Head 168 — HONG KONG OBSERVATORY

Controlling officer: the Director of the Hong Kong Observatory will account for expenditure under this Head.

Estimate 2011–12	**$220.7m**
Establishment ceiling 2011–12 (notional annual mid-point salary value) representing an estimated 285 non-directorate posts as at 31 March 2011 rising by two posts to 287 non-directorate posts as at 31 March 2012	**$115.9m**

In addition, there will be an estimated five directorate posts as at 31 March 2011 and as at 31 March 2012.

Controlling Officer's Report

Programmes

Programme (1) Weather Services	This programme contributes to Policy Area 7: Public Safety (Secretary for Commerce and Economic Development)
Programme (2) Radiation Monitoring and Assessment	This programme contributes to Policy Area 9: Internal Security (Secretary for Security).
Programme (3) Time Standard and Geophysical Services	This programme contributes to Policy Area 7: Public Safety (Secretary for Commerce and Economic Development)

Detail

Programme (1): Weather Services

	2009–10 (Actual)	2010–11 (Original)	2010–11 (Revised)	**2011–12 (Estimate)**
Financial provision ($m)	183.1	182.0	182.5 (+0.3%)	**187.3** (+2.6%) (or +2.9% on 2010–11 Original)

Aim

2 The aim is to provide weather forecasts and issue warnings to the public, special users, the shipping community as well as aircraft and aviation groups in order to reduce loss of life and damage to property, and minimise disruption to economic and social activities during hazardous weather.

Brief Description

3 The Hong Kong Observatory's Central Forecasting Office and Airport Meteorological Office are responsible for the preparation and issue of weather information, forecasts and various warnings on hazardous weather to the public, the shipping community and aviation groups. The Observatory also promotes public awareness of, and community preparedness for, natural disasters. This work involves:

- operating a network of mostly automated weather stations;
- carrying out real-time exchange of data with meteorological centres in the world;
- receiving meteorological satellite imageries and operating weather radar systems;
- analysing meteorological data and computing the future weather by numerical modelling;
- disseminating weather information by a diversity of means;
- issuing warnings on hazardous weather such as tropical cyclones, storm surges, rainstorms, landslips, flooding, thunderstorms, windshear, fire danger and extreme hot and cold conditions; and
- conducting public talks, interviews and training courses as well as producing publicity material on hazardous weather phenomena.

4 In 2010, the Observatory fulfilled its performance pledges of issuing at least one bulletin every hour of the day, disseminating 99 per cent of the bulletins within ten minutes after each hour, and maintaining a forecast accuracy (as verified by objective means) of not less than 88 per cent. The local storm surge alert service was enhanced to include five additional locations in the New Territories. A new computer platform was put into operation for running high-resolution numerical weather prediction models. Special weather services were provided to support the Hong Kong Windsurfing Team participating in the 2010 Asian Games.

5 The Observatory maintains a close surveillance of the weather at and around the Hong Kong International Airport (HKIA) and provides the aviation community with the weather information needed for operations. In 2010, the LIDAR windshear alerting system (LIWAS) was put into full operation to provide alerts for all arrival and departure runway corridors.

6 Enhanced weather information was provided in 2010 to meet the needs of the public. This includes:

- launching the MyObservatory webpage, iPhone and Android applications to provide location-specific weather information to users of mobile phones;
- launching a webpage, on a trial basis, of real-time weather warnings in the Greater Pearl River Delta developed in collaboration with the Guangdong Meteorological Bureau and the Macao Meteorological and Geophysical Bureau;
- delivering weather warnings and Observatory news over the Twitter social networking website;
- launching a new webpage of predicted rainfall maps in the next two hours over the Pearl River Delta region with user-selectable geographical information content;
- launching a new web portal for the fishermen community;
- providing online a new suite of computer forecast weather maps over East Asia and the western North Pacific with enriched content and details; as well as time- and location-specific weather forecasts for popular water sports locations in Hong Kong;
- launching a "Digital Weather Forecast" webpage providing prediction of hourly changes in temperature, wind direction and speed at a resolution of ten kilometres in Hong Kong and the neighbouring Pearl River Delta region;
- enhancing the tropical cyclone track information webpage by displaying the track on a base map with detailed geographic information and providing information on tropical cyclones at their analysed and forecast positions;
- providing location-specific weather information at more than 400 premises with free public Wi-Fi service operated by the Government;
- launching a new weather station in Sham Shui Po District, bringing the "One District One Station" initiative to a successful conclusion;
- providing real-time weather images overlooking Chek Lap Kok, Tolo Harbour and the eastern waters of Cheung Chau;
- enriching the Observatory's website for mobile phone and PDA users by adding satellite images from the Chinese Fengyun-2E and Japanese MTSAT-2 geostationary meteorological satellites; and
- producing an in-house weekly weather programme on the YouTube website.

