

## Head 168 — HONG KONG OBSERVATORY

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

**Estimate 2013–14**..... **\$247.4m**

**Establishment ceiling 2013–14** (notional annual mid-point salary value) representing an estimated 293 non-directorate posts as at 31 March 2013 rising by three posts to 296 non-directorate posts as at 31 March 2014 ..... **\$134.8m**

In addition, there will be an estimated five directorate posts as at 31 March 2013 and as at 31 March 2014.

### Controlling Officer's Report

#### Programmes

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

#### Detail

##### Programme (1): Weather Services

	2011–12 (Actual)	2012–13 (Original)	2012–13 (Revised)	2013–14 (Estimate)
Financial provision (\$m)	191.2	202.3	207.2 (+2.4%)	210.9 (+1.8%)
				(or +4.3% on 2012–13 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 Central Forecasting Office and Airport Meteorological Office of the Hong Kong Observatory (HKO) 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. HKO 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 2012, HKO 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 attained a forecast accuracy (as verified by objective means) of 89 per cent. To meet the need of increasing data exchange, HKO's wide area computer network connecting various offices within the department was being enhanced, improving network reliability and resilience at the same time. A new weather station was set up at Tai Po Kau to provide more weather information for the region.

5 Weather information was enhanced in 2012 to meet the needs of the public through:

- providing two weather icons on the HKO website and mobile weather application, MyObservatory, to better depict expected changes in weather;
- providing special weather tips on the HKO website and MyObservatory mainly to alert the public of the approach of inclement weather;
- launching a trial product on location-based rain forecast on MyObservatory;
- advancing the provision of forecast tropical cyclone tracks on the HKO website and MyObservatory by half an hour;
- revamping the weather portal for senior citizens to suit their special needs in browsing weather information on the web;
- enriching the "Computer Forecast Weather Map" webpage with a more detailed forecast map of cloud cover and rainfall amount, and the "Wind Forecast for Water Sport Activities" webpage with an added hotspot of Tap Mun;
- expanding the "Digital Weather Forecast" webpage to include forecasts of more reference places for the public to better plan their activities in advance;
- enhancing the network of webcams to provide higher resolution weather photos at various places in Hong Kong;
- launching a new lightning sensor station at Yangjiang over western Guangdong to enhance the spatial coverage and reliability of lightning detection;
- publishing a pamphlet to introduce the thematic webpages developed by HKO specifically for outdoor activities as well as for other personalised and regional weather services; and
- promoting popular science articles on the Twitter and Weibo microblog websites.

6 HKO 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 2012, HKO continued its collaboration with the Government Flying Service (GFS) to collect airborne meteorological data for tropical cyclones over the South China Sea. The collected data provided useful information to locate the centre of the tropical cyclone and the wind distribution in the vicinity of the storm. A suite of significant convection forecast products was made available to the Civil Aviation Department (CAD) on a trial basis to support air traffic management. Further progress was made in replacing and upgrading meteorological facilities for HKIA to enhance aviation weather services, with new systems being put into use in phases. A station is being constructed to house a new windshear radar.

7 Other items of note for 2012 include:

- signing a co-operation agreement with Guangdong Meteorological Bureau to strengthen collaboration in numerical weather prediction at the Hong Kong-Guangdong plenary meeting on 14 September 2012;
- signing a memorandum of understanding with Korea Meteorological Administration to further the collaboration and to contribute towards the regional and global development of weather services;
- launching in 2012–13 more languages in addition to English on MyWorldWeather, a mobile weather application developed on behalf of the World Meteorological Organization (WMO) to provide official and authoritative worldwide weather forecast and climatological information to mobile users around the globe;
- providing enhanced information on fog on the Severe Weather Information Centre, a website developed on behalf of the WMO to provide severe weather information aiming to reduce loss of life and damage due to inclement weather;
- enhancing the Greater Pearl River Delta website with weather observations in the region as portal to integrate weather warnings, forecasts and observations for 11 cities in the region;
- further expanding the Community Weather Information Network, operated in collaboration with the Hong Kong Polytechnic University, with the membership now reaching 118. The "Community Weather Observing Scheme", a new initiative to promote the sharing of weather observation among members, was officially launched;
- conducting seminars to promote public understanding of severe weather warnings and proper response actions for government bureaux and departments as well as the education, transport and other sectors; and
- holding public weather lectures and courses, attracting over 1 000 members of the public.

