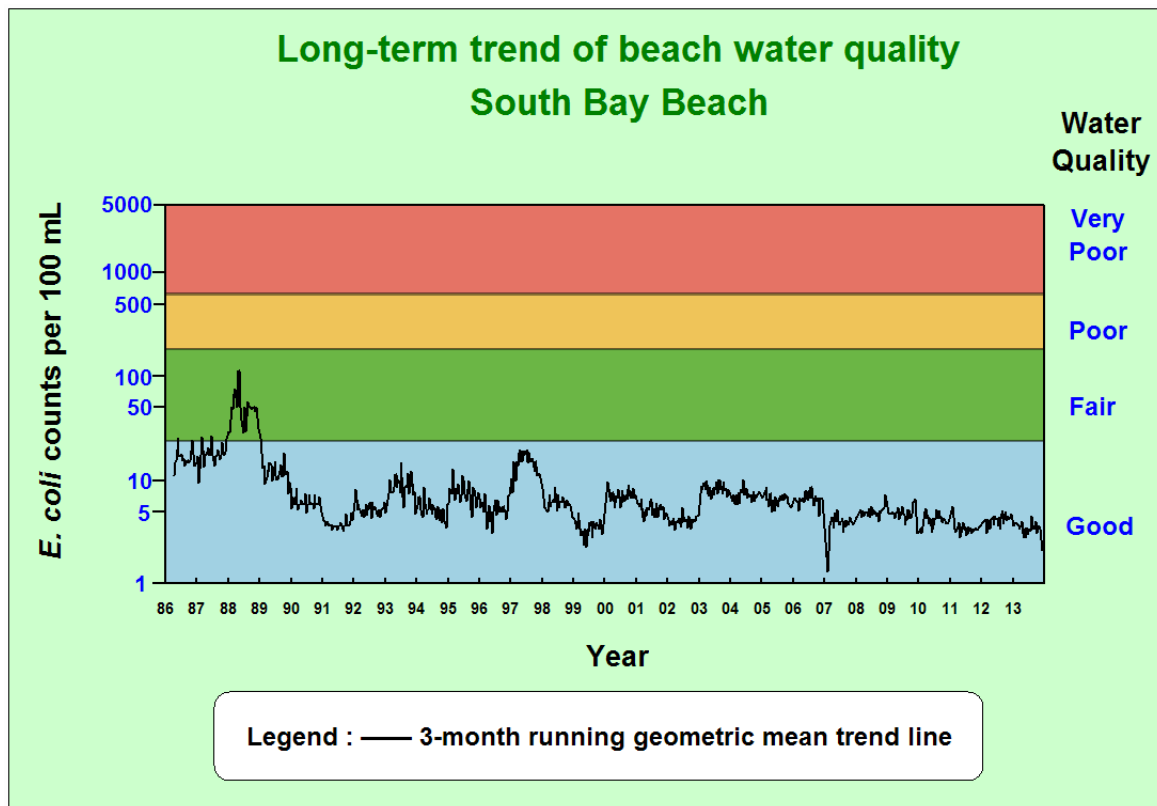


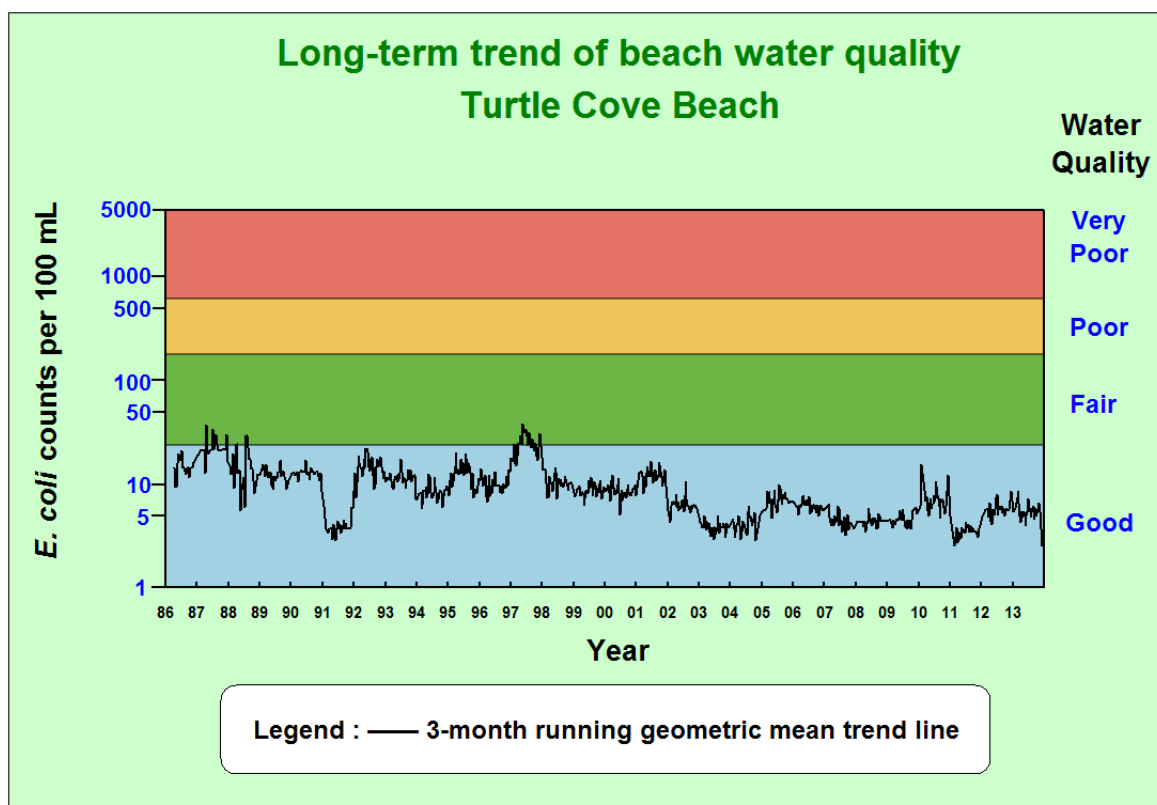
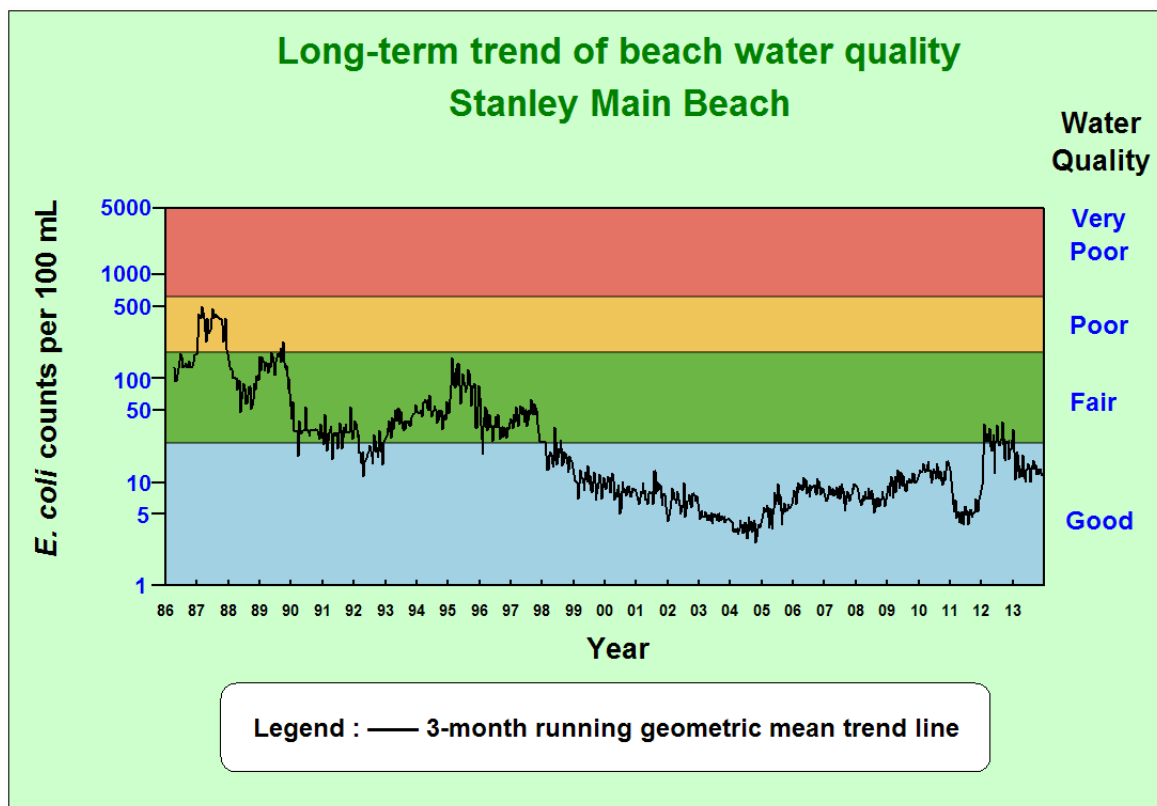




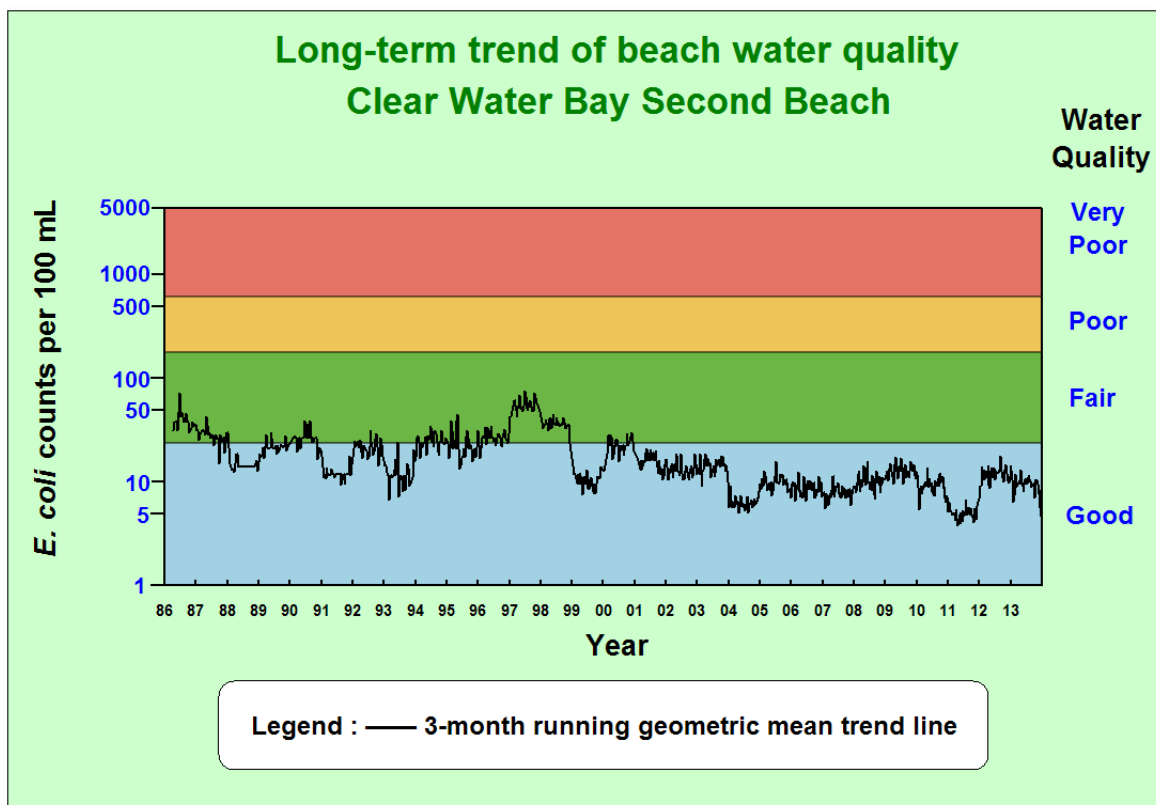
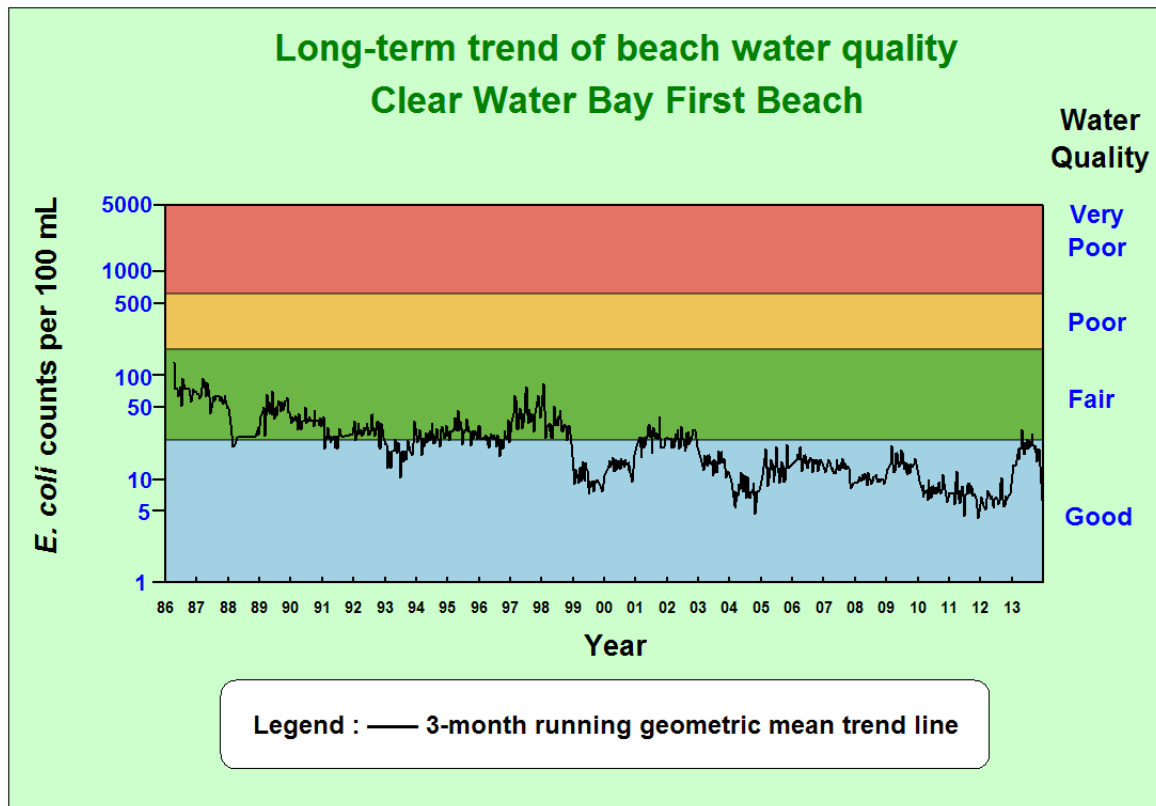


