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FATHERS TO BE BLAMED: MEDIA AND THE PUBLIC ACCOUNTABILITY OF ZIKAWEI OBSERVATORY'S TYPHOON WARNINGS IN TREATY-PORT SHANGHAI

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Abstract: This paper examines the public 'auditing', through media, on the incipient civil weather service in Shanghai in the nineteenth century. Jesuit fathers' Zikawei Observatory became, since the 1880s, a *de facto* head observatory of issuing weather information in China. To Shanghai's mercantile community, which was dominated by shipping and marine insurance interests, Zikawei's typhoon warnings had been of prime importance. This paper introduces and argues that, the commercial English-language newspapers, which published in Shanghai and circulated among other port cities along the typhoon-inflicted China coasts, had constituted an inter-port forum for the mercantile 'users' of the weather service to judge the 'efficiency' of Zikawei. "Who's to blame" questions in the commercial newspapers closely connected to the shipping trade had framed what's to be meteorological fact in the Jesuits and mariners' everyday life in treaty-port Shanghai.

Keywords: media, typhoon warnings, Zikawei Observatory, Treaty-port Shanghai, public auditing of environmental science

1 INTRODUCTION

Weather reporting has long been the everyday practice of technology of modern life. Broadcasted message of "rain or shine, cold or warm tomorrow", reaching every household, became a mark of our present-day life experience. It is the achievement of meteorology in the twentieth century. To tell such information, 'weathermen' need the help of delicate sensing instruments such radars and satellites, with timely and tremendous flows in telecommunication. Expertise involves not only meteorological observation, but numerous communication technologies. These days, no one would dare to challenge the 'oracle' preached by a weatherperson who relies on great forecasting team. To take Bruno Latour's (1987) idea, weather forecasting was 'black-boxed' by meteorological practitioners. Most laypersons can hardly imagine what must happen for the tremendous flood of information from numerous observing sites to successfully reach their homes.

Professionalization of the weather prophet seemed to originate in nineteenth-century Europe and North America. Catherine Anderson had depicted this process in the context of these areas with a major focus on the British Isles and its South Asian colony. She had pointed out that meteorology in Victorian Britain was a

> … science of expectations, not only in the literal sense that it dealt with statements about future weather, but also figuratively, in that it summarized what Victorians thought science could or should be. (Anderson, 2005: 285).

The tension, which arose from the gap between popular expectation and meteorology's poor forecast capacity in its infancy, did exist in the East Asian maritime context.

This paper sheds light on the context of contemporary China coasts, to the incipient stage of the modern weather report when the 'black box' of a scientific profession was not yet closed. The same as the Victorians observed by Anderson, the foreign communities in China shared a Baconian faith, which assumed the problems of meteorology to be a matter of scale and complexity of data collection (*ibid.*). For the residents in the treaty-port of Shanghai in China, the weather report could not tell them it would be rain or shine tomorrow, and only approximately about the track of an existing or possible storm. It was a Jesuit observatory located in a suburb of Shanghai that faced this rising public demand for weather messages during the last two decades of the nineteenth century. From that time to the end of WWII, Zikawei Observatory served as the *de facto* head observatory for the supply of weather information in China. In short, the Shanghai Jesuits were the 'typhoon-tellers' in this leading maritime entrepôt in China.

Figure 1 refers to just one of the various episodes that the Jesuits experienced during their longtime scientific service in Shanghai ("Siccawei" is a twentieth-century spelling of "Zikawei"). This cartoon was published in a major Shanghai English daily, *The North-China Daily News* (*NCDN*). This daily was

published from 1864 and served as the most important newspaper for the foreign inhabitants of that port and beyond. A report in the *NCDN* two days before this cartoon appeared had explained why these Jesuit fathers were searching for the invisible second:

> HOW SICCAWEI LOST A SECOND
>
> The Vigorous Builder and the Too Responsive Clock
>
> To the Shanghai time piece the name of Siccawei stands for that unalterable routine of accuracy which means the booming of a mid-day gun on the tick of twelve at the Signal Tower on the Bund. Likewise to ships that put out to sea the name of Siccawei is a sanctified and scientific symbol, which culls the typhoons from their tracks upon the brine and puts them neatly on the mariner's knowledge map. So intense is the belief in the uncanny powers of Siccawei that we are almost willing to wager that if the irresistible force met the immovable object in the garden of the Observatory it would be tabulated and registered to the edification of all.
>
> But Monday the unalterable accuacy of Siccawei skipped a count. Not through any flaw in the clockwork precision or in the registering of the innumerable complex scientific instruments that grace the observatory was inaccuracy registered, but through the misdirected force of wholly uncontrollable factors; so that when the gun boomed at the hour of twelve noon on Monday, the power of precision registered two seconds off.
>
> It happened that the builders of the new clock room at the observatory, the room which will house the high precision clock whose function is the international measurement of longitudes by wireless, gave too much force to their hammer strokes. The listening ear of Father Gherzi of the Observatory, attuned to the slightest tick of the master clock, did not hear the regular beat of the clock intonation, but a nervous shudder passing along its clear voiced tick. When this was investigated it was found that, rightly enough, the hammering had shaken the delicate mechanism of the clock so that its escapement was jarred from its regular action and, instead of registering a single second each time that its weight struck the mechanism, it skipped a second and marred the perfect precision of its record.
>
> Thus it became necessary for the Siccawei Observatory to send out the following notice yesterday, "Our time signals (ball at noon and radio) on the 10th of May should be considered as erroneous by probably several seconds."
>
> But our belief in the uncanny perceptive powers of Siccawei cannot be shaken by the notice. (How Sicca-wei lost a second, 1926).

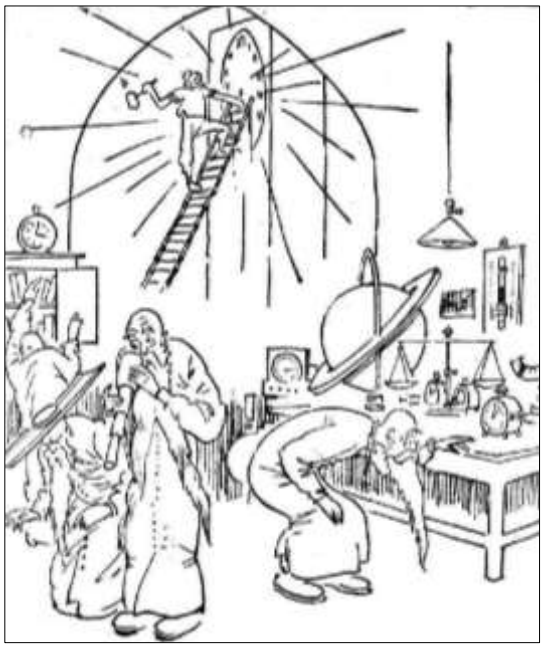


Figure 1: Cartoon relating to Zikawei Observatory (Siccawei hunting for the lost second, 1926).

The Signal Tower, in its origin, was a semaphore mast on the Bund (Figure 2) that was erected in 1884. There were telephone and telegraphic lines between the Bund and Zikawei Observatory so that the semaphore could synchronize chronometers and provide typhoon warning, both of which were important to the seafaring-based mercantile community in Shanghai. Marine chronometers were employed to determine the longitude of vessels while at the sea; while possible encounters with typhoon should be avoided by all ship captains.

This paper illustrates that this unshakable belief in Zikawei's predictive powers and its status as a sanctified and scientific symbol in Shanghai was not always certain during its teething decades in the nineteenth century. The Jesuit Directors of Zikawei Observatory

Figure 2: The Zikawei-connected time ball and weather semaphore on the Bund in Shanghai (after *Dian-Shi-Zhai Illustrated News* (點石齋畫報), 1884).

were often challenged by their primary audience, Shanghai's mercantile community, via the only media available them, the English-language newspapers. Nowadays, scholars use the media to alert the public to scientific issues (e.g. see Lightman, 2007 and Boykoff, 2011), but in the nineteenth century newspaper editors and correspondents in the treaty-port of Shanghai did more than just 'popularize' meteorological science, or praise the work of Zikawei Observatory. Because the media and their publishing associates relied on Shanghai's maritime trade for their survival, they used the media to examine and criticize the Observatory, and portray their own nautical expertise.