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

***Targets***

	Target	2011 (Actual)	2012 (Actual)	2013 (Plan)
forecasts perceived as accurate by the public (%).....	78	79	79	<b>78</b>
accurate public forecasts as verified by objective means (%) .....	88	92	89	<b>90</b>
accurate forecasts as assessed by ship captains (%) .....	96	98	99	<b>96</b>
accurate forecasts as assessed by airline operators (%) .....	96	99	99	<b>98</b>
hourly local weather reports disseminated within the first ten minutes of each hour (%).....	99	99	99	<b>99</b>

***Indicators***

	2011 (Actual)	2012 (Actual)	2013 (Estimate)
calls answered by Dial-a-Weather system (million)#.....	19.5	18.3	<b>19.0</b>
telephone enquiries answered manually#.....	29 000	28 500	<b>29 000</b>
visits to HKO website (million)^ .....	6 160	30 028	<b>35 000</b>
companies and organisations subscribing to special weather and warning services .....	111	112	<b>112</b>
total revenue from above subscribers (\$m).....	1.2	1.3	<b>1.3</b>
media interviews and public lectures/talks on weather‡ .....	1 555	1 195	<b>1 200</b>
meteorological documents for flights departing Hong Kong .....	169 000	181 000	<b>189 000</b>
visits to aviation weather information system (million)@ .....	31.4	50.5	<b>57.0</b>

# The actual figures may vary depending on whether there are more weather changes of concern to the public in that particular year.

^ Figures include visits to HKO's PDA and mobile website, and the Weather Wizard (an application to display real-time weather warnings on personal computer). The notable increase in 2012 was primarily attributable to the growth in users getting access to weather information through mobile devices and other websites.

‡ The decrease in 2012 was primarily due to decrease in media enquiries, which was highly dependent on whether there were weather events of concern to the public.

@ The notable increase in 2012 was primarily attributable to the utilisation of the new forecast products to support air traffic management during inclement weather.

***Matters Requiring Special Attention in 2013–14***

**9** During 2013–14, HKO will:

- continue to enrich the contents of its 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;
- launch a personalised weather homepage, allowing user customisation, to enhance efficiency in the access of weather and other information on its website;
- enhance media weather services to meet the rising needs of the media and the public;
- 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;
- make available probability forecast of rainfall for Hong Kong to the public on a trial basis;
- install a replacement weather radar at Tate's Cairn for monitoring severe weather;
- acquire a meteorological profile measuring system for use on the new GFS fixed-wing aircraft to collect airborne meteorological data to enhance the monitoring and forecasting of tropical cyclones;
- install 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;

- continue to take forward the replacement and upgrading of meteorological facilities for the airport to enhance its aviation weather services, including the construction of a station for a new radar for windshear detection and putting into operation new meteorological information systems for interfacing with CAD's new air traffic control systems as well as a new generation aviation weather information dissemination system;
- launch a pilot project on behalf of the WMO to provide community numerical weather models to developing countries in Asia to facilitate capacity building in the use and interpretation of these models and forecasts; and
- conduct a series of publicity activities for the 130th anniversary of HKO, promoting awareness of natural disaster preparedness and prevention.

**Programme (2): Radiation Monitoring and Assessment**

	2011–12 (Actual)	2012–13 (Original)	2012–13 (Revised)	2013–14 (Estimate)
Financial provision (\$m)	24.2	24.7	25.8 (+4.5%)	25.8 (—)
				(or +4.5% on 2012–13 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** HKO 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, HKO will notify and advise government departments on the possible consequences in Hong Kong and recommend protective action. HKO 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 2012, 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 re-certification 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. HKO also participated in the government-wide Daya Bay Contingency Plan (DBCP) exercise in April 2012.

