Guidelines on Participation of National Meteorological and Hydrological Services in the WMO World Weather Information Service

World Meteorological Organization

Weather • Climate • Water

WMO-No. 1096

PWS-25

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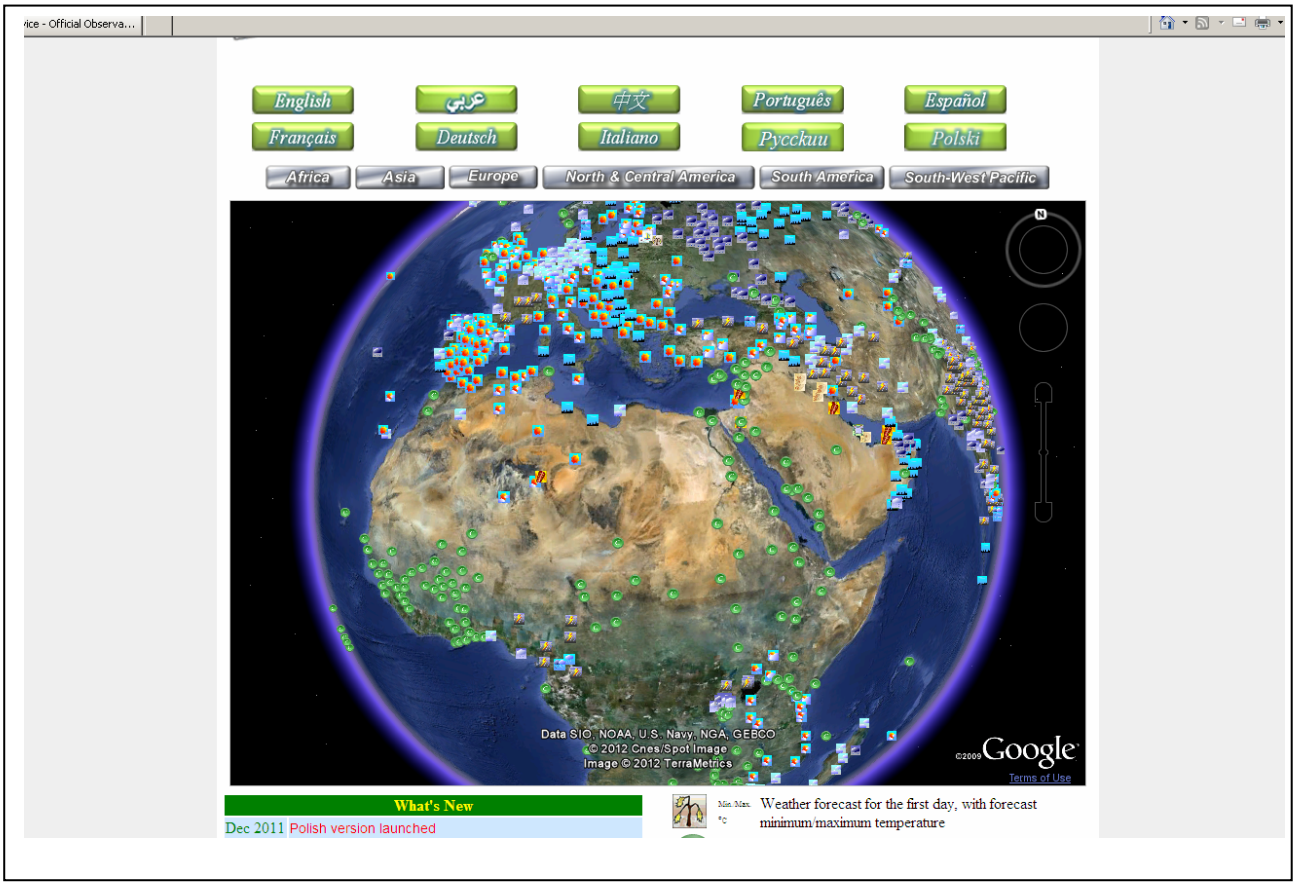
CONTENTS

