



香港泳灘水質 2012

Beach Water Quality in Hong Kong



為更佳泳灘水質而努力
Strive for better beach water quality



Environmental Protection Department

The Government of the Hong Kong
Special Administrative Region



Beach Water Quality in Hong Kong 2012

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



Both locals and tourists like our clean and beautiful beaches



Introduction

Many attractive beaches with long stretch of smooth sand are found along the long coastline of Hong Kong. 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 EPD's monitoring activities can be found at [EPD's Homepage \(http://www.epd.gov.hk\)](http://www.epd.gov.hk) or its [thematic website \(http://www.beachwq.gov.hk\)](http://www.beachwq.gov.hk).



Greenery and clean water greet swimmers at Clear Water Bay Second Beach



Beach Water Quality in Hong Kong 2012

This report summarises the beach monitoring data collected in 2012, the gradings of the beaches and their compliance with the Water Quality Objective (WQO) for bathing beaches. In 2012, 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, and EPD staff made field observations and collected samples for laboratory analyses of *E. coli* as the bacteriological water quality indicator. EPD staff also took measurements of dissolved oxygen, pH, salinity, temperature and turbidity of beach water.



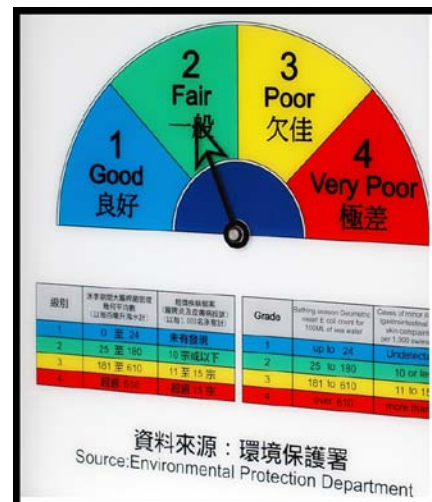
Bacterial testing of beach water
at EPD's laboratory



EPD inspectors monitor water quality
at Deep Water Bay Beach



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.



Beach water quality grading board

Annual Beach Ranking in 2012

All 41 gazetted beaches in Hong Kong complied with the WQO in 2012. Although the total rainfall recorded during the bathing season in 2012 (1733 mm) was 27.5% higher than that in 2011 (1359 mm), there was only slight increase in the *E. coli* levels in beach water, which is generally within the normal range of fluctuation of bacteriological water quality. Compared with the ranking in 2011, the number of beaches ranked as "Good" has changed from 31 (or 76%) to 23 (or 56%) and the number of beaches ranked as "Fair" has increased from 10 (or 24%) to 18 (or 44%). No beach was ranked as "Poor" or "Very Poor" in 2012.



Fun for all ages at Hap Mun Bay Beach



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

The beaches with a "Good" water quality ranking were largely located in the Southern District (Hong Kong Island South), Outlying Islands and Sai Kung. Nine of the 12 beaches in the Southern District were ranked as "Good" in 2012. The ranking of Big Wave Bay Beach and Rocky Bay Beach has changed to "Fair" but the change was not statistically significant. Of the nine beaches on the Outlying Islands, eight were "Good" while Silver Mine Bay Beach was rated as "Fair". In the Sai Kung area, five beaches were "Good" in 2012. Among them, Hap Mun Bay Beach was the cleanest gazetted beach in Hong Kong in terms of overall *E. coli* levels. The ranking of Silverstrand Beach has changed from "Good" to "Fair" but the change was statistically insignificant. On the western side, all six beaches along the Tuen Mun coast received a "Fair" ranking in 2012.

The beaches with a "Good" water quality ranking were largely located in the Southern District (Hong Kong Island South), Outlying Islands and Sai Kung. Nine of the 12 beaches in the Southern District were ranked as "Good" in 2012. The ranking of Big Wave Bay Beach and Rocky Bay Beach has changed to "Fair" but the change was not statistically significant. Of the nine beaches on the Outlying Islands, eight were "Good" while Silver Mine Bay Beach was rated as "Fair".

The water quality of the Tsuen Wan beaches has been stable in 2012 following improvement in 2011 and 2010, 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. Improvement works to the facilities at the remaining three beaches, i.e. Anglers' Beach, Gemini Beaches and Ting Kau Beach, are being carried out with a view to their reopening in 2013-14.



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 2012. Similar to 2011, Lung Mei was ranked as "Poor" in 2012. 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.



Ma Wan Tung Wan Beach

Weekly Beach Grading in 2012

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.

In 2012, the water quality of beaches in the Southern District was largely satisfactory. All ten gazetted beaches received mostly "Good" or "Fair" grading in the bathing season, except for Big Wave Bay Beach and Rocky Bay Beach (a closed beach) were rated as "Very Poor" on a few occasions after heavy rain. Chung Hom Kok, Repulse Bay, South Bay and Turtle Cove Beaches had the best water quality, achieving "Good" gradings on all rating occasions.



The water quality of the Sai Kung beaches was also generally good. Hap Mun Bay Beach achieved "Good" gradings on all rating occasions, while the other beaches were mostly "Good" or "Fair". Silverstrand Beach was rated as “Very Poor” on a few occasions after heavy rain.

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



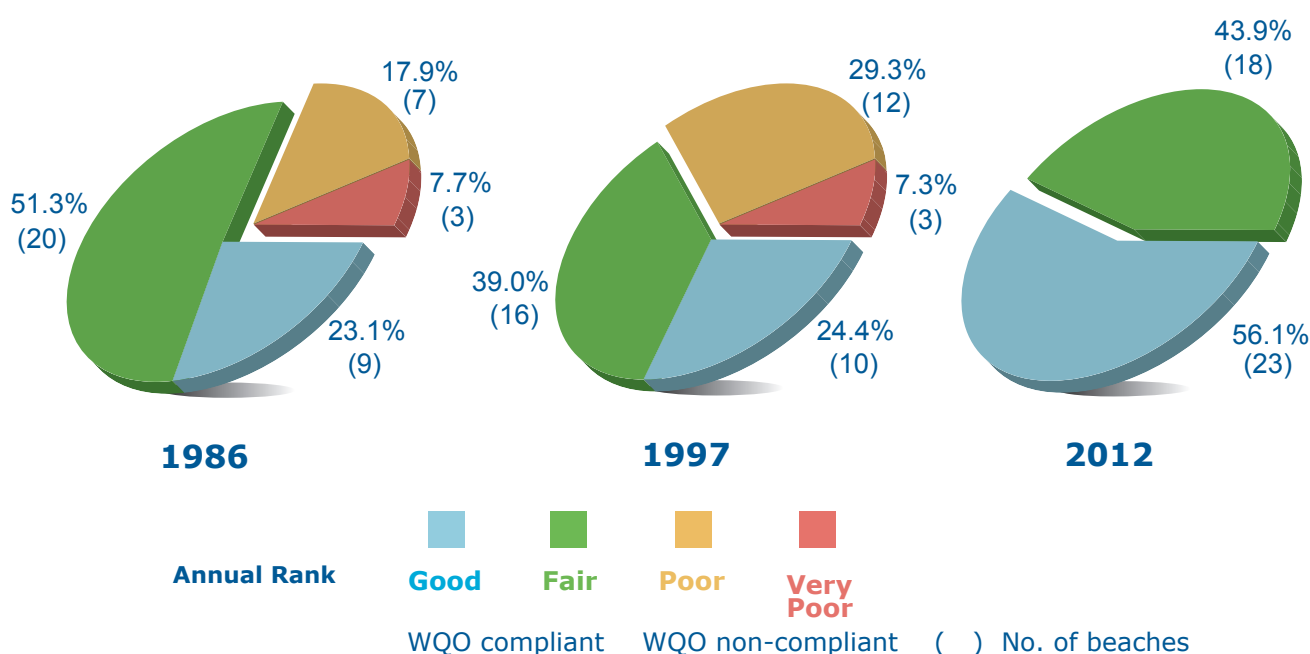
Scenic Repulse Bay Beach



Water Quality Trend

The beach water quality in Hong Kong is able to fully comply with the WQO for the last three 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 2012



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

There was a 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.



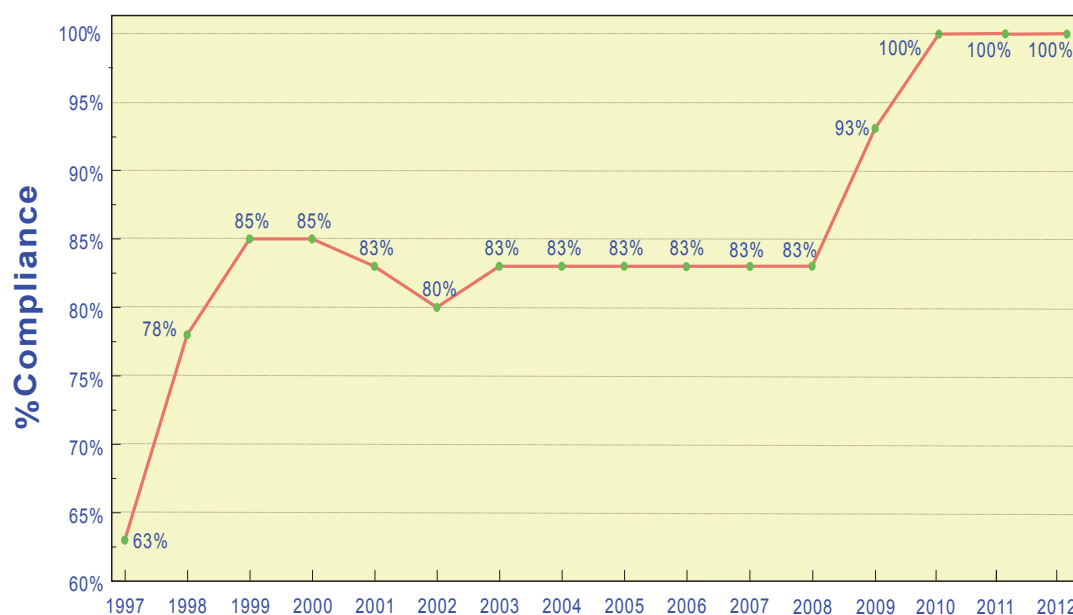
Major improvement measures for the beaches since the implementation of beach water quality monitoring programme in 1986

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 - 2012	
✱ Commissioning of the Advance Disinfection Facilities at 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



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. 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 the seven 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 - 2012





Water quality trend lines of gazetted beaches over the last 27 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 EPD's Homepage (<http://www.epd.gov.hk>) or its thematic website (<http://www.beachwq.gov.hk>), which provides user-friendly access to the annual beach reports as well as data published since 2000.

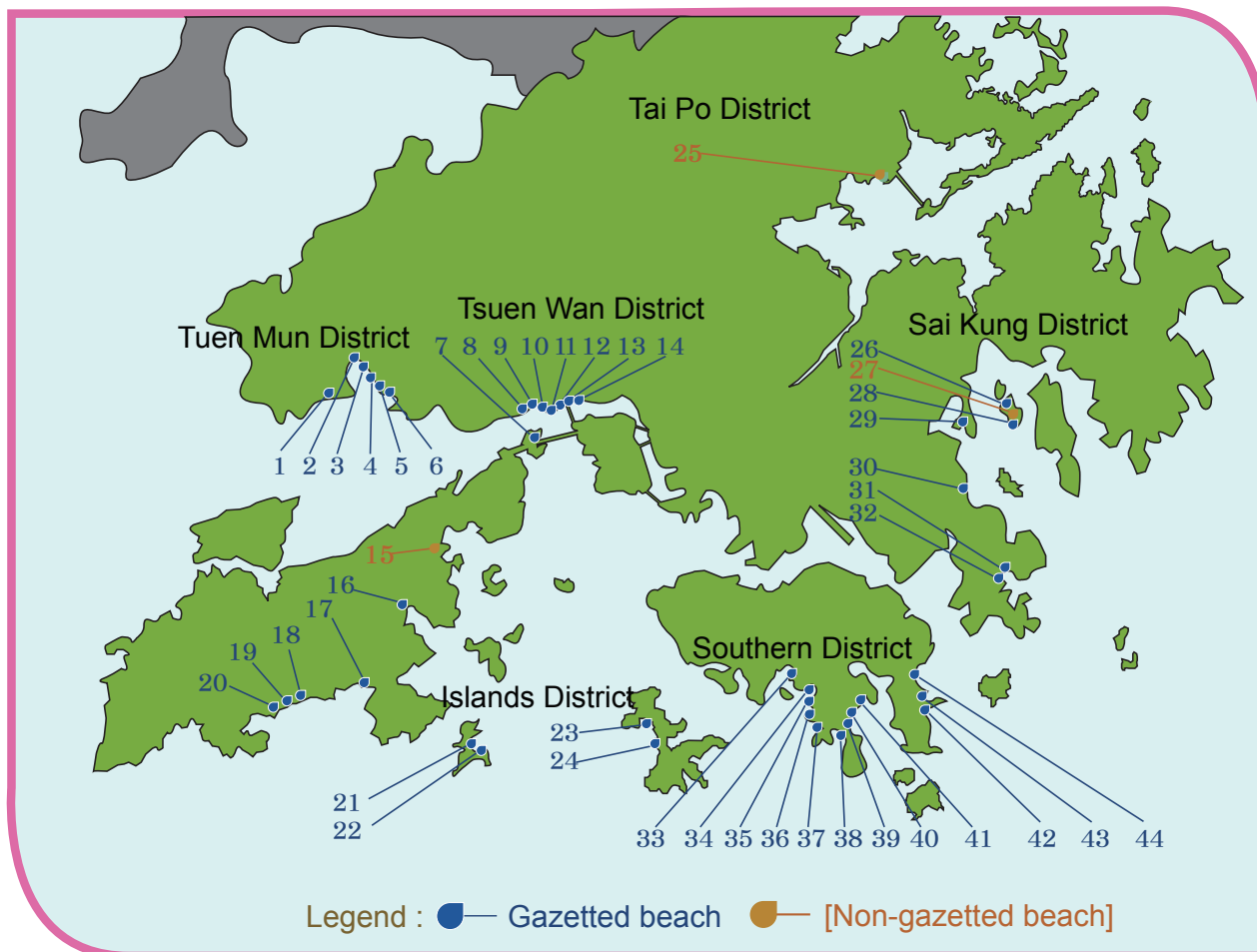


Youngsters having fun at Lido Beach



Beach Water Quality in Hong Kong 2012

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 Water Quality in Hong Kong 2012

Beach monitoring frequencies

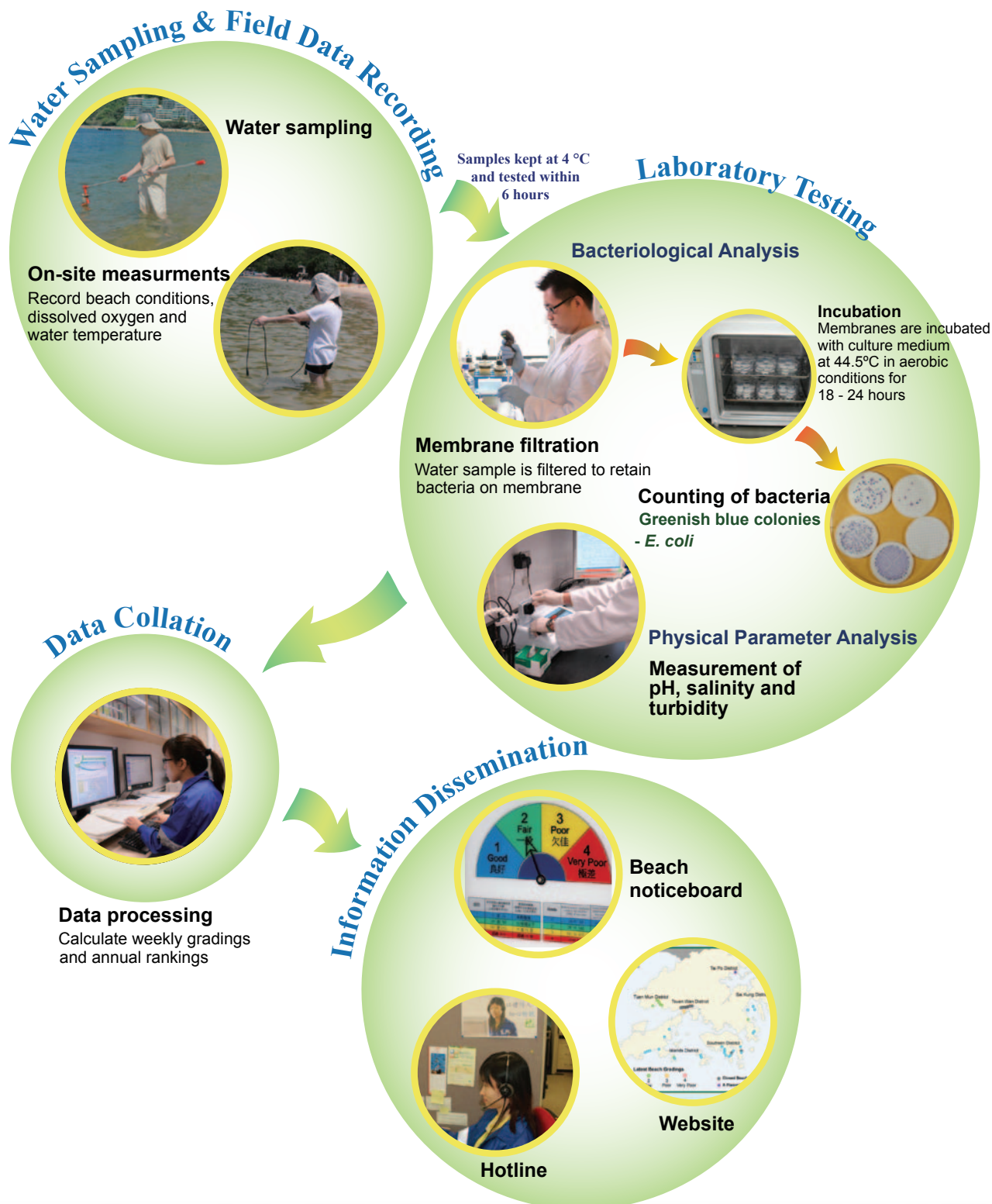
Beach	Monitoring frequency per month	
	Bathing season*	Non-bathing season
Gazetted beaches open all year round **	at least 3 times	at least 3 times
Other gazetted beaches	at least 3 times	once
Non-gazetted beaches	at least 3 times	once

* March to October

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



Overview of various stages of the Beach Monitoring Programme





Beach Water Quality in Hong Kong 2012

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

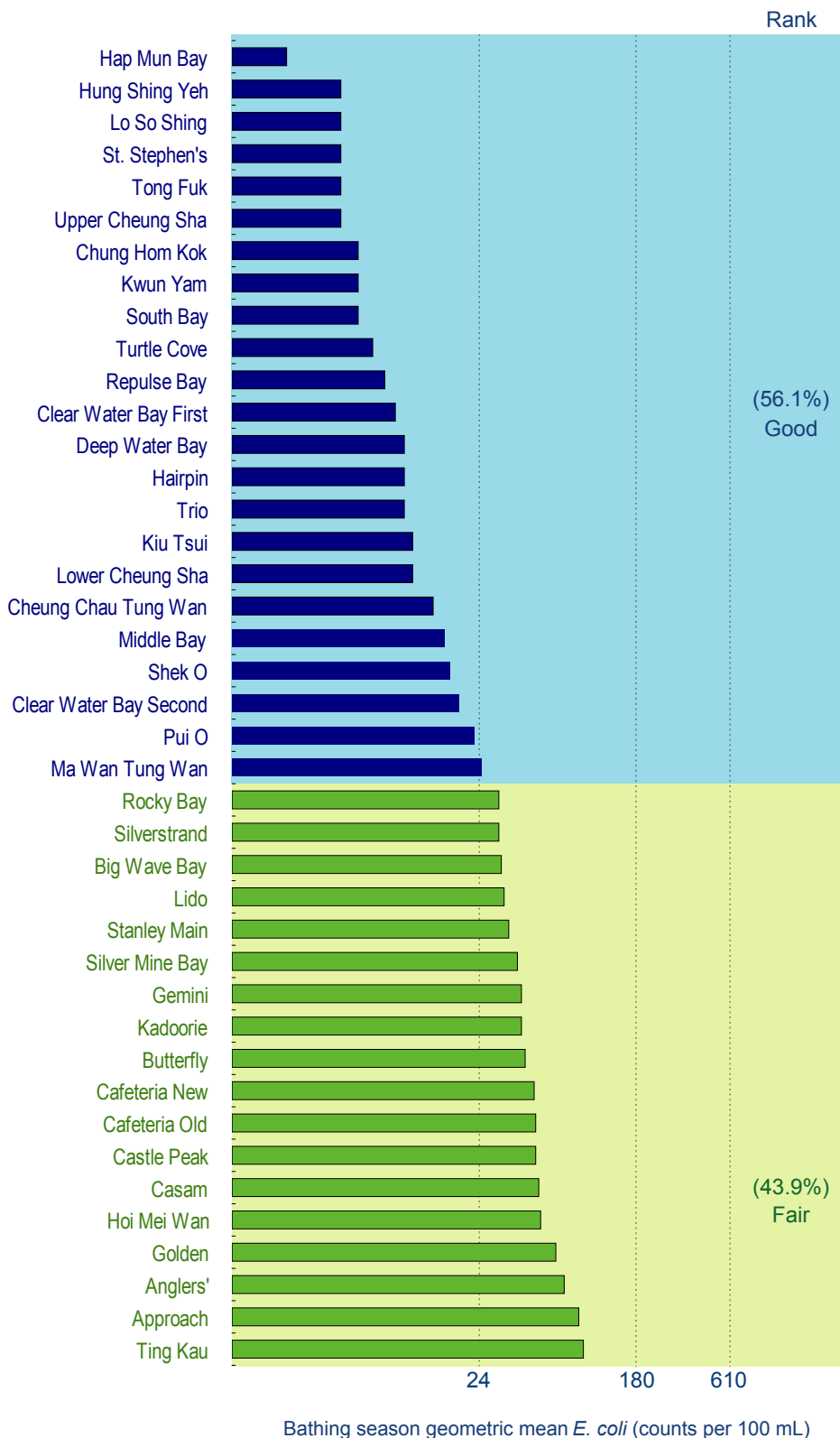
* Unless otherwise indicated, the *E. coli* count represents the geometric mean of the 5 most recent sampling occasions.

