



Meteorological station at Kathmandu Airport

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NEWS

1. World Meteorological Day-2005 Celebrated

Society of Hydrologists and Meteorologists, Nepal (SOHAM-Nepal) in collaboration with Department of Hydrology and Meteorology (DHM) and Central Department of Hydrology and Meteorology (CDHM), Tribhuvan University (TU) celebrated the World Meteorological (WM) Day on March 23. The program was also sponsored by University Grant Commission (UGC), Nepal. The theme of the WM Day of this year was **Weather, Climate, Water and Sustainable Development**. The theme was selected by World Meteorology Organization (WMO) in the recognition of the vital role of meteorology, hydrology and related geophysical sciences to achieve the Millennium Development Goals (MDG) by 2015.

During the Inauguration Program, chaired by Dr. Swoyambhu M. Amatya, Secretary for Ministry of Environment, Science and Technology (then Ministry of Science and Technology), five speeches were delivered. Chief Guest, Hon. Dr. Hari Krishna Upadhyaya, Member of National Planning Commission was very happy to know the importance of meteorology in agriculture activities and he emphasized that the national prioritization depends on the immediate requirement of public utilities. Similarly, Dr. Amatya suggested conducting the next WM day outside the Kathmandu Valley. Dr. Madan L. Shrestha, Director General of DHM and Life Member of SOHAM-Nepal, highlighted the issues of global climate change and activities of DHM on climate change and climate models. Prof. Dr. Bidur P. Upadhyaya, Chairman of UGC and Life Member of SOHAM-Nepal pointed out that low budget on data collection is the main constraint for qualitative improvement of the data and related research. He also highlighted the importance of hydrology and meteorology. Dr. Janak L. Nayava, Chairman of SOHAM-Nepal stressed on the need of effort prioritizing the activities of hydrology and meteorology at the national level. He pointed out that because of less priority, the development pace of hydrology and meteorology in Nepal is slower compare to that in other countries in the world.

A technical seminar was organized in the Second Session, which was chaired by Mr. Adarsha P. Pokhrel, Executive Member and Ex-Chairman of SOHAM-Nepal. The following five technical papers were presented during the seminar:

- a. 'Monsoon rainfall variability in Nepal and its linkage with large scale weather features' by Mr. Saraju K. Baidya, DHM.
- b. 'Flood risk mapping of Bagmati River in the Kathmandu Valley using geo-informatics tools' by Dr. Dilip Gautam, DHM (Prepared by Dr. Dilip Gautam and Mr. Ram Gopal Kharbuja, DHM).
- c. 'Study of the western disturbances in Nepal: a case study of the event of 26-28 December 2003 using satellite data' by Mr. Suman K. Regmi, DHM.
- d. 'Hydrochemistry assessment of Bishnumati River for the downstream awareness' by Ms. Nisha Shrestha, CDHM, TU (Prepared by Ms. Nisha Shrestha, Ms. Rejina Maskey Central Dept. of Environmental Sciences, TU and Mr. Deepak Aryal, CDHM).
- e. 'Geo-information procedures to assist water accounting: a case of the East Rapti River Basin, Nepal' by Mr. Rajendra L. Shilpakar, ICIMOD.

2. The Chairman of SOHAM-Nepal Highlighted the Importance of Agro-meteorology

Dr Janak L. Nayava, Chairman of SOHAM-Nepal had an interactive talk programs on '**Challenges facing Nepalese agriculture based on cereal crop production in Nepal**' at the Central Bureau of Statistics, the Department of Agriculture, the Department of Irrigation

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and at the National Planning Commission on March 1, March 9, April 5 and April 6, respectively. During the programs, he highlighted the role of agro-meteorology for the agricultural development in Nepal. Based on the last 30 years' (1970 to 2000) rainfall and cereal crop data in Nepal, he pointed out the following issues:

- Since 1980's Nepal became a food importer country, while the country used to be an exporter till 1970's.
- Despite the top priority on development of agriculture in all the 5-year National Plans of Nepal, the country has not yet achieved the target of crop production due to several causes.
- Despite of great efforts of scientific innovations from the Department of Agriculture, the country had faced reduction in crop production in the following ten years: 1972, 1976, 1977, 1979, 1982, 1986, 1992, 1994, 1997 and 1999.
- Noting these points Dr. Nayava suggested a thorough study to get the answers on why, how and where such reductions occurred with respect to weather and he also pointed out that these types of studies and their outcomes may save millions of rupees in the coming years.