1. INTRODUCTION

1.1. Description of the WWIS Websites

The origins of the World Weather Information Service (WWIS) dates back to 1999 when a group of Public Weather Services (PWS) experts and the World Meteorological Organization (WMO) PWS Programme discussed the utilization of the Internet to gather and display official information from National Meteorological and Hydrological Services (NMHSs) on a central Website. The WWIS Website was then established by WMO in 2001 to display official weather forecasts and climatological information for cities supplied by NMHSs worldwide. The fifty-fourth session of the WMO Executive Council (EC-LIV, Geneva, Switzerland, 11-21 June 2002) described the purpose of WWIS as follows: "to provide the media and the public with authoritative, official global city weather forecasts in order to counteract adverse effects on the image and authority of NMHSs, and on public safety, caused by increased amounts of unofficial city forecasts issued by the media, and widely available on the Internet". The Website has been continuously improved and undergone a major overhaul resulting in the addition of the Google Earth feature. The Website, which is currently available in ten language versions, won the prestigious Stockholm Challenge Award in 2008, in the Environmental category. The citation of the Award described WWIS as "having a strong vision, global objectives, robust sustainability model, and demonstrates information exchange between national and international organizations sharing weather data". The WWIS Website, including the re-vamped Google Earth version, can be accessed at the following web link: http://worldweather.wmo.int/.



WWIS is hosted and coordinated by the Hong Kong Observatory (HKO) in Hong Kong,

Figure 1. The Google Earth version of the WWIS Website

WWIS is hosted and coordinated by the Hong Kong Observatory (HKO) in Hong Kong, China. Participating Members provide climatological data and city forecasts for uploading on the

site. During the "Third Coordination Meeting of the WWIS Website Hosts", which was held in Offenbach, Germany, 18-20 October 2011, it was agreed to develop a set of guidelines aimed at increasing the participation of WMO Members in the WWIS initiative. This decision was meant to address some of the WWIS weaknesses such as the low number of cities for which WWIS is currently providing forecasts. At the present time, this number falls short of what would be desirable for the intended level of service delivery. It was noted that other competing forecast providers provide unofficial forecasts through the Internet for a markedly larger number of locations than the WWIS does, a fact that could make some users prefer such sources. Similarly, it was found necessary to request NMHSs to provide forecasts with longer lead times, and forecast updates at a uniform and higher frequency. The WWIS Coordinator, the different WWIS language version hosts, and the WMO Secretariat, decided that steps needed to be taken to eliminate these weaknesses, to ensure that an enhanced WWIS would provide a source of high quality service to the public and other users of the meteorological forecasts and climatological information. These guidelines provide the steps that NMHSs can take to eliminate these weaknesses though enhancement of their participation in the WWIS initiative.

1.2. What is the purpose of this Guide?

This guide is targeted at NMHSs and is intended to demonstrate the benefits that NMHSs gain by participating in WWIS, and to provide step-by-step guidance for a National Meteorological or Hydrometeorological Service (NMS) wishing to either join the WWIS initiative or to enhance its level of participation. Templates of the standard forms that NMHSs would need to complete to join or enhance participation in the WWIS are also provided.

2. CURRENT STATUS OF WWIS

2.1 Status of Websites

By end of April 2012, there were 159 Members (out of 189) actively participating in WWIS by providing weather and climate information for a total of 1,611 cities worldwide. Table 1 below, shows the number of participating Members by Region, as well as the participation of Least Developed Countries (LDCs). WWIS is available in the following language versions: Arabic, Chinese, English, French, German, Italian, Polish, Portuguese, Russian and Spanish. Table 2 shows the monthly and daily average page visits of the WWIS Websites. Since its inception in 2001, the cumulative page visits to all the WWIS language versions is in excess of 1 billion (see Figure 1 below).