** Skin and gastrointestinal illnesses



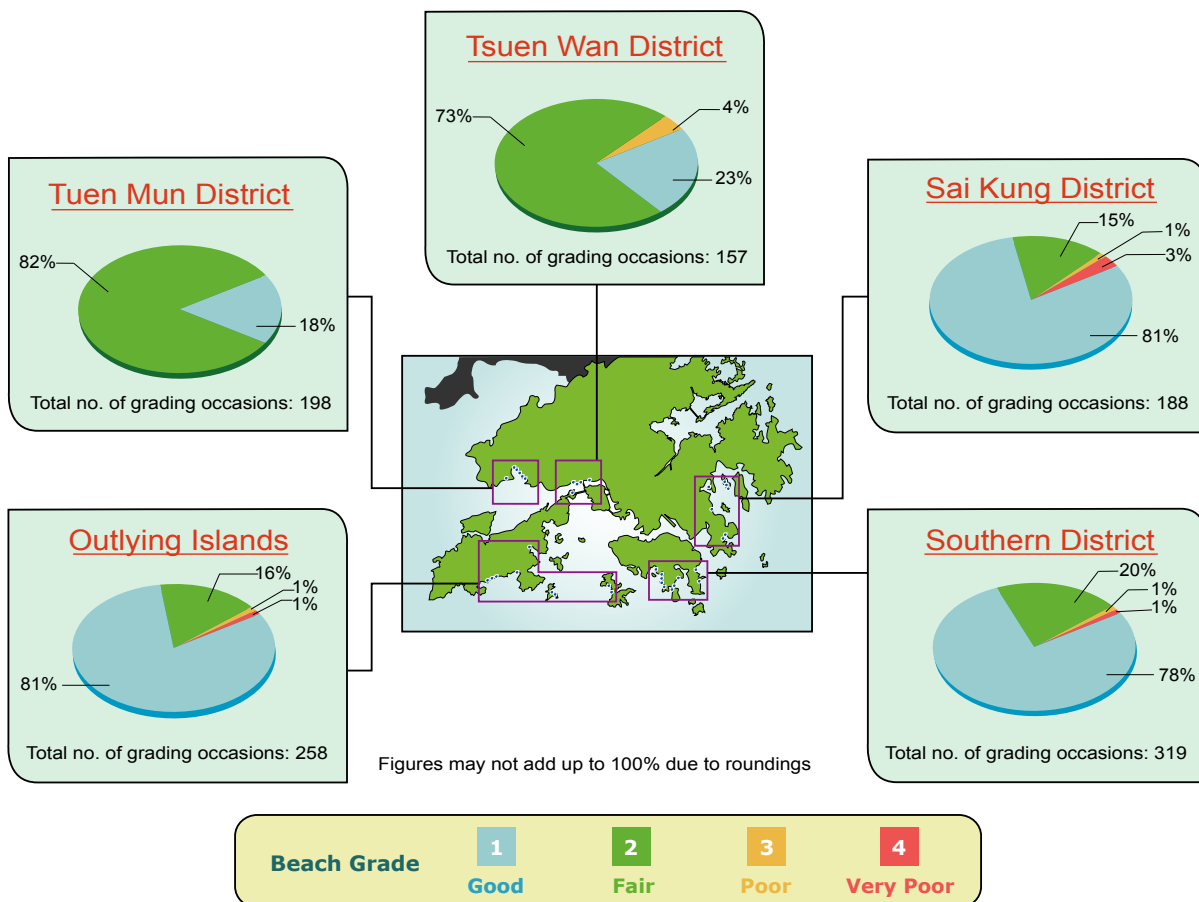
Beach Water Quality in Hong Kong 2012

Hong Kong's gazetted beaches 2012 annual ranking





Weekly beach grading summary of gazetted beaches by district in 2012





Annual Ranking of gazetted beaches at a glance





Southern District beaches

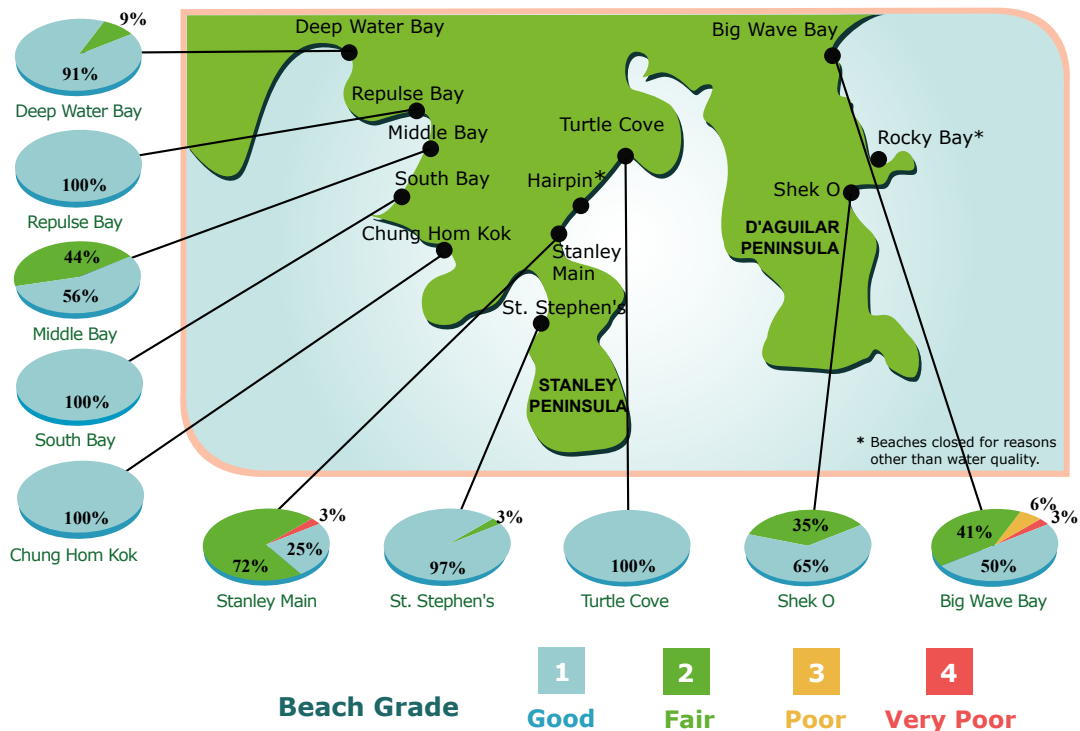
Annual ranking



Annual Rank

Good Fair Poor Very Poor

Weekly grading



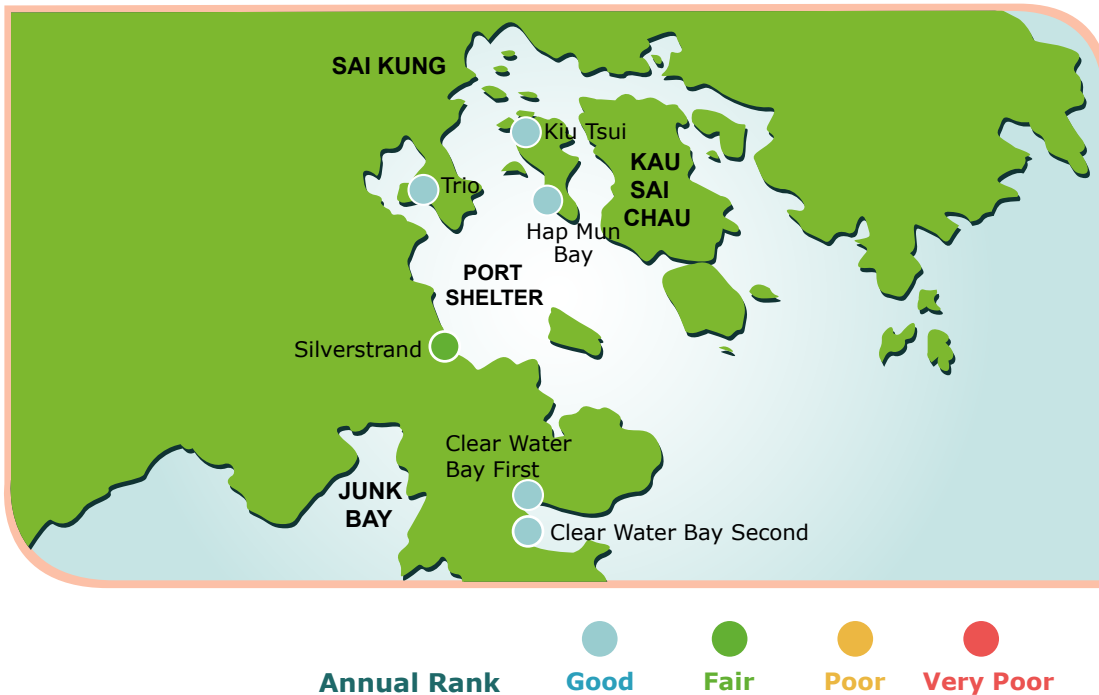
* Closed beaches. No grading was made.



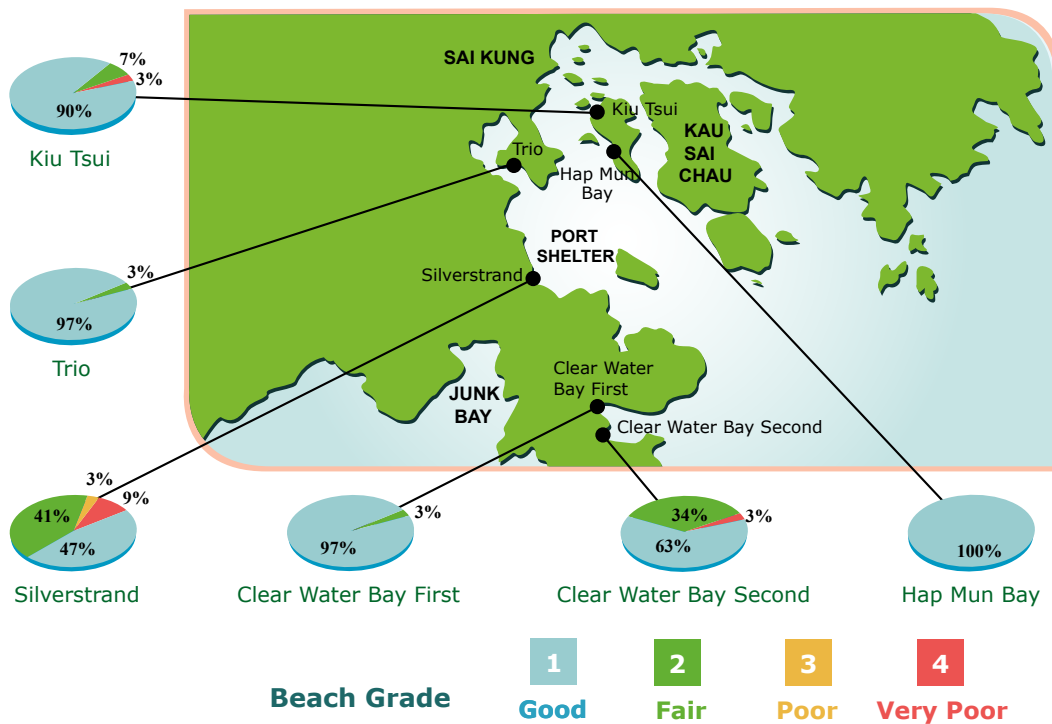
Beach Water Quality in Hong Kong 2012

Sai Kung beaches

Annual ranking



Weekly grading

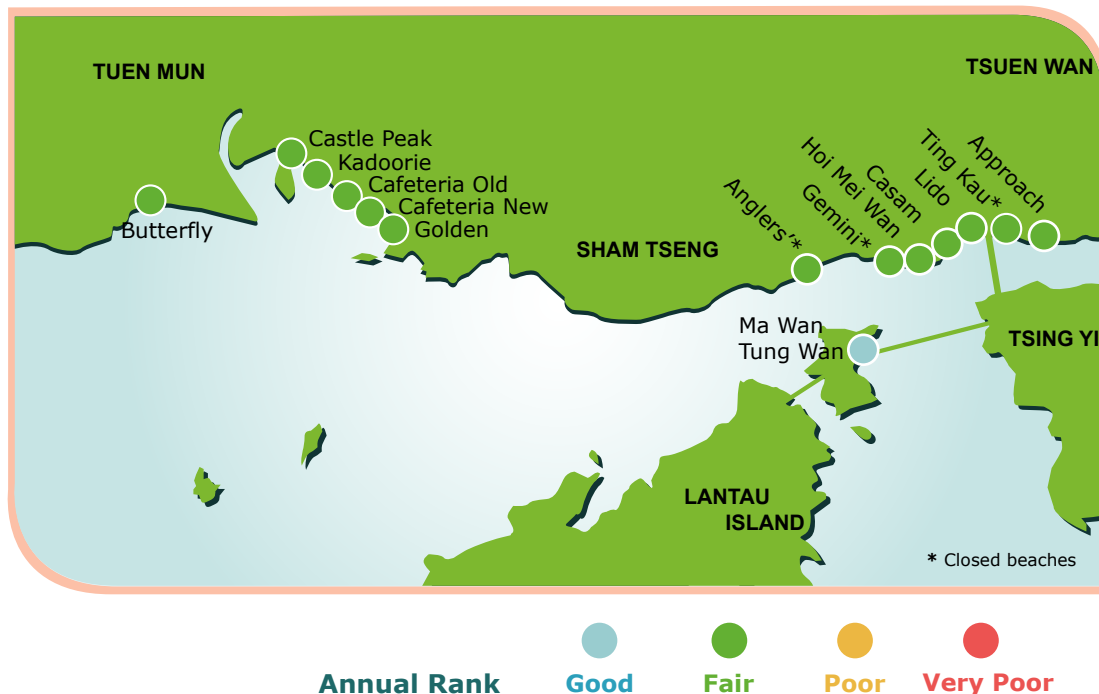




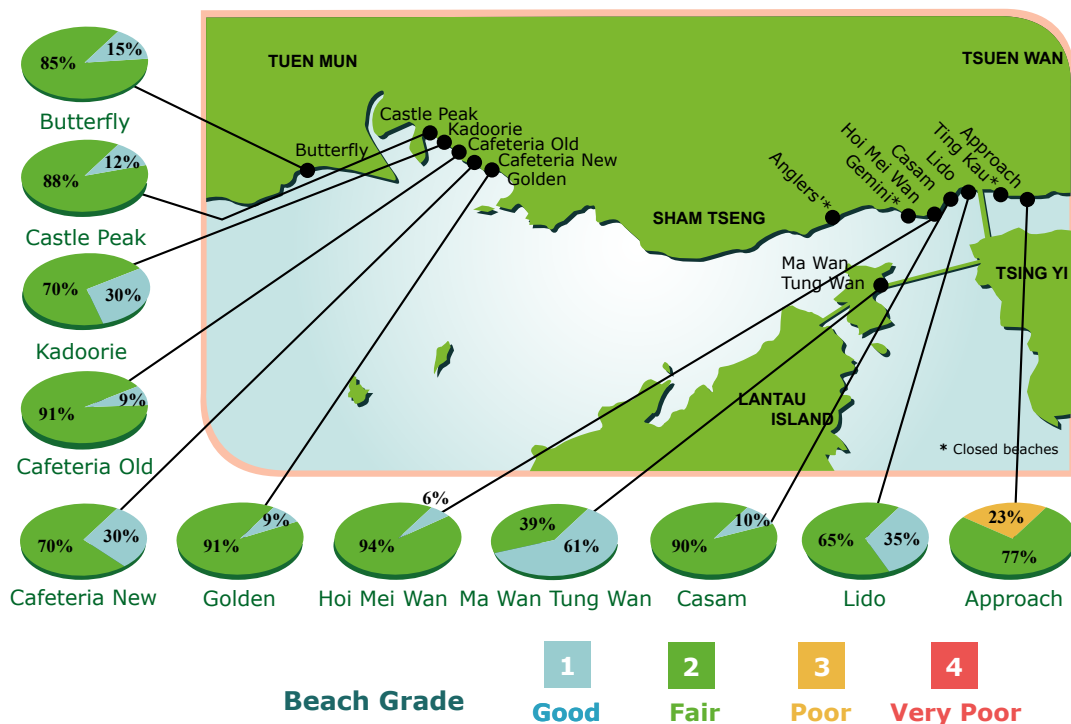
Beach Water Quality in Hong Kong 2012

Tsuen Wan and Tuen Mun beaches

Annual ranking



Weekly grading



* Closed beaches. No grading was made.