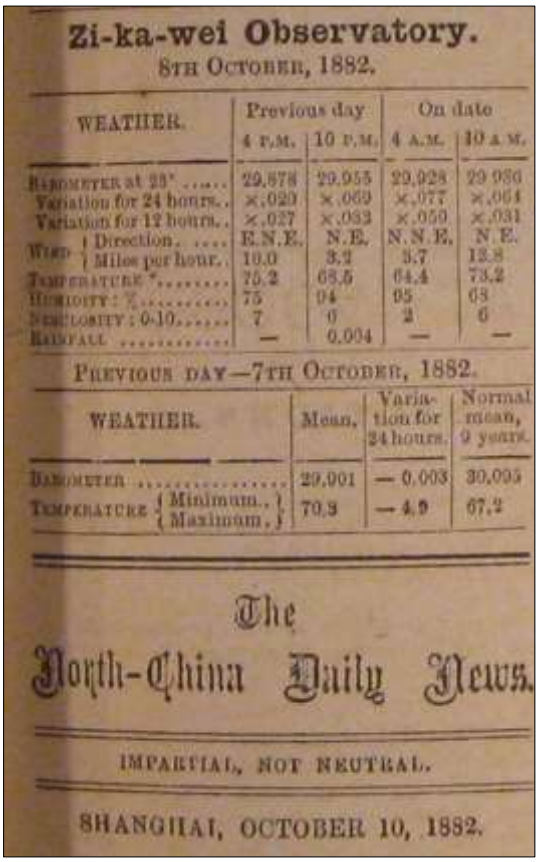
It might be more accurate for us to use the word 'audit' rather than 'popularize' to describe this particular relationship between Shanghai's mercantile-marine media and Zikawei's daily scientific duties, for the dictionary definition of 'audit' is "To make an official systematic examination of (accounts), so as to ascertain their accuracy." (*Oxford English Dictionary*). Any possible mistake in predicting the track of a typhoon implied a great loss to the shipping and marine insurance business, not to mention the perils to human lives. King and Clarke (1965) examine the nineteenth-century China-coast newspapers published in the English language, and categorize them as 'commercial papers', for their major task was to serve the foreign mercantile and marine community. It was not surprising to find that the newspaper editors and correspondents, whose publishing careers depended on the shipping trade, looked very closely at all of Zikawei Observatory's pronouncements on typhoons.

2 THE ORIGIN OF ZIKAWEI'S WEATHER SERVICE

Before the semaphore was established on the Bund in 1884, Zikawei had already started its weather service to the Shanghai mercantile community. Shortly after a great typhoon had devastated Shanghai in August 1881 the Shanghai General Chamber of Commerce or-

Figure 3: Father Dechevrens (after Udias, 2003: 162).

ganized a meteorological committee and convened a meeting to discuss the feasibility of a "China Coast Meteorological Service" (CCMS). In this, Zikawei was assigned to be



Zi-ka-wei Observatory.

8TH OCTOBER, 1882.

WEATHER.	Previous day 4 P.M.	Previous day 10 P.M.	On date 4 A.M.	On date 10 A.M.
Barometer at 32°	29.578	29.955	29.928	29.936
Variation for 24 hours..	×.020	×.069	×.077	×.064
Variation for 12 hours..	×.027	×.033	×.050	×.031
Wind { Direction.	E.N.E.	N.E.	N.N.E.	N.E.
Wind { Miles per hour..	10.0	3.2	3.7	13.8
Temperature °.....	75.2	68.5	64.4	73.2
Humidity: %.....	75	94	95	68
Nebulosity: 0-10.....	7	0	2	0
Rainfall	—	0.004	—	—

PREVIOUS DAY—7TH OCTOBER, 1882.

WEATHER.	Mean.	Variation for 24 hours.	Normal mean, 9 years.
Barometer	29.901	— 0.003	30.095
Temperature { Minimum., } { Maximum., }	70.3	— 4.9	67.2

The North-China Daily News.

IMPARTIAL, NOT NEUTRAL.

SHANGHAI, OCTOBER 10, 1882.

Figure 4: The first of the Zikawei daily weather bulletins (after *North-China Daily News*, 1882b).

the head Observatory in gathering weather messages from various observers. These observers included medical doctors, lighthouse keepers of the Chinese Maritime Customs (most of whom during the nineteenth century were non-Chinese), and captains from major steamship companies. The Chamber of Commerce had solicited a subscription of 1500 tales (equivalent to about £500 at that time), mainly collected from local insurance companies, for the first-year's expenditure (1882–1883) of the CCMS (*The North-China Daily News*, 1884a). Kindness for help also came from the following parties: the Chinese Imperial Maritime Customs promised to provide observational data to Zikawei Observatory, after several months of hesitation; numerous volunteer captains or shipmasters on board naval and mercantile vessels frequenting the China coasts promised to furnish data while at sea; and the telegraph companies pledged to transmit meteorological telegrams free of charge. With all these resources and help, the Director of Zikawei Observatory, Father Marc Dechevrens (1845–1923; Figure 3), began to send regularly weather notices to the Shanghai press.