Table 1. The number of participating Members by Region, as well as the participation of LDCs in the WWIS initiative

Region:		**No. of Members:**	**No. of Participating Members (%):**	**No. of participating LDCs/ Total No. LDC Members:**
I	Africa	55	41 (75%)	23/32
II	Asia	35	34 (97%)	8/9
III	South America	13	13 (100%)	0/0
IV	North America, Central America and the Caribbean	26	21 (81%)	0/1
V	South-West Pacific	23	17 (74%)	2/5
VI	Europe	50	46 (92%)	0/0
Total		**189**	**159 (84%)**	**33/47**

Table 2. Monthly and daily average page visits of the WWIS Websites in the period January to April 2012

Language:	**Monthly Total WWIS Page Visits (Daily Average WWIS Page Visits)**			
	January 2012	**February 2012**	**March 2012**	**April 2012**
English	6,139,708 (198,055)	7,318,255 (252,354)	8,091,587 (261,019)	7,958,038 (265,268)
Arabic	202,170 (6,522)	150,178 (5,179)	338,284 (10,912)	266,158 (8,872)
Chinese	4,242,235 (136,846)	4,080,517 (140,707)	4,628,710 (149,313)	4,073,671 (135,789)
German	83,082 (2,680)	71,538 (2,466)	123,367 (3,979)	135,274 (4,509)
Italian	243,158 (7,844)	223,950 (7,722)	170,073 (5,486)	226,989 (7,566)
Polish	10,579 (341)	11,290 (389)	7,579 (244)	8,875 (296)
Portuguese	73,894 (2,384)	89,189 (3,075)	66,822 (2,156)	62,886 (2,096)
Spanish	672,972 (21,708)	821,468 (28,326)	648,970 (20,935)	705,103 (23,503)
French	44,398 (1,432)	47,164 (1,626)	33,031 (1,066)	44,053 (1,468)

Figure 2. Cumulative page visits to all WWIS Websites since inception (in millions)

2.2 The "MyWorldWeather" Mobile version of WWIS

The "MyWorldWeather" application is the mobile phone version of the WWIS Website. It is the world's first location-specific weather service providing official city weather forecasts. It is equipped with location-based technology, which detects the location where the user is, and provides official city weather forecasts, automatically. It is currently available on the iPhone platform, and the Android version is currently under development. More information on this application can be accessed at the following link: http://www.wmo.int/ifoneapp.

Figure 3. Screen shot of « MyWorldWeather » iPhone application

There is a high rate of increase of usage of smart phones in the world, including in the developing countries and in LDCs. Demand for services availed through smart phones is growing fast. It is therefore essential that NMHSs participating in the WWIS provide official forecasts for as many locations or cities as possible for display on "MyWorldWeather" mobile phone application. A dense network of cities or locations for which weather forecasts are available would ensure that

the location-based technology would always locate a city near enough to the user, thus availing official forecasts easily to users no matter where they are. Figure 2 above shows a screen shot of "MyWorldWeather" iPhone application displaying forecasts for seven days for the city of Hong Kong, China.

3. HOW WWIS FUNCTIONS

3.1 The WWIS setup

On behalf of WMO, the Hong Kong Observatory (HKO) developed the WWIS Website from inception and has continued to coordinate its expansion and operation to the present. Members send climate information, daily weather forecasts and forecast updates to HKO, where the information is then uploaded into the English version of the WWIS Website. The other language version hosts update their WWIS versions following the HKO English version. These versions are hosted as follows: Arabic (Oman), Chinese (China), French (France), German (Germany), Italian (Italy), Polish (Poland), Portuguese (Portugal), Russian (Russia Federation) and Spanish (Spain). The language hosts meet every two years to discuss coordination issues as well as improvements to the Websites. The PWS Programme of WMO is responsible for coordinating with all language hosts and for providing linkage between NMHSs and the HKO. In order to facilitate coordination at operational level, NMHSs have nominated WWIS Focal Points who are responsible for coordination between their respective Services and the WMO Secretariat, in matters to do with WWIS.

3.2 Channels for submitting forecasts and climatological information

There are several channels for submitting forecasts for use on WWIS. This set of channels provides NMHSs with flexibility to select any option based on their desired approach and preference. The channels are shown in Table 3 below.