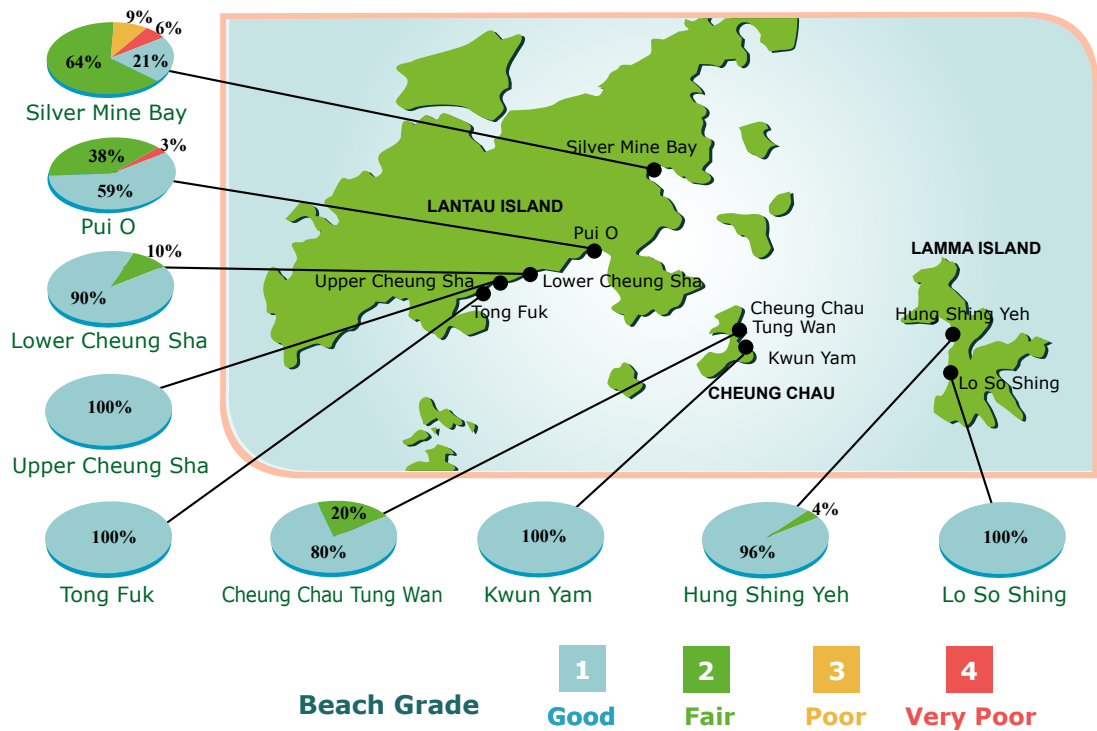
Beach Water Quality in Hong Kong 2012

Outlying Islands beaches

Annual ranking

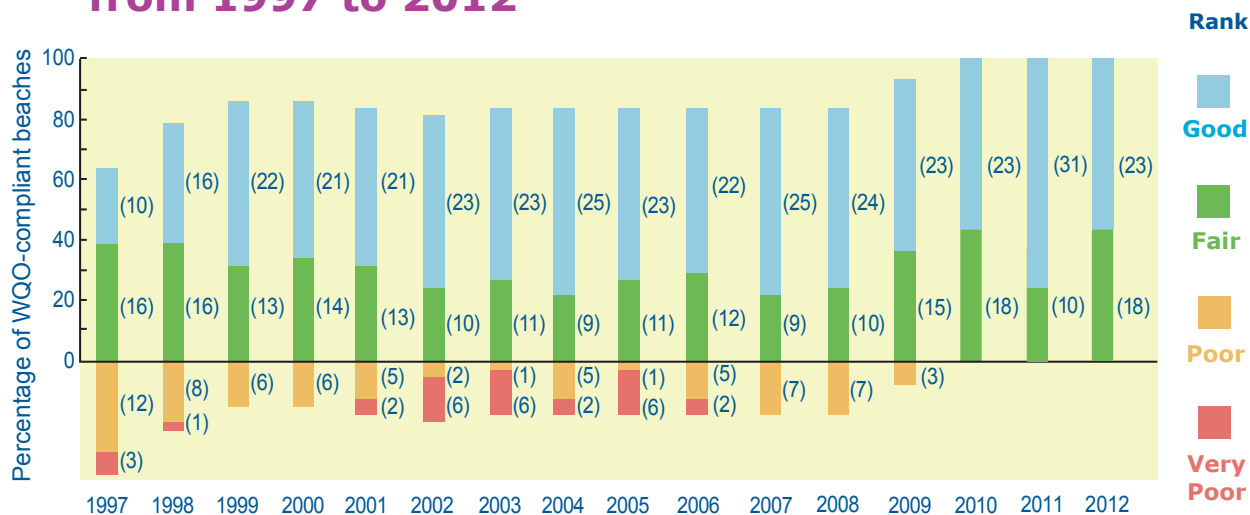


Weekly grading



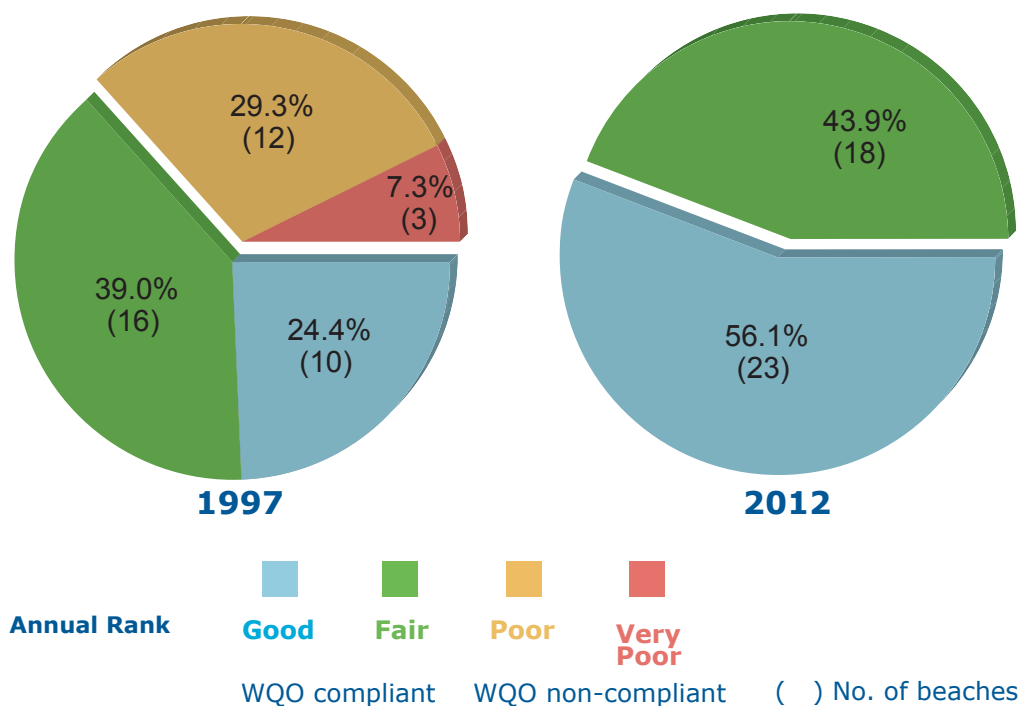


Annual beach rankings of gazetted beaches from 1997 to 2012



Total number of gazetted beaches = 41

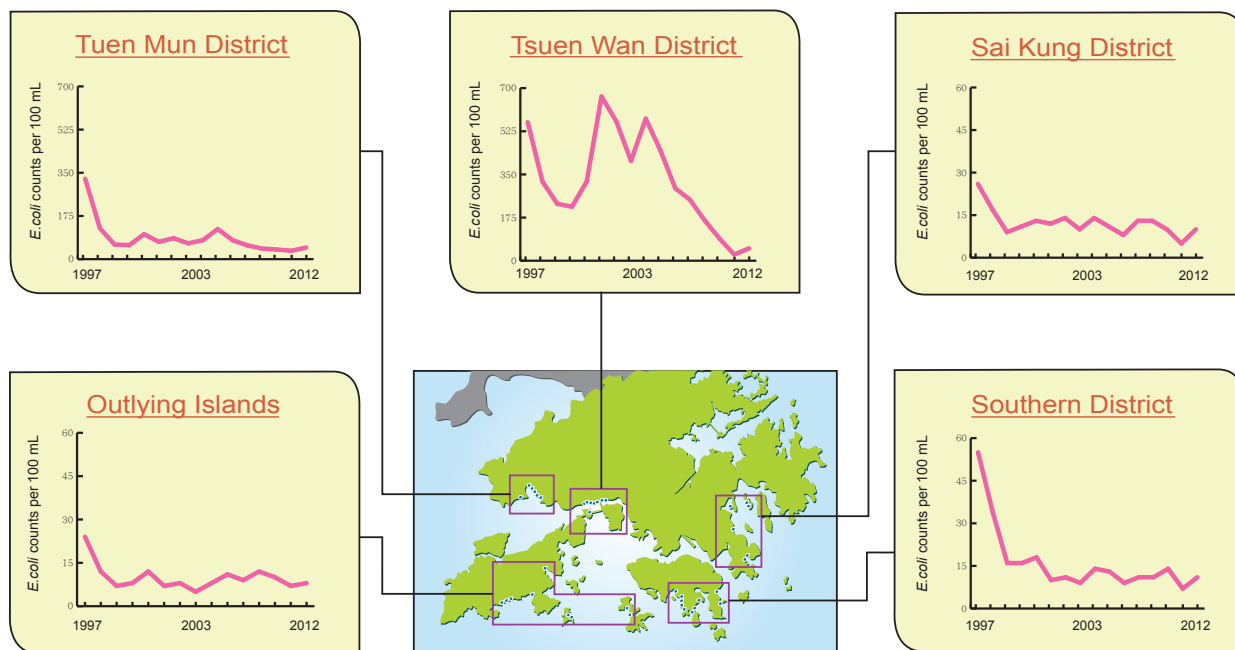
Comparison of annual beach ranking of gazetted beaches in 1997 and 2012





Beach Water Quality in Hong Kong 2012

Annual geometric mean *E. coli* levels of gazetted beaches by district, 1997 - 2012



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 (1997-2012)

Southern District

Annual geometric mean *E. coli* levels

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

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



Sai Kung District

Annual geometric mean *E. coli* levels

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

Tuen Mun District

Annual geometric mean *E. coli* levels

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

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

Beach Water Quality in Hong Kong 2012

Tsuen Wan District

Annual geometric mean *E. coli* levels

Beach	<i>E. coli</i> counts per 100 mL															
	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Anglers'	691	502	442	326	621	1,169	693	619	895	772	496	510	276	134	27	69
Approach	1,009	435	387	316	411	696	762	470	663	599	352	251	208	124	59	83
Casam	609	239	231	209	233	741	702	594	716	426	305	289	144	102	21	50
Gemini	458	399	350	258	323	1,155	875	1,102	1,042	853	566	481	410	137	19	40
Hoi Mei Wan	471	280	109	177	199	547	442	287	641	308	286	271	130	87	23	51
Lido	600	262	231	181	269	683	734	523	782	459	280	296	178	87	21	32
Ma Wan Tung Wan	110	92	51	39	133	201	159	101	132	171	78	53	60	17	10	24
Ting Kau	1,583	1,045	515	593	739	742	831	412	512	469	405	258	145	141	58	88

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

Outlying Islands

Annual geometric mean *E. coli* levels

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



Appendix B - 2012 Beach visitor number

Southern District

Visitor numbers during the 2012 bathing season

Beach	Daily average		Peak day	Peak month	Total
	Weekdays	Weekends & public holidays			
Big Wave Bay	244	1,390	3,200	29,680	149,270
Chung Hom Kok	269	852	2,400	19,800	111,310
Deep Water Bay	911	4,678	16,000	128,400	517,080
Hairpin	123	389	800	8,550	50,900
Middle Bay	229	313	720	15,020	62,630
Repulse Bay	10,171	14,267	21,500	414,300	2,811,360
Rocky Bay	-	-	-	-	-
Shek O	2,352	7,035	24,000	284,700	941,500
South Bay	261	644	2,300	28,580	93,820
St. Stephen's	155	410	800	10,800	57,860
Stanley Main	859	2,913	11,500	82,320	370,620
Turtle Cove	62	381	1,320	8,330	40,050

Note: Information provided by the Leisure and Cultural Services Department



Sai Kung District

Visitor numbers during the 2012 bathing season

Beach	Daily average		Peak day	Peak month	Total
	Weekdays	Weekends & public holidays			
Clear Water Bay First	181	481	1,880	13,260	67,730
Clear Water Bay Second	1,925	6,879	26,300	231,100	858,080
Hap Mun Bay	381	885	3,110	43,750	132,680
Kiu Tsui	120	843	2,130	15,490	85,780
Silverstrand	130	579	4,700	25,310	66,810
Trio	256	1,085	3,610	30,860	127,450

Note: Information provided by the Leisure and Cultural Services Department

Tuen Mun District

Visitor numbers during the 2012 bathing season

Beach	Daily average		Peak day	Peak month	Total
	Weekdays	Weekends & public holidays			
Butterfly	810	1,555	2,100	39,100	256,550
Cafeteria New	868	1,832	4,750	64,220	287,870
Cafeteria Old	744	1,231	2,380	37,800	220,190
Castle Peak	419	1,444	2,200	24,000	182,600
Golden	1,738	5,498	8,400	115,950	719,100
Kadoorie	577	992	1,800	34,140	173,740

Note: Information provided by the Leisure and Cultural Services Department



Tsuen Wan District

Visitor numbers during the 2012 bathing season

Beach	Daily average		Peak day	Peak month	Total
	Weekdays	Weekends & public holidays			
Anglers'	21	237	380	3,200	21,960
Approach	131	391	900	10,030	52,490
Casam	25	110	340	2,860	12,730
Gemini	9	31	80	650	3,950
Hoi Mei Wan	49	141	430	4,980	19,160
Lido	279	1,283	6,110	35,590	146,700
Ma Wan Tung Wan	1,713	3,342	10,250	182,820	546,700
Ting Kau	13	74	200	1,750	7,910

Note: Information provided by the Leisure and Cultural Services Department

Outlying Islands

Visitor numbers during the 2012 bathing season

Beach	Daily average		Peak day	Peak month	Total
	Weekdays	Weekends & public holidays			
Cheung Chau Tung Wan	189	528	2,400	14,300	72,680
Hung Shing Yeh	204	655	1,750	18,250	85,100
Kwun Yam	86	242	700	7,400	33,200
Lo So Shing	47	178	380	3,860	21,720
Lower Cheung Sha	158	578	1,200	16,330	71,480
Pui O	248	676	1,670	19,660	94,130
Silver Mine Bay	201	461	4,550	16,900	69,580
Tong Fuk	131	263	640	11,000	42,380
Upper Cheung Sha	111	407	1,500	9,570	50,260

Note: Information provided by the Leisure and Cultural Services Department



Appendix C - Physicochemical water quality data for gazetted beaches, 2012

Southern District :

Summary of physicochemical water quality data of gazetted beaches, 2012

Beach	pH	Salinity (psu) ¹	Turbidity (NTU) ²	Temperature (°C)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% Saturation)
Big Wave Bay Beach	8.4 (8.1 - 8.6)	29.2 (22.5 - 32.5)	2.9 (1.1 - 7.8)	26.1 (15.5 - 31.6)	6.9 (5.8 - 7.8)	96 (84 - 105)
Chung Hom Kok Beach	8.4 (8.1 - 8.7)	29.6 (19.4 - 32.4)	4.1 (1.1 - 10.5)	26.5 (15.0 - 30.3)	6.7 (5.6 - 8.2)	94 (73 - 121)
Deep Water Bay Beach	8.4 (8.0 - 8.8)	29.0 (17.6 - 32.1)	6.4 (1.6 - 14.2)	26.8 (15.1 - 31.0)	6.8 (5.3 - 8.9)	96 (75 - 130)
Hairpin Beach [Closed]	8.4 (8.2 - 8.8)	29.4 (21.6 - 32.7)	2.6 (0.7 - 10.4)	26.3 (15.8 - 31.1)	7.1 (6.1 - 8.6)	99 (87 - 113)
Middle Bay Beach	8.4 (8.1 - 8.7)	29.2 (19.8 - 32.6)	4.4 (1.1 - 10.3)	26.3 (14.9 - 30.1)	6.8 (5.4 - 9.0)	97 (77 - 128)
Repulse Bay Beach	8.4 (8.1 - 8.7)	29.6 (19.5 - 32.6)	4.0 (1.2 - 8.9)	26.3 (15.0 - 30.3)	6.7 (5.3 - 8.8)	96 (76 - 127)
Rocky Bay Beach [Closed]	8.3 (8.0 - 8.6)	30.0 (18.2 - 32.6)	2.8 (1.0 - 6.0)	25.6 (15.5 - 30.0)	6.9 (5.4 - 8.1)	95 (82 - 107)
Shek O Beach	8.4 (8.2 - 8.6)	30.3 (27.2 - 32.7)	3.3 (1.0 - 10.3)	26.3 (15.4 - 32.3)	7.0 (5.9 - 9.3)	98 (88 - 121)
South Bay Beach	8.3 (8.0 - 8.6)	29.6 (19.6 - 32.7)	3.4 (1.2 - 7.8)	26.5 (15.0 - 30.1)	6.6 (5.2 - 8.8)	93 (75 - 116)
St. Stephen's Beach	8.4 (8.1 - 8.7)	29.7 (19.2 - 32.7)	3.8 (1.3 - 12.4)	26.5 (15.1 - 30.2)	6.6 (5.4 - 8.2)	94 (72 - 120)
Stanley Main Beach	8.4 (8.1 - 8.8)	27.4 (16.8 - 32.3)	2.9 (1.0 - 7.0)	26.4 (15.5 - 30.9)	7.0 (5.4 - 8.9)	99 (68 - 119)
Turtle Cove Beach	8.4 (8.1 - 8.8)	29.2 (21.0 - 32.7)	4.9 (1.0 - 17.3)	26.6 (15.8 - 31.0)	6.9 (6.0 - 8.9)	98 (82 - 111)

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, 2012

Beach	pH	Salinity (psu) ¹	Turbidity (NTU) ²	Temperature (°C)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% Saturation)
Clear Water Bay First Beach	8.4 (8.2 - 8.6)	30.1 (23.6 - 32.7)	4.4 (1.1 - 11.7)	26.7 (15.6 - 31.7)	6.7 (5.6 - 8.5)	96 (79 - 116)
Clear Water Bay Second Beach	8.4 (8.2 - 8.6)	30.5 (20.2 - 32.9)	7.1 (1.8 - 48.9)	26.9 (15.2 - 32.2)	6.6 (4.9 - 8.6)	95 (79 - 120)
Hap Mun Bay Beach	8.4 (8.2 - 8.6)	30.4 (23.9 - 32.7)	2.2 (0.5 - 10.2)	26.8 (15.0 - 31.9)	6.8 (6.0 - 8.9)	96 (76 - 109)
Kiu Tsui Beach	8.4 (8.2 - 8.7)	30.0 (24.6 - 32.1)	2.0 (0.7 - 10.3)	26.8 (15.2 - 32.1)	7.0 (5.8 - 8.9)	98 (72 - 114)
Silverstrand Beach	8.4 (8.1 - 8.7)	28.5 (18.0 - 31.2)	3.8 (1.0 - 13.1)	26.5 (15.0 - 31.2)	6.8 (5.5 - 8.9)	96 (79 - 117)
Trio Beach	8.4 (8.2 - 8.7)	29.1 (11.6 - 32.5)	2.1 (0.9 - 7.5)	26.9 (15.3 - 32.4)	6.8 (5.5 - 8.3)	95 (79 - 112)

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, 2012

Beach	pH	Salinity (psu) ¹	Turbidity (NTU) ²	Temperature (°C)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% Saturation)
Anglers' Beach [Closed]	8.2 (8.1 - 8.6)	26.4 (14.0 - 31.1)	5.1 (1.0 - 11.4)	26.3 (17.5 - 30.3)	6.6 (5.0 - 8.1)	93 (73 - 104)
Approach Beach	8.3 (8.1 - 8.5)	25.7 (11.2 - 31.0)	4.5 (1.2 - 10.3)	26.4 (17.7 - 29.8)	6.7 (5.7 - 8.2)	93 (79 - 108)
Casam Beach	8.3 (8.1 - 8.6)	26.0 (11.7 - 31.1)	4.6 (1.7 - 15.4)	26.6 (17.6 - 29.9)	6.6 (5.3 - 8.2)	93 (77 - 108)
Gemini Beaches [Closed]	8.2 (8.1 - 8.6)	26.5 (15.9 - 31.2)	4.0 (1.5 - 8.5)	26.3 (17.8 - 30.3)	6.5 (5.0 - 8.2)	91 (71 - 105)
Hoi Mei Wan Beach	8.2 (8.0 - 8.5)	25.6 (12.0 - 31.0)	3.9 (1.5 - 9.3)	26.7 (17.7 - 29.9)	6.5 (5.0 - 8.4)	92 (76 - 108)
Lido Beach	8.3 (8.1 - 8.6)	26.1 (11.6 - 31.1)	4.8 (1.6 - 12.3)	26.5 (17.8 - 29.9)	6.6 (5.1 - 7.9)	93 (79 - 105)
Ma Wan Tung Wan Beach	8.2 (8.1 - 8.4)	27.3 (13.9 - 31.3)	6.3 (2.0 - 15.6)	26.1 (16.5 - 30.0)	6.6 (4.9 - 9.1)	91 (74 - 104)
Ting Kau Beach [Closed]	8.2 (8.1 - 8.6)	25.4 (11.3 - 31.1)	4.0 (1.1 - 11.8)	26.6 (17.8 - 29.8)	6.6 (5.4 - 8.0)	94 (71 - 107)

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, 2012

Beach	pH	Salinity (psu) ¹	Turbidity (NTU) ²	Temperature (°C)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% Saturation)
Butterfly Beach	8.2 (8.0 - 8.4)	23.2 (9.0 - 30.7)	8.4 (2.2 - 21.9)	27.1 (16.6 - 31.8)	6.6 (4.9 - 8.9)	92 (73 - 103)
Cafeteria New Beach	8.2 (8.1 - 8.6)	22.8 (7.9 - 30.5)	12.3 (4.1 - 42.6)	26.8 (16.8 - 31.2)	6.7 (5.2 - 9.0)	92 (80 - 103)
Cafeteria Old Beach	8.2 (8.0 - 8.5)	22.7 (8.0 - 30.5)	11.0 (3.3 - 28.4)	26.8 (16.7 - 30.9)	6.6 (4.9 - 9.0)	92 (71 - 102)
Castle Peak Beach	8.3 (8.0 - 8.6)	22.4 (8.9 - 30.1)	6.3 (2.2 - 15.7)	27.3 (16.7 - 32.0)	6.9 (5.4 - 9.3)	96 (77 - 115)
Golden Beach	8.2 (8.1 - 8.5)	22.8 (8.0 - 30.3)	15.3 (4.6 - 52.1)	26.8 (16.7 - 31.1)	6.7 (5.3 - 9.0)	93 (78 - 104)
Kadoorie Beach	8.3 (8.1 - 8.6)	22.6 (8.1 - 30.4)	8.1 (2.8 - 33.5)	27.0 (16.7 - 31.2)	6.7 (5.3 - 9.0)	93 (76 - 110)

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, 2012

Beach	pH	Salinity (psu) ¹	Turbidity (NTU) ²	Temperature (°C)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% Saturation)
Cheung Chau Tung Wan Beach	8.3 (8.0 - 8.6)	28.1 (18.6 - 31.6)	4.0 (1.3 - 12.8)	26.2 (16.5 - 30.2)	6.6 (5.2 - 8.3)	94 (75 - 104)
Hung Shing Yeh Beach, Lamma	8.3 (8.1 - 8.6)	28.4 (16.2 - 32.3)	7.7 (2.1 - 45.3)	26.0 (17.0 - 30.6)	6.9 (6.0 - 8.4)	95 (88 - 104)
Kwun Yam Beach, Cheung Chau	8.3 (8.0 - 8.5)	28.0 (18.8 - 31.6)	3.5 (1.0 - 8.9)	26.2 (16.5 - 30.1)	6.6 (5.1 - 7.7)	93 (77 - 106)
Lo So Shing Beach, Lamma	8.3 (8.2 - 8.6)	29.0 (14.0 - 32.4)	4.9 (1.4 - 23.6)	26.1 (16.3 - 30.7)	7.0 (5.5 - 9.0)	96 (84 - 112)
Lower Cheung Sha Beach, Lantau	8.4 (8.1 - 8.7)	27.0 (13.8 - 31.8)	11.6 (2.6 - 39.3)	26.9 (16.5 - 31.8)	6.7 (5.3 - 8.0)	95 (77 - 104)
Pui O Beach, Lantau	8.4 (8.1 - 8.7)	26.9 (13.6 - 31.9)	15.4 (3.0 - 58.2)	27.1 (16.6 - 32.9)	6.5 (5.0 - 7.7)	93 (62 - 104)
Silver Mine Bay Beach, Lantau	8.3 (7.8 - 8.8)	24.0 (3.8 - 31.7)	11.4 (3.4 - 31.4)	27.7 (16.9 - 33.2)	6.8 (4.2 - 9.8)	95 (63 - 134)
Tong Fuk Beach, Lantau	8.4 (8.1 - 8.7)	27.3 (14.8 - 32.0)	9.1 (1.7 - 27.5)	26.8 (16.6 - 32.4)	6.7 (5.3 - 8.0)	95 (81 - 113)
Upper Cheung Sha Beach, Lantau	8.4 (8.1 - 8.7)	27.3 (14.5 - 31.8)	10.7 (2.1 - 33.2)	26.7 (16.4 - 31.8)	6.7 (4.8 - 9.2)	94 (73 - 106)

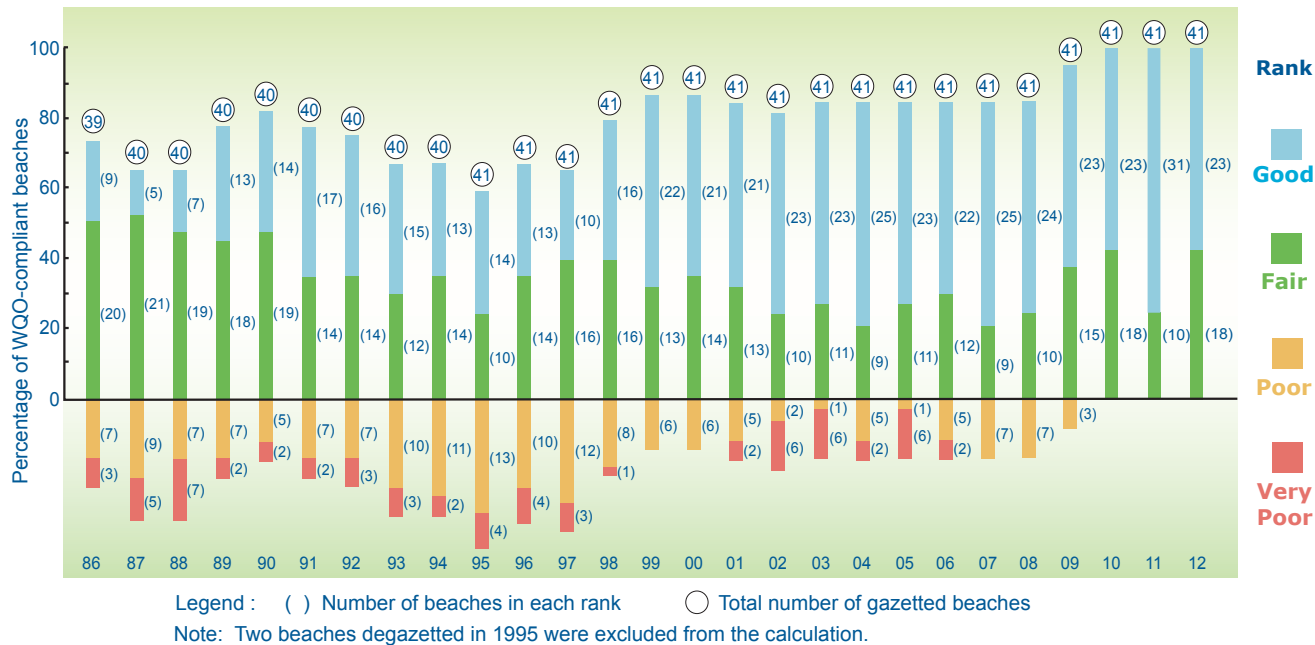
1. Practical Salinity Unit ; 2. Nephelometric Turbidity Unit
Note: Data presented are arithmetic means; figures in brackets are ranges.