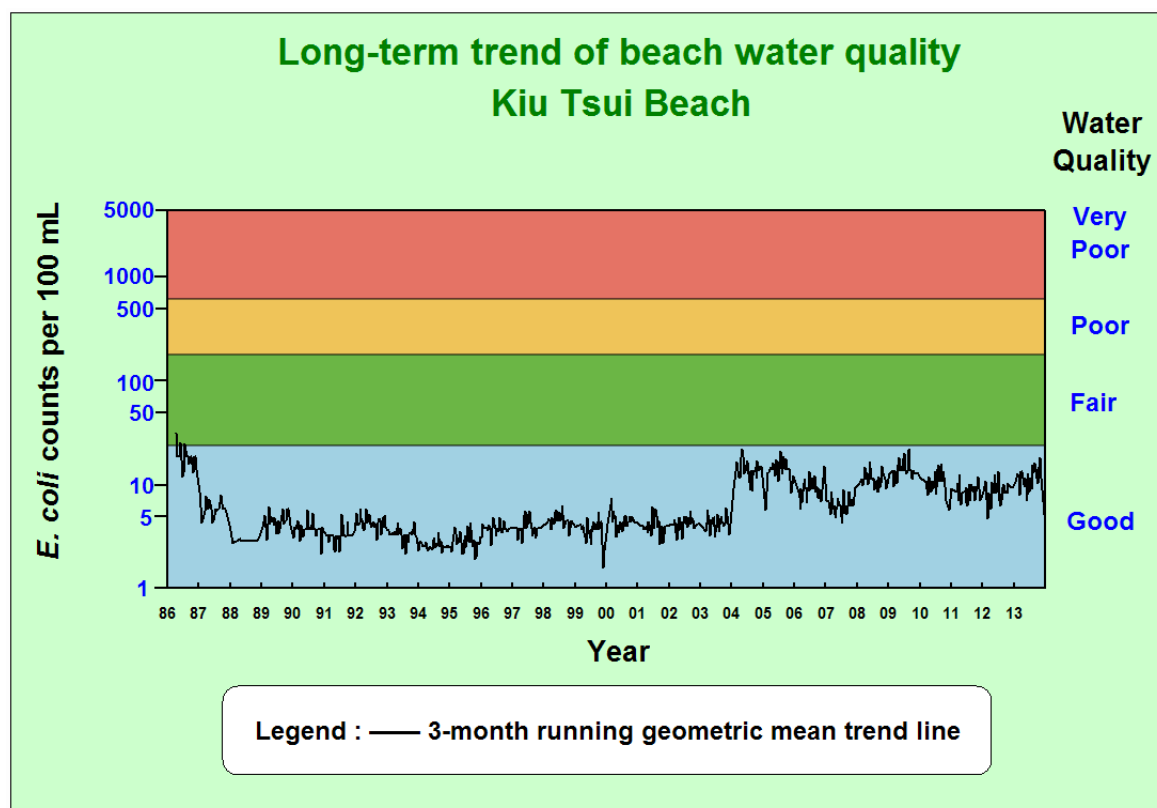
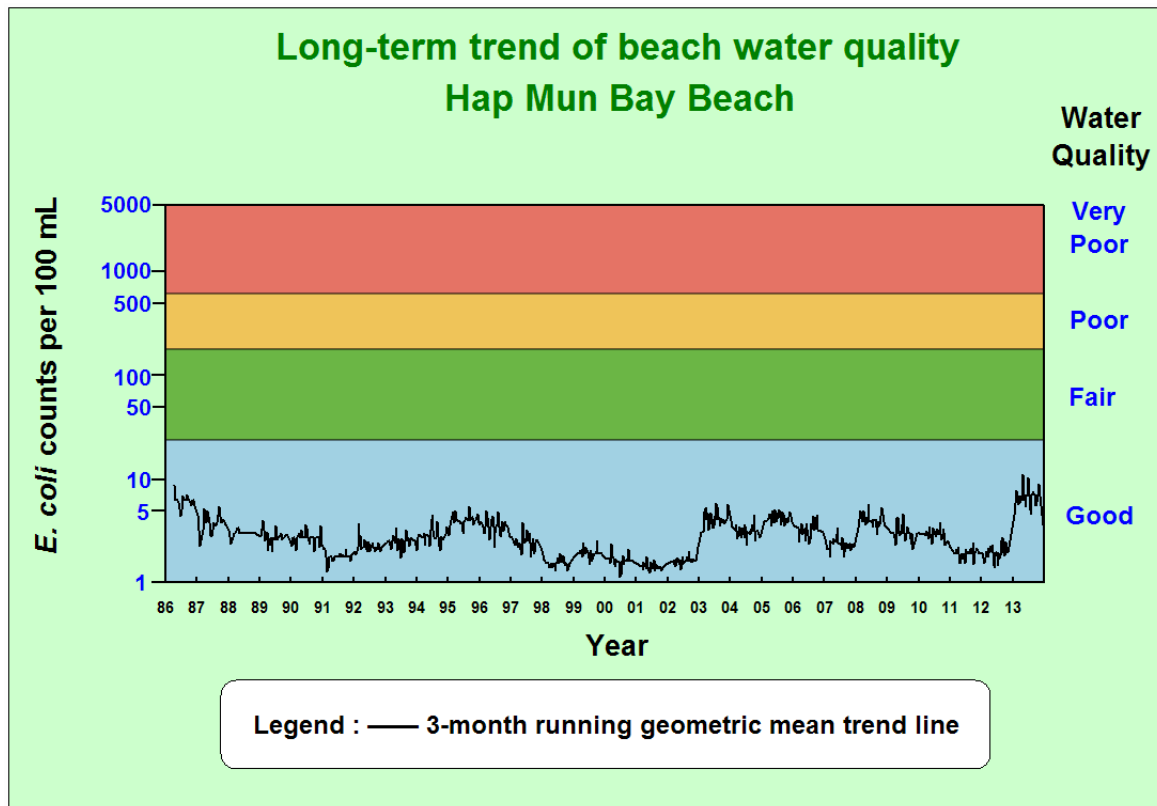


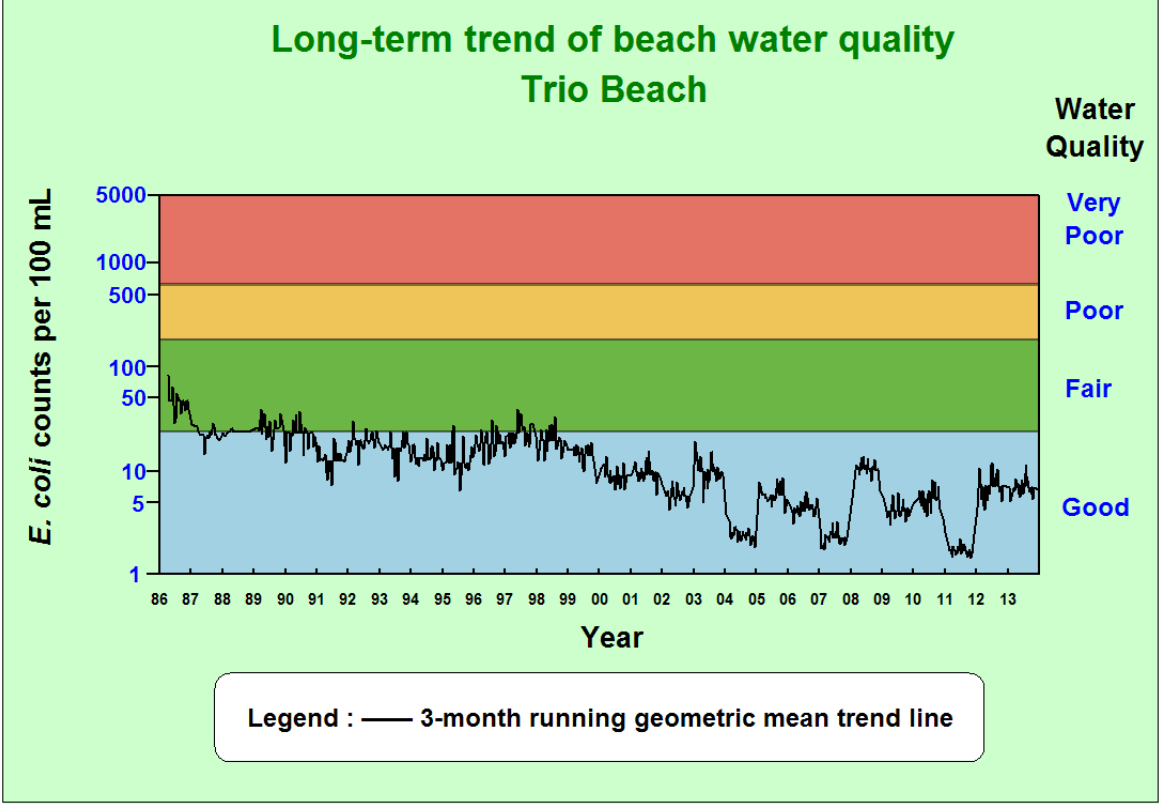
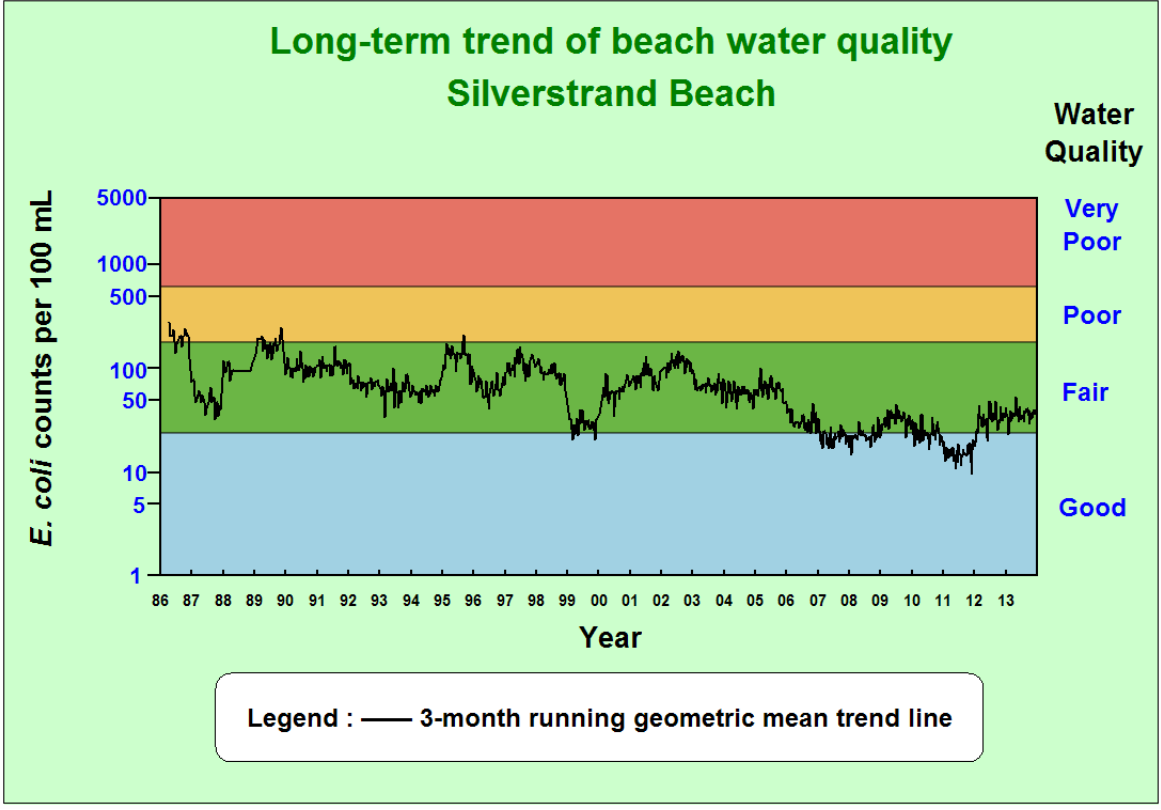