Table 3. Channels for submitting forecasts and climatological information to the WWIS server in HKO

Input Methods	No. of Members providing forecasts
GTS/AFTN	30
FTP	33
WebForm	34
E-mail	54

NMHSs may automate their procedures of forecast submission if they opt for GTS/AFTN, FTP or e-mail channels. However, submission through the WebForm has to be done manually. NMHSs are encouraged to use the method(s) that suite(s) them best. Some NMHSs use more than one method. Should a Meteorological Service need technical assistance with any of the input methods above, it may contact the WWIS Coordinator through the contact address provided in Annex I.

4. BENEFITS OF WWIS TO NMHSs AND THE PUBLIC

WWIS was designed to benefit NMHSs, the national public they serve and the international community at large. The following are some of the benefits of WWIS:

4.1 WWIS as a channel for providing official forecasts of NMHSs

WWIS is an efficient, user-friendly and practical channel available to NMHSs for providing their official forecasts to international media and other forecast aggregators. It assists NMHSs increase the outreach of their products and services. The fact that these forecasts are translated into ten languages serves to increase their outreach to the international community. It may be noted that currently WWIS records about 13,000,000 page visits per month. International and other users using these forecasts are required to indicate the source of the information as official forecasts provided by meteorological services through WMO. This attribution raises the visibility of NMHSs as the official credible sources of forecasts. In addition, it remains the only authoritative voice and central data repository managed and coordinated by experts and available on a 24-hour basis. It is an advanced technical platform and environment that is regularly maintained, monitored and updated by experts to ensure security of data.

4.2 Access to NMHSs' forecasts on mobile phones

WWIS enables the public in all countries to access official city forecasts from NMHSs. This means that the public are conveniently availed of high quality forecasts through the Internet and mobile phones. Likewise, NMHSs that provide forecasts to the media (print, radio and television (TV)) may use the official forecasts on WWIS to provide high quality city forecasts to their local media. It is for this reason that NMHSs are encouraged to inform media in their respective countries to access and use information provided on the WWIS.

4.3 WWIS links back to a NMS Website

In order to allow WWIS users to get more detailed forecasts than the ones displayed on the WWIS Websites, links to the Websites of all participating NMHSs are provided on the WWIS Websites. These links benefit a particular NMS by increasing its visibility and extending the outreach of its other services and products such as warnings, detailed forecasts and longer-term outlooks to users.

5. WWIS IMPROVEMENT NEEDS

The WWIS improvement needs, for which NMHSs have a direct role, have been identified as follows:

- Increasing the number of NMHSs participating in the WWIS initiative;
- Increasing the number of cities for which NMHSs provide climate information and weather forecasts;
- Increasing frequency of updating forecasts;
- Providing more climate information;
- Providing same day weather forecasts;
- Providing links to WWIS Websites from NMHSs' Websites; and,
- Informing local media and other users, such as the tourism industry, of WWIS and encouraging its usage by these users.

With regard to these improvements, there are some specific actions which are relatively easy for NMHSs to carry out that, if implemented, would help meet these needs and markedly transform the quality and usefulness of WWIS for the better. To realize these improvements, NMHSs are encouraged to start by assessing their current level of participation in WWIS and deciding on steps they could take to enhance their participation in WWIS, as guided by the suggestions in section 6 below.

6. HOW NMHSs CAN ENHANCE THEIR PARTICIPATION IN WWIS

6.1 Increasing the number of NMHSs participating in the WWIS initiative

A National Meteorological or Hydrometeorological Service (NMS) that has not yet started participating in the WWIS initiative and would like to start now would need to take the following actions:

a. Complete the "Nomination Form for the Contact for the World Weather Information Service" (see Annex I). The Form contains the information of the nominated contact for all future operational WWIS matters. It also indicates the preferred channel for communicating the information;

b. Consider as many cities as possible to submit climate information, as well as daily weather forecasts for; and,

c. Follow the steps described in sections 6.2 to 7 below to submit climatological information and forecasts for display on WWIS.