The responsibility of the press to provide Shanghai with a publically sponsored weather service was tested, and from 10 October 1882 a daily Zikawei Observatory weather bulletin, showing the previous day's weather data, was published in the Shanghai newspapers (Figure 4). To introduce the bulletin to the public, Father Dechevrens published a note in French in the *NCDN* where he mentioned that the Shanghai Chamber of Commerce and Zikawei Observatory had agreed to immediately implement the proposed organization of a weather service for China (i.e. the CCMS). He then agreed to publish in the newspapers, a bulletin on the state of the atmosphere as observed at Zikawei Observatory. If the Editor believed that such a bulletin would be appreciated by *NCDN* readers, Father Dechevrens continued, he would like to publish one every day (*The North-China Daily News*, 1882b). From that day on, Zikawei's daily weather bulletins were inserted in the *NCDN* and occupied a prominent position —above the name of this major English daily and its motto "Impartial, Not Neutral."

Readers of the *NCDN* could then receive the weather message from the Observatory every day (see Figure 4). Meteorological data in these bulletins—barometric readings, wind force, and temperature—were all in the British system of measurements. Occasionally, there were notes at the bottom of the

table to warn the public about the existence of bad weather, such as

> A centre of atmospheric depression is now passing north of Shanghai at a great distance, going north-east-ward; it came from the south-west. A north and north-west (moderate) gale may be expected at sea, unless a secondary depression will immediately follow. (*The North-China Daily News*, 1882c).

Or sometimes there was just a single sentence like: "Barometer very high will fall down with the coming of a typhoon probably now raging in the south." (*North-China Daily News*, 1882d.)

It was thus a highly media-based scientific enterprise from the beginning, and also heavily hinged on the incipient telecommunication technologies along the East Asian coast. However, the telegraphic connection of Zikawei with other observation sites was still in question in 1883, the second year the CCMS was in operation. The year 1883 was significant in terms of the extension of the telegraphic link in China. In 1883, after more than a decade since the first submarine telegraphic cable was connected to Shanghai in 1869, the Chinese Government decided to build an inland telegraphic network, and the China Telegraph Administration started their project of laying a land line from Shanghai to Canton (Ahvenainen 1981, 59–90). Submarine telegraphic connection in China also expanded in that same year. In addition to the first cable laid by the Great Northern Telegraph Company along the North-Western Pacific coasts, which connected Vladivostock, Nagasaki, Shanghai, Amoy and Hongkong, the Eastern Extension Telegraph Company had also laid an identical Hongkong–Shanghai submarine cable via Foochow in 1883. Moreover, in May of that year, a six-mile telephone line had linked Zikawei Observatory with the Bund, where Shanghai's telegraph terminal was located (Dechevrens, 1881). A possible route of that line is shown on the map in Figure 5. Unfortunately, all

Figure 5: Map showing the telegraphic link from Zikawei Observatory to the Bund of (base map: Gadofffe, 1901; map modifications: Marlon Zhu).

these improvements in telegraphic communication could not guarantee Zikawei Observatory a better typhoon-warning capacity.

Without instant telegraphic connection to meteorological stations in the south, Dechevrens seemed incapable of making detailed forecasts of coming typhoons. For instance, his meteorological notes in the *NCDN* in June 1883 contained such an uncertain narrative as:

> … a first centre of atmospheric depression came from the south and inland and went towards the sea south of Shanghai on the 10th instant ... another centre is expected, and it will probably pass west and north of Shanghai. (*The North-China Daily News*, 1883a).

