Development of Colonial Meteorology: Role of Early Observatories in India

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Abstract

Present paper is about the establishment of the early observatories in India during the East India Company's period. It is also about how the modern meteorological practices developed in non-western societies. Present article helps us to understand the complex relation between western science and colonization. It also assists to understand the introduction and institutionalization of meteorological science in India.

Keywords

Meteorology, Observatory, Colonial Science, East India Company

Introduction

In meteorological observations, observatory played the most prime role. Observatory is a space where all important instruments are maintained to observe and record various conditions of weather. The East India Company paid very little attention for the development of meteorological science in India. They mainly wanted to use meteorology as an instrument for fulfilling their colonial requirements.[1] They aware the importance of local meteorological knowledge in expanding and running their commercial, military and administrative activities. From late nineteenth century, they gave green signal for the establishment of observatories in India. During 1792 to 1852, seven observatories were established in the different parts of India, for instance in Madras, Bombay, Calcutta, Trivandrum, Simla, Ootacamund and Karachi.[2] These observatories were not specialist organisation for understanding India's weather. These observatories were designed for developing astronomical, megnetical and meteorological observations in India. However, they made important contributions in growing colonial meteorological knowledge. Present paper particularly tries to discuss four early observatories, for instance, The Madras astronomical, magnetical and meteorological observatory; The Trivandrum meteorological and magnetical observatory; The Dodabetta meteorological observatory; and The Colba (Bombay) meteorological, magnetical and time-service observatory, and their contributions in colonial science.

(I) The Madras Observatory:

Madras observatory was officially introduced by East India Company in 1792. However, this observatory started its function from 1788 as an astronomical observatory. William Petrie, a member of the Madras Government, prepared and equipped this observatory at his own expense. In 1789, Petrie returned to Europe and handed over his observatory with all instruments to the Madras Government which insisted the Company for establishing an observatory for gathering knowledge regarding astronomy, geography and navigation. For making this observatory, Sir Charles Oakeley played an important role.

In 1792, John Goldingham was appointed as the Astronomer of Madras observatory and held that office for thirty eight years. A long series of meridional observations of the brighter stars were taken by Mr. Goldingham, and the results were in part published in two volumes. Goldingham made a significant role in observing weather which directly helped mariners for understanding the weather of Bay of Bengal. During the late eighteenth century, he made important contribution in maintain meteorological register in India where he noted regularly the readings of barometer, thermometer and hygrometer.[3] He also played a prime character in analysing the influence of moon on the barometer.[4] In 1827, he published "Madras Observatory Papers" where he discussed in detail the meteorological conditions of Madras during 1796 to 1825.[5]

Thomas Glanville Taylor was appointed as the second Astronomer in 1830. He also made a remarkable role in broadening meteorological investigations in India. Before joining as an Astronomer of the East India Company in Madras, he studied in leading European institutions and got his astronomical and meteorological training from Greenwich. After his appointment, the Government allotted more fund for buying more important instruments. During this period, three new instruments were purchased for extending the observational capacity of this observatory. He carried on the hourly meteorological and magnetical observations begun by Captain Ludlow.[6] He also made a salient role for maintaining a regular meteorological register in Madras observatory.[7]

After the retirement of Taylor, Captain W. S. Jacob was appointed as Astronomer of Madas Observatory in 1846. By profession he was an engineer. But his activities in astronomical and meteorological studies influenced the Company for appointing him as the Chief observer of Madras Observatory. In 1859, he resigned from this post due to his ill health. However, during 1846 to 1859, he made important contributions in developing both astronomical and meteorological observations in India. His weather observation records between 1851 to 1855, were published in 1874 by the Government.

In Madras observatory, the hourly magnetical and meteorological observations commenced in the years 1822 and 1845 were continued until 1861 when it was decided to take the observations upon a reduce scale of three observations daily at suitable hours.[8] For the development of meteorological studies in India, Madras observatory played an important character.

(II) The Colba or Bombay Observatory:

After understanding the value of the scientific work carried out by the Madras observatory, the Company wanted to extend the astronomical and meteorological activities in the other parts of India. In the second decade of the nineteenth century, an observatory was established by the Government in Bombay. This observatory started its journey from 1820-21. In 1823, a suitable space was selected by the Company for making this observatory.

In 1826, a building was constructed under the supervision of Mr. Curnin who was appointed by the Company as the Astronomer of the Bombay observatory. After joining the duty of the chief of Bombay observatory, he emphasised on the development of Bombay observatory. At that period, he took an important step for concretizing the activities of this observatory. He complained of the quality of the instruments which sent out for the equipment of Bombay observatory. Simultaneously, he returned the majority of them to England. After few years, the Government took initiative for suppling him some instruments, for instance tidal gauges, sets of meteorological and magnetical instruments etc., which were important for pursuing his observational activities. From 1841, meteorological records were regularly kept in this observatory. At that period, some important instruments were installed in this observatory, like, three standard barometers, two or three complete sets of wet and dry bulbs thermometers, maximum and minimum thermometers, a set of solar and terrestrial radiation thermometers, five ground thermometers, a self-registering anemometer, pluviometer and two rain gauges. After 1841, Bombay observatory emerged as an important centre for producing meteorological knowledge about India's weather. It helped to expand the systematic meteorological observations in India.

