

**The Network System for Monitoring and Predicting ENSO  
Event and Sea Temperature Structure of the Warm Pool  
In the Western Pacific Ocean (APN 2001-12)**

**Project Leader:**

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## **APN Funding**

US \$45,000

## **Participants from the following countries were funded**

Australia, China (including Hong Kong and Macao), Indonesia, Japan, Malaysia, Philippines, Republic of Korea, United States and Vietnam. The Chinese National Climate Centre and the Chinese Meteorological Administration funded computer charges (6 performing models) for the prediction of 2001/2002 El Niño event.

## **Introduction/Background**

Numerous investigators have shown that ENSO cycles (consisting of El Niño and La Niña phases) have significant relations with, and impacts on, climate, environment, and socio-economic aspects on Asian and Western Pacific countries and regions. For instance, recent statistics have shown that due to the effect of the 1997/1998 El Niño event, the global and regional climate changed abnormally, and large-scale severe natural disasters caused 4,829,884 people to be homeless, and direct economic losses up to US \$33.9 billion. On the other hand, the sea surface temperature anomaly (SSTA) in the Western Pacific Ocean also may exert a teleconnection effect on the weather and climate in East Asia through PJ (Pacific–Japan) pattern or Walker circulation. Therefore, it is necessary to improve our understanding and knowledge in these fields and essential to enhance the monitoring and prediction of ENSO events and SSTA on the warm pool over the Western Pacific Ocean at the seasonal and inter-annual time scales with necessary related information, products and data sets distributed to APN countries/regions via an Internet network, thus leading to the improvement of seasonal and inter-annual prediction of monsoon activity and significant climate events in this region.

## **Outline of activities conducted**

1. Maintaining and updating the network and issuing new products.
2. Improving the content of the network with the prediction of ENSO, enhancing the research and prediction outputs of the Warm Pool, adding the information of winter monsoon and expanding the data and information contributed by each participating country of this APN project.
3. Continuing to enhance research work, increase the amount of papers, and put related research papers on the web.

4. Improving the El Niño/La Niña prediction system.
5. Held an international workshop on monitoring and prediction of ENSO event and the sea temperature structure of warm pool in the Western Pacific in Macao on 5-7 February, 2002.

### **Outcomes/Products**

The major objectives and contents of the project APN 2001-12 included the collection of data and information, improving the network and issuing new products, continuing to enhance research work and improving the El Niño/La Niña prediction system. Through one year's efforts, these goals have been successfully achieved:

1. Enlarging the collection of data and information relative to ENSO and the warm pool, such as TOGA-TAO and SCSMEX-A, B, C buoy data, oceanic data of the warm pool and the South China Sea, the oceanic observations of Japan along 137°E, and satellite data such as OLR and TBB, etc. Participating countries provided the data sets needed for the project.
2. Improving the network and issuing new products. A network and web page <<http://www.ncc.gov.cn>> of the APN project (APN 99012 and APN 2000-12) have been fully set up, with their catalogues and information residing at a workstation. The Chinese National Climate Center (CNCC) is responsible for maintenance and improvement of this network on the Internet, and collection and updating of the necessary information. Improvement of this network has been made in the following aspects: (1) adding more information of historical background, (2) inclusion of more contributions from participating countries, (3) adding new information and data sets accessible to users in APN countries, (4) establishing a full and updated network, with internal memory capacity of our workstation expanding, thus providing a more complete set of monitoring information data sets and prediction products as well as graphic outputs. Improve the design of the main web page of the network with a newer layout and clearer catalogue and more easily accessible mode, so that users can pick up the information effectively. The related countries and experts that participate in this project through Email to further update and supplement information and data, promote the time efficiency in updating the web, and validate the contact and accessible method.
3. Continuing to enhance research work, increase the amount of papers, and put related research papers on the web. Through these studies, the useful relationships between ENSO and SSTA of Warm Pool, and anomalous weather–climate conditions in Southern Asia and East Asia have been established and in turn will be used in operational seasonal and inter-annual prediction, especially for extreme events such as typhoons, monsoons and droughts/floods.

4. El Niño/La Niña prediction systems have been improved to raise the capability of prediction and simulation. The predictions of the tropical Pacific Ocean SSTA during 2001-2002 have been made and issued on the APN network.
5. A booklet of this APN Project describing this network has been published.
6. An international workshop on monitoring and seasonal to inter-annual prediction of ENSO event and the sea temperature structure of the warm pool in the west Pacific was held in Macao on 5-7 February 2002 (Summary Meeting). About 40 people including experts from 8 APN countries, US Navy postgraduate school and IPRC, were invited to attend the workshop. They have been directly involved in our project with their contribution in the aspects of research and development of the network. The goals of the workshop were: (1) To exchange research results and update the achievements and network on monitoring and prediction of ENSO and sea temperature structure over warm pool, and their impact on East-Asian monsoon, tropical cyclones and extreme events, and (2) To demonstrate the updated system developed jointly for this project.

#### **Future directions/Follow-up work**

Continuous maintenance of this APN Network. The details for financial and Manpower support was discussed at the Macao workshop.

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