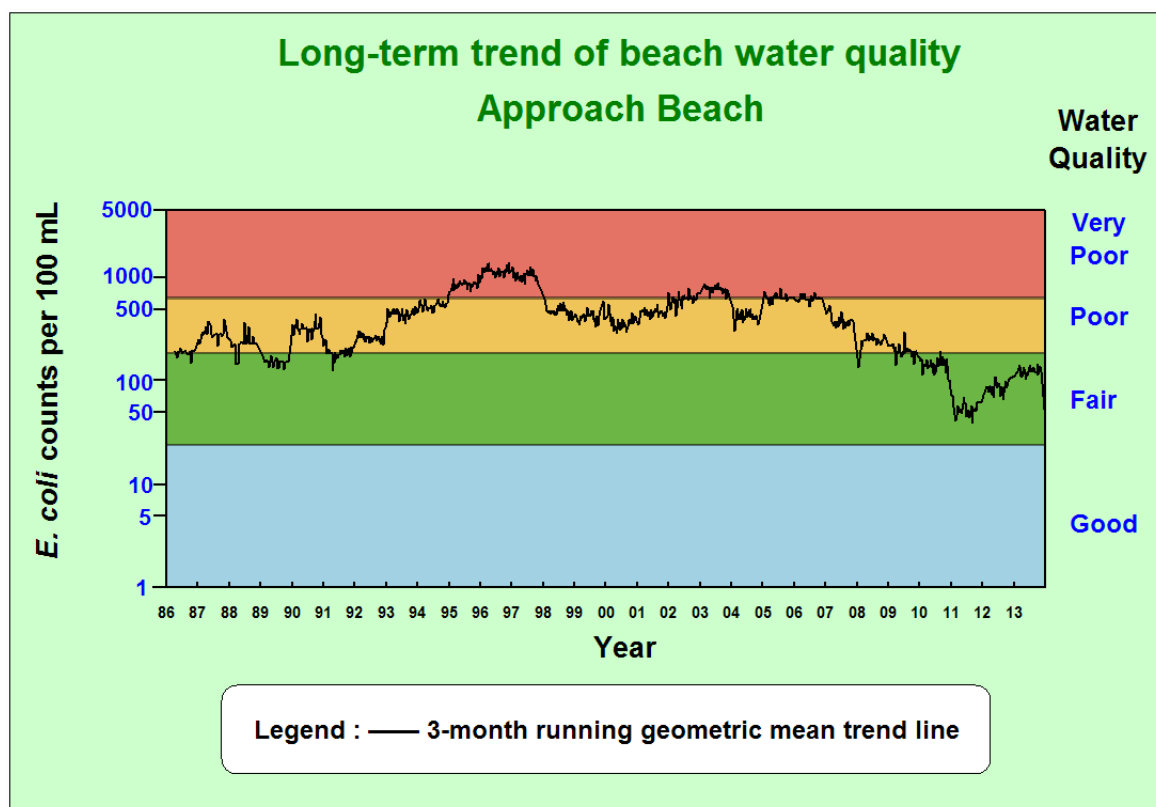
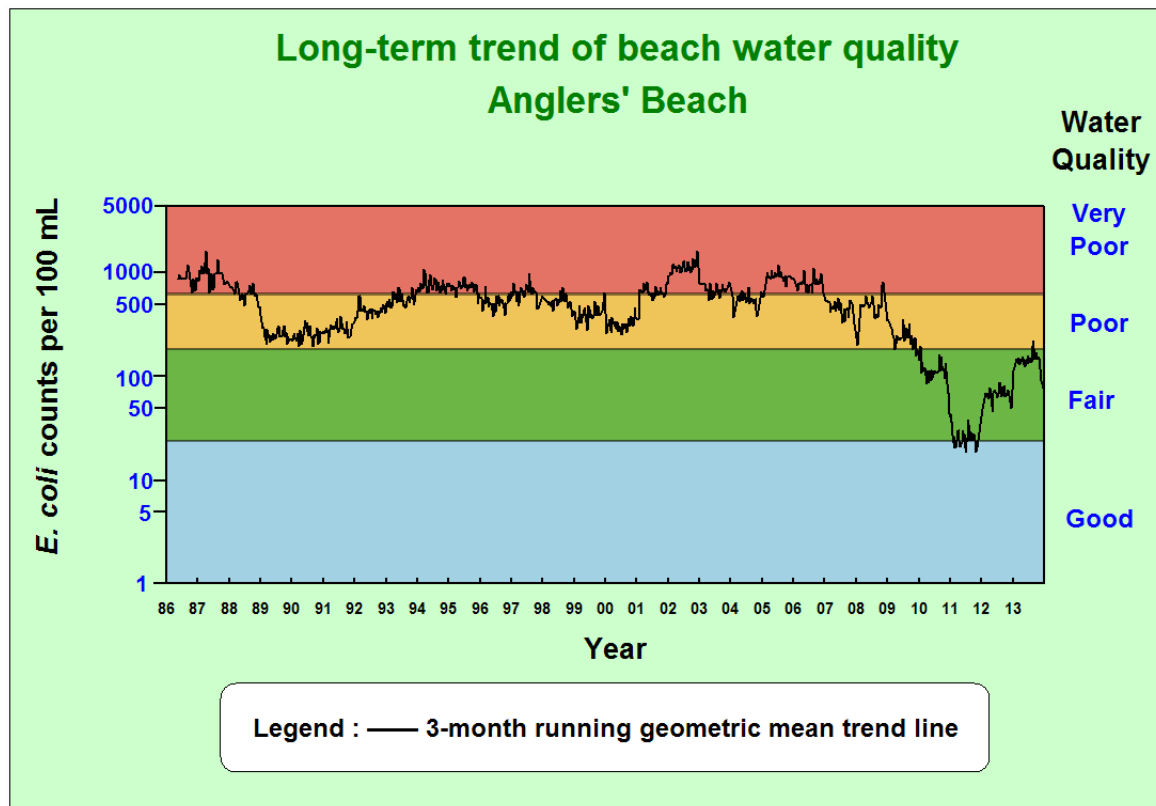
Sai Kung District

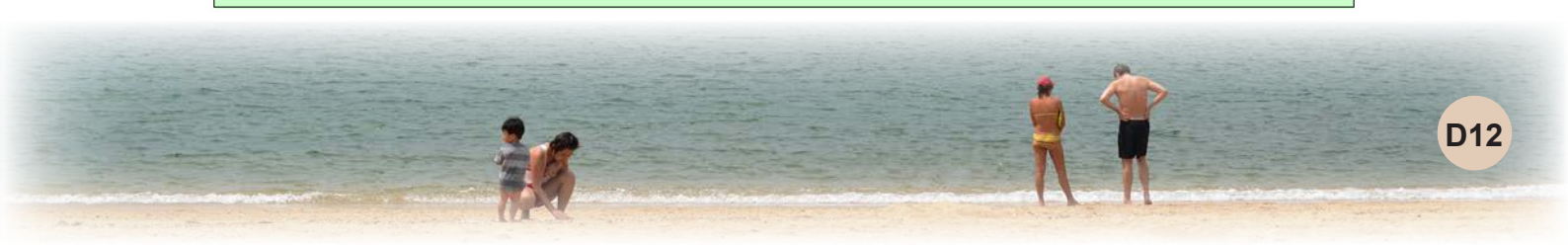
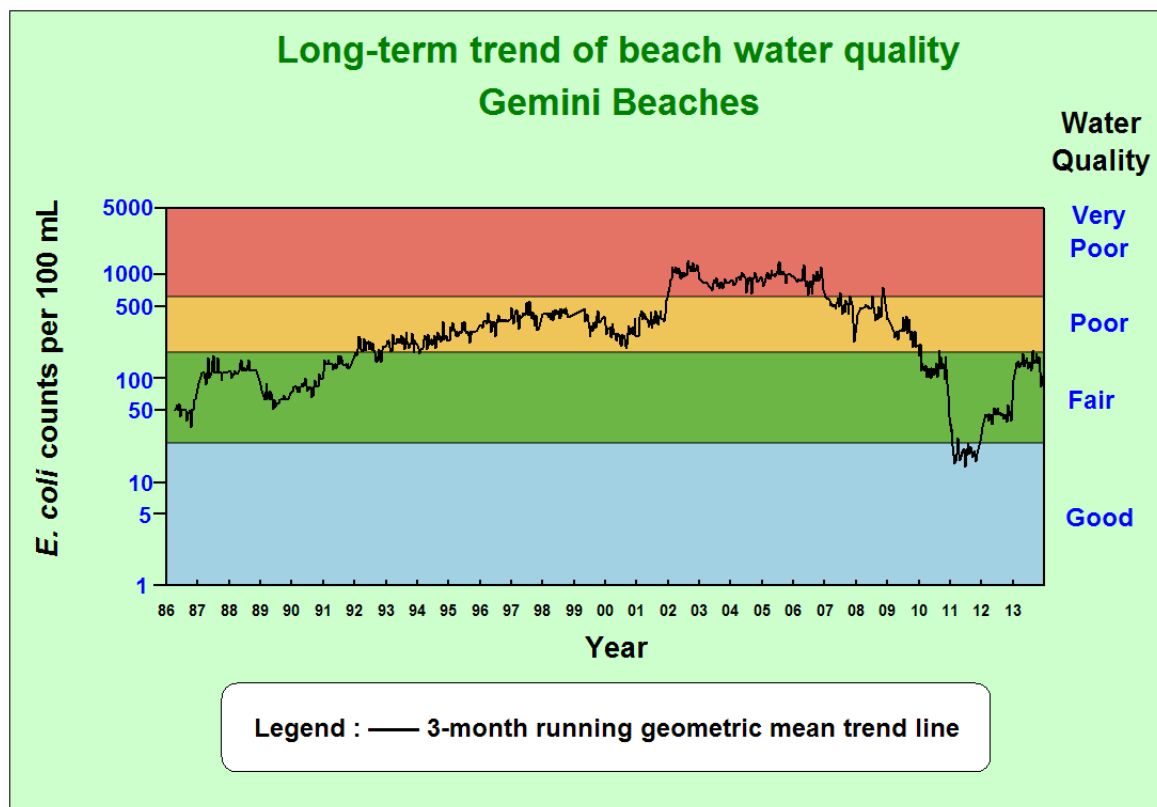
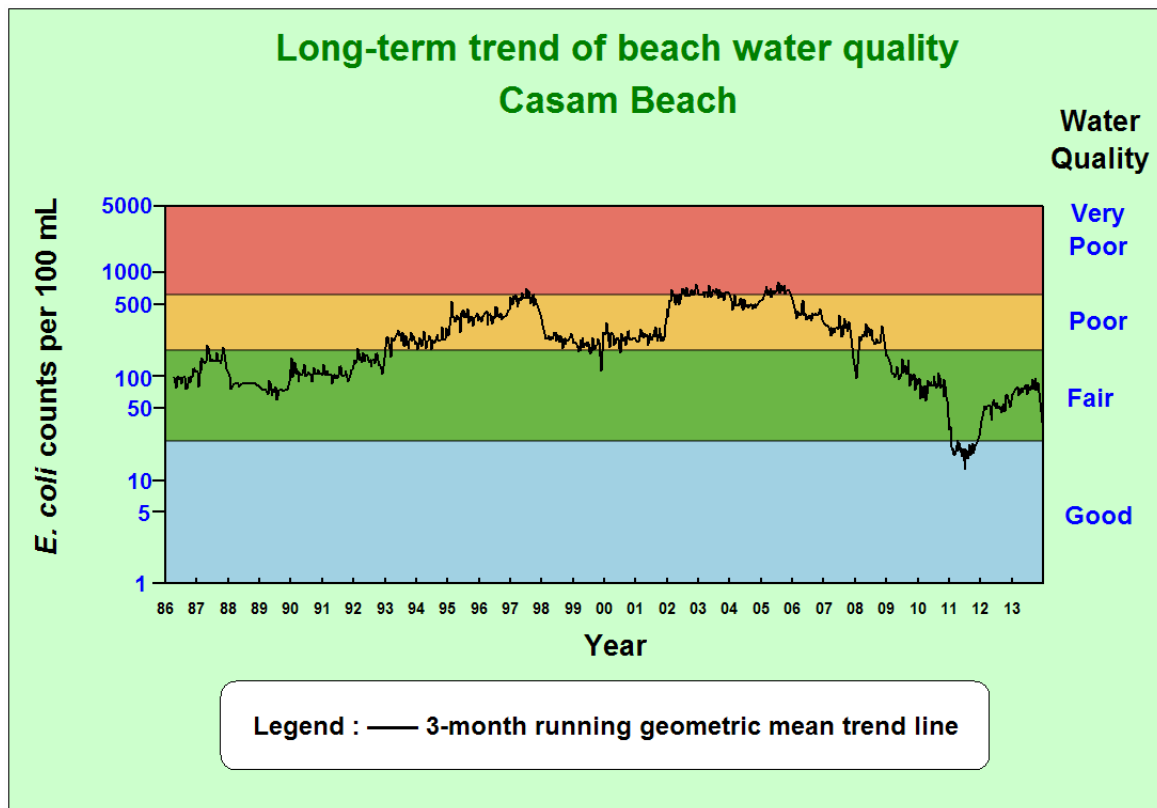