6.2 Increasing the number of cities for which NMHSs provide climate information and weather forecasts

a. The importance of increasing the number of cities (or towns) that each Member provides city forecasts and climate information for

The quality of the service delivered to the media and the public through WWIS depends, to a great extent, on the number of cities each participating Member provides climate information and weather forecasts for. This is because, for example, given the current density of cities (1,611 cities for the whole world), a user checking the weather forecast on a smart mobile phone equipped with the location detection capability risks getting forecasts for a far off city, which could be too far off to be of any use. However, if the network of cities is made more dense, the user would always get forecasts for a city near enough to them (proximity of data). In this case, NMHSs are encouraged to ensure that they provide forecasts for the top five most densely populated cities (and / or towns) for all provinces, counties or districts in their respective country (depending on the terminology used to describe the larger administrative units that comprise a country, territory (or state). In particular, NMHSs should provide forecasts for cities (or towns or tourist attraction zones) in such a way that the distance between them does not exceed 50 km, if possible, but the distance could be larger than this in sparsely-populated regions. The current WWIS status with respect to the density of cities is inadequate. Most NMHSs are providing forecasts for very few locations, for example two to eight cities only in a whole country, which makes them too sparse. There are however a few Members who are providing a large number of locations, e.g., India (94). Figure 3 below shows the distribution of cities for which both forecasts and climatological information (in red) and climatological information only (in green) are provided for display on WWIS by NMHSs.

