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

Estimate 2012–13	**$238.8m**
Establishment ceiling 2012–13 (notional annual mid-point salary value) representing an estimated 287 non-directorate posts as at 31 March 2012 rising by six posts to 293 non-directorate posts as at 31 March 2013	**$125.9m**

In addition, there will be an estimated five directorate posts as at 31 March 2012 and as at 31 March 2013.

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

	2010–11 (Actual)	2011–12 (Original)	2011–12 (Revised)	**2012–13 (Estimate)**
Financial provision ($m)	180.0	187.3	195.2 (+4.2%)	**202.3** (+3.6%) (or +8.0% on 2011–12 Original)

Aim

2 The aim is to provide weather forecasts and issue warnings to the public, special users, the shipping community 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 and other meteorological instruments;
- 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 educational materials on hazardous weather phenomena.

4 In 2011, the Observatory fulfilled its performance pledge 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 core operational computer network of the Observatory was enhanced to improve its reliability, resilience and efficiency. A new weather station was set up at Tsing Yi to provide enhanced weather information for the region.

5 Enhanced weather information was provided in 2011 to meet the needs of the public by:

- launching a revamped and more user-friendly mobile version of the Observatory website (http://m.weather.gov.hk);
- enhancing the mobile weather application, MyObservatory, on iPhone and Android platforms with expanded content of weather information to users of mobile phones;
- delivering weather warnings and information over the Weibo social networking website;
- enhancing the "Digital Weather Forecast" webpage to include forecasts of more weather elements and for a longer forecast period up to three days;
- providing latest information and products for the monitoring of sand and dust weather;
- extending the network of webcams to provide weather photos of the western part of the New Territories;
- launching a new weather portal on hiking and mountaineering; and
- producing an in-house weekly weather programme on the Tudou website.

6 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 its operations. In 2011, the Observatory collaborated with the Government Flying Service in a "Meteorological Data Collection Programme" to collect airborne meteorological data for studying windshear, turbulence and other meteorological phenomena. Data collection flights were also conducted for some tropical cyclones over the South China Sea with a view to improving tropical cyclone forecasting. A significant convection forecast product with specific reference to arrival and departure corridors of the HKIA was made available to the Civil Aviation Department (CAD) for trial use. Further progress was made in replacing/upgrading meteorological facilities for HKIA to enhance aviation weather services, with new systems being put into use in phases. A station will be constructed to house a new windshear radar. The station design has been revised to address concerns raised by the local community.

7 Other items of note for 2011 include:

- meteorological support was rendered to the 2011 Summer Universiade held in Shenzhen through the provision of weather observations, forecast products and professional advice to the meteorological authorities in the Mainland;
- the operational launch of two projects on behalf of the World Meteorological Organisation (WMO) to provide numerical model weather forecasts to developing countries in Asia in support of their public weather service and aviation weather service;
- launching a new application on iPhone called MyWorldWeather on behalf of the WMO to provide official and authoritative worldwide weather forecast and climatological information to mobile users around the globe;
- the Hong Kong Community Weather Information Network operated in collaboration with the Hong Kong Polytechnic University saw further expansion with the membership exceeding 100, and won a couple of local and international awards for raising the awareness in the community of weather and climate change;
- 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	2010 (Actual)	2011 (Actual)	**2012 (Plan)**
forecasts perceived as accurate by the public (%)	78	77	79	**78**
accurate public forecasts as verified by objective means (%)	88	90	92	**90**
accurate forecasts as assessed by ship captains (%)	96	98	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

	2010 (Actual)	2011 (Actual)	**2012 (Estimate)**
calls answered by Dial-a-Weather system (million)#	22.7	19.5	**22.0**
telephone enquiries answered manually#	35 400	29 000	**34 000**
visits to Observatory's website (million)^	1 791	6 160	**6 000**
companies and organisations subscribing to special weather and warning services	106	111	**118**
total revenue from above subscribers ($m)	1.1	1.2	**1.2**
media interviews and public lectures/talks on weather	1 642	1 555	**1 600**
meteorological documents for flights departing Hong Kong@	157 000	169 000	**172 000**
visits to aviation weather information system (million)Ψ	25.1	31.4	**33.0**

\# The actual figures may vary depending on whether there are more weather changes of concern to the public in that particular year. The decrease in 2011 was primarily attributable to less rainfall and fewer thunderstorms affecting Hong Kong in the year.

^ Figures include visits to the Observatory's PDA/mobile website. The notable increase in 2011 was primarily attributable to the growth in users getting access to weather information through mobile devices.