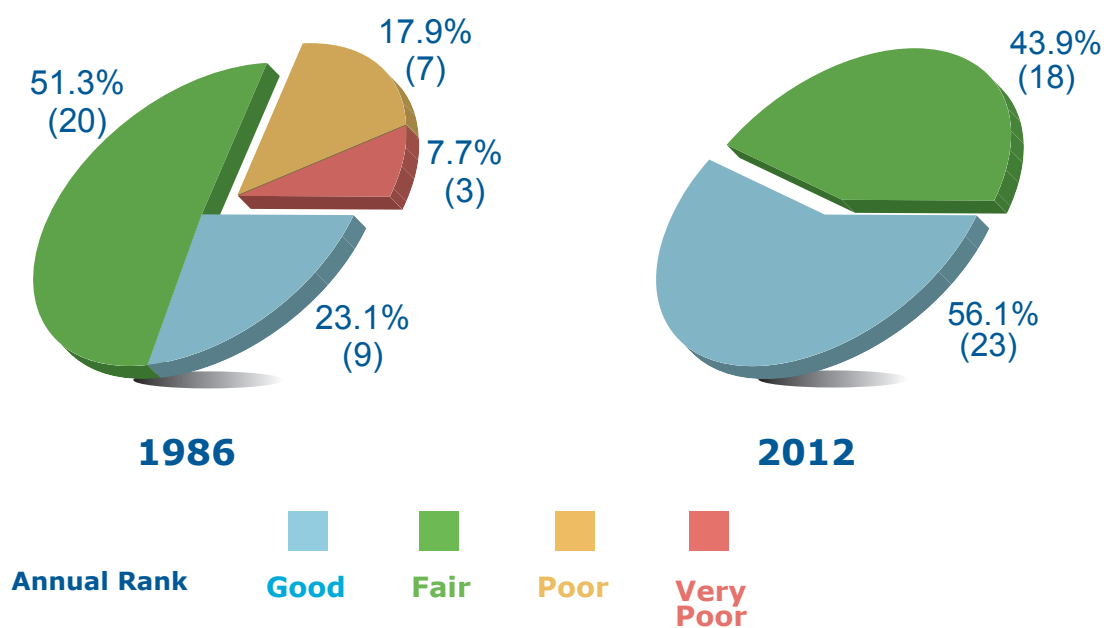
Beach Water Quality in Hong Kong 2012

Appendix D - Long-term trend of beach water quality (1986 - 2012)

Annual beach rankings of gazetted beaches from 1986 to 2012



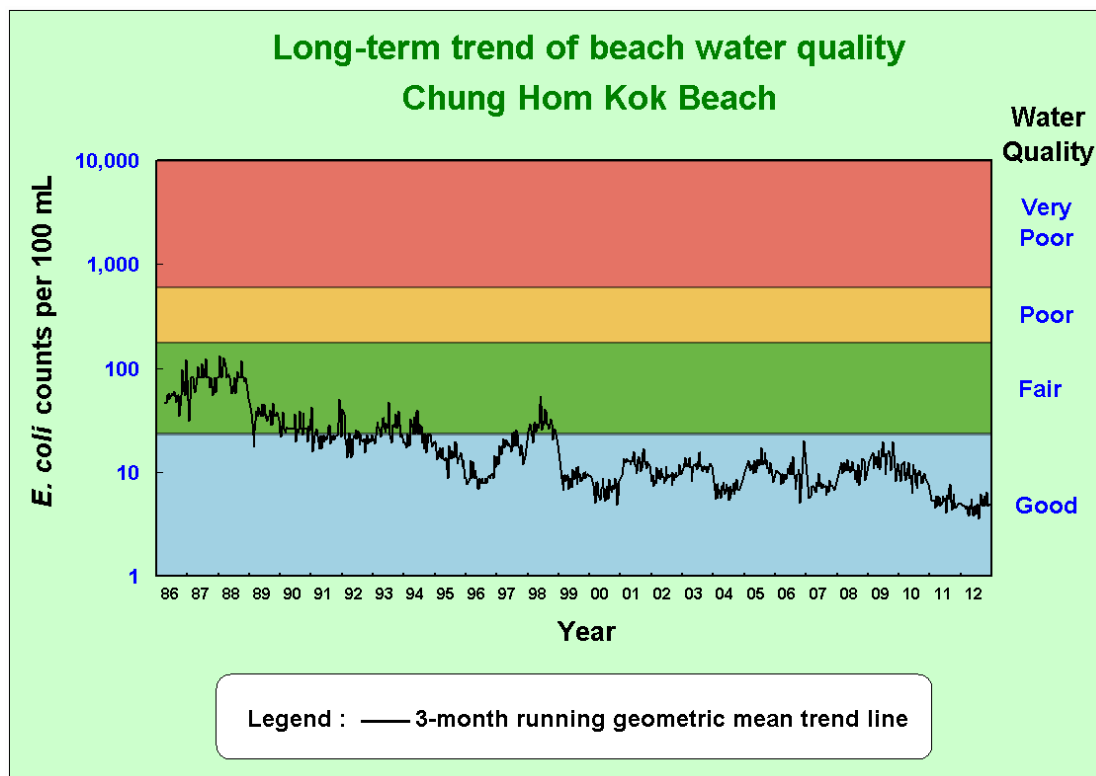
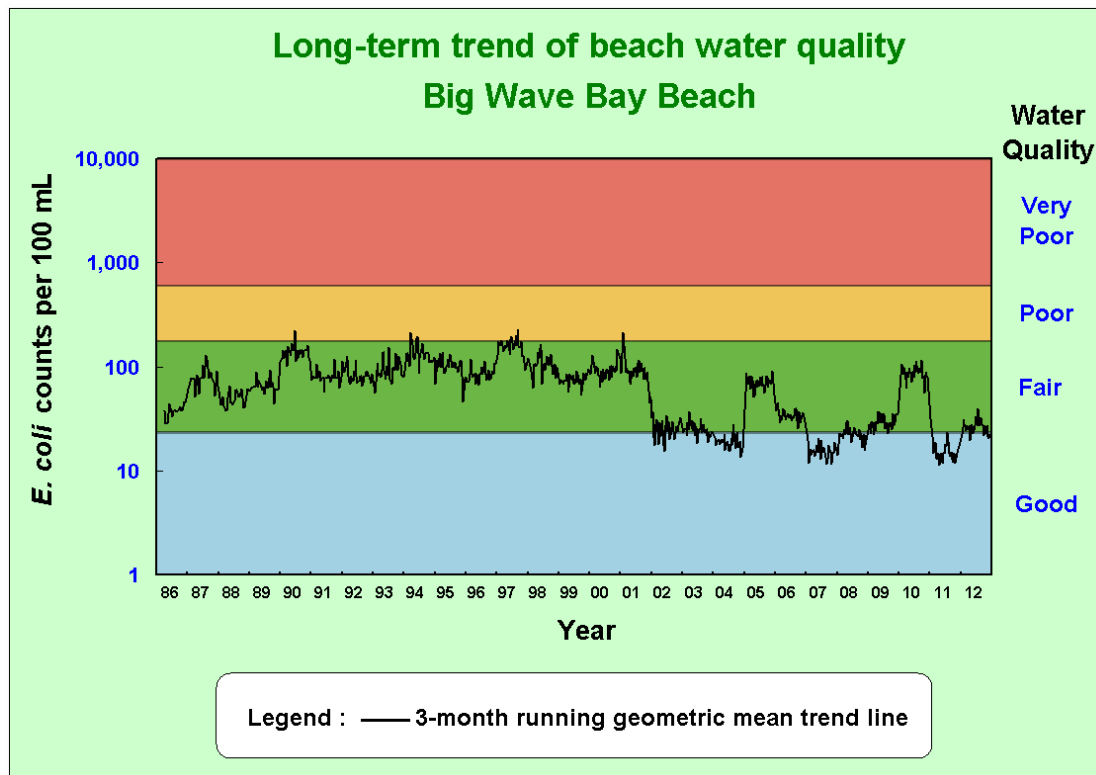
Comparison of annual beach ranking of gazetted beaches in 1986 and 2012





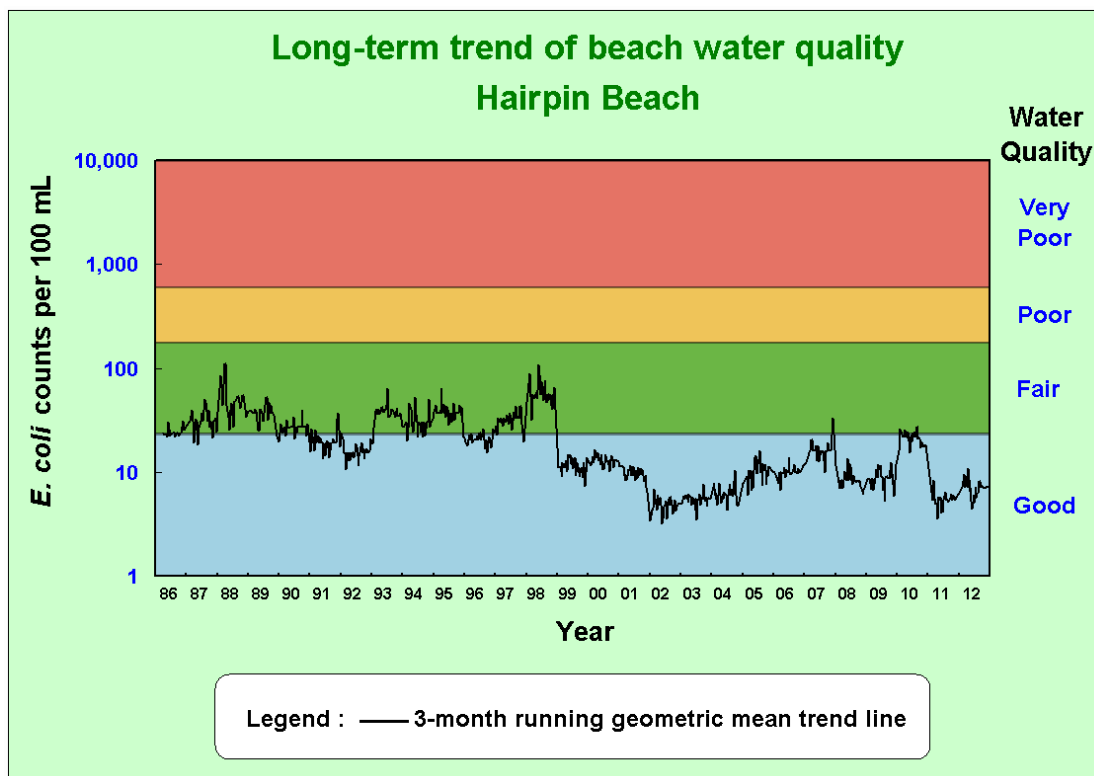
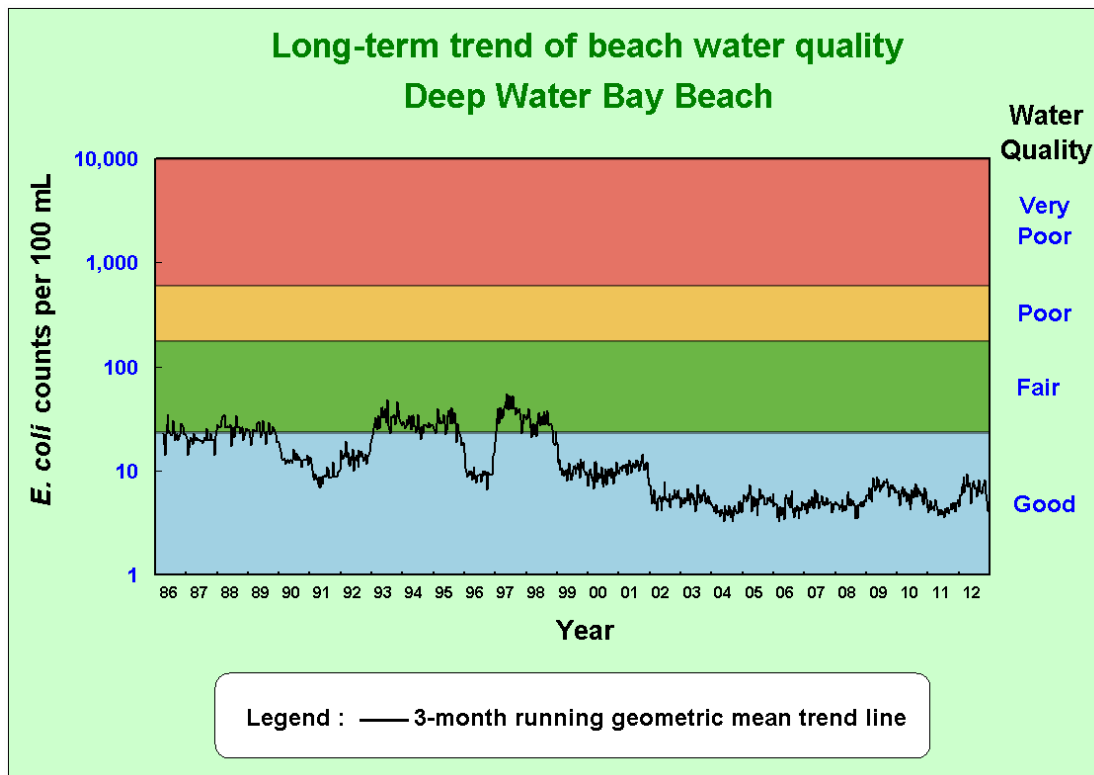
Beach Water Quality in Hong Kong 2012

Southern District



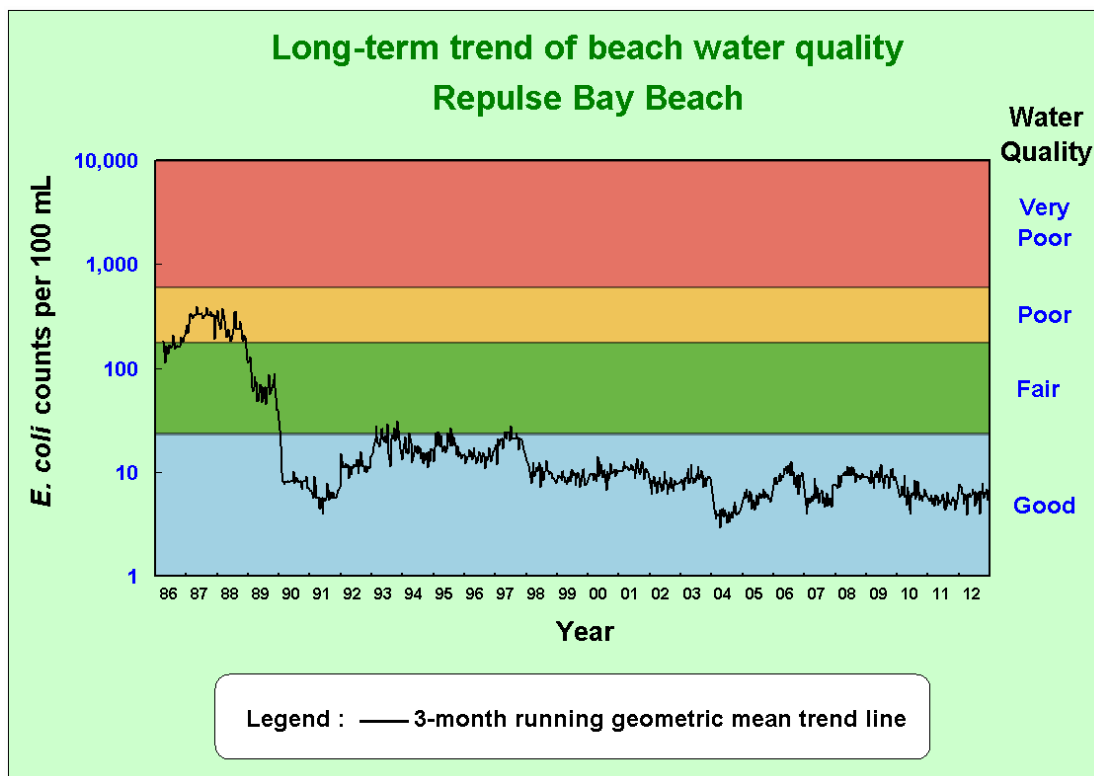
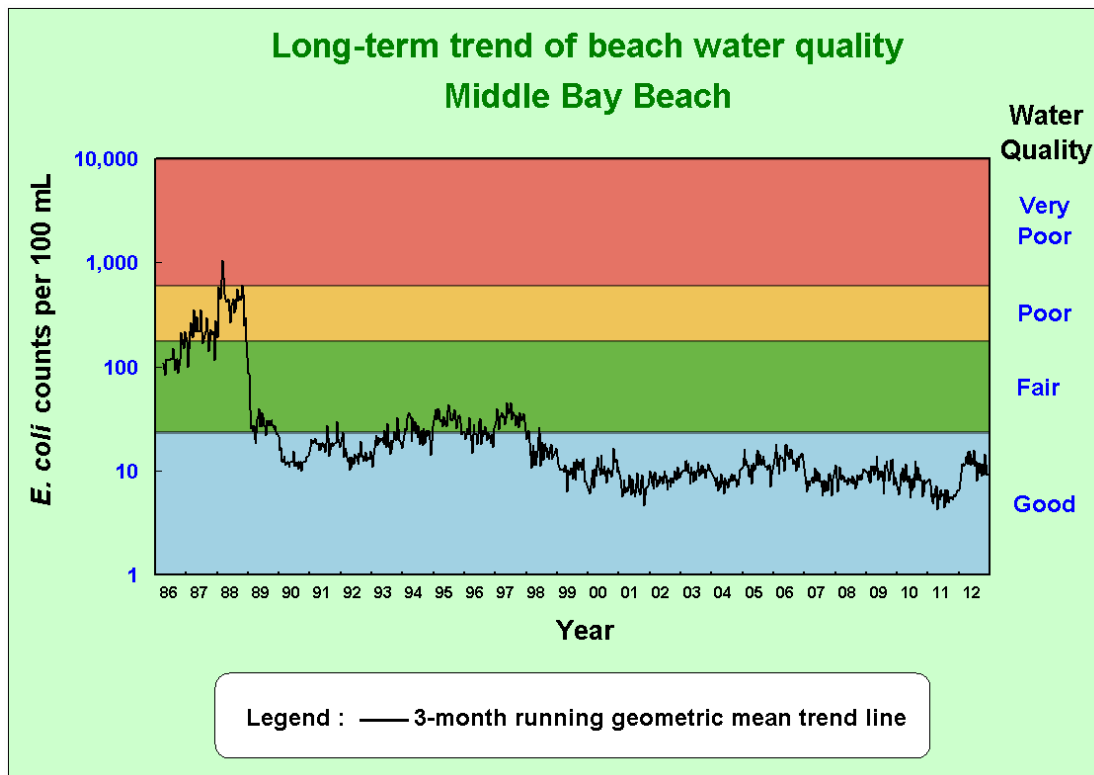