According to Dr. Nayava, the National Planning Commission is very keen to materialize the proposal to study agro-meteorological applications in two selected districts in Nepal. With the consent of the Commission, SOHAM-Nepal is working with the Ministry of Agriculture to take necessary actions for the proposal.

3. World Water Day

The period 2005-2015 has been declared as the International Decade for Action "Water for life" by the General Assembly of the United Nations on the occasion of World Water Day on 22 March. The main aim of the Decade is to support the 50% of people, who are without clean water supplies by the year 2015. (Source: <http://www.wmo.ch/news>, May 2005).

To mark the date the students of M.Sc. Environmental Science at Khwopa College (KC) organized a national program entitled "Seminar on Water Science" on 19 March 2005 at Bhaktapur. During the program nine technical papers were presented on water and environment. (Source: Mr. Sudeep Thakuri, KC).

4. Nepal Ratified Kyoto Protocol

Nepal government, through a cabinet decision, has ratified the Kyoto Protocol, which sets limits on emission of greenhouse gasses (GHG) from industrialized countries and introduces a mechanism for emission trading. The Protocol came into effect on 16 February 2005 after Russia ratified the Protocol.

The government is in process to send a formal note of ratification to the United Nations. With this ratification, Nepal can benefit from Clean Development Mechanism (CDM) for promotion of renewable energy and clean transportation. (Source: *Kantipur Daily Newspaper*, 30 April 2005)

5. Celebration of Kyoto Protocol Ratification

The Kyoto Protocol entered into force on the 16 Feb 2005. During the celebration program at UN headquarter to mark the date; General Kofi Annan called on the world community to be bold, to adhere to the Protocol, and to act quickly in taking the next steps against climate change. There were also worldwide celebrations to mark the day. About eighty six different events were organized by some Parties to the Protocol, as well as institutions and organizations in different countries. (Source: www.unfccc.int, May 2005)

6. China to Forecast Climate of Asia

During the First Session of the Forum on Regional Climate Monitoring, Assessment and Prediction for Asia held in Beijing, China from 7-9 April 2005, Xu Xiaofeng, Vice-Administrator of China Meteorological Administration (CMA), informed that China would make climate forecast for whole Asia from this summer using their climate forecast model for

the first time. Beijing Climate Centre (BCC), subordinate of CMA is one of the Regional Climate Centers of WMO for Asia. (Source: www.cma.gov.cn, May 2005)

7. 2004 WMO Research Award for Young Scientists

The 2004 WMO Research Award for Young Scientists was awarded to Mr Ahmed Gahein of the Egyptian Meteorological Authority, Cairo, and Mr Nouredine Semane of the National Centre for Meteorological Research, Casablanca, Morocco, at a ceremony in the WMO headquarter on 14 March 2005. Mr Gahein won the Award for his research paper published in 2003 in *Atmosfera* entitled "Diagnostic study on the relation between ozone and potential vorticity". Mr Semane received the Award for his research paper published in 2002 in *Tellus* entitled "A very deep ozone mini-hole in the northern hemisphere stratosphere at mid-latitudes during the winter of 2000". (Source: www.wmo.ch/news/news_april2005.html)

8. Hailstorm Killed a Person and Injured Few in Pokhara

One person died and a few others injured after being hit by the intense hailstorm that struck Pokhara and adjoining areas on 18 May afternoon. Some pedestrians rushing for a shelter following the hailstorm were injured and the vehicles parked on the roadside had their glasses shattered by the icy precipitation.