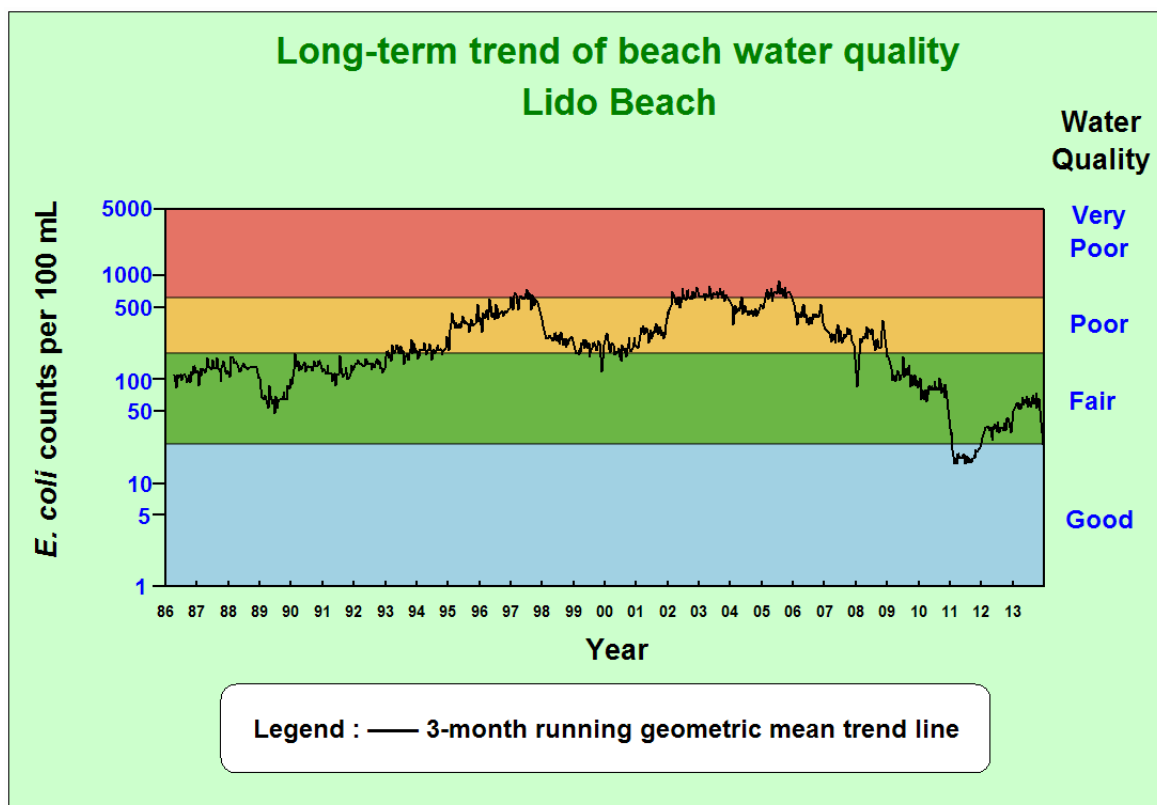
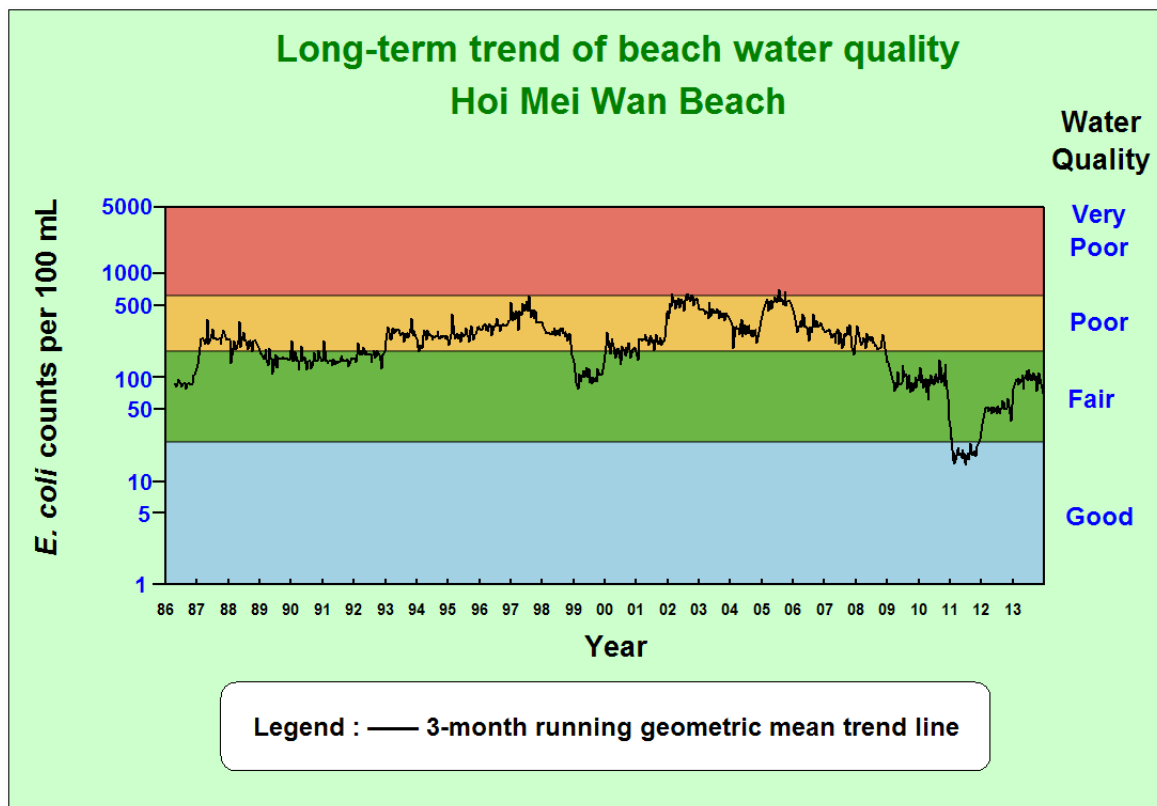


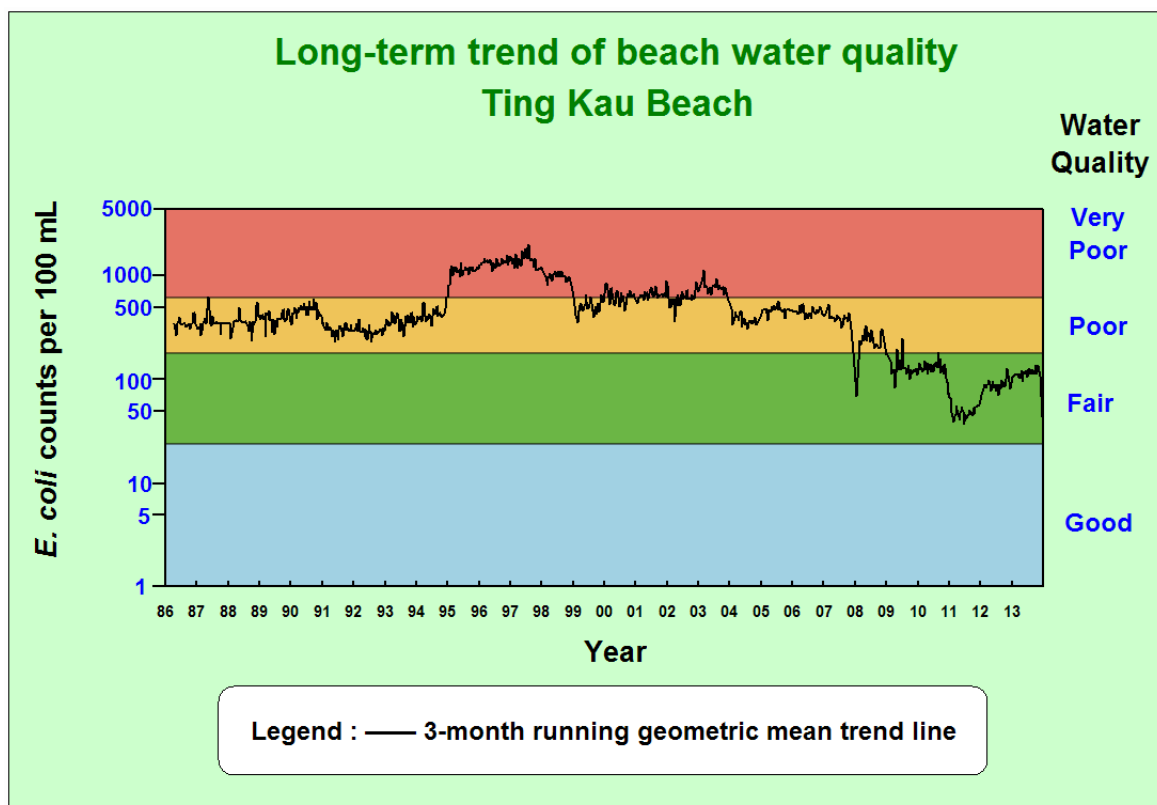
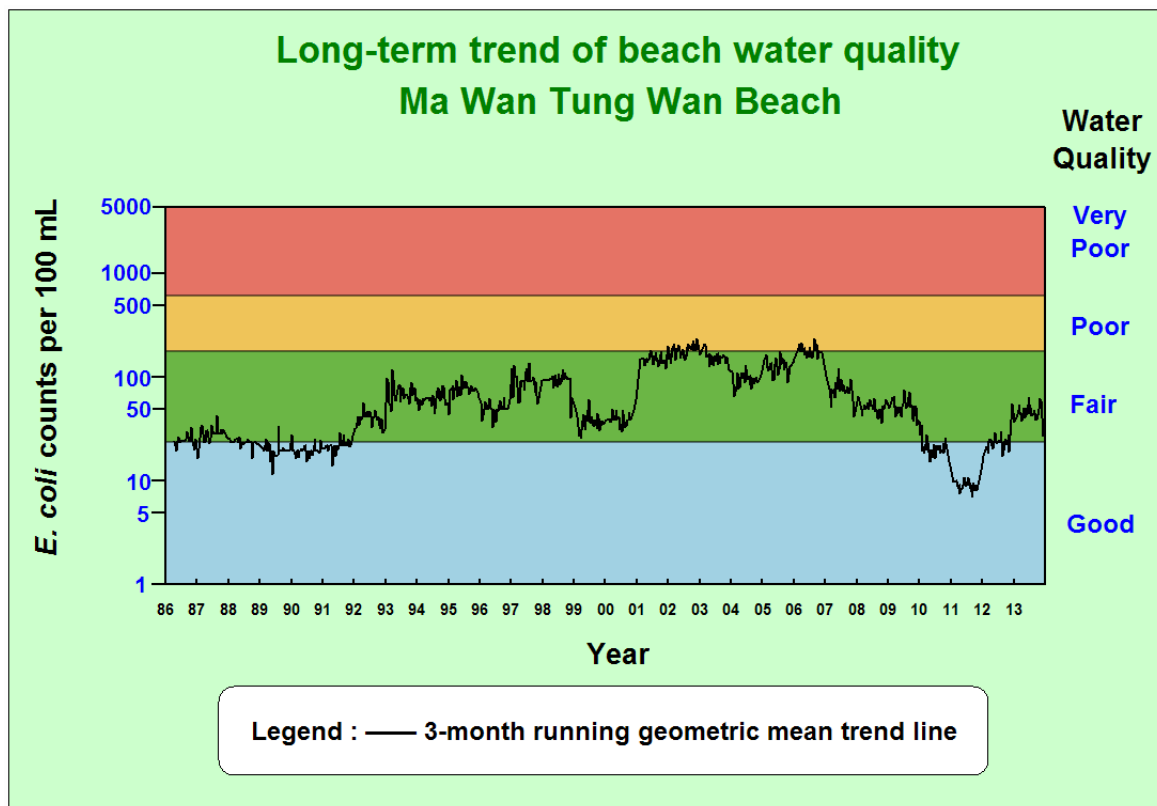