7 Other items of note for 2010 include:

- the Observatory made steady progress with the replacement and upgrading of meteorological facilities for the airport to enhance its aviation weather services. Also, the Observatory took preparatory actions for the funding application relating to its proposed site for housing a new windshear radar, such as local consultations and geotechnical investigation works;
- the Observatory provided meteorological support in severe weather nowcasting to the ExPo 2010 Shanghai China and the Commonwealth Games at New Delhi;
- the Hong Kong Community Weather Information Network which was started in 2007 in collaboration with the Hong Kong Polytechnic University and the Hong Kong Joint-school Meteorological Association saw further expansion in the number of community weather stations, as well as further development of the ultraviolet (UV) network, with relevant weather and UV data made available to the public via the Internet. Weather data obtained through the Network was applied by school children in various educational projects and studies;
- assistance was rendered to the Guangdong meteorological authority in respect of the Observatory's heat stress monitoring system for the 2010 Asian Games;
- seminars to promote public understanding of severe weather warnings and proper response actions were conducted for government bureaux/departments as well as the education, transport and other sectors; and
- public weather lectures and courses were held, attracting over 1 000 members of the public.

8 The key performance measures in respect of weather services are:

Targets

	Target	2009 (Actual)	2010 (Actual)	**2011 (Plan)**
forecasts perceived as accurate by the public (%)	78	79	77	**78**
accurate public forecasts as verified by objective means (%)	88	90	90	**90**
accurate forecasts as assessed by ship captains (%)	96	95	98	**96**
accurate forecasts as assessed by airline operators (%)	96	99	99	**98**
hourly local weather reports disseminated within the first ten minutes of each hour (%)	99	99	99	**99**

Indicators

	2009 (Actual)	2010 (Actual)	**2011 (Estimate)**
calls answered by Dial-a-Weather system (million)	22.0	22.7	**23.0**
telephone enquiries answered manually#	43 600	35 400	**38 000**
visits to the Observatory's website (million)^	1 589	1 791	**1 900**
companies and organisations subscribing to special weather and warning services	100	106	**110**
total revenue from above subscribers ($m)¶	1.2	1.1	**1.2**
media interviews and public lectures/talks on weather	1 574	1 642	**1 600**
meteorological documents for flights departing Hong Kong	143 000	157 000	**164 000**
visits to aviation weather information system (million)	20.0	25.1	**26.0**

\# The actual figures may vary if there are more weather changes of concern to the public in that particular year. The decrease in 2010 was primarily attributable to fewer tropical cyclones affecting Hong Kong in that year.

^ Figures for 2010 and 2011 include visits to the Observatory's PDA/mobile website.

¶ Reduction in revenue despite increase in the number of subscribers was due to the termination by some subscribers of the lightning location information service, which became available in the public domain in June 2009.

Matters Requiring Special Attention in 2011–12

9 During 2011–12, the Observatory will:

- continue to enrich the contents of the Observatory's website in response to the evolving needs of the public and to further develop the delivery of weather services through mobile platforms;
- continue to enhance its weather service to the public, the aviation and marine community and to develop new products making use of up-to-date meteorological techniques;
- plan the replacement of the aging Tate's Cairn weather radar for monitoring severe weather;
- continue to promote public awareness of, and preparedness for, natural disasters through various outreach activities and continuous development of educational resources; and
- continue to take forward the replacement and upgrading of the meteorological facilities for the airport to enhance the Observatory's aviation weather services. This includes securing funding for constructing a station to house a new radar for windshear detection.

Programme (2): Radiation Monitoring and Assessment

	2009–10 (Actual)	2010–11 (Original)	2010–11 (Revised)	**2011–12 (Estimate)**
Financial provision ($m)	23.6	24.1	24.3 (+0.8%)	**23.6** (–2.9%) (or –2.1% on 2010–11 Original)

Aim

10 The aim is to provide information on environmental radiation levels in Hong Kong and advise government departments on the protective action that may be necessary during nuclear emergencies.