@ The notable increase in 2011 was primarily attributable to the growth in aircraft movement in 2011.

Ψ The notable increase in 2011 was primarily attributable to the higher utilisation of the new weather products of the system during inclement weather.

Matters Requiring Special Attention in 2012–13

9 During 2012–13, 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 and social networking platforms;
- continue to enhance its weather service to the public, aviation and marine community and to develop new products making use of up-to-date meteorological techniques;
- issue tender for the acquisition of the replacement of the Tate's Cairn weather radar for monitoring severe weather;
- acquire a vertically pointing microwave radiometer to enhance the continuous monitoring of changes in weather elements;
- 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/upgrading of meteorological facilities for the airport to enhance its aviation weather services. This includes interfacing the newly acquired meteorological information systems with CAD's new air traffic control systems, and procuring a new radar for windshear detection.

Programme (2): Radiation Monitoring and Assessment

	2010–11 (Actual)	2011–12 (Original)	2011–12 (Revised)	**2012–13 (Estimate)**
Financial provision ($m)	23.8	23.6	24.7 (+4.7%)	**24.7** (—) (or +4.7% on 2011–12 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 radiation 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 2011, 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. A new radiological survey vehicle was deployed for carrying out regular sampling and in-situ radiation monitoring over various parts of Hong Kong. Two additional radiation monitoring stations, one at Hok Tsui, and another at Chek Lap Kok, were established to enhance radiation monitoring over the southern and western parts of Hong Kong. Inter-comparisons between Hong Kong and Guangdong on radiological measurements continued. Exercises and drills on radiation monitoring and assessment were conducted. The second-generation accident consequence assessment system capable of evaluating the impact of radioactivity released from different locations was put into operation.

13 In March 2011, the Observatory stepped up its radiation monitoring activities in response to the Fukushima nuclear accident. Additional samples of air particulate, sea water and soil were measured. A special radiation monitoring webpage for the nuclear accident was launched to provide measurement data and forecast trajectory of air reaching Hong Kong, so as to reassure the public that Hong Kong was not adversely affected by the accident.

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

Target

	Target	2010 (Actual)	2011 (Actual)	**2012 (Plan)**
data availability of radiation monitoring network (%)	99.0	99.2	99.9	**99.5**

Indicators

	2010 (Actual)	2011 (Actual)	**2012 (Estimate)**
exercises and drills	22	18	**18**
visits to the Observatory's webpage on radiation#	947 000	3 638 525	**1 500 000**

\# The notable increase in the webpage visits in 2011 was primarily attributable to the increase in the public demand for radiation monitoring information after the Fukushima accident.

Matters Requiring Special Attention in 2012–13

15 During 2012–13, 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;
- continue to improve the radiation monitoring and assessment facilities, taking advantage of technological advances; and
- provide support to the Security Bureau in reviewing the Daya Bay Contingency Plan (DBCP) as well as planning and conducting a large scale DBCP exercise.

Programme (3): Time Standard and Geophysical Services

	2010–11 (Actual)	2011–12 (Original)	2011–12 (Revised)	**2012–13 (Estimate)**
Financial provision ($m)	9.7	9.8	10.3 (+5.1%)	**11.8** (+14.6%) (or +20.4% on 2011–12 Original)

Aim

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

Brief Description

17 The Observatory maintains the Hong Kong time standard and provides time signals for the public. It prepares, collates, provides and publicises geophysical, oceanographic, astronomical and climatological information for the public and to meet the requirements for planning, engineering design and environmental impact assessments. It monitors earthquakes and sea-level and releases related information to the public, including the operation of the tsunami warming system. 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;
- carrying out real-time exchange of seismic data with overseas centres;
- 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.

18 In 2011, the objectives and targets of this programme were generally met. Achievements and activities include:

- providing enhanced tsunami and earthquake information through information bulletins, press releases, media interviews, public lectures and publications to meet the demands of the public, pursuant to the Japanese earthquake and tsunami on 11 March 2011;
- enhancing the timeliness of earthquake information by further accelerating the earthquake analysis process and the launch of Quick Earthquake Messages, disseminated through Twitter and Weibo for the public and SMS/emails for special users;
- co-ordinating the participation of government bureaux/departments in the third Pacific-wide tsunami exercise, organised by the Intergovernmental Oceanographic Commission of the United Nations Educational, Scientific and Cultural Organization;
- updating the climatological normals for the period from 1981 to 2010;
- assessing the effect of climate change on extreme weather events in Hong Kong;
- assessing the characteristics of urban heat island effect in Hong Kong;
- enriching the content of the webpages on El Nino and climate change for the public; and
- conducting about 40 talks on climate change to schools, organisations and the public.