Tsuen Wan District

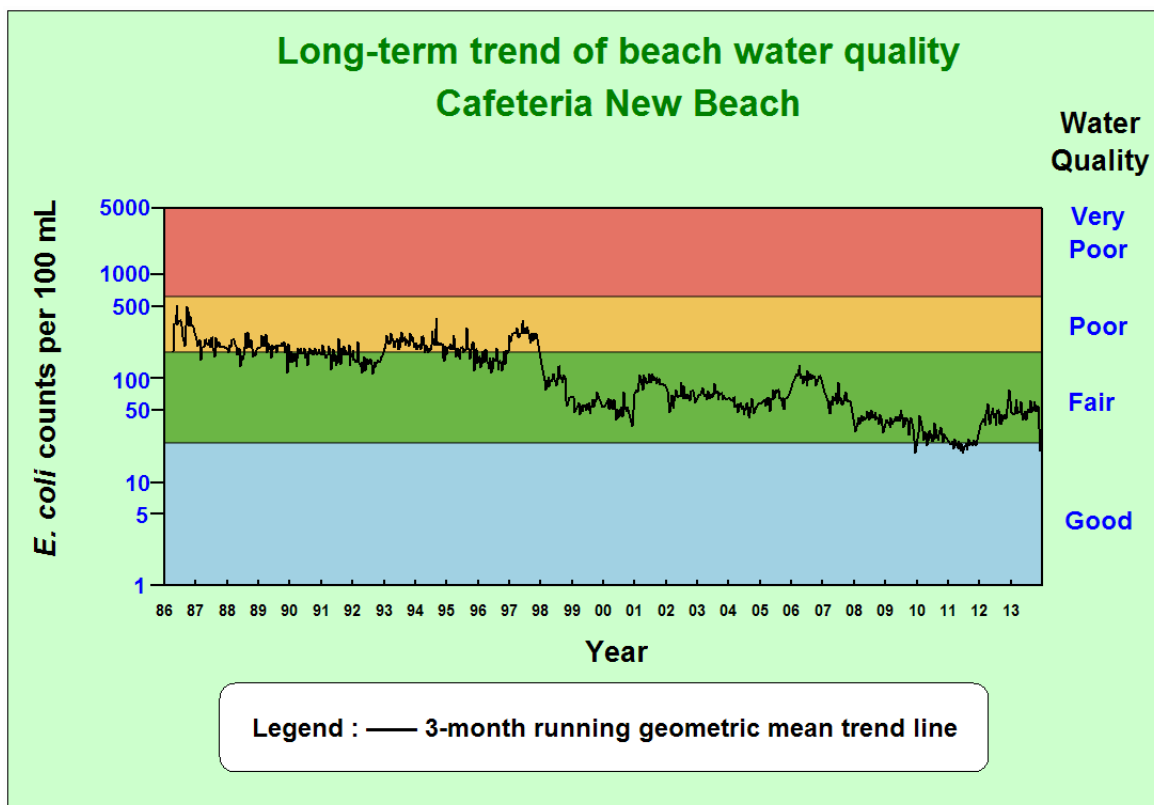
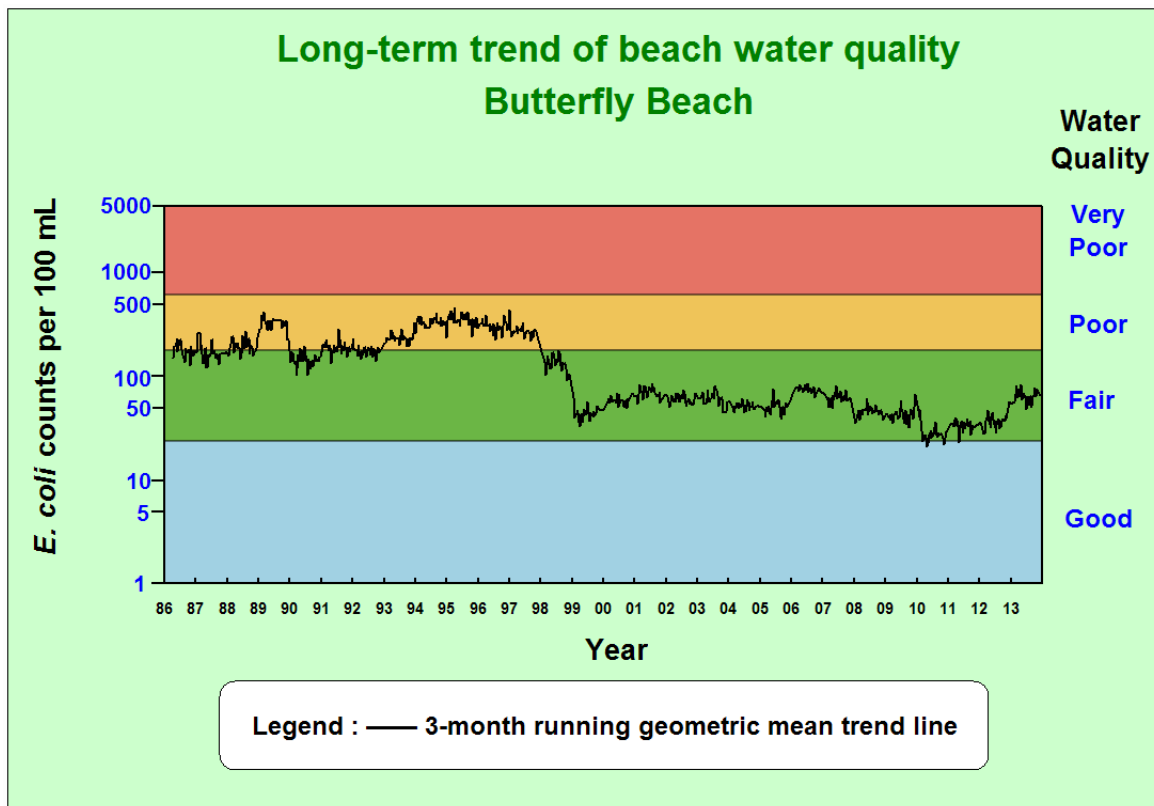


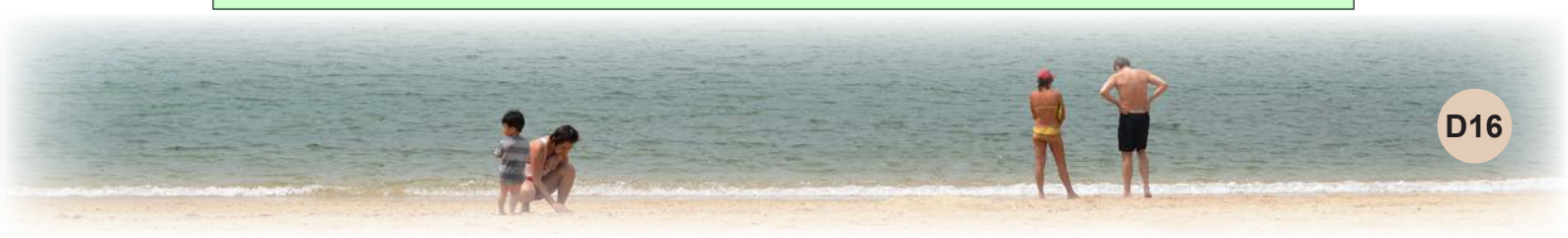
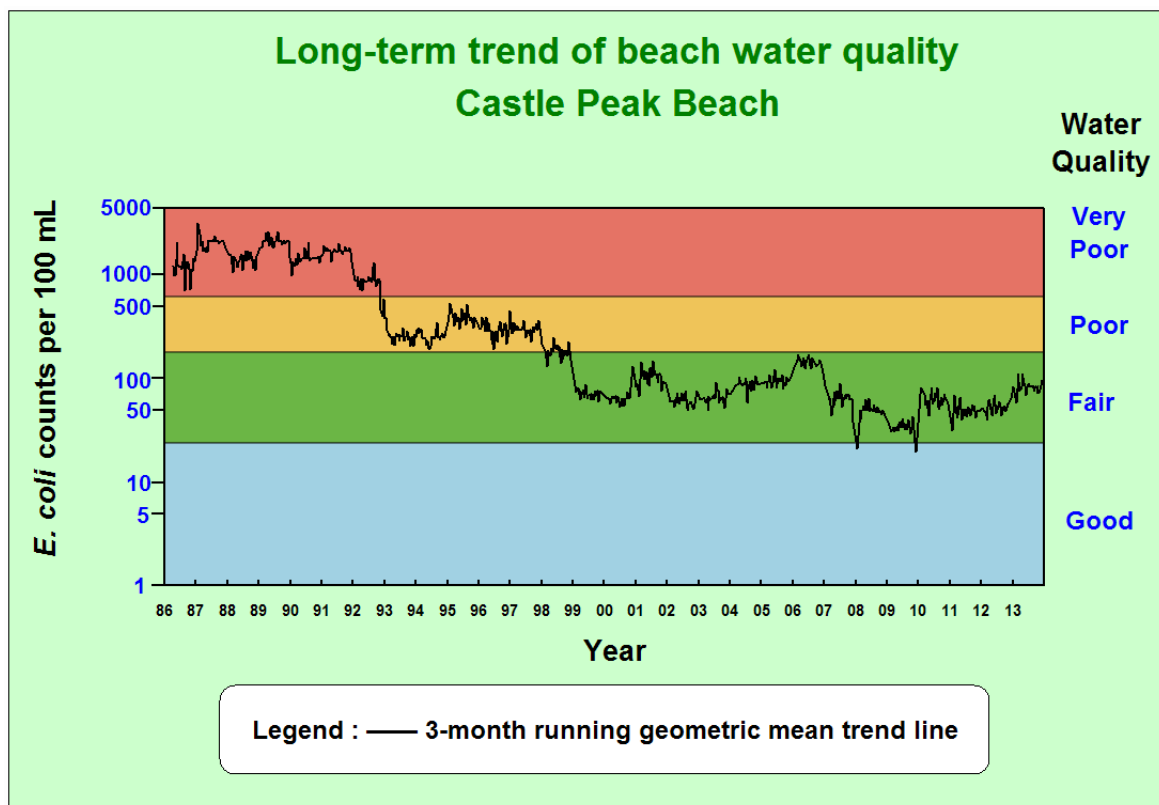
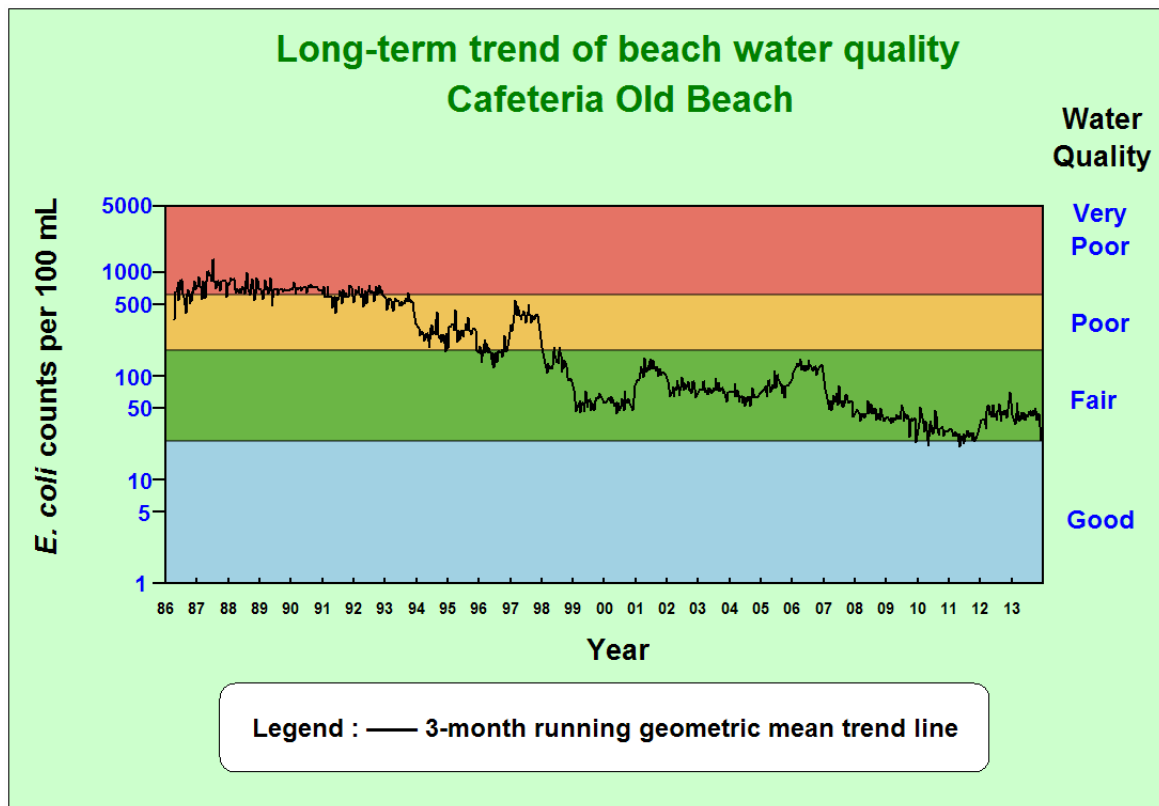