Beach Water Quality in Hong Kong 2012



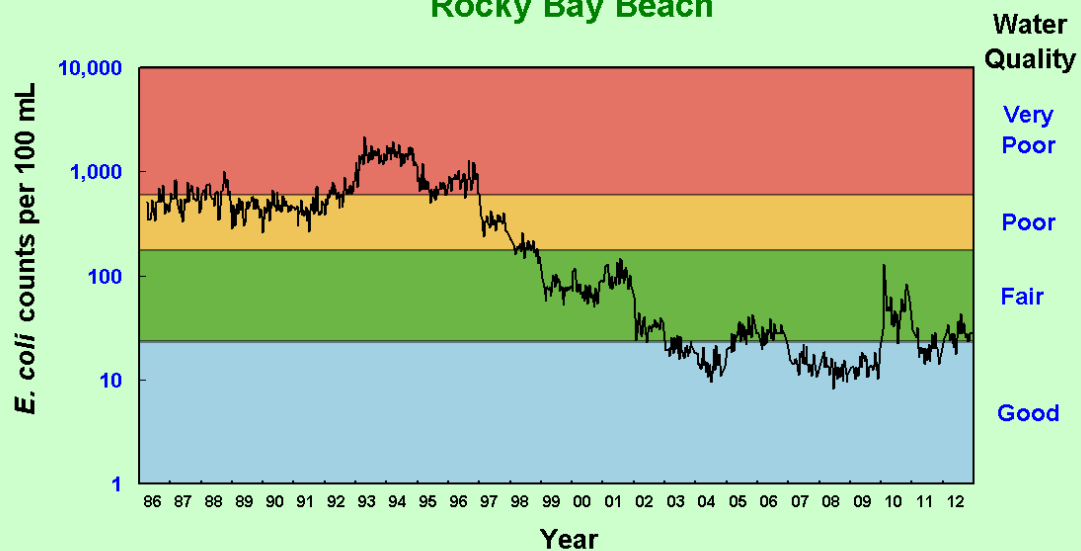


Beach Water Quality in Hong Kong 2012



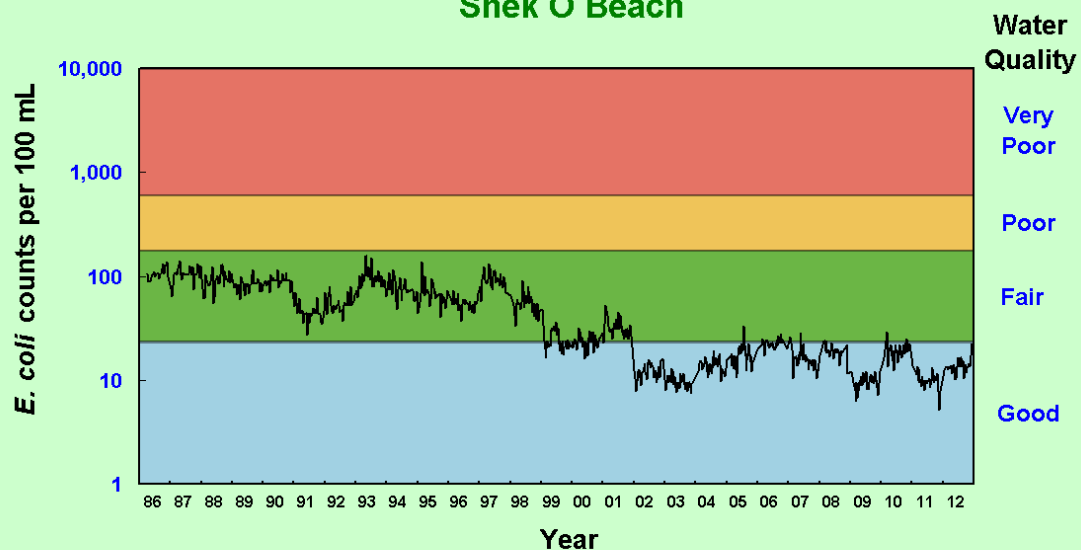


Long-term trend of beach water quality Rocky Bay Beach



Legend : — 3-month running geometric mean trend line

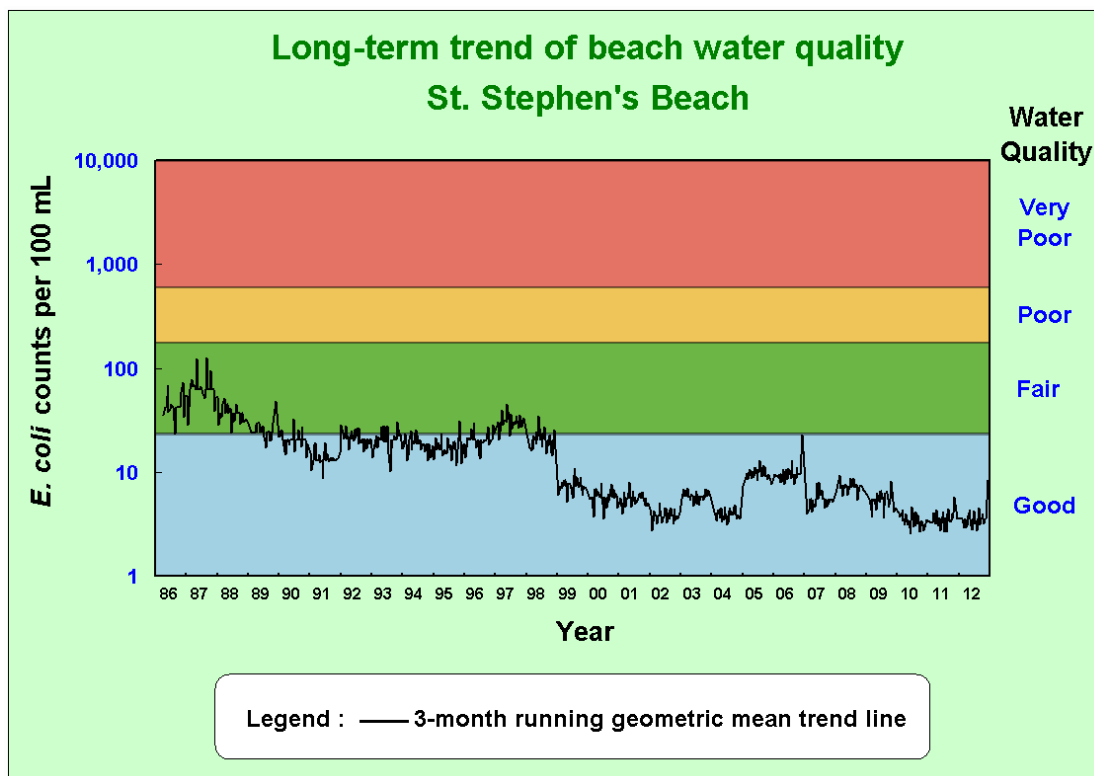
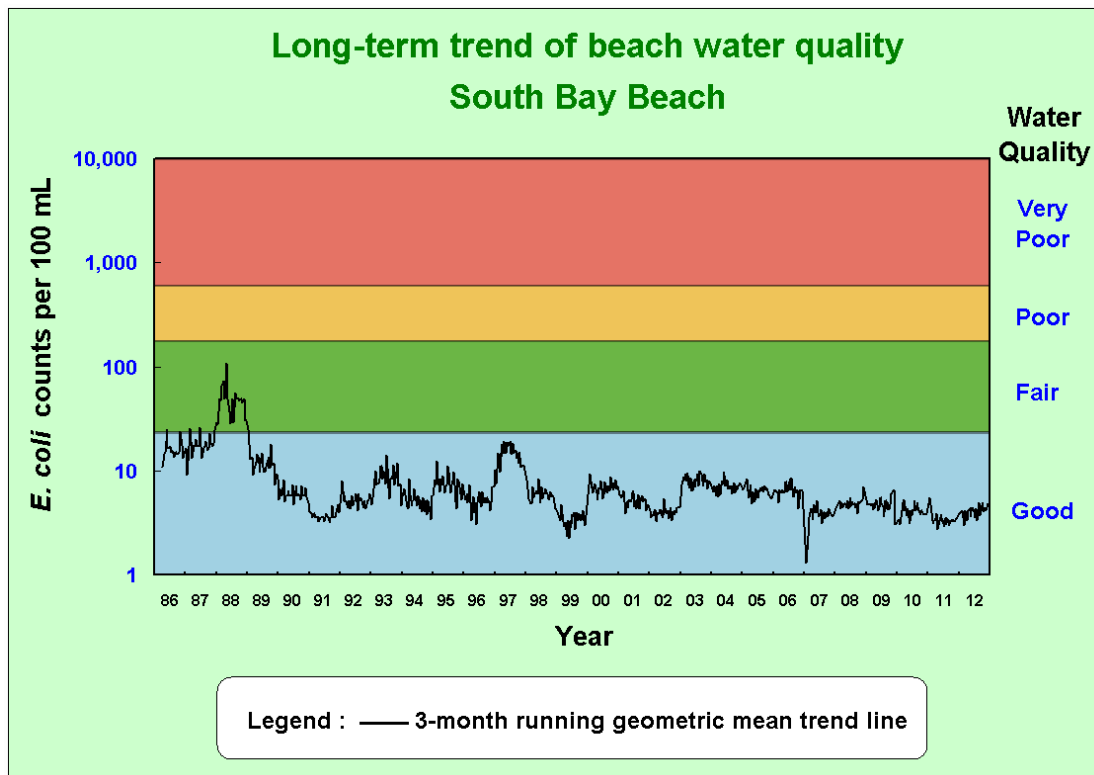
Long-term trend of beach water quality Shek O Beach



Legend : — 3-month running geometric mean trend line

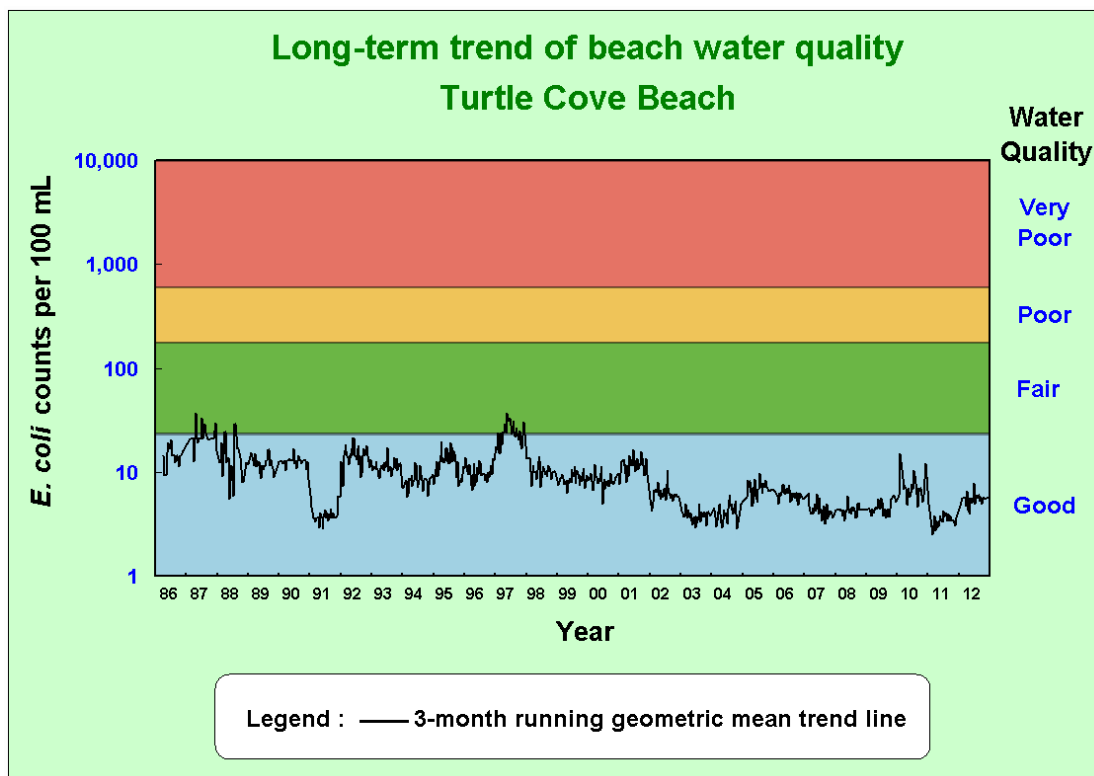
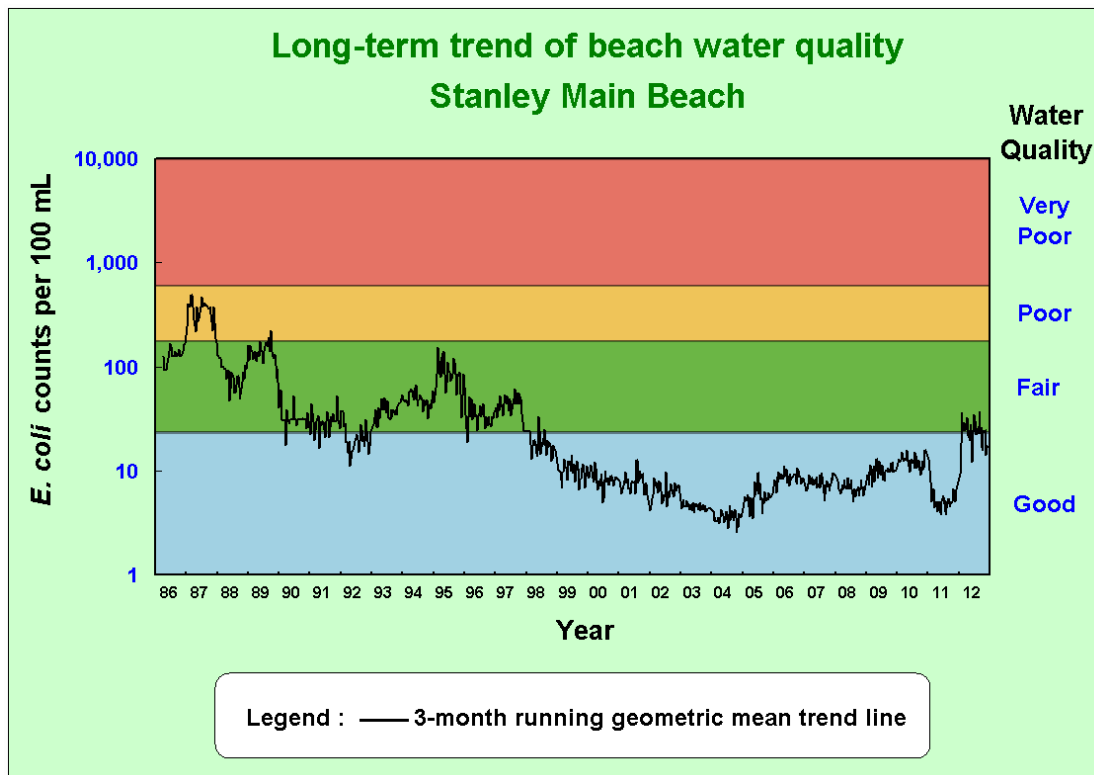


Beach Water Quality in Hong Kong 2012





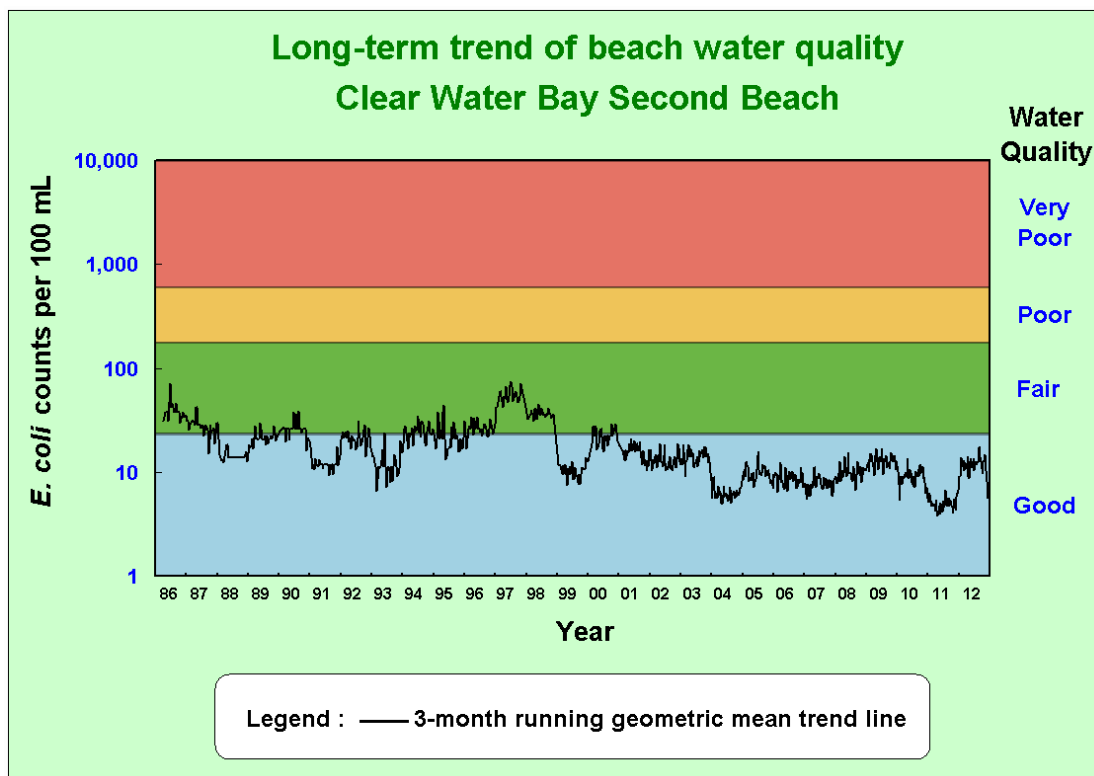
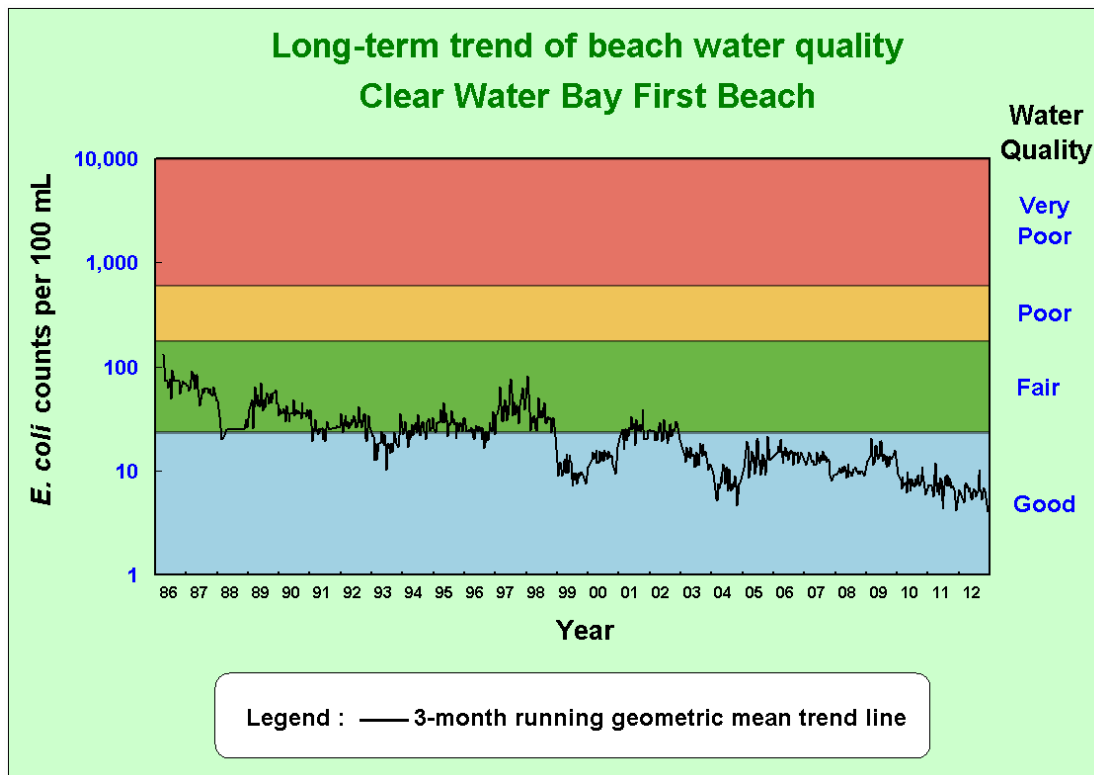
Beach Water Quality in Hong Kong 2012