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

**Target**

	Target	2011 (Actual)	2012 (Actual)	2013 (Plan)
data availability of radiation monitoring network (%) .....	99.0	99.9	99.5	99.5

**Indicators**

	2011 (Actual)	2012 (Actual)	2013 (Estimate)
exercises and drills§ .....	18	25	18
visits to HKO's webpage on radiationφ .....	3 638 525	1 734 025	1 700 000

§ The high number of exercises and drills in 2012 was primarily attributable to preparation for the large-scale government-wide DBCP exercise in late April.

φ The high number of webpage visits in 2011 was primarily attributable to the increase in the public demand for radiation monitoring information following the Fukushima accident.

***Matters Requiring Special Attention in 2013–14***

**14** During 2013–14, HKO 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; and
- take forward the enhancement of radiation monitoring and assessment facilities, taking into account outcomes from the DBCP exercise.

**Programme (3): Time Standard and Geophysical Services**

	2011–12 (Actual)	2012–13 (Original)	2012–13 (Revised)	2013–14 (Estimate)
Financial provision (\$m)	10.2	11.8	12.2 (+3.4%)	10.7 (–12.3%)
				(or –9.3% on 2012–13 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** HKO 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 the sea-level and releases related information to the public, including the operation of the tsunami warning 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 and disseminating earthquake information by various means;
- operating seismological, tide and water level monitoring networks and conducting related analyses;
- compiling climatological and other related data;
- conducting studies on 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 2012, the objectives and targets of this programme were generally met. Achievements and activities include:

- providing earthquake information in a more timely manner through press releases, Twitter, Weibo and Really Simple Syndication to meet the demands of the public and through SMS and emails for special users;
- launching an online tool to facilitate the reporting of local felt earth tremors to HKO through the Internet;
- replacing the aged caesium-beam atomic clock and related time transfer systems to ensure continuous provision of time signals for the public, and continuing to contribute to the International Bureau of Weights and Measures for the determination of the universal standard time;
- launching the IPv6 network time service to meet the needs of the communication industry in connection with the development of the next generation Internet Protocol;
- introducing a leap second to the Hong Kong Time on 1 July 2012;
- conducting joint webcasting of the Annular Solar Eclipse and the Transit of Venus with the Space Museum and Ho Koon Nature Education cum Astronomical Centre, attracting over 2.8 million page views;
- launching new webpages on “Weather Information for the Marine Community” and “Climatology for Festivals and Special Days”;
- assessing the effect of climate change on extreme weather events 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.

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

***Targets***

	Target	2011 (Actual)	2012 (Actual)	2013 (Plan)
time standard accuracy (microseconds per day).....	0.1	0.1	0.1	<b>0.1</b>
geophysical, meteorological and oceanographic data capture rate (%).....	98	100	100	<b>99</b>
climatological information (% of written requests responded to within ten working days).....	99	100	100	<b>100</b>

***Indicators***

	2011 (Actual)	2012 (Actual)	2013 (Estimate)
visits to HKO's Internet time service (million)Ψ .....	1 352	4 712	<b>6 700</b>
requests for geophysical, climatological and oceanographic information and adviceΔ .....	1 106	972	<b>1 100</b>

Ψ The notable increase in 2012 was primarily attributable to the general increase in the use of networked computing equipment in the community, increasing publicity and popularity of the service, launch of IPv6 network time service and upgrade of time service servers. The increasing trend in the visits to HKO's Internet time service is expected to continue in 2013.

Δ The actual figures may vary depending on whether there are relevant events of concern to the public in that particular year.