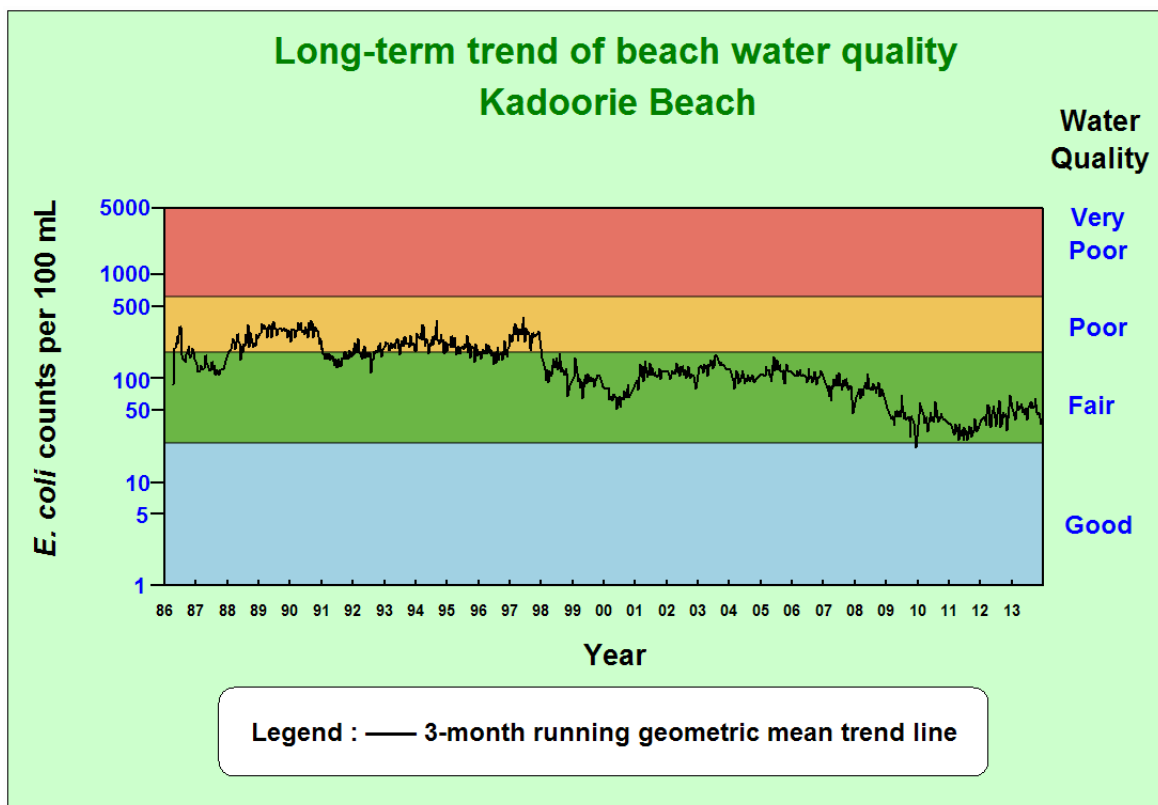
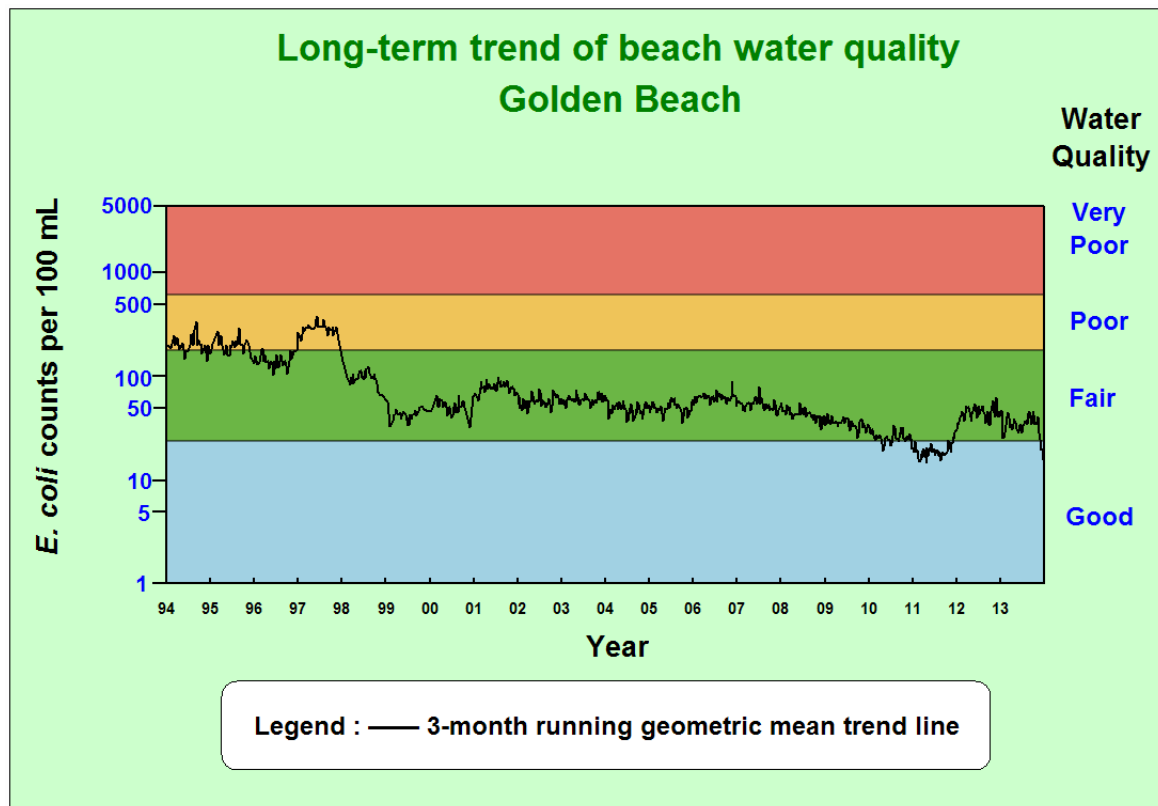




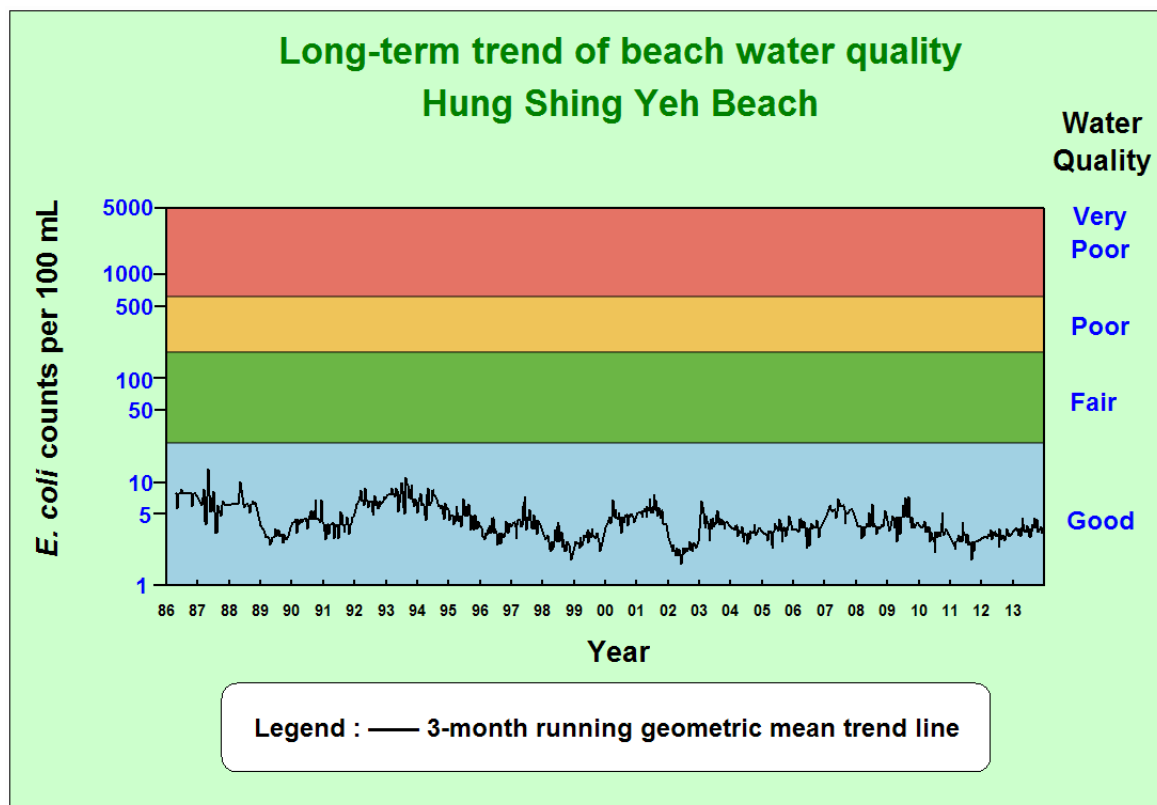
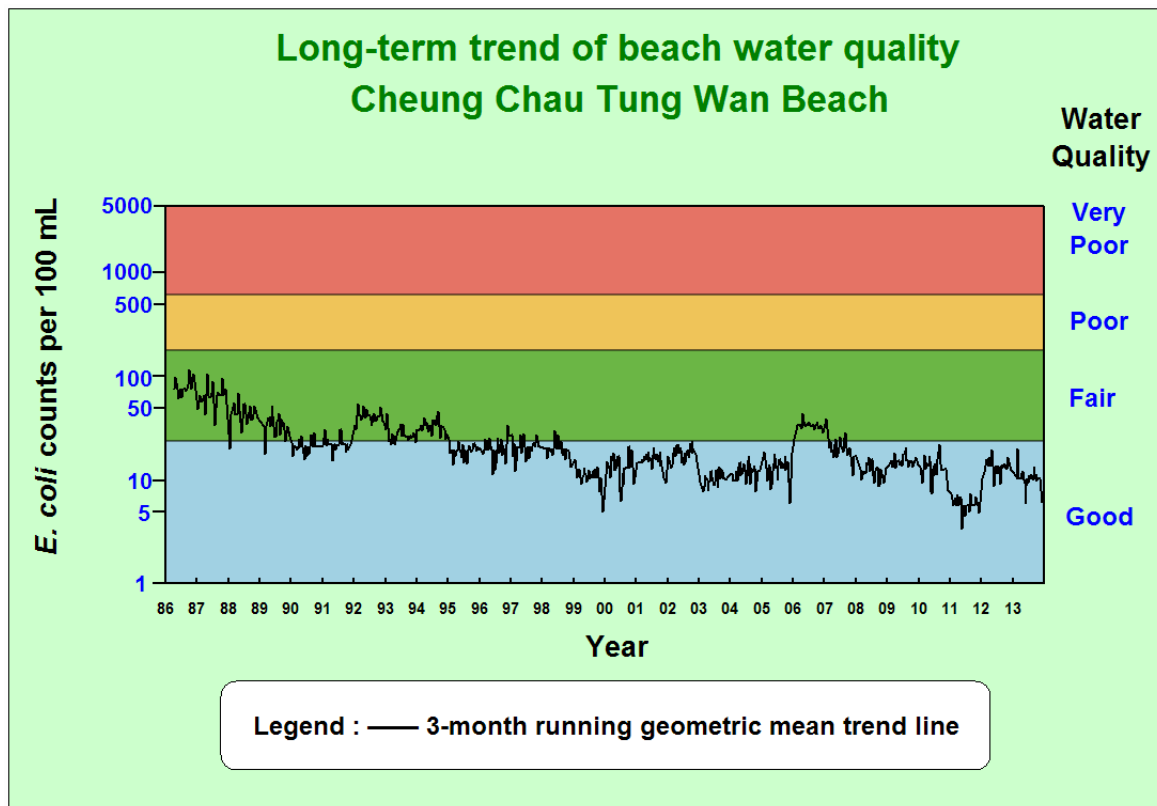
Tuen Mun District

