

# On the meteorological observation data by Itaru and Chiyoko Nonaka at the summit of Mt. Fuji in 1895

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## 1. Introduction

The pioneering meteorological observation in winter season at the summit of Mt. Fuji was performed by Itaru (1867-1955) and his wife Chiyoko Nonaka (1871-1923). On October 1, 1895, in a summit hut at Ken-ga-mine, the highest point of Mt. Fuji build at his own expense, Itaru started weather observations with which he was entrusted by Central Meteorological Observatory (CMO), using the instruments borrowed from CMO. On October 11, Chiyoko joined her husband to help him make meteorological observations.

Mountain guides visiting Itaru and Chiyoko on the summit on December 12, so shocked at their physical deterioration, made their concerns known to the authorities. Together with the policemen and porters, Yuji Wada (1859-1918), the Chief of the Service of Indications of CMO, Japan Meteorological Agency (JMA) today, who understood and supported him the most, escorted them down on December 22 (Omori, 1978).

Although the observation data obtained by them are supposed to have been reported to CMO, almost nothing has been known up until now, except for some monthly mean values of temperature in the report of Itaru himself (Nonaka, 1896). The authors recently confirmed the existence of the hourly and daily observation datatables in their remembrances preserved by their grandson.

## 2. Observation data

The data sheets, handwritten presumably by Itaru himself, contain every-two-hours data with daily maximum and minimum values (midnight as boundary of day) of temperature, atmospheric pressure, wind direction, wind speed and weather. The statistical values such as monthly mean values of temperature, etc. coincide with the values hitherto reported by Itaru (Nonaka, 1896). Blueprints of an observatory (different from the hut they had built) were also included in the package. We imagine that he might have been planning to publish them.

Every-two-hours observation data using a mercury-in-glass thermometer were written on the tables from 02:00, October 1 to 12:00, December 22 (JST), without a single missing value. It is presumed that a maximum thermometer and a minimum thermometer reading and resetting were performed every two hours. We have read the table data and digitized the data on a graph (Figure). Although the variation of the temperature seems valid compared to the present normal values of Mt. Fuji by JMA, over-range values are seen to increase from late November to December, while none are found in October.

As for the atmospheric pressure, extraordinary values are sometimes seen in comparison with those of the present data at Kofu Meteorological Observatory.

## 3. Discussions

There is no doubt for us to believe that the data we have confirmed are authentic.

In addition to the hitherto reported outrange values on the mercury barometer, interruption or abandonment of wind speed determination caused by freezing of batteries or instruments, the new findings of extraordinary values of maximum or minimum temperature, and so on, might have possibly made Itaru to hesitate in reporting further data. Meteorological observations were performed under severe life-threatening winter conditions facing challenges and difficulties including instrument problems. We would continue to clarify the reality of the meteorological observations in the winter of 1895, by investigating the remaining documents.

Scanned images of the data tables are open to the public on our website “Nonaka Itaru & Chiyoko Museum” (URL: [nonaka-archives.jimdo.free.com](http://nonaka-archives.jimdo.free.com), operated by nonprofit organization Mount Fuji Research Station (MFRS). In addition to the observation data, historical photos from Nonaka family and a timeline of Nonaka’s life and related events are going to be gradually released on the website.

Acknowledgements: The authors would like to express their hearty gratitude to Mr. Masaru Nonaka and other Nonaka family members for allowing us to make copies of the precious mementos. The activities of "Fuyo-Nikki-no-kai" (a voluntary group interested in the history of meteorological observations at Mt. Fuji) is supported by nonprofit organization MFRS.

"Fuyo-Nikki" (it means “Diary of lotus” ) is the title of a memoir at the summit of Mt. Fuji written by Chiyoko Nonaka published in 1896. "Fuyo-hou" is known as a graceful byname of Mt. Fuji.

#### Reference

Hisao Omori, 1978: Shinsen Fukkoku Nippon no Sangaku Meicho; Kaidai (in Japanese) ,Taishukan.  
Itaru Nonaka, 1896: Fuji-san Kisho Kansoku Hobun (in Japanese), Chigaku Zasshi.

Figure: Atmospheric Temperature at the summit of Mt. Fuji. Every two hours data (Oct.1 –Dec. 22, 1895: solid line) and the normal daily maximum and minimum values at Mt. Fuji (JMA) (1981-2010: dotted lines).

Keywords: History of Meteorology, Summit of Mt. Fuji, Itaru Nonaka, Chiyoko Nonaka, Observation of mountain meteorology

