

## Pancheti Koteswaram – An obituary

*P. K. Das*

With the passing away of Pancheti Koteswaram (1915–1997) on 11 January this year, our country has lost an eminent meteorologist of the postwar period. His best contributions were in synoptic meteorology and practical weather forecasting for which he will be remembered by his colleagues. His ability in these fields was coupled with an innovative approach to emerging areas of new technology. He had a visionary outlook for the growth of Indian meteorology.

Koteswaram was born on 20 March 1915 at Nellore, a small town in coastal Andhra Pradesh. In later life he would often tell us about a cyclone which struck Nellore in 1927, when he was a boy of twelve. This, he said, generated a lifelong interest on tropical cyclones.

His early education was received at Nellore. In 1931, he was placed first in the Intermediate examination of Andhra Pradesh. The Sir R. Venkataraman gold medal was awarded to him by Andhra University for this achievement. Later he joined the Presidency College at Madras from where he graduated in 1934 with an Honours degree in Physics. Thereafter, he worked in junior academic positions at different colleges of Andhra Pradesh. Around 1936 he embarked on a research project on the Raman effect, under the guidance of T. Ramakrishna Rao. He received his doctorate degree (DSc) in 1939 from Madras University. His thesis was on 'Studies of associated liquids by the Raman effect'.

Koteswaram joined the India Meteorological Department (IMD) in August of 1940. The early part of his career was spent on operational weather forecasting at different meteorological centres of India. Interestingly, one of his early postings was at the Cyclone Warning Centre at Alipore, in Calcutta. Here he acquired the basics of cyclone prediction and warning.

I was introduced to Koteswaram in 1949, when I joined the Meteorological Department at Poona (now Pune). I was impressed by his command over data and data-related problems. Around this

time Koteswaram became interested in the upper air over India. This led to his discovery of an easterly jet stream over peninsular India. Its appearance provided Indian forecasters with a valuable tool for detecting the arrival of the summer monsoon.

As mentioned earlier, Koteswaram's other area of interest was on tropical cyclones. Once a cyclone was detected, he would follow its path and predict its future with meticulous care. I remember spending many hours with him debating the observations on a weather chart. He



loved a debate, but like Voltaire, the French philosopher, he would often end by saying: 'I differ from you emphatically, but I will defend your right to differ till the last drop of my blood'. Differences of opinion seldom led to any permanent rancour.

As a sequel to his work on tropical cyclones and the easterly jet stream, there were invitations for him from many centres abroad. He went to the University of Hawaii in 1961 as a research scholar. Similar assignments were provided for him by the University

of Chicago and the National Centre for Atmospheric Research (NCAR) in the USA.

Koteswaram was elevated to the top position of the Meteorological Department, the Director General of Observatories (DGO), in 1969. He was due to retire in 1973, but his work earned him a two-year extension up to March 1975. The Government of India awarded a 'Padma Bhushan' to him in 1975. After retirement, he worked as a consultant with the government of Iran up to 1977. Subsequently, he settled down at Waltair as an Emeritus Professor of Andhra University, and whenever a cyclone was brewing near Andhra Pradesh he was always present at the nearby meteorological office to watch its movement. He named his house in Waltair 'Varsha' (rain), which was not surprising when we consider his love for the atmosphere. 'Varsha' was a pleasant meeting place for his students and colleagues because of the warm hospitality of Koteswaram and his family.

During his tenure as the Director General of Observatories, Koteswaram introduced several new ideas and innovations. One of his early contributions was to improve the quality of upper air data. His initiative led to a uniform design for the radiosondes used in India. Automatic Picture Transmission (APT) facilities from the US Weather Satellites were introduced by him. Meteorological radars in the X-band (3 cm) and the S-band (10 cm) were also introduced. As these radars were manufactured by Bharat Electronics Ltd., Koteswaram tried to make the country as self-reliant as possible in the then emerging area of radar meteorology.

True to his abiding interest in tropical cyclones, Koteswaram took vigorous steps to introduce a close network of cyclone detection radars along the east and west coasts of India. Along with the APT facilities, these innovations did much to improve cyclone detection and prediction in India. Developments in instrumental technology were followed by cyclone warning centres in each of the coastal states of our country. An

annual meeting of the Cyclone Review Committee also helped to keep meteorologists aware of the latest developments in this field.

India played a leading role in international collaboration during Koteswaram's time. He was largely instrumental in setting up a Regional Meteorological Centre (RMC) and a Regional Telecommunication Hub (RTH) at New Delhi. These centres were a part of World Weather Watch (WWW), a global project that was launched by the World Meteorological

Organization (WMO) to improve the collection and analysis of data at the principal meteorological centres of the world. Koteswaram was also closely associated with the International Indian Ocean Experiment (IIOE) of 1959–1965. For his constructive role in the different WMO projects, Koteswaram was elected a member of the Executive Committee of WMO. Later, he was made the Third Vice-President of WMO. He was the first Director General from India to receive this honour.

Outside his professional activities, Koteswaram was a fun-loving personality with a keen sense of humour. He loved a light-hearted joke, even sometimes on himself. His humour often enlivened a dreary discussion. This made life much easier for others.

He died after a brief illness and is survived by his widow, four daughters and a son.

P. K. DAS

A 59, Kailash Colony,  
New Delhi 110 048, India

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## Erratum

### Solar eclipse and neutrinos (*Curr. Sci.*, 1996, 70, 848–849)

Mohan Narayan, G. Rajasekaran and Rahul Sinha

The neutrino emerging from the sun is an incoherent mixture of mass eigenstates and hence the correct quantum mechanical calculation of the enhancement during the eclipse is different from the classical treatment of eqs (2) and (3). Although the corrected numerical results are similar to those in Figure 1, the enhancement now occurs at still smaller values of  $\delta$  and these will be presented in a detailed paper.