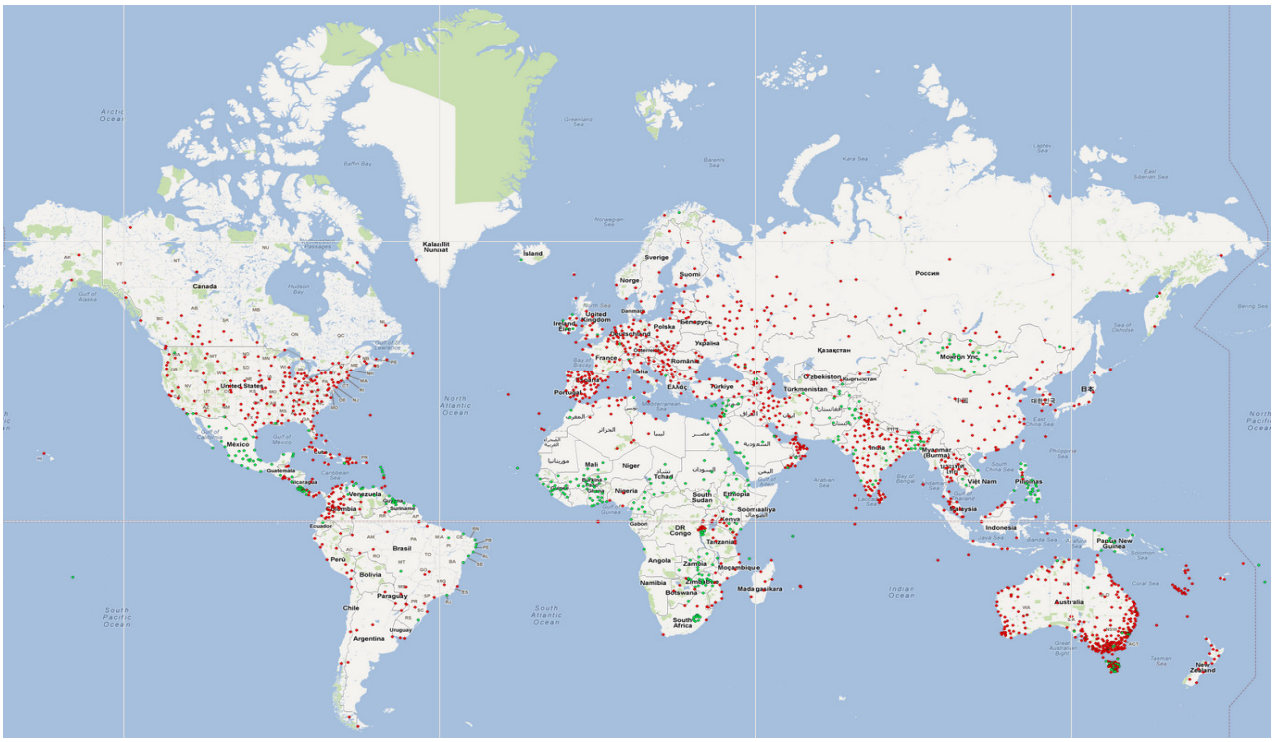


Figure 4. The distribution of cities for which both forecasts and climatology (in red) and climatological information only (in green) are provided for display on WWIS by as of July 2012

b. How does a NMS go about increasing the number of cities for which it issues forecasts and climate information?

To increase the number cities for your country or territory, please complete the “Submission of City Forecasts" Form (see Annex II).

6.3 Increasing frequency of updating forecasts

The WWIS server has the capability to ingest weather forecast updates every minute. NMHSs therefore have the option to regularly update forecasts throughout the day. Currently most NMHSs only update their forecasts once a day, which could be improved. In some cases, some NMHSs do not send in updates for several days, which greatly affects the effectiveness and reliability of the WWIS. NMHSs are encouraged to update their forecasts as often as possible and at least twice per day.

6.4 Providing current weather information

The shorter the forecast lead-time, the more accurate and the higher the confidence associated with a forecast. For this reason, “present-day forecasts” are high-confidence forecasts and are important as they help users plan for the day using the most up-to-date information. At present, very few Members provide present-day weather forecasts on the WWIS, although this information is available at NMHSs. Inclusion of this information by all participating Members in the WWIS has been recognized as an important move toward enhancing the WWIS.

6.5 Increasing forecast lead times

In order for the WWIS to provide the intended level of service, it would be desirable to display forecasts for at least four days for each of the cities. NMHSs are therefore encouraged to

provide forecasts with as much lead time as possible, but for a minimum of four days, on a daily basis, updated, as indicated under item 6.3 above.

6.6 Providing more climate information

In order to increase the use of WWIS as a reliable provider of climate information for cities, NMHSs are encouraged to provide this information for all the new cities they may add to WWIS. To add climate information for a new city please complete the "Submission of Climatological Information" Form (see Annex III).

6.7 Providing links to WWIS Websites

In order to increase the usage of WWIS, NMHSs are encouraged to provide prominent links from their own Websites to the respective WWIS language version sites. The reason for this is that visitors to the NMHSs' Website would easily find the link to WWIS for official weather forecasts from other NMHSs.

In order for the media of participating countries to be aware of the WWIS as a source of official forecasts, NMHSs may take the initiative to spread the word concerning WWIS to all forms of media including print, radio and TV. NMHSs using social media such as Facebook, Twitter and YouTube may also point their audience to WWIS. It may be mentioned here that information to the media should not be seen as a one-time activity but a continuous one, in which a NMS uses every opportunity, such as press conferences and other collaborative activities with the media, to put the message forward.

7. ACCESSING ASSISTANCE

Should you need further assistance with regard to taking action to commence or enhance participation in WWIS, please e-mail your request to Mr Armstrong Chen, Coordinator of WWIS at the Hong Kong Observatory (cityforecast@hko.gov.hk), with a copy for information to: Ms Haleh Kootval, Chief of the Public Weather Services Programme at WMO (HKootval@wmo.int) and Mr Samuel Muchemi, Scientific Officer, Public Weather Services Programme (SMuchemi@wmo.int).