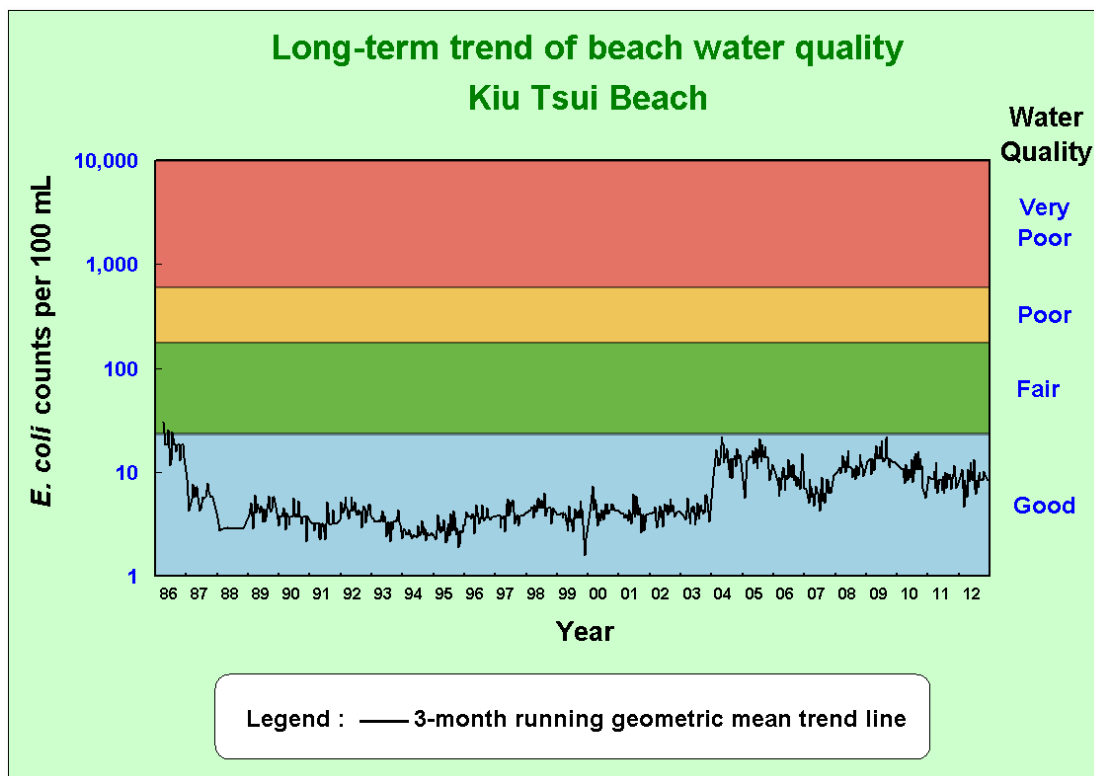
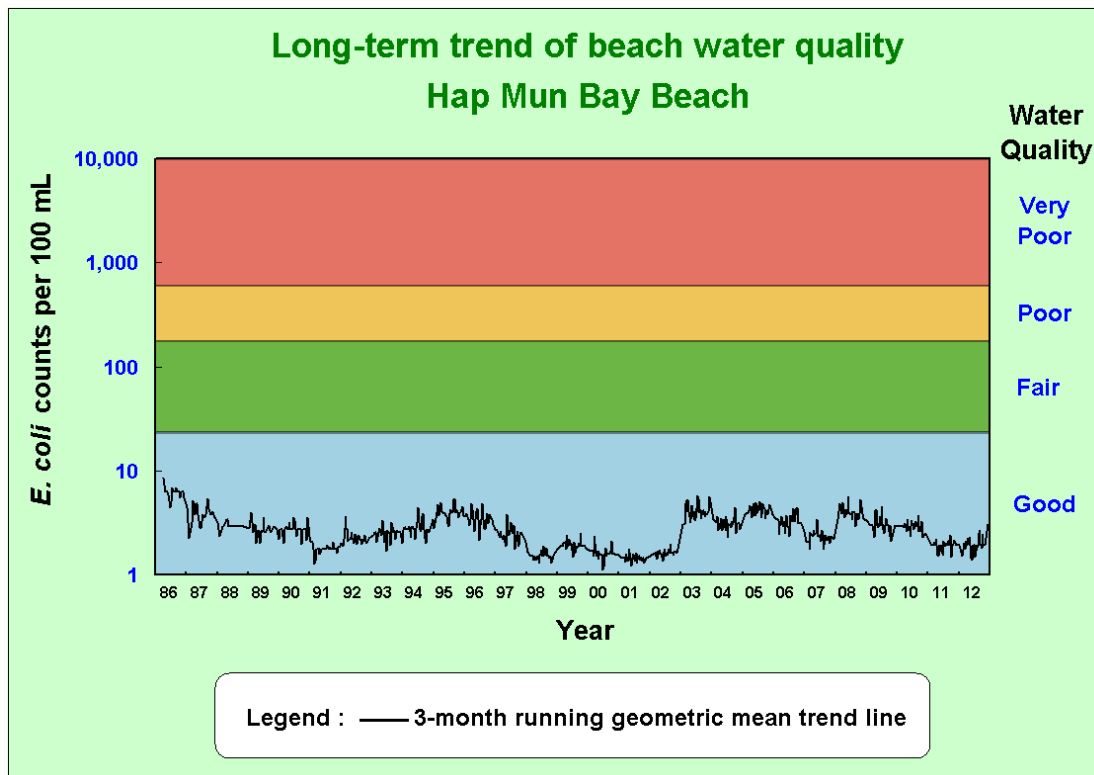
Beach Water Quality in Hong Kong 2012

Sai Kung District



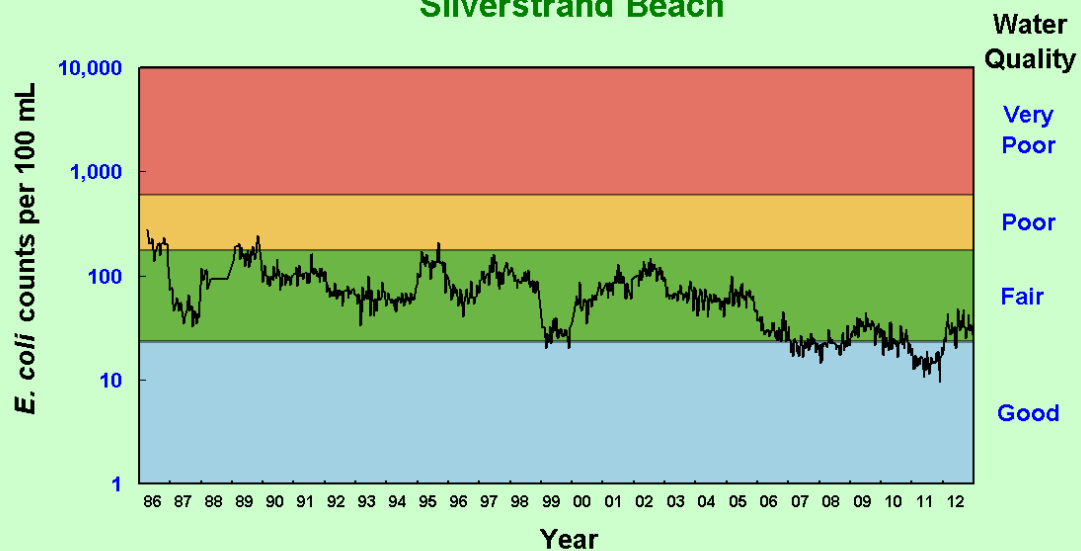


Beach Water Quality in Hong Kong 2012



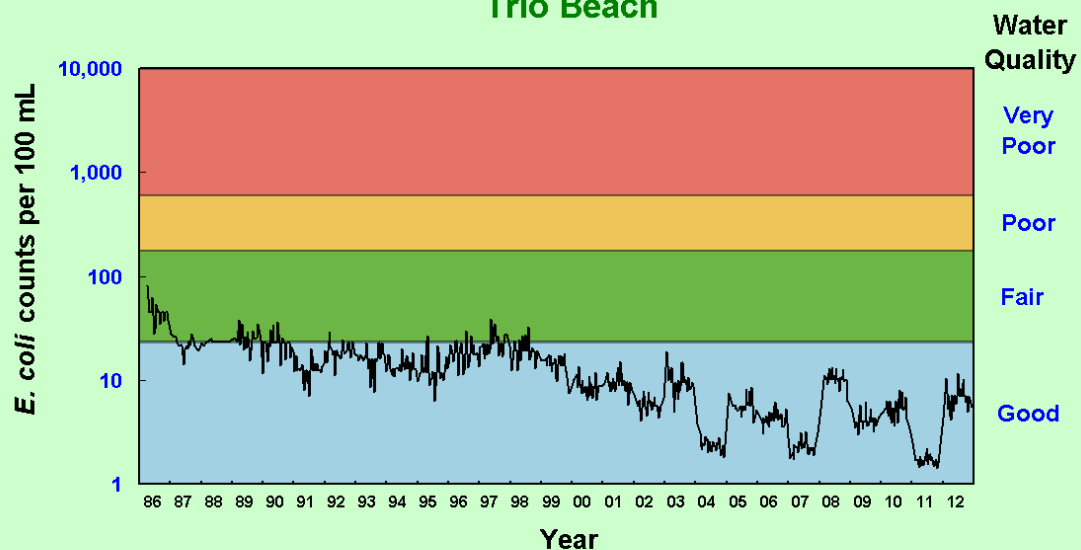


Long-term trend of beach water quality Silverstrand Beach



Legend : — 3-month running geometric mean trend line

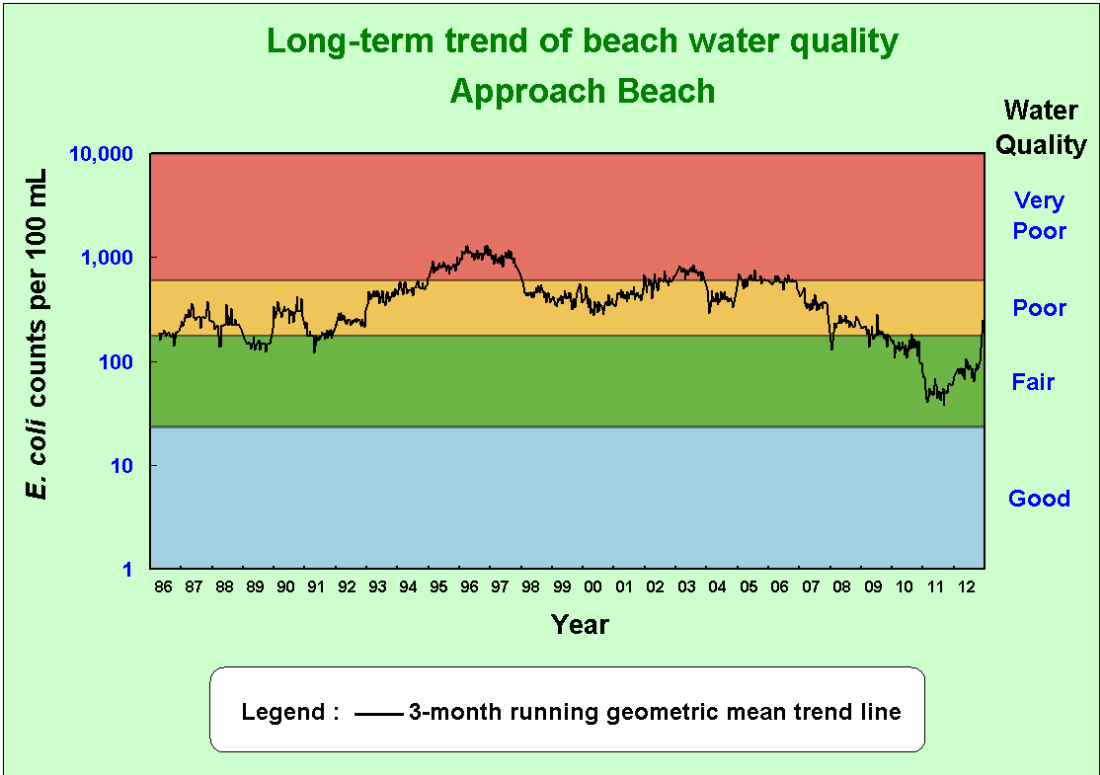
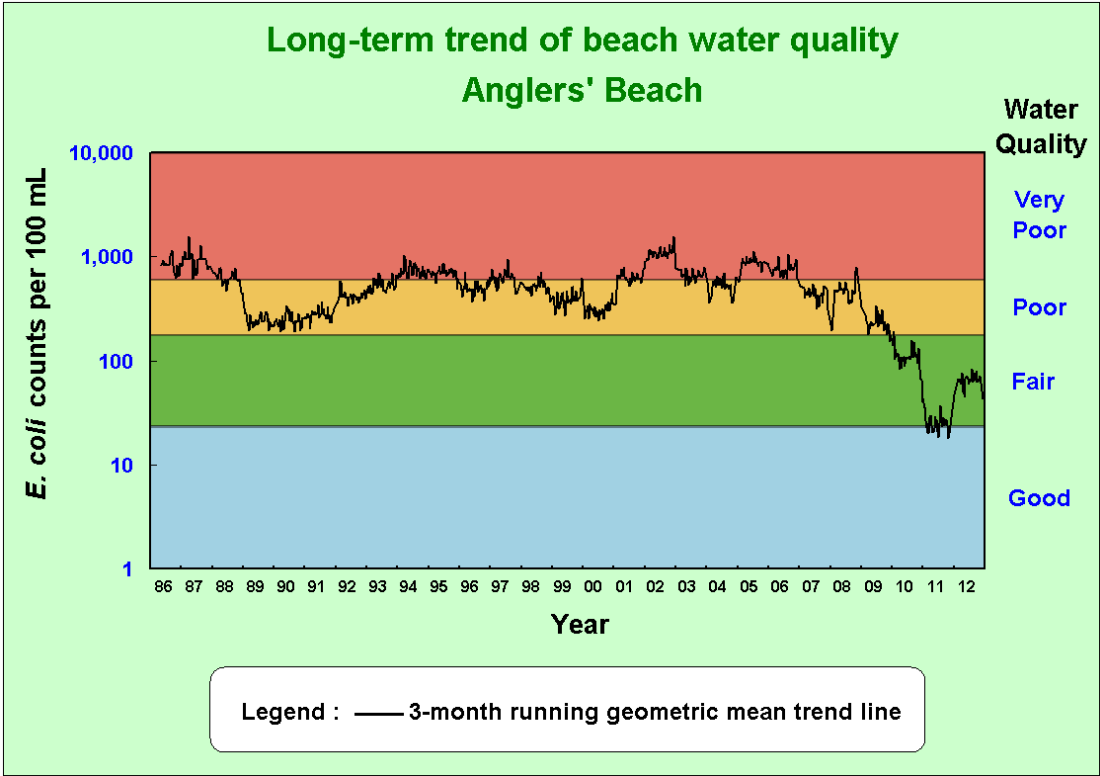
Long-term trend of beach water quality Trio Beach



Legend : — 3-month running geometric mean trend line

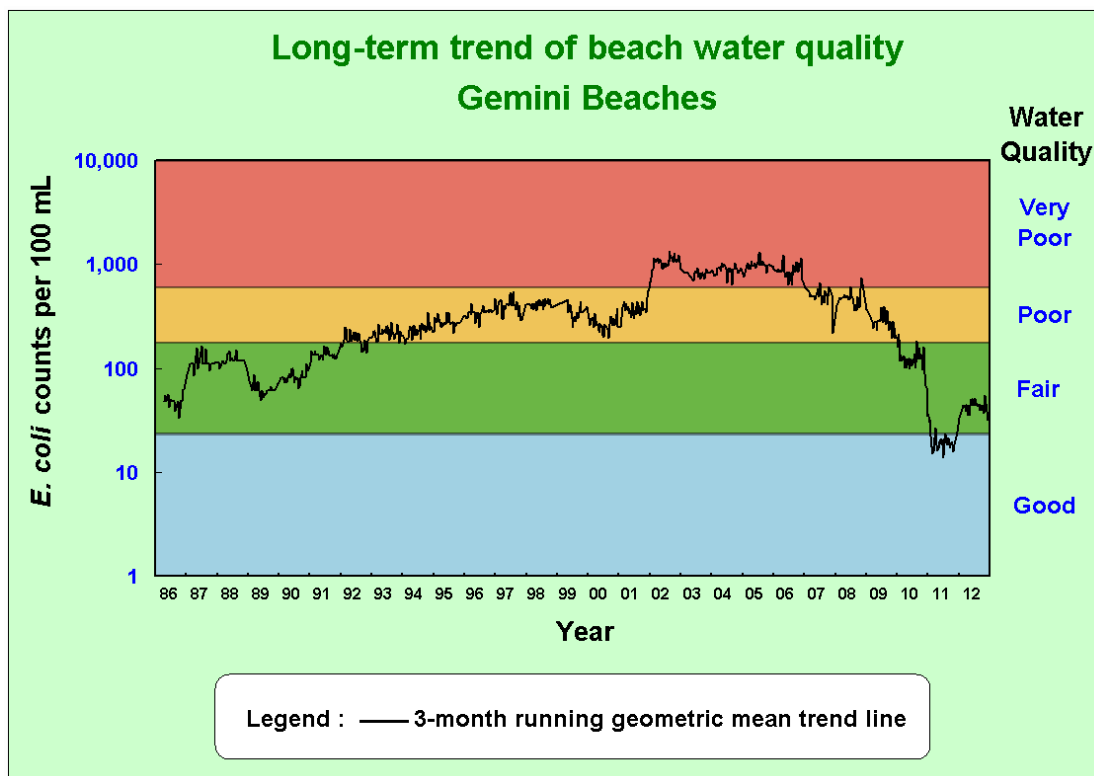
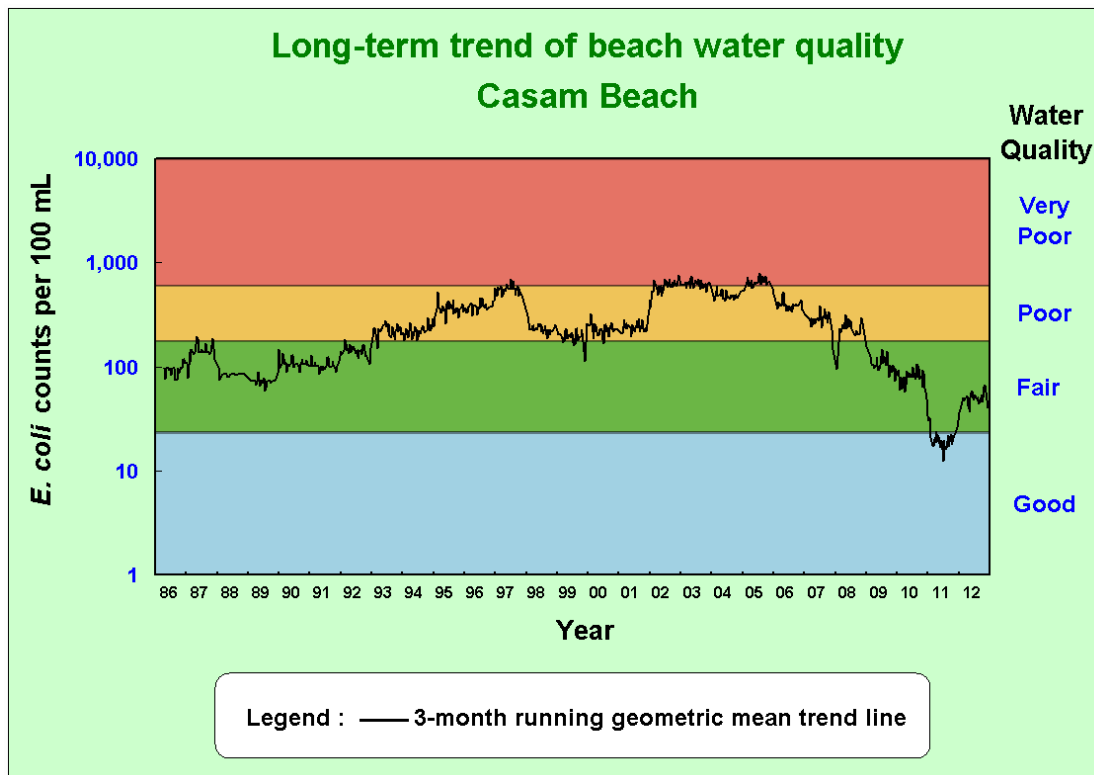