Brief Description

11 The Observatory monitors ambient radiation levels in Hong Kong and conducts radiological measurements on air, soil, water and food samples. In the event of a nuclear emergency, the Observatory will notify and advise government departments on the possible consequences in Hong Kong and recommend protective action. The Observatory organises training and exercises on radiation monitoring for other government departments involved in the Hong Kong contingency plan for nuclear emergencies. The work involves:

- operating a network of radiation monitoring stations, an aerial monitoring system, a radiological survey vehicle, a radiation laboratory and an emergency radiation data management system;
- keeping abreast of the latest development on the methodology for nuclear accident consequence assessment; and
- planning and participating in exercises and drills in response to nuclear emergencies.

12 In 2010, all radiation monitoring and assessment work in this programme was carried out satisfactorily. All equipment was maintained in a state of readiness, highlighted by the successful annual surveillance audit under ISO 9001:2008. Inter-comparisons between Hong Kong and Guangdong on radiological measurements continued. Exercises and drills on radiation monitoring and assessment were conducted. A second-generation accident consequence assessment system capable of evaluating the impact of radioactivity released from different locations was developed.

13 The key performance measures in respect of radiation monitoring and assessment are:

Target

	Target	2009 (Actual)	2010 (Actual)	**2011 (Plan)**
data availability of radiation monitoring network (%)	99.0	99.7	99.2	**99.5**

Indicators

	2009 (Actual)	2010 (Actual)	**2011 (Estimate)**
exercises and drills	14	22	**18**
visits to the Observatory's webpage on radiation	1 180 000	947 000	**1 150 000**

Matters Requiring Special Attention in 2011–12

14 During 2011–12, the Observatory will:

- continue to implement the agreed arrangements between Hong Kong and Guangdong on radiation monitoring and assessment;
- continue to conduct drills and exercises on emergency response in conjunction with other government departments as well as the relevant Guangdong counterparts;
- continue to organise training on radiation monitoring and assessment;
- put the second-generation accident consequence assessment system into operation; and
- continue to improve the radiation monitoring and assessment facilities, taking advantage of technological advances.

Programme (3): Time Standard and Geophysical Services

	2009–10 (Actual)	2010–11 (Original)	2010–11 (Revised)	**2011–12 (Estimate)**
Financial provision ($m)	9.8	9.8	9.8	**9.8**
			(—)	(—)
				(or same as 2010–11 Original)

Aim

15 The aim is to maintain the Hong Kong time standard and to provide geophysical, oceanographic, astronomical and climatological information to the public.

Brief Description

16 The Observatory maintains the Hong Kong time standard and provides time signals for the public. It prepares, collates and provides geophysical, oceanographic and climatological information required for planning, engineering design and environmental impact assessments. It monitors earthquakes and sea-level and releases related information to the public, including tsunami alerts. It also keeps abreast of research and development on international issues such as global climate change and advises the public and government departments on likely implications. This work involves:

- maintaining a caesium beam clock as the Hong Kong time standard and providing time signals for radio broadcasts, automatic telephone answering service and synchronisation of clocks via the Internet;
- operating seismological, tide and water level monitoring networks and conducting data analyses;
- compiling climatological and other related data;
- conducting studies related to climate change in Hong Kong and promoting public understanding; and
- providing updates on the effects of El Nino and other longer term atmospheric phenomena on Hong Kong.

17 In 2010, the objectives and targets of this programme were generally met. Achievements and activities include:

- implementating real-time exchange of seismic data with overseas centres;
- conducting a geomagnetic survey in Hong Kong;
- developing a climate model jointly with the Food and Environmental Hygiene Department to predict the abundance of Aedes mosquitoes in Hong Kong;
- undertaking further research on the projections of future climate change in Hong Kong based on the latest data in respect of the Intergovernmental Panel on Climate Change;
- assessing the long term trend of extreme weather events in Hong Kong;
- enriching the content of the web pages on E1 Nino and climate change for the public; and
- giving about 50 talks on climate change to schools, organisations and the public.