The hailstorm was also reported to have caused a big damage to fruit, vegetable and maize crop in the area. Local residents informed that hailstorm in such a big scale was witnessed there after many years. (Source: *The Rising Nepal*, May 19 2005)

9. Monsoon Arrival over Nepal May be Delayed

According to Meteorological Forecasting Division of DHM, arrival of monsoon may be delayed in Nepal by 4 to 5 days than the normal onset date. The normal onset date of monsoon in the eastern Nepal is 10 June. Indian Meteorological Department (IMD) has also forecasted delayed monsoon onset over Kerala, Southern India. According IMD monsoon onset over Kerala is likely to be on 7 June 2005, delaying by 6 days. (Source: www.mfd.dhm.gov.np and www.imd.ernet.in)

ACTIVITIES

1. Talk Programs

Two talk programs were organized by SOHAM-Nepal on 16 December 2004 and 11 March 2005.

- **Flood Impact on Hydroelectric Projects- Correction of flood data on Dudh Koshi at Rabuwa Bazar (gauging station 670):** Mr. Damodar Bhakta Shrestha, Executive Member of SOHAM-Nepal and Water Resource Engineer of Nepal Electricity Authority (NEA) presented this paper on 16 December 2004. In his study he modified the flood data using HEC-2 software, which were lower than the historical data. His paper concludes that careful analysis of the hydrological parameters can make significant change in the design and consequently cost of the project.
- **Maximum Rainfall Discharge for the Design of Road Structures of Nepal:** Dr. Prem Chandra Jha, Lecturer of Institute of Engineering presented the talk program on 11 March 2005. His focused on the method for the calculation of maximum rainfall discharge for the design of surface drainage and cross drainage (bridges and culverts) structures. He also mentioned that his method has been used in 11 river projects in Nepal.

2. Consultancy Works

SOHAM-Nepal has successfully completed the following three consultancy works for various organizations.

- Installation of staff gauge and discharge measurement at Uttar Ganga River.

- Low flow measurement of the year 2005 for the Melamchi Project.
- Preliminary study of flood of Madi River, August 2003 and Kawache Glacier Lake.
- Low flow study of eastern Terai.

Recently NEA has awarded SOHAM-Nepal a consultancy package titled "Glacier and Glacier Lake Study of Tamur River Basin". A contract agreement was signed on 18 March 2005 between Project Development Department, Engineering Services, NEA and SOHAM-Nepal. This study is being conducted as a part of a larger project called "Initiation of Upgrading Feasibility Study of Tamur-Mewa Hydroelectric Project".

FEATURES

1. Winter 2004/05 in Nepal: No Cold Waves

The preliminary data from various stations of the country showed that winter (December 2004 to February 2005) in Nepal remained warmer than Normal (Fig.1a). The positive anomaly of more than 0.5°C was observed in mean temperatures in the country, except over some places - Hetauda, Syangja, Nepalgunj and Mahendranagar, where temperatures were near normal. The highest positive anomaly of greater than 1.5°C was found in the northern part of Western Region. It is noteworthy that cold wave had badly affected lives and agriculture in Terai plains in 2003 and 2004 winters and there was no cold wave in the country this winter.