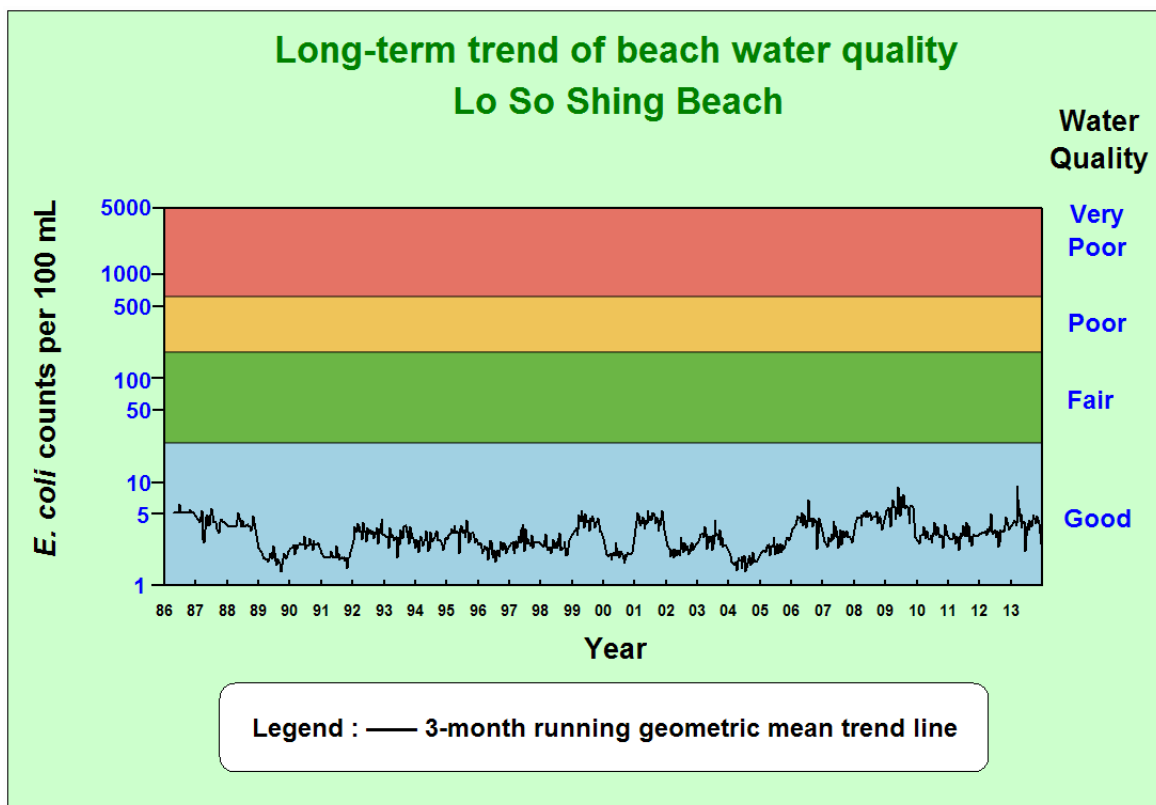
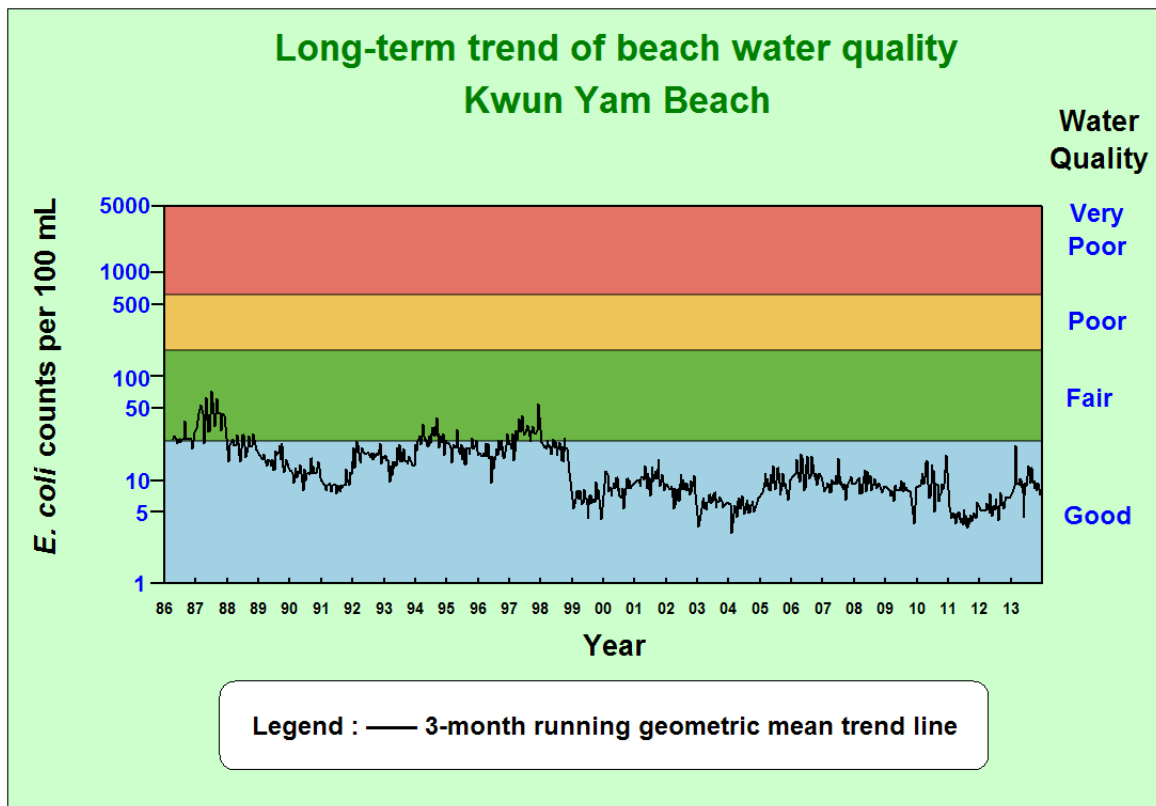


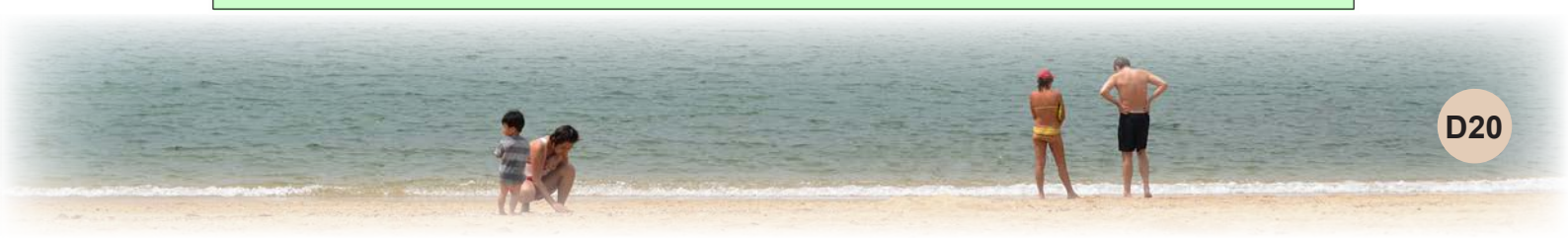
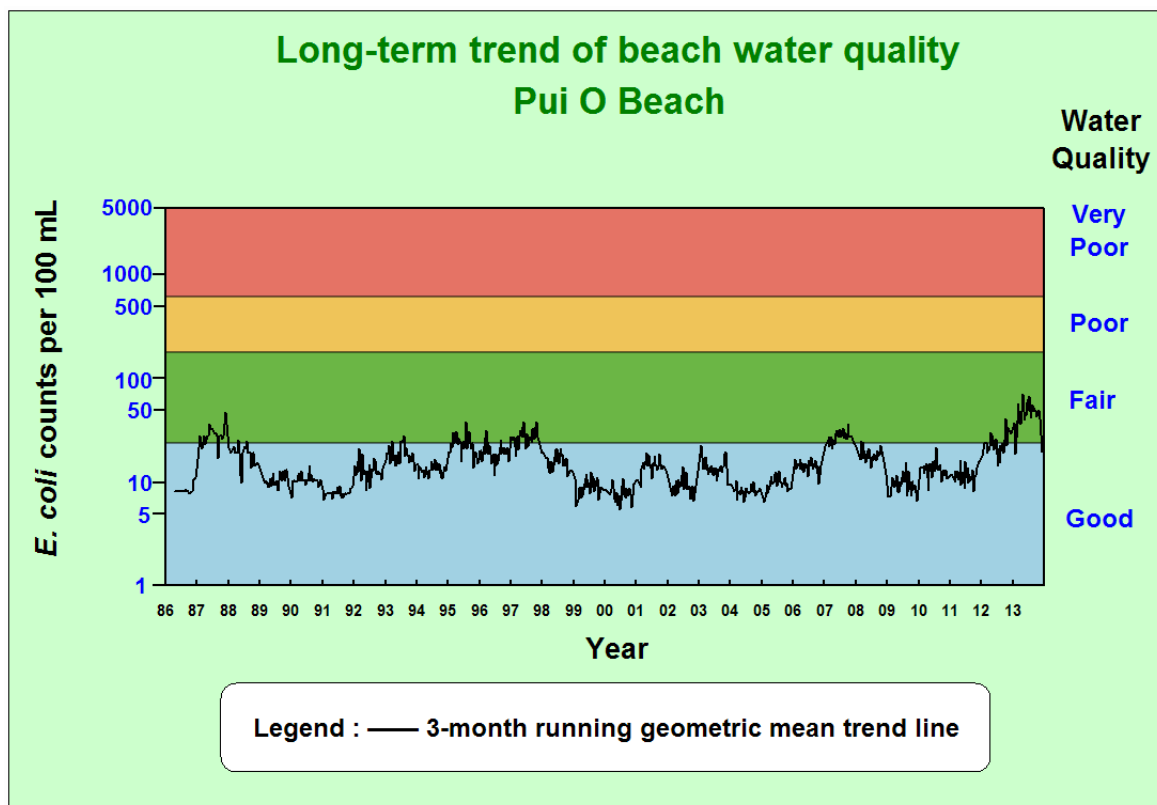
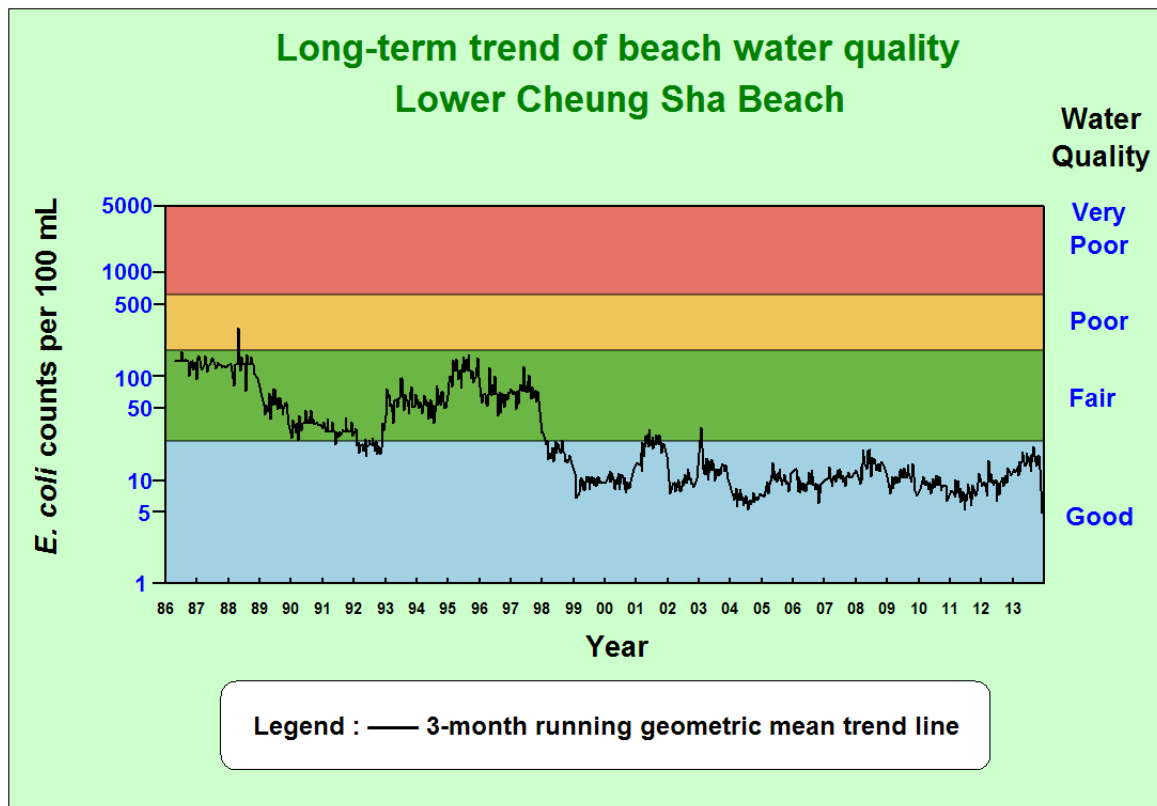