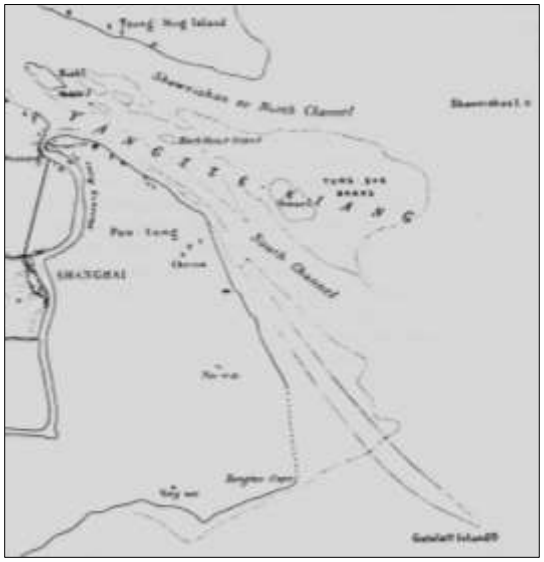


Figure 6: Gutzlaff Island (extreme bottom right) outside the mouth of the Yang-tse-kiang River (after Ahvenainen, 1981: 44).

Without adequate telegraphic connection at seas east of Shanghai apart from the outpost on Gutzlaff Island (大戢山 in Chinese; its relative position to Shanghai is shown in Figure 6) and a lack of inland reporting stations, besides Amoy and Hongkong in the south, the Jesuit forecasters would depend only on their barometers, while instruments of similar kind were also in the hands of shipmasters. Another basic weather note from Zikawei was:

> … for the last three days there has been high atmospheric pressure at Shanghai and low pressure in the South of China. During that time, two centers of depression have arrived on the continent and left it to take to sea South of Shanghai; hence the strong and persistent winds, which oscillate between E. and E.S.E., with irregular barometer. (*The North-China Daily News*, 1883b).

No data from any southern locations were specified.

Nonetheless, Father Dechevrens' major work during this period was not to improve the Observatory's telegraphic connection, which was certainly a matter beyond the Director's control. Instead, he devoted great efforts to distributing 'standard' meteorological instruments, which he had newly purchased from Paris. However, even if these instruments arrived on time and were installed on the vessels, they still could not serve to enhance Zikawei's forecasting ability in that year (1883), for neither the vessels nor these instruments were connected telegraphically and instantly with Zikawei Observatory in an age prior to the appearance of wireless telegraphy.

The daily publication of Zikawei's meteorological information in newspapers created a regular readership that appreciated Father Dechevrens' public service. Despite the delay in the arrival of expected French instruments, regular observations still continued at Zikawei Observatory, and were furnished daily to the press. Furthermore, the extensive observations on board vessels of major shipping companies, and at Customs' meteorological stations, continued to be made and sent to Zikawei. Enabled by this wide spectrum of observers, Zikawei's daily weather bulletins, occasional notes on weather forecasting, and treatises on specific atmospheric phenomena, attracted a loyal audience, which followed closely the meteorological passages furnished by the Reverend Father.

Meanwhile, newspaper editors and readers at the same time also defined the role of the public meteorologist-general (Father Dechevrens) by raising various questions in their correspondence to the papers. Knowledge of meteorology in general and typhoons in particular, thus became common within the literate circle of the mercantile community. An editorial in the *NCDN* best illustrates this new relationship between Zikawei Observatory and its audience with the following lines:

> The excellent premonitions of Père Dechevrens, and his admirable treatise on the manners and customs of typhoons have somewhat over familiarized us with those unwelcome visitants. Before we know so much about them they were surrounded with a certain degree of ignorant awe. Now, everyone knows something, or at all

> events can easily say he knows about typhoons and the law of storms. They are talked about with more or less flippancy over dinner tables. Ladies have been known to pause in the middle of a conversation about volleying, in order to put gentlemen right who were not quite accurate in their definition of the phenomena of storms … (*The North-China Daily News*, 1883c).

3 UNFAVORABLE COMMENTS ABOUT ZIKAWEI OBSERVATORY

While enjoying a reputation in the media, the time ball on the top of the semaphore mast on the Bund since 1884 had "lost its seconds" on several occasions and caused public censure of Zikawei Observatory's 'uncanny power'. In the first month of its operation, the punctuality of the dropping of the time ball was a public concern and was closely examined through correspondence in the press. The general public compared the new device with other authorities that provided meridian time. Three days after its first official test, the *NCDN* noted on 19 August 1884 that the fall of the ball was "… forty-five seconds after the (meridian) gun was fired on board H.M.S. (Her Majesty's Ship, i.e., the British Royal Navy's) *Cleopatra*." (*The North-China Daily News*, 1884b). The punctuality problems remained in the autumn of 1886 when the *NCDN* noted on 6 September:

> The Time Ball did not fall at the right time yesterday. For the benefit of seafaring people we may repeat that the signal flag 0 is always hoisted, immediately it is found the ball does not fall at the right time. (*North-China Daily News*, 1886g).