18 The key performance measures in respect of time standard and geophysical services are:

Targets

	Target	2009 (Actual)	2010 (Actual)	**2011 (Plan)**
time standard accuracy (microseconds per day)	0.1	0.1	0.1	**0.1**
geophysical, meteorological and oceanographic data capture rate (%)	98	100	100	**99**
climatological information (% of written requests responded to within ten working days)	99	100	100	**99**

Indicators

	2009 (Actual)	2010 (Actual)	**2011 (Estimate)**
visits to the Observatory's internet time service (million)	714	954	**1 000**
requests for geophysical, climatological and oceanographic information and advice	1 143	1 311	**1 200**

Matters Requiring Special Attention in 2011–12

19 During 2011–12, the Observatory will:

- continue to provide information and data to users efficiently and through user-friendly means;
- continue to study as well as to promote public understanding of climate change in Hong Kong; and
- continue to keep abreast of earthquake risk assessment in the region.

ANALYSIS OF FINANCIAL PROVISION

Programme	2009–10 (Actual) ($m)	2010–11 (Original) ($m)	2010–11 (Revised) ($m)	**2011–12 (Estimate) ($m)**
(1) Weather Services	183.1	182.0	182.5	**187.3**
(2) Radiation Monitoring and Assessment	23.6	24.1	24.3	**23.6**
(3) Time Standard and Geophysical Services	9.8	9.8	9.8	**9.8**
	216.5	215.9	216.6 (+0.3%)	**220.7 (+1.9%)**
				(or +2.2% on 2010–11 Original)

Analysis of Financial and Staffing Provision

Programme (1)

Provision for 2011–12 is $4.8 million (2.6%) higher than the revised estimate for 2010–11. This is mainly due to increased expenditure for enhancing aviation weather services for the HKIA. In addition, two posts will be created in 2011–12.

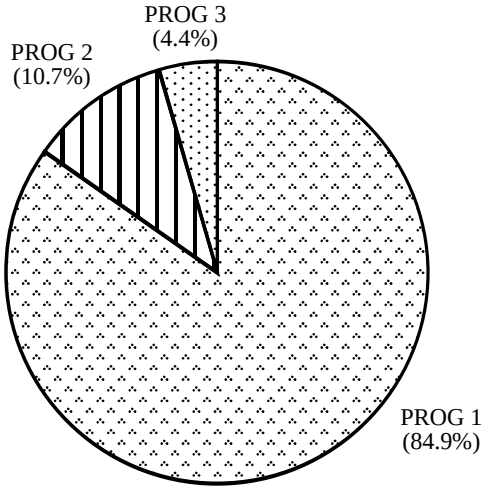
Programme (2)

Provision for 2011–12 is $0.7 million (2.9%) lower than the revised estimate for 2010–11. This is mainly due to decreased requirement for capital expenditure.

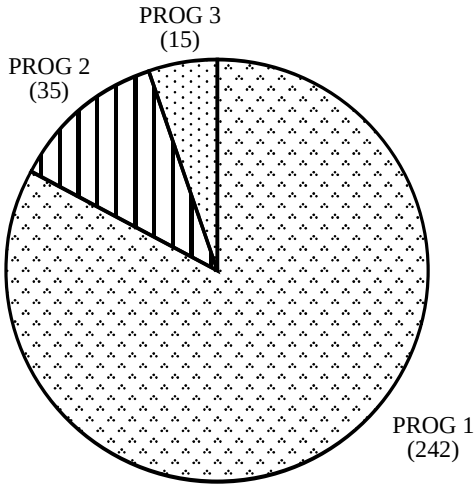
Programme (3)

Provision for 2011–12 is the same as the revised estimate for 2010–11.