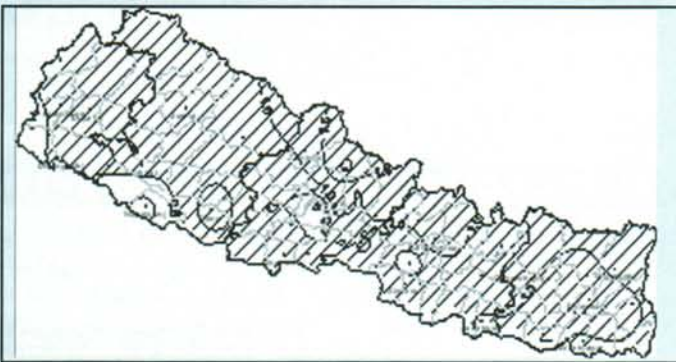


Fig. 1a: Mean winter temperature departure in °C from normal

In winter, normally rainfall decreases from west to east of the country. This year also winter rainfall followed the normal pattern. However, the northern districts of Mid-western region, most of the districts of Western and Eastern regions and the eastern districts of Central region had below normal winter rainfall. But, most of the Terai districts received above normal rainfall (Fig 1b). In December, the rainfall was nil in the entire country. However, in January rainfall was widespread with excess rainfall. Out of 75 districts, 28 districts had deficit (<80% of normal rainfall) and 20 districts had excess (>120% of the normal) rainfall in winter. (Figures contributed by Mrs. Mandira Rajbahak, DHM)

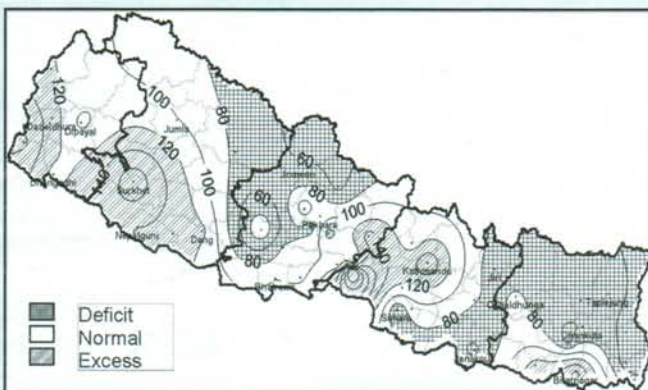


Fig. 1b: Winter rainfall as percentage on the normal

2. ENSO Outlook-2004/05

The El Niño/Southern Oscillation (ENSO) index is defined as three-month averages of sea surface temperature (SST) departures from normal for a critical region of the central and equatorial Pacific (Niño 3.4 region; 120W-170W, 5N-5S). Departures from average of SST in this region are critically important in determining major shifts in the pattern of tropical rainfall, which influence the jet streams and patterns of temperature and precipitation around the world. According to NOAA's operational definitions for El Niño and La Niña, based on this index, **El Niño** is a phenomenon in the equatorial Pacific Ocean characterized by a positive SST departure from normal (for the 1971-2000 base period) with greater than or equal in magnitude to 0.5°C, averaged over three consecutive months in the Niño 3.4 region. When Niño 3.4 is characterized by negative SST departure with greater than or equal in magnitude to 0.5°C, averaged over three consecutive months then it is called **La Niña**.

Warmer than normal SST prevailed in the Niño 3.4 region for later half of 2004 and early 2005 (Fig. 2a). The latest SST condition in the Equatorial Pacific showed the highest positive anomaly over the 100°W in the early May 2005.

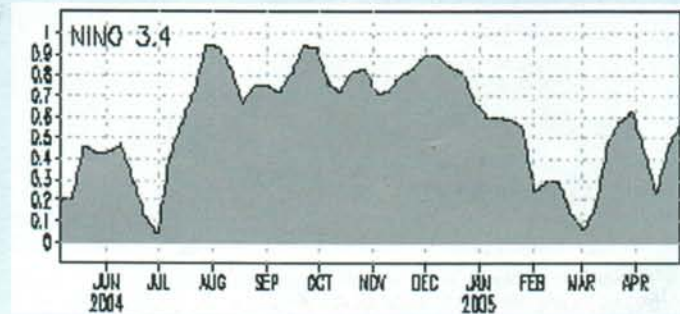


Fig. 2a: Time series of average SST departure from normal in Niño 3.4 region (Source: www.noaa.gov)

Studies have shown that the drought years over India and Nepal are often related to warm SST anomalies in the equatorial central and east Pacific (El Niño) and excess years with anomalously cold SSTs (La Niña). However, there is a regional variation in the effect of ENSO over the Indian subcontinent including Nepal.