***Matters Requiring Special Attention in 2013–14***

**19** During 2013–14, HKO 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.

## Head 168 — HONG KONG OBSERVATORY

### ANALYSIS OF FINANCIAL PROVISION

Programme	2011–12 (Actual) (\$m)	2012–13 (Original) (\$m)	2012–13 (Revised) (\$m)	2013–14 (Estimate) (\$m)
(1) Weather Services.....	191.2	202.3	207.2	210.9
(2) Radiation Monitoring and Assessment.....	24.2	24.7	25.8	25.8
(3) Time Standard and Geophysical Services.....	10.2	11.8	12.2	10.7
	225.6	238.8	245.2 (+2.7%)	247.4 (+0.9%)
				(or +3.6% on 2012–13 Original)

#### Analysis of Financial and Staffing Provision

##### Programme (1)

Provision for 2013–14 is \$3.7 million (1.8%) higher than the revised estimate for 2012–13. This is mainly due to the creation of three posts, increased requirement for repair and upgrade of facilities and Civil Service Provident Fund contribution, partly offset by decreased requirement for capital expenditure and for allowances.

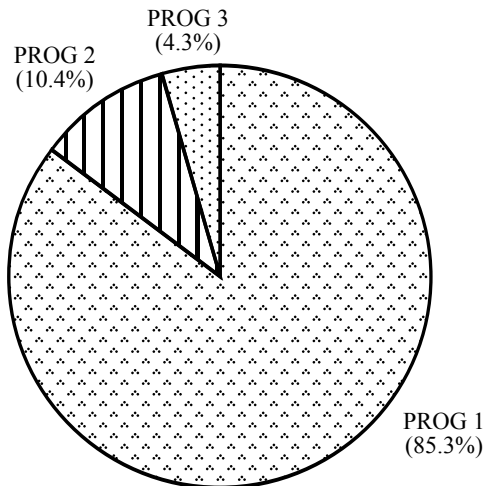
##### Programme (2)

Provision for 2013–14 is the same as the revised estimate for 2012–13.

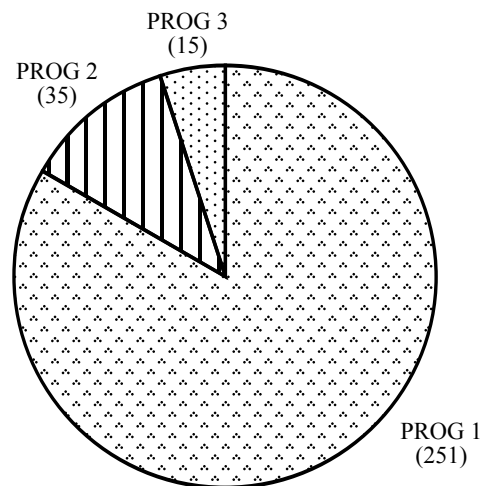
##### Programme (3)

Provision for 2013–14 is \$1.5 million (12.3%) lower than the revised estimate for 2012–13. This is mainly due to the decreased requirement for capital expenditure.