Tsuen Wan District



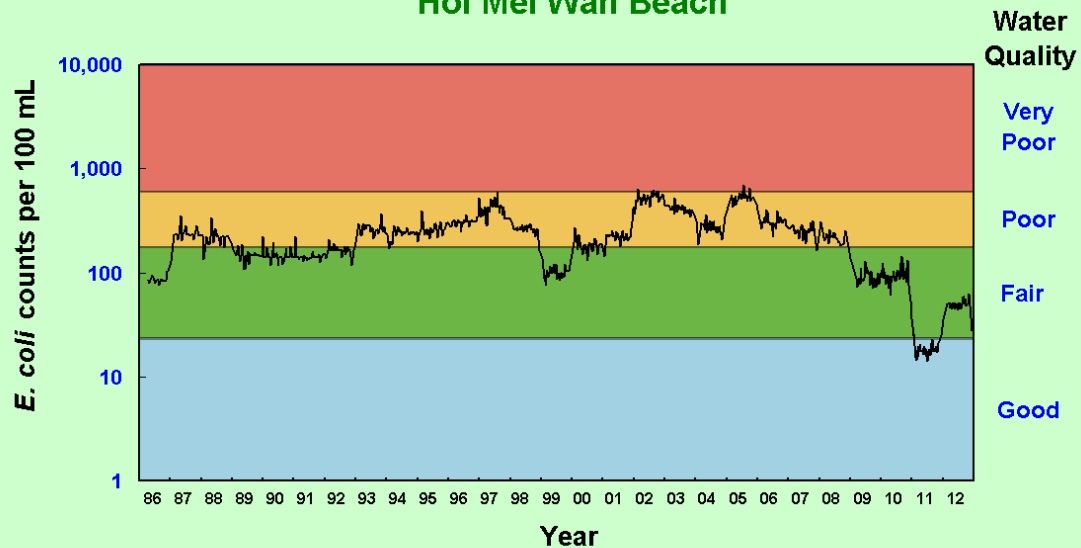


Beach Water Quality in Hong Kong 2012



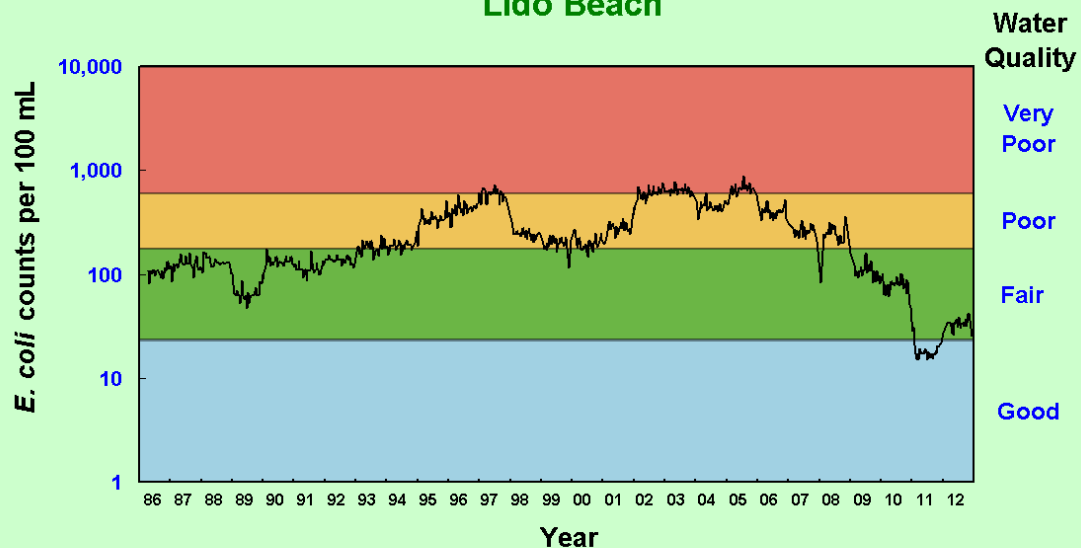


Long-term trend of beach water quality Hoi Mei Wan Beach



Legend : — 3-month running geometric mean trend line

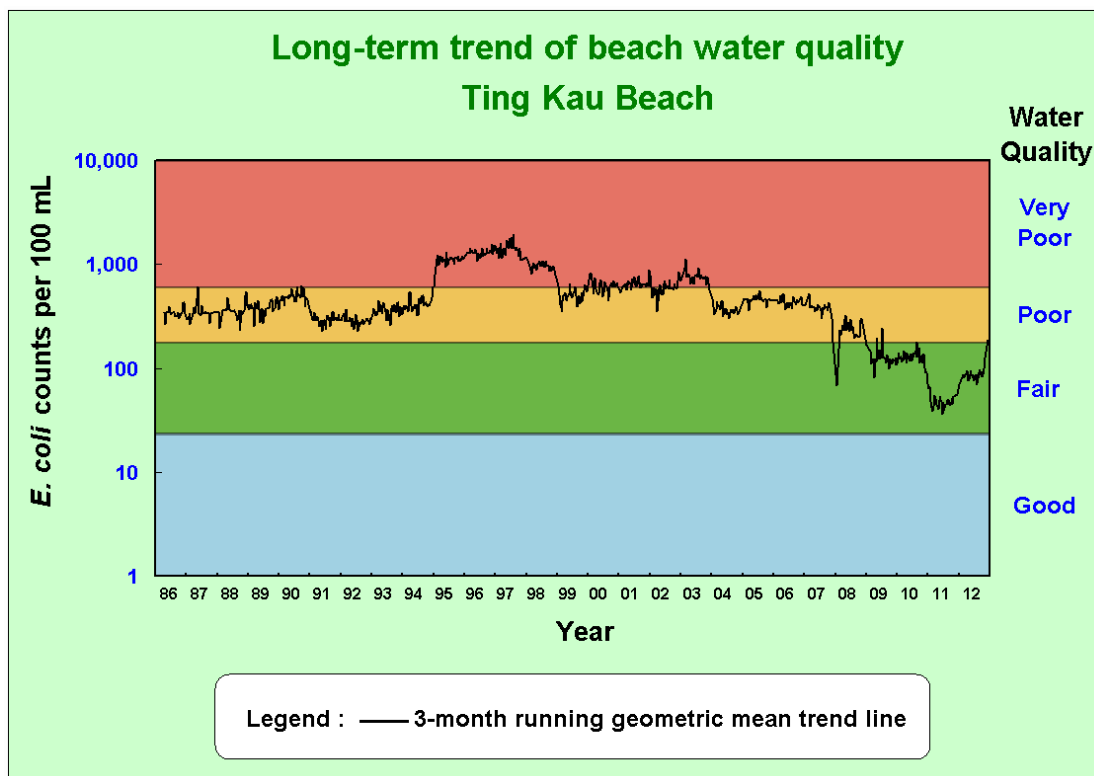
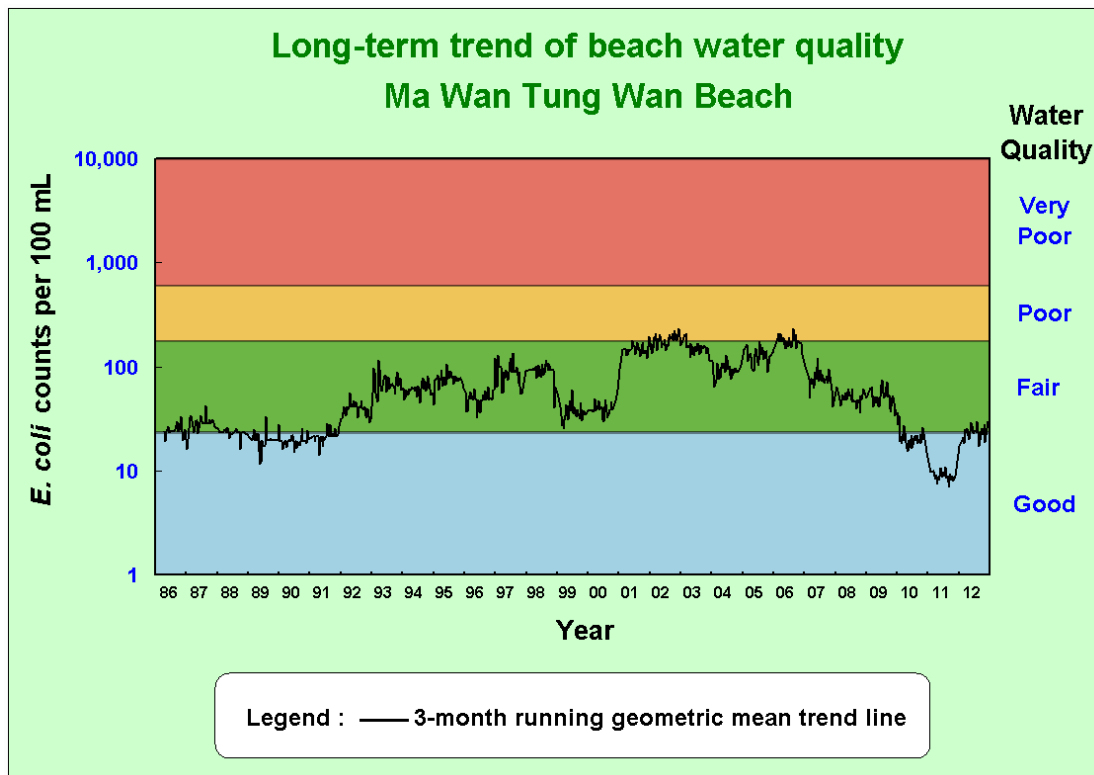
Long-term trend of beach water quality Lido Beach



Legend : — 3-month running geometric mean trend line

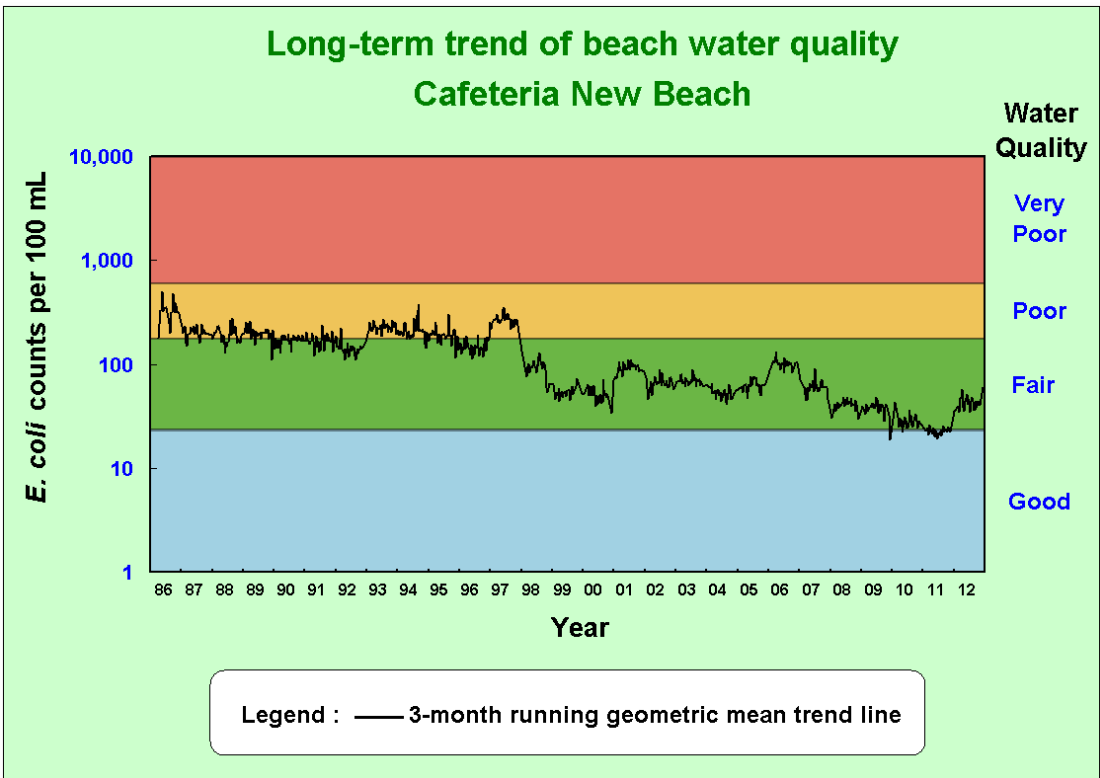
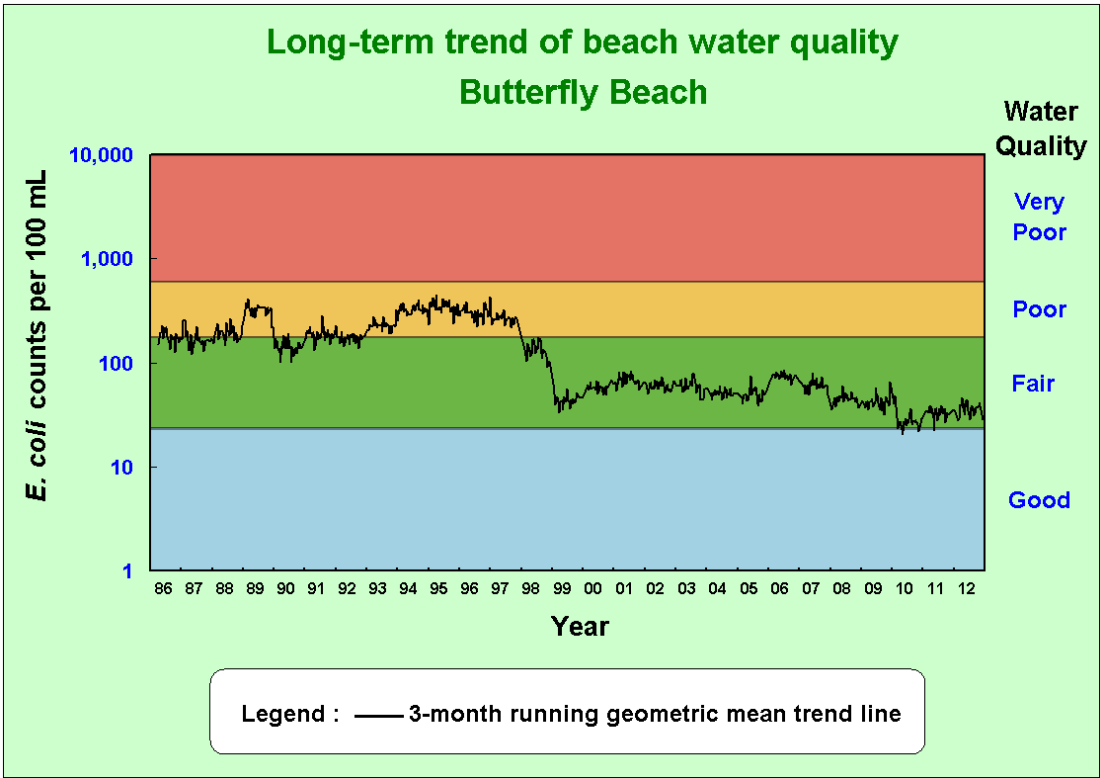


Beach Water Quality in Hong Kong 2012



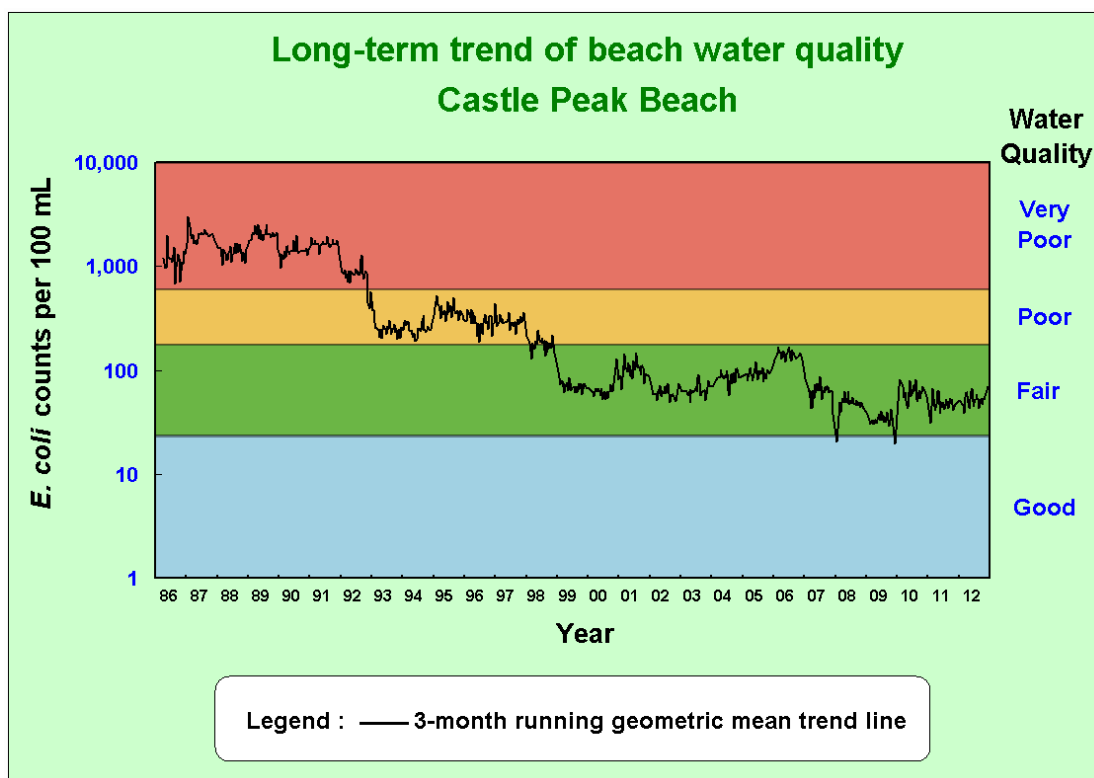
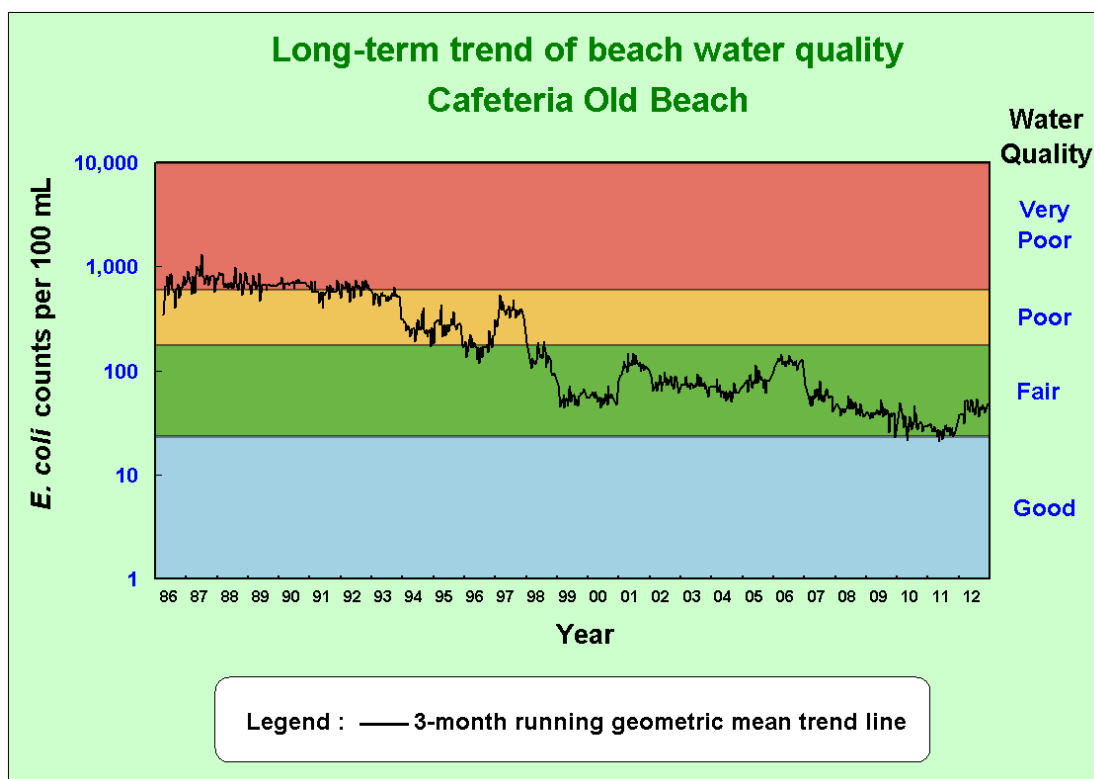