A majority of the statistical and coupled model forecasts indicate that ENSO-neutral conditions will prevail during the northern summer (June-August) of 2005 despite the recent increases in SST anomalies associated with strong Madden-Julian Oscillation (MJO) activity. It is unclear at this time whether this warming will be sufficient in itself to cause a basin-wide El Niño. However, La Niña conditions are considered unlikely (one of the models results on SST forecast is shown in Fig 2b). Therefore, El Niño related drought is less likely in Nepal during the monsoon 2005. (Contributed by Mr. Saraju K. Baidya, DHM)

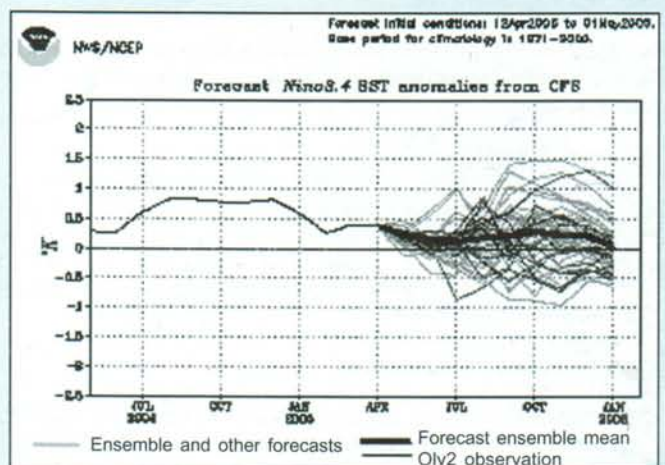


Fig. 2b: Forecast for Niño 3.4 SST anomalies from CFS

3. South Atlantic Hurricane: Is It the Signal of Climate Change?

Amazing world's Meteorologists, the first ever recorded Hurricane of the South Atlantic Ocean hit the Brazilian state Santa Catarina on 28 March 2004, causing much damage to property and some loss of lives (Fig. 3a). The South Atlantic Ocean is the one place where hurricanes do not occur. The atmosphere does not provide enough spin near the surface to get them started and winds higher in the atmosphere tend to shear off any that do make a start. In the past, only two tropical cyclones had ever been noted in this region.



Fig. 3a: Hurricane Catarina off Southern Brazil, 26 March 2004 (Image: MODIS Rapid Response Project, NASA/GSFC)

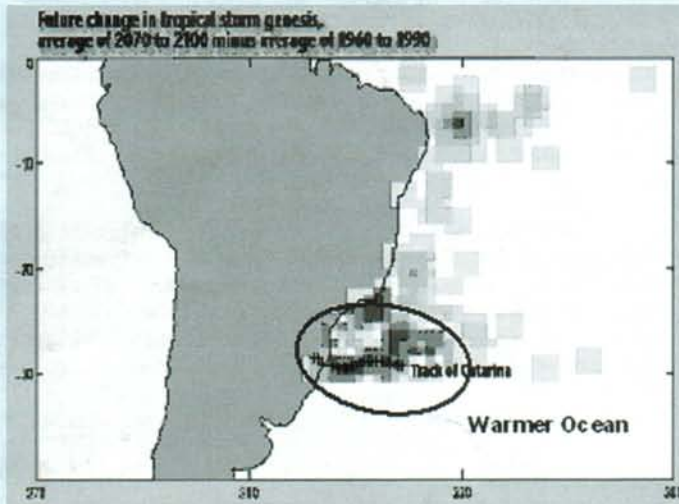


Fig. 3b: Model results for future change in storm genesis in the South Atlantic Ocean with warmer atmosphere (UK Met office model results)