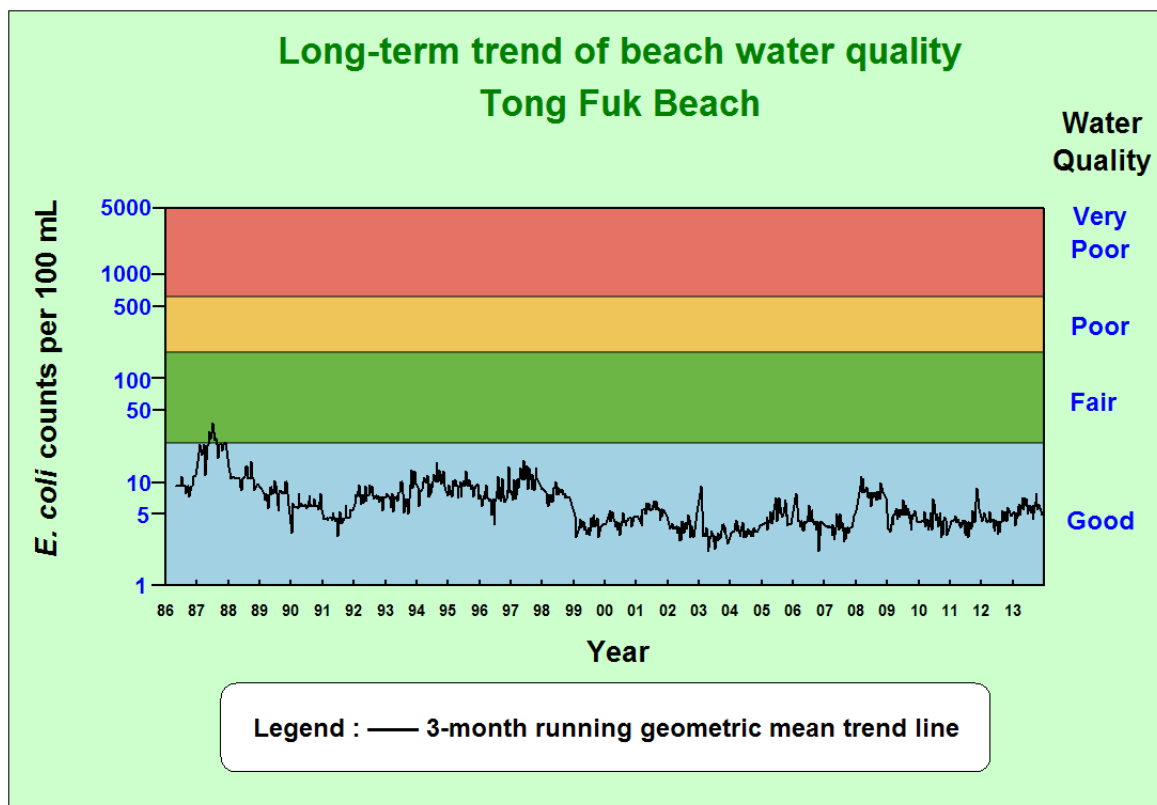
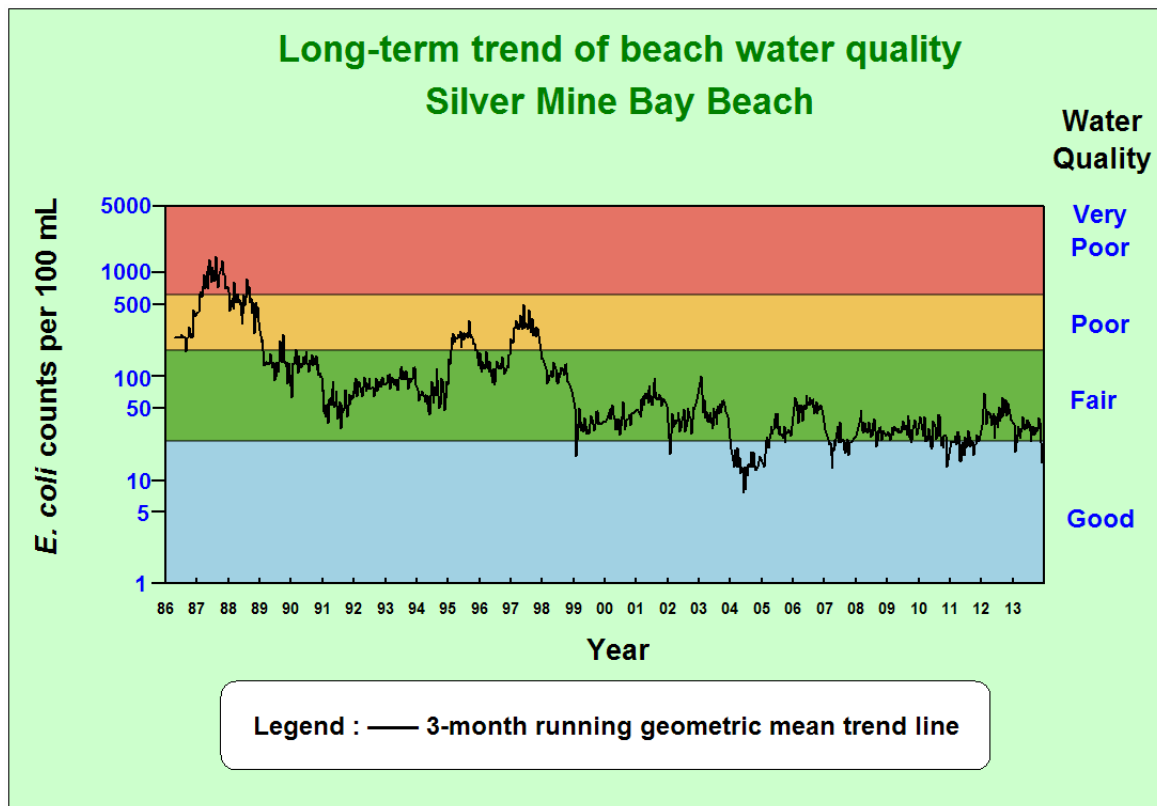


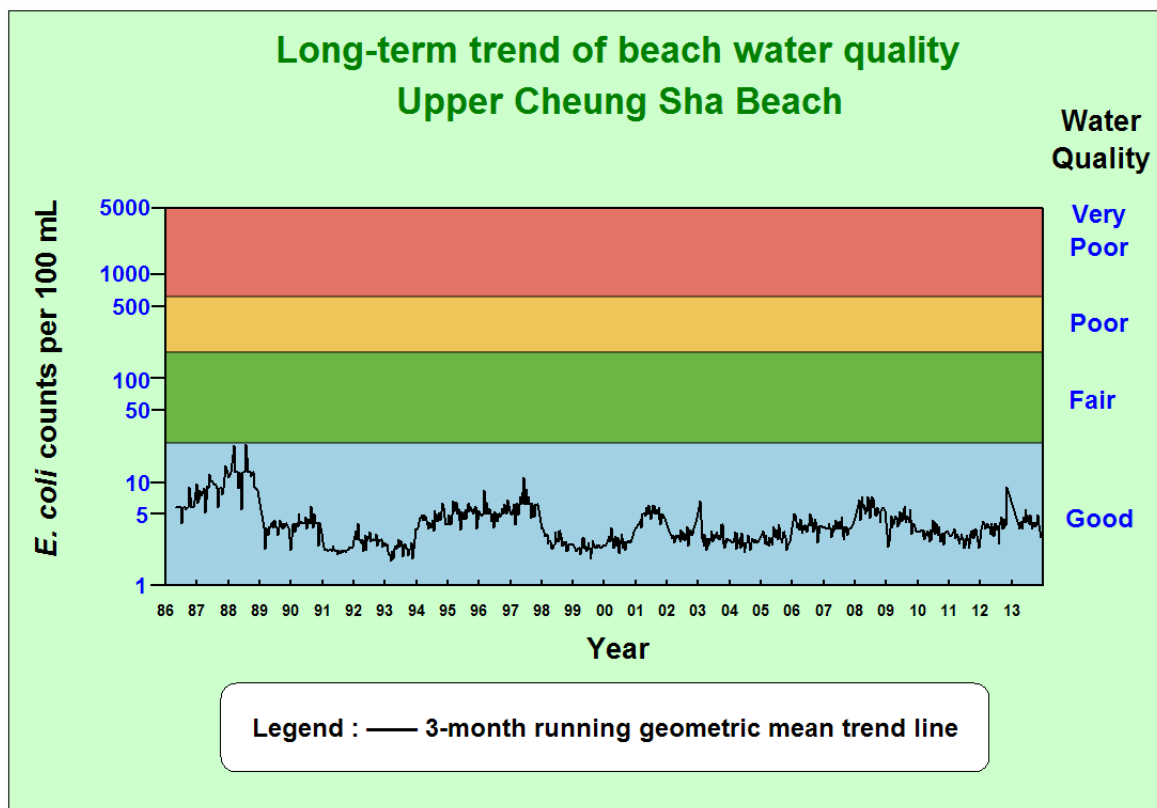
Outlying Islands











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