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

Targets

	Target	2010 (Actual)	2011 (Actual)	**2012 (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

	2010 (Actual)	2011 (Actual)	**2012 (Estimate)**
visits to the Observatory's Internet time service (million)#	954	1 352	**1 800**
requests for geophysical, climatological and oceanographic information and advice@	1 311	1 106	**1 100**

\# The notable increase in the number of visits in 2011 was mainly attributable to increasing popularity of the service and the general increase in the use of networked computing equipment in the community.

@ The actual figures may vary depending on whether there are relevant events of concern to the public in that particular year. The decrease in 2011 was primarily attributable to less rainfall in the year.

Matters Requiring Special Attention in 2012–13

20 During 2012–13, the Observatory will:

- acquire a replacement caesium-beam atomic clock and related time transfer systems;
- 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	2010–11 (Actual) ($m)	2011–12 (Original) ($m)	2011–12 (Revised) ($m)	**2012–13 (Estimate) ($m)**
(1) Weather Services	180.0	187.3	195.2	**202.3**
(2) Radiation Monitoring and Assessment	23.8	23.6	24.7	**24.7**
(3) Time Standard and Geophysical Services	9.7	9.8	10.3	**11.8**
	213.5	220.7	230.2 (+4.3%)	**238.8 (+3.7%)**
				(or +8.2% on 2011–12 Original)

Analysis of Financial and Staffing Provision

Programme (1)

Provision for 2012–13 is $7.1 million (3.6%) higher than the revised estimate for 2011–12. This is mainly due to the increased requirement for capital expenditure, repair and upgrade of facilities and Civil Service Provident Fund contribution. In addition, six posts will be created in 2012–13.

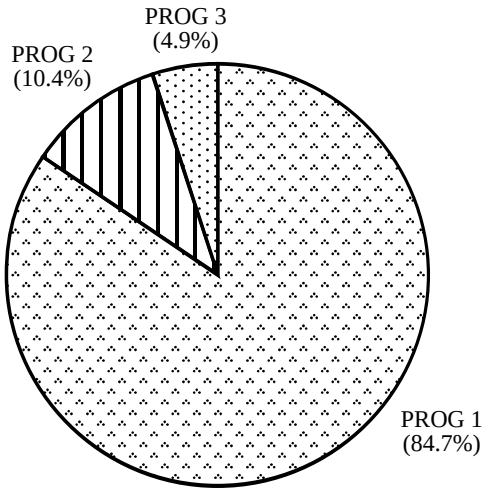
Programme (2)

Provision for 2012–13 is the same as the revised estimate for 2011–12.

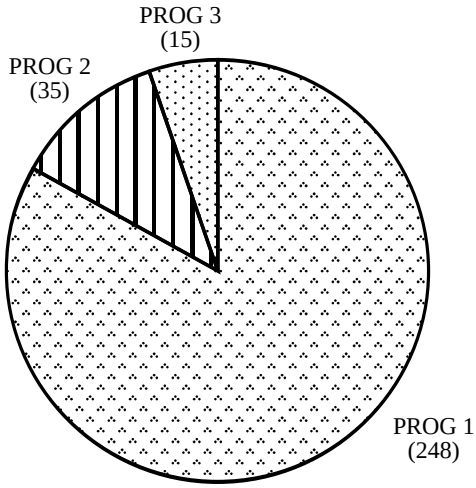
Programme (3)

Provision for 2012–13 is $1.5 million (14.6%) higher than the revised estimate for 2011–12. This is mainly due to the increased requirement for capital expenditure.