Later that same month, on 21 September 1886, one paragraph in the same newspaper said:

> We have been asked to state that the Time Ball fell five minutes before the correct time yesterday, owing to a derangement of the electrical apparatus. The Ball was hoisted again, but did not fall again till some minutes after noon. (*North-China Daily News*, 1886i).

These unfavorable comments against Zikawei Observatory did not only target the time ball service; the nightmare for the Reverend Father also came from his weather service, which was visible every day on the semaphore mast at the French Bund. Similar to the situation of the time ball service, Shanghai was also provided with sources, other than Zikawei Observatory, that furnished weather intelligence to the mercantile community. The *China Coast Meteorological Register* had continued since 1873. It summarized daily weather observations taken at the ports of Hong Kong, Amoy, Shanghai and Nagasaki, all of which were hubs of the submarine telegraphic cables along the coasts of East Asia. From 15 September 1884 data from Manila Observatory (see Alvarez, 2023) were added to this daily column in the press. Occasionally, some notes would be added at the end of the figure and sometimes they were specially put in another column. For instance, the *NCDN* of 19 August 1885 (a Wednesday), carried: "A telegram of the *China Coast Meteorological Register* states that on Monday there was a typhoon to the west of Hongkong, moving northward." (*North-China Daily News*, 1885d). Another source of the typhoon warnings was Manila weather telegrams forwarded to the *NCDN* by the telegraph companies, or by the Spanish Consul in Shanghai, announcing the presence of typhoons in the Philippines (see *The North-China Daily News,* 1885a*;* 1885e; 1886a). Moreover, meteorological intelligence from the new Hong Kong Observatory (established in 1884) was also reprinted in the Shanghai newspapers typically after a delay of 6 days. Its first Director, Dr William Doberck (1852–1941), with the title 'Government Astronomer', even telegraphed directly to the Shanghai newspapers informing them of the possible approach of typhoons (MacKeown, 2011). For instance, in the *NCDN* of 4 September 1886 the Government Astronomer at Hongkong reported (dated 3 September) that "There appears to be a typhoon in the Pacific, E. of Formosa, probably moving northwards." *The North-China Daily News*, 1886f). Then in the *NCDN*, on 20 November 1886 we read: "The Government Astronomer at Hongkong telegraphs that the typhoon which started to the south of Luzon has now gone towards Japan." (*The North-China Daily News*, 1886j). Zikawei Observaory's competitors therefore provided meteorological intelligence from ports other than Shanghai. Meanwhile, the policy of the Shanghai press was to include all possible sources of information. This accordingly invited a comparison of the different sources by cross-referencing the weather information in terms of precision and efficiency of performance of each forecaster.

Yet some of the unfavorable comments about Father Dechevrens' work came not from counterpart forecasters at other ports

but from the Shanghai mercantile community, which kept offering their opinions on Zikawei's public weather service. Some of the comments were mere suggestions for improvement of the semaphore. For instance, in the second typhoon season of the semaphore service, one article suggested that it would be an improvement if the French Municipal Council (with a Chinese name 法租界公董局, who sponsored Zikawei Observatory) would arrange to have the flags showing the direction of the wind hoisted at one arm of the Time Ball mast, and the flags showing the force on another. Because the flag for East was red; and from a distance appeared like number 5, people on board ships upon seeing the red flag and a 6 under it might mistake this for 56, meaning "The typhoon has gone on mainland, near Foochow," and that indeed was the interpretation given to the signals by some people on 11 August 1885, whereas the flags actually indicated "direction of wind East; force 6." (*North-China Daily News*, 1885b).

Other criticisms of Zikawei's weather service came from the failure of the indications of the semaphore. For instance, the Semaphore Station failed to signal a typhoon visiting Shanghai at the night of 13 August 1886. As the *NCDN* pointed out three days later, the typhoon had obvious precursors of an early change of weather such as a gigantic ring round the Moon and immense masses of clouds moving rapidly westward. However, the Semaphore Station only inertly hoisted flags after the visit of the typhoon one day later (on 14 August), which gave the following messages successively:---"The typhoon has gone on mainland near Ningpo," "The typhoon is going West," and "The typhoon has gone on mainland between Foochow and Ningpo." They were by no means any forecasting or warning in advance to the general public at Shanghai. Responding to a subsequent request by the Editor of the newspaper regarding the failure, Father Dechevrens explained:

> The last meteorological observations telegraphed from Manila and Hongkong, and received at Zi-ka-wei up to the present date (15th Aug., 10 a.m.), are those of the 12th instant, 10 a.m. Thence it may be seen how useless are, for the prevision of weather, daily telegrams forwarded and received in such conditions.
>
> I am therefore reduced to our own observations of Zi-ka-wei alone, somewhat enlightened by those telegraphed from Nagasaki up to the 13th, 7 a.m., to know the where-about of the typhoon that has just now passed in our vicinity … (*The North-China Daily News*, 1886b).