(III) The Dodabetta Observatory:

In 1845, the Company recommended that a series of meteorological observations should be made at Ootacamund and forwarded a set of instruments to Mr. Taylor, the then Astronomer of the Madras observatory, in hope that he might be able to make the necessary arrangements. After two visits to Ootacamund, Taylor prepare a report where he mentioned that "no series of observations in the Nilgherry hills could be considered of scientific value unless they were taken on the top Dodabetta, where the observatory would have a free exposure to the general air movements across these hills."[9] He proposed to the Government of Madras that a meteorological observation centre should be established on the summit of Dodabetta and that one of the assistants from the Madras observatory should be sent there to undertake the work of observation. After submitting the Report of Taylor, the Government allotted fund for making a observational building in Dodabetta. They ordered the Public Works

Department for preparing an observation centre in a suitable place of Dodabetta. The Government also sanctioned more funds for buying and installing meteorological instruments in this observatory.

The Dodabetta observatory started to take meteorological readings from 12th January, 1847. The observatory was supplied with a complete set of meteorological instruments, including barometers, thermometers, rain gauge, an Osler's anemometer and chronometer. However, this observatory discontinued its function from 1855. The Government reopened this observatory in 1901.

During 1847 to 1855, this observatory made important contributions in observing meteorological condition of Southern parts of India. In this period, Mr John De Cruz played the most prime role for keeping meteorological data regularly. He also prepared three important reports which were published by the Astronomer or the Director of the Madras observatory in three parts or volumes, for instance, "*Meteorological observations made at the meteorological bungalow on Dodabetta (elevation 8,640) in the year 1847-48*", "*Meteorological observations made at the meteorological bungalow on Dodabetta in the years 1848-50*", "*Meteorological observations made at the meteorological bungalow on Dodabetta in the years 1851-55*".

(IV) The Trivandrum Observatory:

Trivandrum observatory played a pivotal role in extending meteorological investigations in Trivancore which was one of the most important princely states in British India during this period. For establishing meteorological observatory in Trivandrum, Rama Varma, the then Raja of Travancore performed the most important character. For making this observatory General Stuart Fraser, the then representative of British Government in Trivandrum, also played an important role. In an archival document, it is mentioned that "The advantages which might accrue to science by the establishment of an observatory in the most southern part of the Indian Peninsula were first brought to the Raja's notice by Mr. J. Caldecott, commercial agent of the Travancore Government at the port of Allepy. His Highness desirous that his country should participate with European nations in scientific investigation, sanctioned the construction of an observatory."[10]

Trivandrum observatory was built in 1841. Mr. Caldecott was appointed as the director of this observatory and was requested to prepare this observatory as an important centre in a colonial periphery for the production of colonial meteorological knowledge. After getting the responsibility of this observatory, Caldecott emphasised to bring high class scientific instruments from Europe. He also concentrated to make a network with the leading metropolitan scientific organisations of Europe for developing meteorological investigations in peripheries. In 1849, Caldecott died at Trivandrum.

After Caldecott, Mr. John Allan Broun was appointed as the Director of the Trivandrum observatory in 1852. Before joining this post, he made important contributions in developing meteorological science in Scotland where he worked as meteorological observer in a private observatory near Edinburgh. As a Director of the Trivandrum observatory, he first tried to locate the main problems of this observatory in taking proper readings. He wrote "The chief objection to that locality lay in its position, without roads, a day's journey from the nearest cultivated ground, and surrounded by forests inhabited by elephants and tigers. The construction of an observatory on this nearly inaccessible rocky peak presented considerable difficulties. It was doubted also whether native observers accustomed only to the climate of the plains, could live, or could be induced to try to do so, on a mountain top which for several months during the year remains buried in cloud."[11] For overcoming these difficulties Mr. Broun suggested to rebuilt the observatory. However, the Government of Madras and Raja of Travancore jointly decided to close this observatory in 1865. During 1852 to 1865, Broun took important initiatives for concretizing meteorological observations in Travancore. For developing meteorological investigation, he concentrated to maintain a proper meteorological dairy systematically. In his dairy, he noted the regular weather conditions between 1853 to 1864. He mainly concentrated on wind, humidity, temperature, rain and cloud. He also took initiatives for conducting special observations at different elevations on the Travancore hills.

Conclusion:

Present article helps us to understand the nature of meteorological practices in the late eighteenth and the first half of the nineteenth century in India. These observatories were neither a separate weather observing institutions nor they were functioned by the professional meteorologists. However, it was an important step of the colonial government for expansion of western style meteorological centres in India. The inception of these observatories, helped to insist the growth of colonial meteorological knowledge. Present article also helps to open some new doors for understanding the Company's policies for institutionalizing India's weather. Perhaps, the activities of these observatories insisted the Government for introducing a systematic meteorological investigation mechanism in India. However, the Company did not take proper steps for developing meteorological science in India. They mainly tried to fulfil their own interest. They always believed on the policy of low investment and high profit. They allotted funds for making some observatory but they did not follow any systematic policy for the growing of meteorological studies throughout India.

References

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