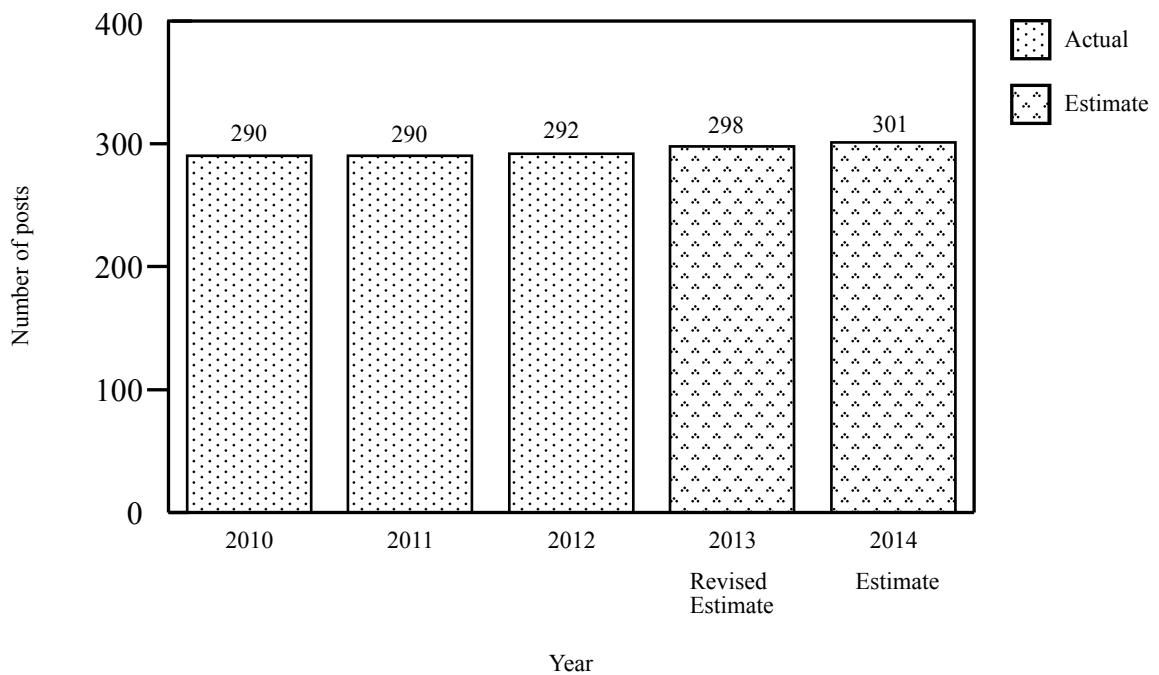
*Allocation of provision  
to programmes  
(2013-14)*



*Staff by programme  
(as at 31 March 2014)*



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



## Head 168 — HONG KONG OBSERVATORY

Sub-head (Code)	Actual expenditure 2011–12	Approved estimate 2012–13	Revised estimate 2012–13	Estimate 2013–14
	\$'000	\$'000	\$'000	\$'000
<b>Operating Account</b>				
Recurrent				
000 Operational expenses .....	225,606	233,778	240,213	<b>247,367</b>
Total, Recurrent .....	225,606	233,778	240,213	<b>247,367</b>
Total, Operating Account.....	225,606	233,778	240,213	<b>247,367</b>
<hr/>				
<b>Capital Account</b>				
Plant, Equipment and Works				
Minor plant, vehicles and equipment (block vote).....	—	4,972	4,972	—
Total, Plant, Equipment and Works .....	—	4,972	4,972	—
Total, Capital Account.....	—	4,972	4,972	—
<hr/>				
Total Expenditure .....	225,606	238,750	245,185	<b>247,367</b>

## Head 168 — HONG KONG OBSERVATORY

### Details of Expenditure by Subhead

The estimate of the amount required in 2013–14 for the salaries and expenses of the Hong Kong Observatory is \$247,367,000. This represents an increase of \$2,182,000 over the revised estimate for 2012–13 and of \$21,761,000 over actual expenditure in 2011–12.

#### *Operating Account*

#### Recurrent

**2** Provision of \$247,367,000 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 2013 will be 298 permanent posts. It is expected that there will be an increase of three posts in 2013–14. Subject to certain conditions, the controlling officer may under delegated power create or delete non-directorate posts during 2013–14, but the notional annual mid-point salary value of all such posts must not exceed \$134,777,000.

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

	2011–12 (Actual) (\$'000)	2012–13 (Original) (\$'000)	2012–13 (Revised) (\$'000)	2013–14 (Estimate) (\$'000)
Personal Emoluments				
- Salaries .....	147,201	151,950	157,654	<b>160,459</b>
- Allowances .....	2,174	1,615	1,970	<b>1,705</b>
- Job-related allowances.....	210	155	420	<b>164</b>
Personnel Related Expenses				
- Mandatory Provident Fund contribution .....	349	329	339	<b>402</b>
- Civil Service Provident Fund contribution .....	952	1,675	1,816	<b>2,604</b>
Departmental Expenses				
- General departmental expenses .....	74,608	77,939	77,899	<b>81,918</b>
Other Charges				
- World Meteorological Organization.....	112	115	115	<b>115</b>
	<u>225,606</u>	<u>233,778</u>	<u>240,213</u>	<u><b>247,367</b></u>