The same excuse of the poor telegraphic connection with places outside Shanghai was reiterated in Zikawei Observatory's *Bulletin Mensuel …* (1885; 1886). Dechevrens lamented that although there were already telegraphic lines along the coasts and the interior, none of them was connected directly to the Observatory. As a result, the Director could only provide semaphore warnings on the basis of his own study and experience over a decade (*The North-China Daily News*, 1886b).

Zikawei's direct connection with other observation stations outside Shanghai, which were supposed to provide daily, if not instant, telegrams to each other, was the key to the success of the whole warning system. According to the trajectories of typhoons, they were formed in the sea to the east of the Philippines; hence, typhoon messages transmitted from there, especially from Manila Observatory, were more crucial than those from other sites. However, the telegraphic connection to Zikawei Observatory remained inadequate till the end of 1887. As mentioned in the *Bulletin Mensuel …* (1886), it was not until December 1887, and only after some not fully satisfactory steps had been taken, that the Fathers at the Observatory would receive telegrams much earlier.

4 THE CONTROVERSY OVER THE TYPHOON AND THE *MENZALEH*

Father Dechevrens' failure to forecast the typhoon of 13 August 1886 was not rectified by his explanations to the public in newspapers or in the publication of the Observatory. A controversy arose one week after Dechevrens' explanation. On 24 August the *NCDN* reprinted from a Hongkong newspaper an abstract of the ship's log from the French steamer S.S. *Menzaleh*, which encountered a typhoon on 13 August on her trip from Kobe to Hongkong (*The China Mail*, 1886a; *The North-China Daily News*, 1886d). Dechevrens saw this extract in the Hongkong newspaper as criticism of his failure to forecast the typhoon. Four days later he replied to this 'unfriendly' extract in a letter to the *NCDN*. Dechevrens (1886) asserted that some remarks in the *Menzaleh*'s report in the press somehow differed from the more authentic version given by her commander Captain