Tuen Mun District



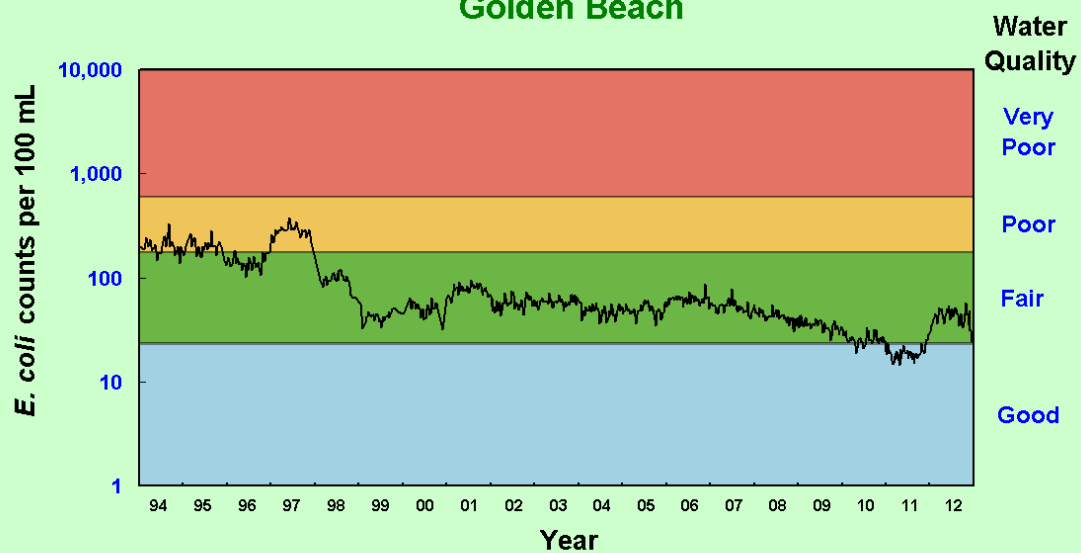


Beach Water Quality in Hong Kong 2012



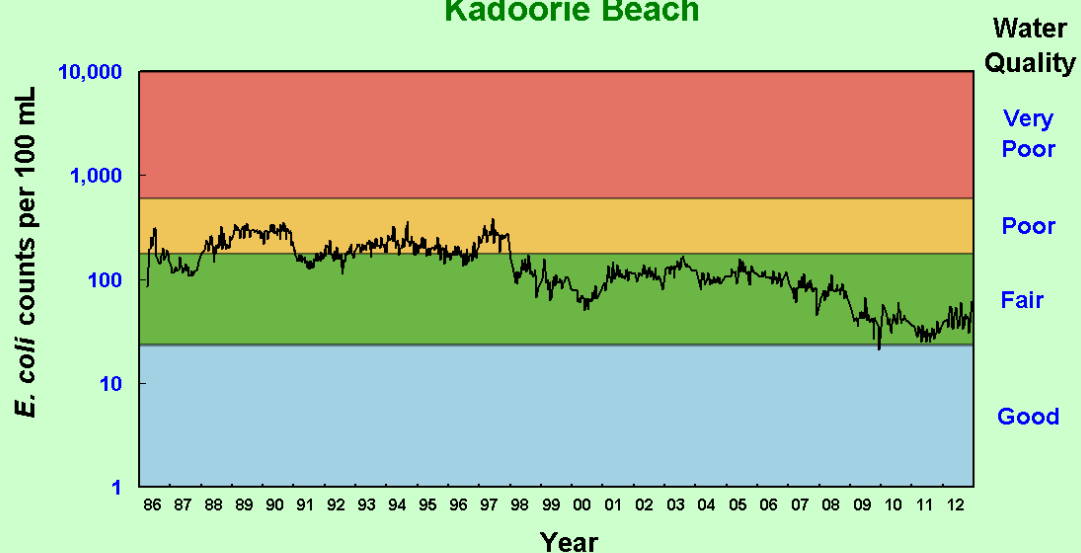


Long-term trend of beach water quality Golden Beach



Legend : — 3-month running geometric mean trend line

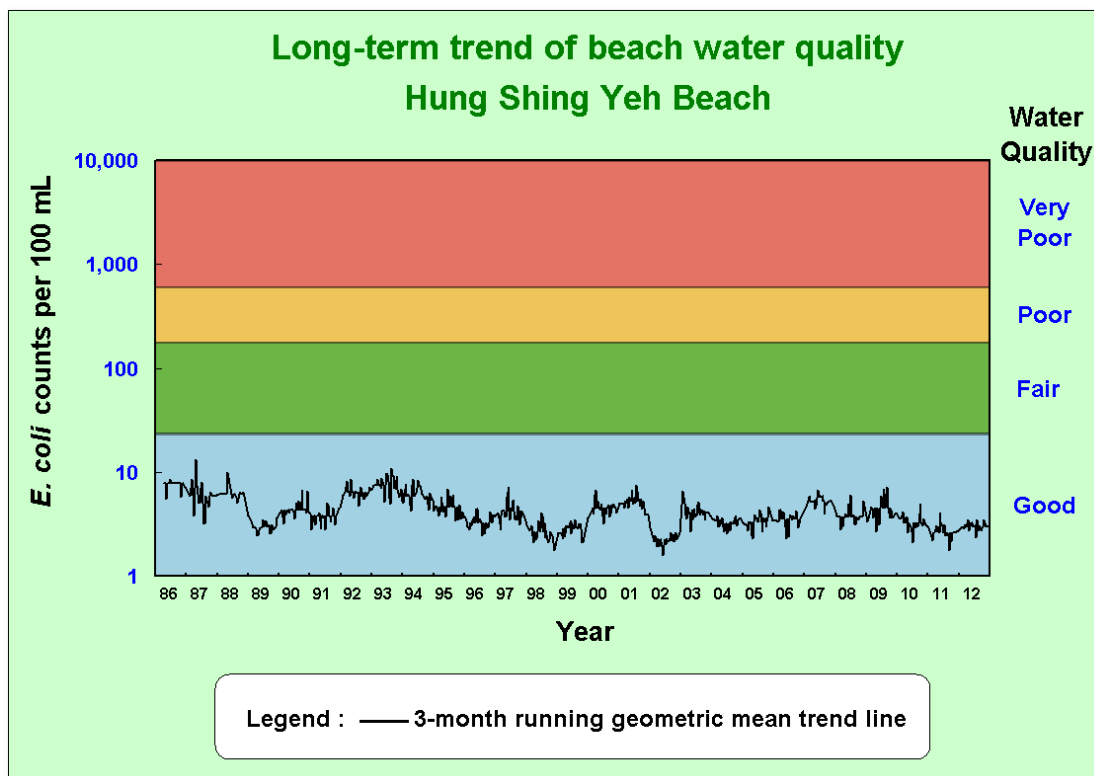
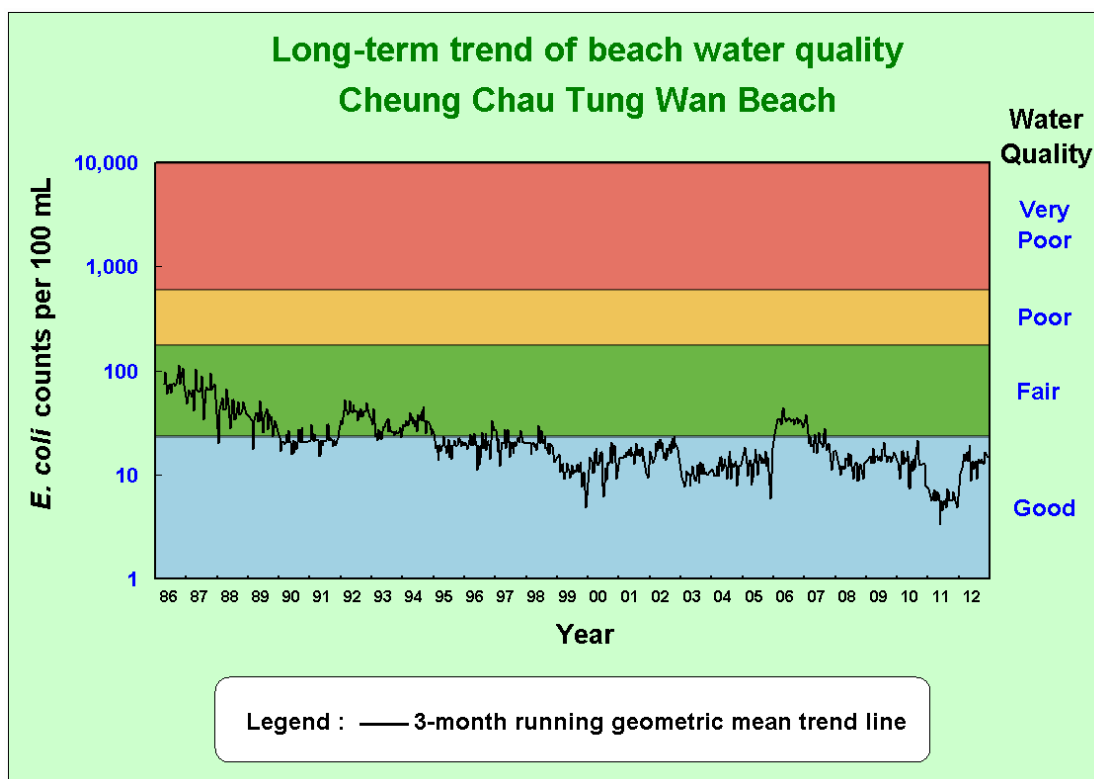
Long-term trend of beach water quality Kadoorie Beach



Legend : — 3-month running geometric mean trend line

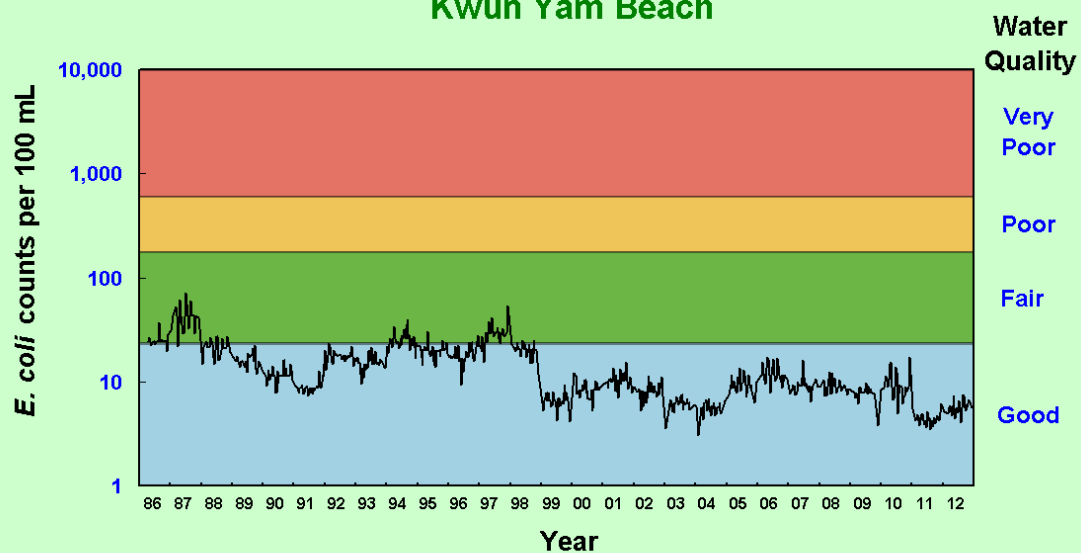


Outlying Islands



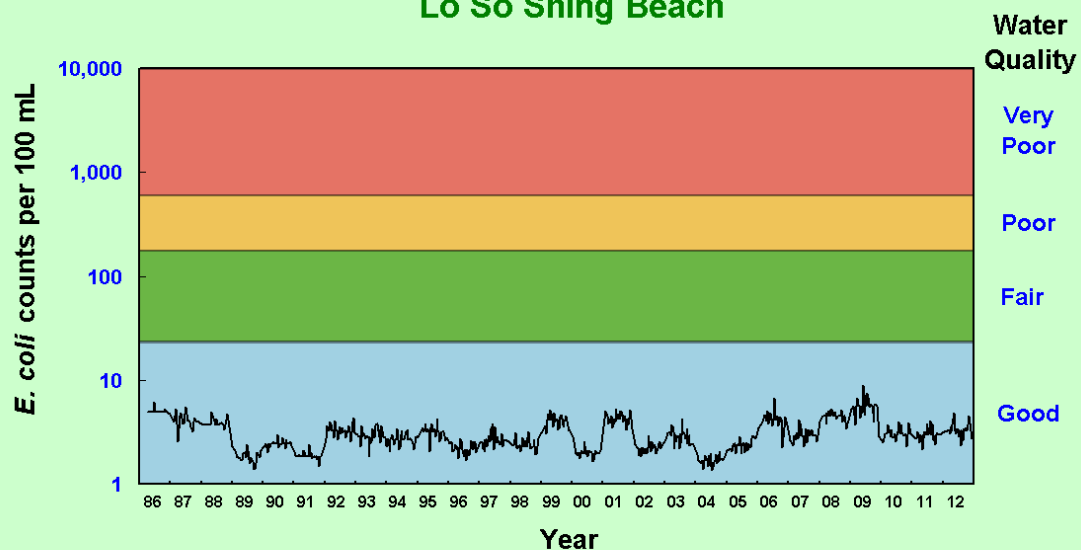


Long-term trend of beach water quality Kwun Yam Beach



Legend : — 3-month running geometric mean trend line

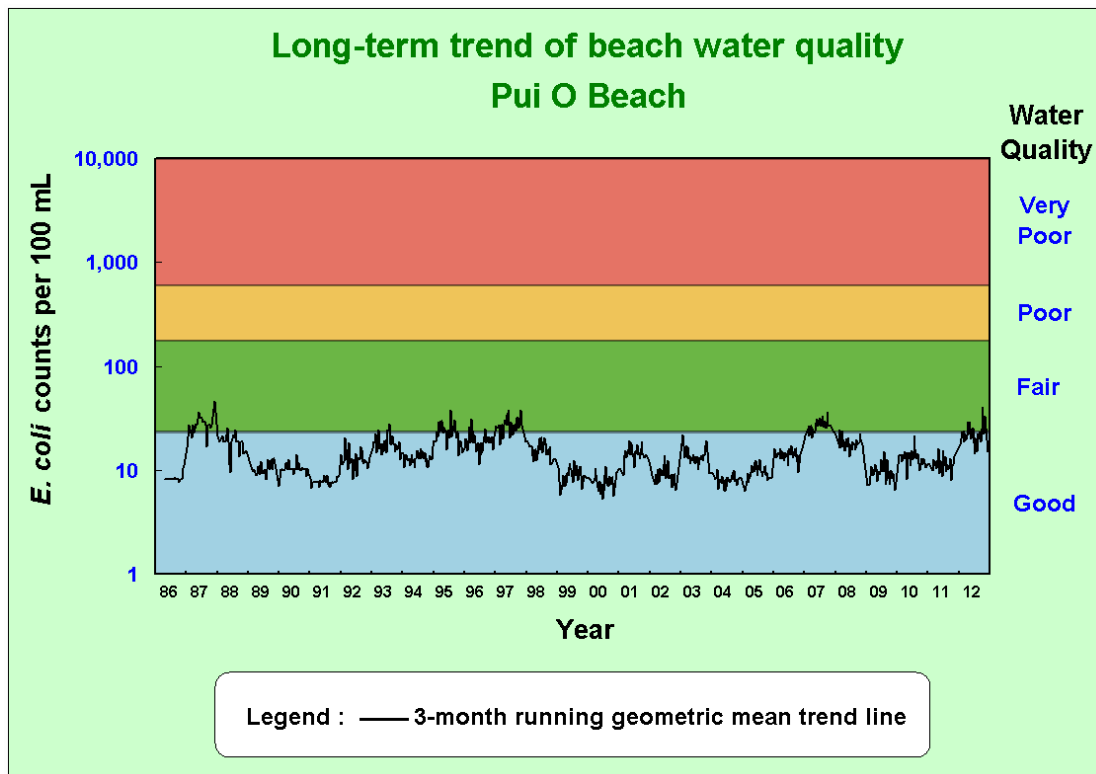
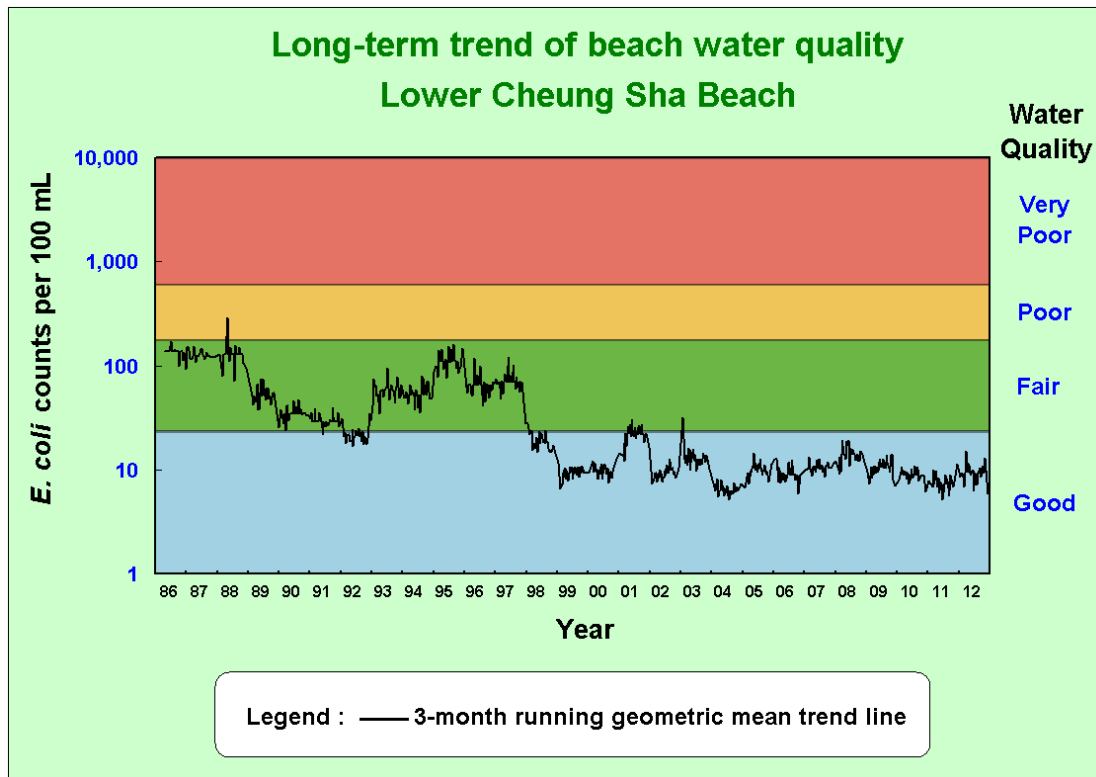
Long-term trend of beach water quality Lo So Shing Beach



Legend : — 3-month running geometric mean trend line

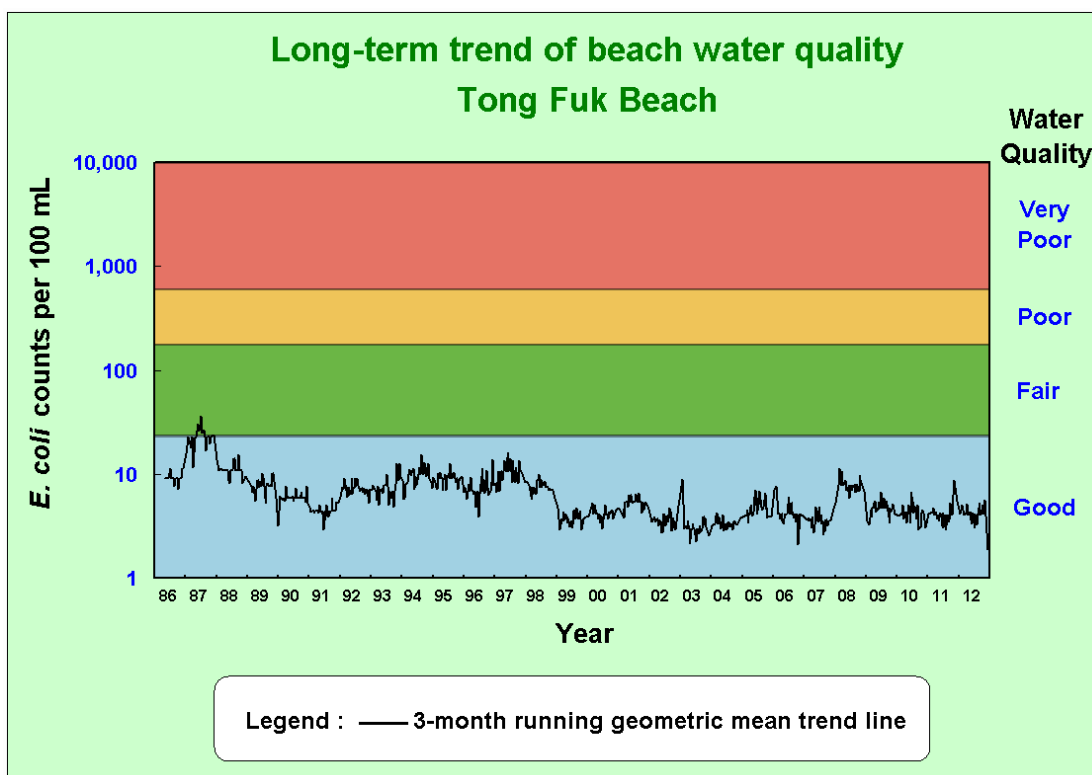
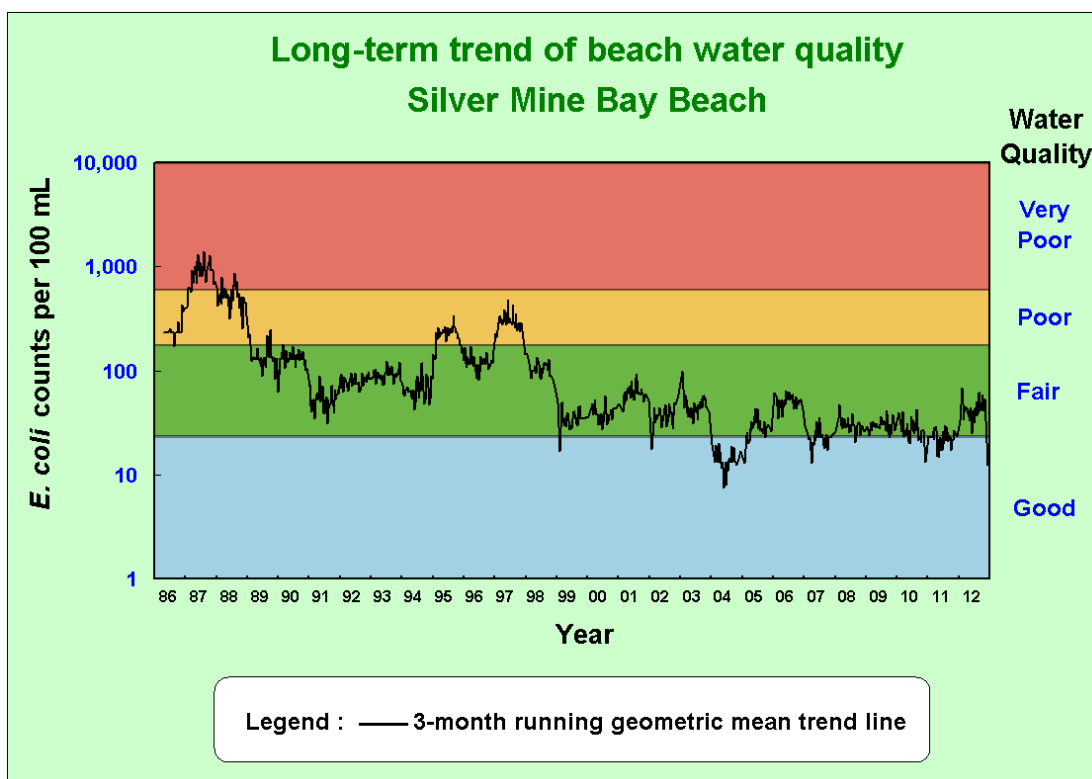


Beach Water Quality in Hong Kong 2012



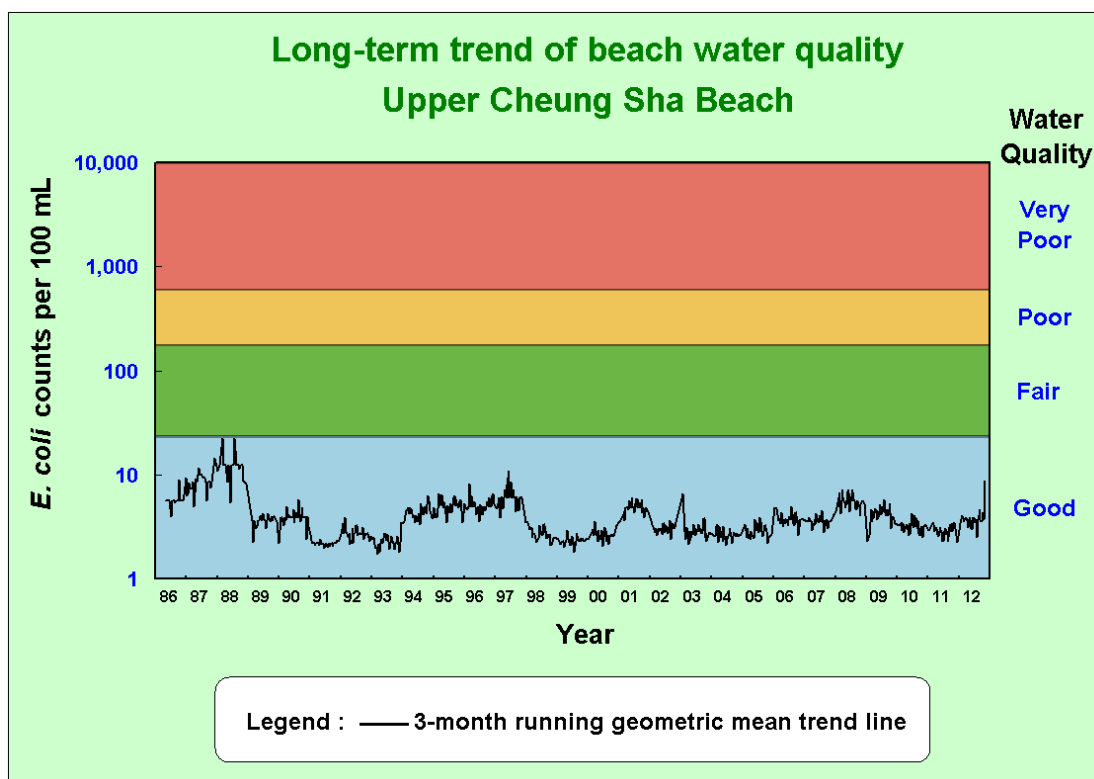


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