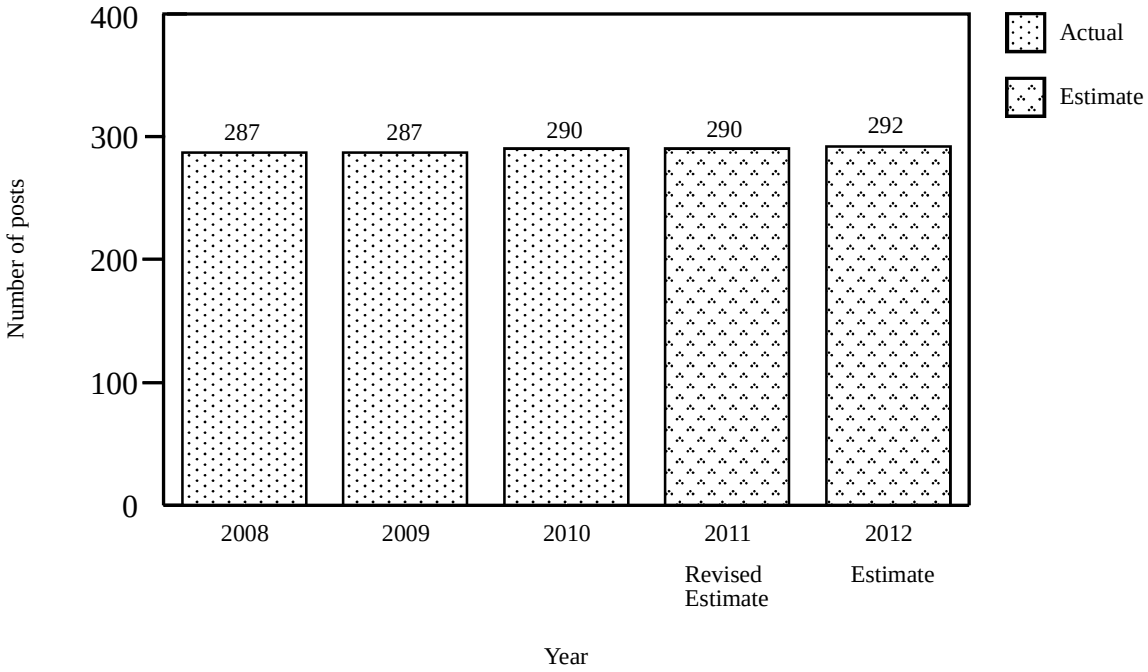
Allocation of provision to programmes (2011-12)



Staff by programme (as at 31 March 2012)



Changes in the size of the establishment (as at 31 March)



Sub-head (Code)		Actual expenditure 2009–10	Approved estimate 2010–11	Revised estimate 2010–11	**Estimate 2011–12**
		$'000	$'000	$'000	**$'000**
	Operating Account				
	Recurrent				
000	Operational expenses	213,418	215,351	215,987	**220,668**
	Total, Recurrent	213,418	215,351	215,987	**220,668**
	Total, Operating Account	213,418	215,351	215,987	**220,668**
	Capital Account				
	Plant, Equipment and Works				
	Plant, vehicles and equipment	2,021	—	—	**—**
	Minor plant, vehicles and equipment (block vote)	1,062	589	589	**—**
	Total, Plant, Equipment and Works	3,083	589	589	**—**
	Total, Capital Account	3,083	589	589	**—**
	Total Expenditure	216,501	215,940	216,576	**220,668**

Details of Expenditure by Subhead

The estimate of the amount required in 2011–12 for the salaries and expenses of the Hong Kong Observatory is $220,668,000. This represents an increase of $4,092,000 over the revised estimate for 2010–11 and of $4,167,000 over actual expenditure in 2009–10.

Operating Account

Recurrent

2 Provision of $220,668,000 under *Subhead 000 Operational expenses* is for the salaries, allowances and other operating expenses of the Hong Kong Observatory.

3 The establishment as at 31 March 2011 will be 290 permanent posts. It is expected that two posts will be created in 2011–12. Subject to certain conditions, the controlling officer may under delegated power create or delete non-directorate posts during 2011–12, but the notional annual mid-point salary value of all such posts must not exceed $115,943,000.

4 An analysis of the financial provision under *Subhead 000 Operational expenses* is as follows:

	2009–10 (Actual) ($'000)	2010–11 (Original) ($'000)	2010–11 (Revised) ($'000)	**2011–12 (Estimate) ($'000)**
Personal Emoluments				
- Salaries	140,829	140,484	140,972	**142,569**
- Allowances	1,543	1,515	1,515	**1,515**
- Job-related allowances	341	146	146	**146**
Personnel Related Expenses				
- Mandatory Provident Fund contribution	261	313	325	**364**
- Civil Service Provident Fund contribution	344	359	495	**919**
Departmental Expenses				
- General departmental expenses	70,009	72,444	72,434	**75,065**
Other Charges				
- World Meteorological Organization	91	90	100	**90**
	213,418	215,351	215,987	**220,668**