The model of the Hadley Centre for Climate Prediction and Research, UK, showed a possibility of more tropical storms in this region of the South Atlantic for a warmer world due to increased greenhouse gases (Fig. 3b). However, the signal is not clear as some aspects of the model are not realistic and don't exactly match the current storm, but the potential is there and the event is a part of the climate change system. (Source: www.metoffice.com/ 20 May 2005)

4. Year 2004 – Fourth Warmest Year

The year 2004 was the fourth hottest ever recorded since the measurement of temperature began in 1861. The global mean temperature in 2004 was 0.44°C above the 30 year (1961-1990)

average (14°C). The surface temperature anomaly in 2004 for the Northern hemisphere (+0.62°C) was the fourth warmest and for the Southern hemisphere (+0.25°C) was the sixth in the instrumental record. Globally, the land surface air temperature anomalies for October and November 2004 were the warmest on record for these months.

The year 1998 was the warmest year with average temperature 0.54°C above the same 30-year average. The five warmest years in decreasing order are: 1998, 2002, 2003, 2004 and 2001. The last 10 years (1995-2004) with the exception of 1996, were among the warmest on record.

In the Northern hemisphere, the 1990s was the warmest decade with mean temperature 0.38°C above the 30-year average. However, the mean surface temperature, for the recent 5 years (2000-2004), was much higher with the positive anomaly of 0.58°C. (Source: WMO Statement on the status of the global climate in 2004, WMO-No.983)

DO YOU KNOW?

- The standard total suspended particle (TSP) of Nepal is 150 $\mu\text{g}/\text{m}^3$ and annual mean TSP at Babarmahal is 206 $\mu\text{g}/\text{m}^3$, while the WHO standard is 150-230 $\mu\text{g}/\text{m}^3$. (Source: DHM)
- The highest ever recorded maximum temperature at Kathmandu was 36.6°C, recorded on 7 May, 1989. (Source: DHM)
- The Glacier AX010 at Shorong has retreated 174 m between 1978 and 2004. (Source: DHM & Glacier Expedition to Nepal)

PUBLICATION

Journal of Hydrology and Meteorology, Vol. II, 2005 the annual Journal of SOHAM-Nepal is in Press. Eleven papers have been included in the Journal.

ANNOUNCEMENTS: CALL FOR PAPERS

1. **River Basin Management 2005: Third International Conference on River Basin Management including all aspects of Hydrology, Ecology, Environmental Management, Flood Plains and Wetlands**, 6 - 8 September 2005, Bologna, Italy. Abstract Submission : As soon as possible (details: <http://www.wessex.ac.uk/conferences/>)
2. **14th Joint Conference on the Applications of Air Pollution Meteorology with A&WMA**, 29 January-2 February 2005, Atlanta, Georgia. Deadline for Abstract Submission: 1 August. (for details: details: www.ametsoc.org/AMS)
3. **20th Conference on Hydrology**, 29 January – 2 February 2006, Atlanta. Abstract deadline 1 August 2005. (details: www.ametsoc.org/AMS)
4. **Fifth Asian Regional Conference on Engineering Geology for Major Infrastructure Development and Natural Hazards Mitigation**, 28–30 September 2005, Kathmandu, Nepal. Abstract submission: 31 July 2005. (For details: www.ngs.org.np/iaeg.htm)

OBITUARY

- SOHAM-Nepal extends heartfelt condolence to Mr. Bijay Kumar Baidya, Life Member of SOHAM-Nepal and Acting Deputy Director General of Meteorological Forecasting Division on the sad demise of his mother, Mrs. Hira Devi Baidya. Mrs. Baidya passed away on 6 May 2005 at the age of 93 years.
- SOHAM-Nepal also extends heartfelt condolence to Mr. Bhakta L. Manandhar, Life Member of SOHAM-Nepal and Ex-Deputy Director General of DHM on the sad demise of his mother, Mrs. Ram Kumari Manadhar. Mrs. Manandhar passed away on 2 June 2005 at the age of 87 years.