W O R L D M E T E O R O L O G I C A L O R G A N I Z A T I O N
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ANNEX I

NOMINATION FORM
CONTACT FOR THE WORLD WEATHER INFORMATION SERVICE

The Permanent Representative of _____ designates the following expert as a contact person for the World Weather Information Service (WWIS):

1. **Title*:** Dr/Mr/Mrs/Ms: _____
2. **Surname:** _____
3. **First name(s):** _____
4. **Organization:** _____
5. **Mailing Address:** _____

   _____
6. **Telephone:** _____
7. **Mobile:** _____
8. **Fax:** _____
9. **E-mail:** _____
10. **Submission of city / town forecasts through*: GTS, E-mail, FTP, WebForm**
11. **Endorsement from the Permanent Representative:**

    Name of Permanent Representative: _____

    Date: _____ **Signature:** _____

This completed Form should be sent as soon as possible to:

Mr Armstrong Cheng
Coordinator, WMO World Weather Information Service
Hong Kong Observatory, 134A Nathan Road, Hong Kong, China
Fax: +852 2311 9448 : **E-mail:** cityforecast@hko.gov.hk

With copy for information to:

Ms Haleh Kootval
Chief, Public Weather Services Programme
World Meteorological Organization, P.O. Box 2300, CH-1211 Geneva 2, Switzerland
Fax: +41 22 730 8021 : **E-mail:** HKootval@wmo.int

Mr Samuel Muchemi
Scientific Officer, Public Weather Services Programme
Fax: +41 22 730 8021 : **E-mail:** SMuchemi@wmo.int

_____

* Indicate preference

W O R L D M E T E O R O L O G I C A L O R G A N I Z A T I O N
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ANNEX II

WMO WWIS ON WORLD CITY FORECASTS
SUBMISSION OF CITY FORECASTS

If you would like to send city forecasts by e-mail, please:

(a) Use 'city forecasts of _____ (Name of country/territory)' as the e-mail subject;
(b) Send the forecasts in plain text to: submitforecast@worldweather.org;
(c) Follow the recommended format (see the sample below) and embed the message in the main body of the e-mail message, not as a separate attachment.

Sample with bulletin in an e-mail message (example of cities of Haiti)

Subject: city forecasts of Haiti (Name of country / territory)

Date: Mon, 29 Mar 2010 17:00:00

From: Sender

To: submitforecast@worldweather.org

ZCZC 100

FPHA01 MTEG 290900

FORECAST ISSUED AT 1700 **ON** 20100329

3 DAY FORECAST

PORT-AU-PRINCE

30 24/33 PARTLY CLOUDY

31 24/33 CLOUDY

01 24/33 FOG

CAP-HAITIAN

30 24/33 PARTLY CLOUDY

31 24/33 CLOUDY

01 24/33 FOG

NNNN

- Please note that the text in bold in the sample message are key identifiers.
- There is no space for the line of **NNNN**.
- 20100329 means the 29th day of the 3th month of the year 2010.
- NA means not available.

_____

W O R L D M E T E O R O L O G I C A L O R G A N I Z A T I O N
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ANNEX III

WMO WORLD WEATHER INFORMATION SERVICE

SUBMISSION OF CLIMATOLOGICAL INFORMATION

Please provide latitude/longitude and monthly climatological data of cities. Complete one form for **each** city you are providing climatological information for.

1._____*(name of city / town/)*_____ *N/S* _____*E/W (latitude / longitude)*

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Daily Maximum (˚C)												
Daily Minimum (˚C)												
Daily Maximum (˚F)												
Daily Minimum (˚F)												
Mean Total Precipitation (mm)												
Mean Number of Precipitation Days												

Please fill in the blanks below:

1. Climatological information is based on monthly averages for the _____*-year period, from* ___ _____ *to* _____

*[e.g., Climatological information is based on monthly averages for the **30**-year period **1981-2010**.]*

2. Precipitation includes _____ *[**both rain and snow / rain only**]*

3. Mean number of Precipitation days = Mean number of days with at least _____ *mm of Precipitation.*

_____

For more information, please contact:

World Meteorological Organization

Communications and Public Affairs Office

Tel.: +41 (0) 22 730 83 14/15 – Fax: +41 (0) 22 730 80 27

E-mail: cpa@wmo.int

Public Weather Services Division

Tel.: +41 (0) 22 730 83 33 – Fax: +41 (0) 22 730 80 21

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