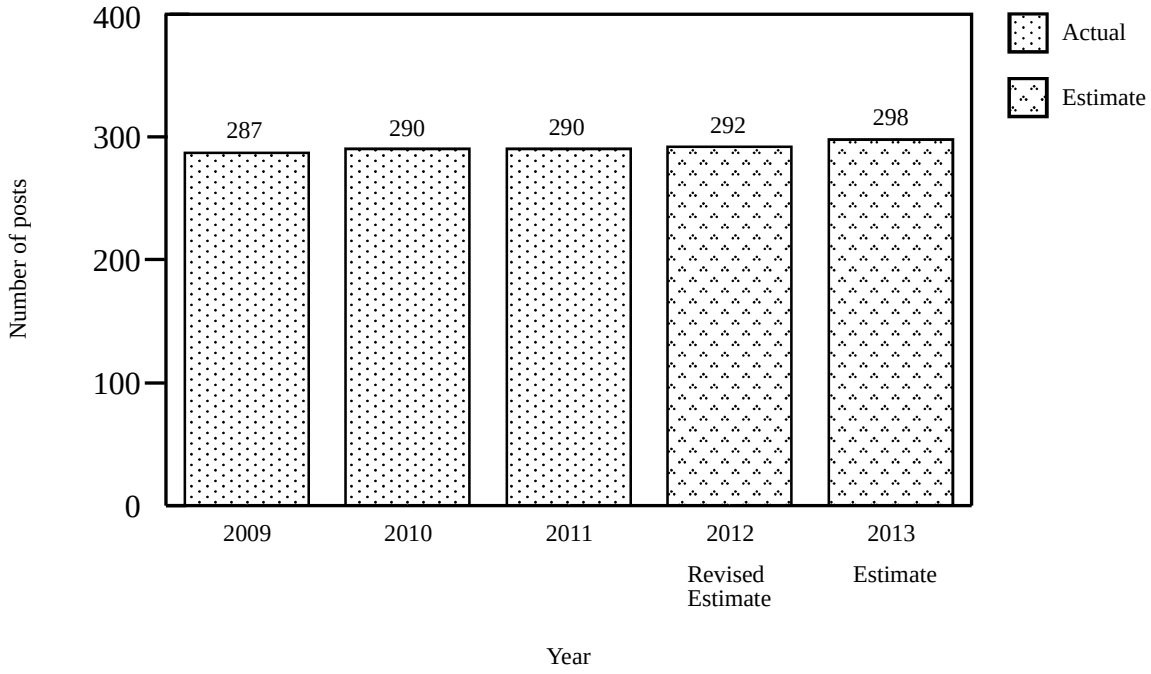
Allocation of provision to programmes (2012-13)



Staff by programme (as at 31 March 2013)



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



Sub-head (Code)		Actual expenditure 2010–11	Approved estimate 2011–12	Revised estimate 2011–12	**Estimate 2012–13**
		$'000	$'000	$'000	**$'000**
	Operating Account				
	Recurrent				
000	Operational expenses	213,074	220,668	230,190	**233,778**
	Total, Recurrent	213,074	220,668	230,190	**233,778**
	Total, Operating Account	213,074	220,668	230,190	**233,778**
	Capital Account				
	Plant, Equipment and Works				
661	Minor plant, vehicles and equipment (block vote)	430	—	—	**4,972**
	Total, Plant, Equipment and Works	430	—	—	**4,972**
	Total, Capital Account	430	—	—	**4,972**
	Total Expenditure	213,504	220,668	230,190	**238,750**

Details of Expenditure by Subhead

The estimate of the amount required in 2012–13 for the salaries and expenses of the Hong Kong Observatory is $238,750,000. This represents an increase of $8,560,000 over the revised estimate for 2011–12 and of $25,246,000 over actual expenditure in 2010–11.

Operating Account

Recurrent

2 Provision of $233,778,000 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 2012 will be 292 permanent posts. It is expected that there will be an increase of six posts in 2012–13. Subject to certain conditions, the controlling officer may under delegated power create or delete non-directorate posts during 2012–13, but the notional annual mid-point salary value of all such posts must not exceed $125,873,000.

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

	2010–11 (Actual) ($'000)	2011–12 (Original) ($'000)	2011–12 (Revised) ($'000)	**2012–13 (Estimate) ($'000)**
Personal Emoluments				
- Salaries	138,946	142,569	151,950	**151,950**
- Allowances	1,322	1,515	1,615	**1,615**
- Job-related allowances	98	146	155	**155**
Personnel Related Expenses				
- Mandatory Provident Fund contribution	321	364	346	**329**
- Civil Service Provident Fund contribution	494	919	969	**1,675**
Departmental Expenses				
- General departmental expenses	71,796	75,065	75,040	**77,939**
Other Charges				
- World Meteorological Organization	97	90	115	**115**
	213,074	220,668	230,190	**233,778**

Capital Account

Plant, Equipment and Works

5 Provision of $4,972,000 under *Subhead 661 Minor plant, vehicles and equipment (block vote)* represents an increase of $4,972,000 over the revised estimate for 2011–12. This is mainly due to the increased requirement for new and replacement equipment.