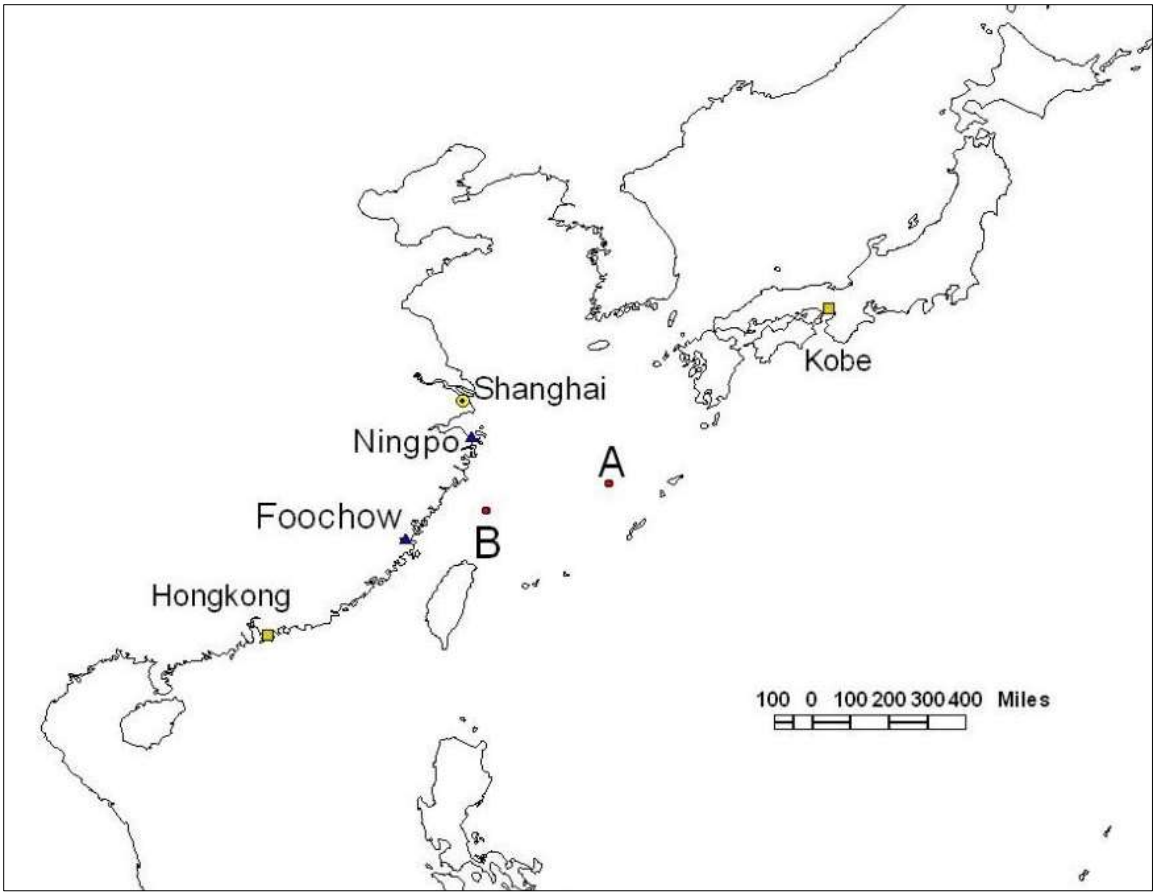


Figure 7: The two different positions of the S.S. *Menzaleh* recorded on 13 August 1886 (map: Marlon Zhu).

Benois. There were two major differences. One was the state of the weather when the *Menzaleh* left Kobe; and the other was the position of the vessel at the noon on 13 August. Dechevrens (*ibid.*) claimed that these two mistakes might "… totally puzzle the most expert investigators, both about the course of the ship from Japan to Hongkong, and about the track of the typhoon itself." Regarding the early state of the weather, he pointed out, it was reported that, on 11 and 12 August *Menzaleh* proceeded with fine weather, "… with very little breeze." (*ibid.*). This was in great contrast to the authentic report sent to Dechevrens by Captain Benois, in which the state of the sky was not mentioned, and only winds from E. and E.N.E., at first force 4, then force 6 to 8 were recorded. According to Dechevrens (1886), the scale of wind force used by the French seamen, who were accustomed to a scale from 0 to 10, was certainly "… far from a *very little* breeze …" (as said in the report in newspapers).

Regarding the position of the vessel on 13 August, it was, according to the Hongkong paper, 28° 15′ N., and 127° E. (point A in Figure 7). However, Dechevrens (1886) said that the "… authentic report before him …" (by Captain Benois) indicated a different position of the ship at noon on the same day, namely 27° 15′ N., and 122° 40′ E. (i.e. point B in Figure 7). The difference in the vessel's position on 13 August was crucial to Dechevrens' 'prognostications' of the typhoon. The signals hoisted at the Semaphore Station at Shanghai on 14 August indicated that the typhoon was moving towards the west and had already crossed the coast between Ningpo and Foochow the day before.

Dechevrens (1886) pointed out that the track of the typhoon depicted by the Hong Kong press, which was supposed to be furnished by the Hongkong Observatory, was totally impossible. Both Captain Benois' full report at hand and the ship-log of another vessel (the *Bokhara* of the Peninsular and Oriental Steam Navigation Company) nearby, according to Dechevrens, did not support *Menzaleh's* track as stated in the newspapers. Dechevrens (1886) thus questioned the authenticity of the passage in the Hong Kong paper, which obviously threatened his credibility in typhoon forecasting:

> It is with deep regret that I find myself, by my own position and for the general interest, compelled to call atten-

> tion to such a mistake. In the published report all the barometrical observations, nearly all the directions of wind are correct; it is then difficult to believe that all this information is not drawn from an authentic source. How is it then, that on essential points that absolutely characterize the typhoon, there can exist such a divergence between the true observations and those given by the *China Mail*?

The China Mail (1886b) reprinted Father Dechevrens' response on 1 September, with a short reply by the Editor at the end. The Editor of this major English daily at Hongkong defended the authenticity of their report, saying that it was received from one of the officers of the *Menzaleh*. Furthermore, the Editor emphasized that

> We have reason to think from the tone of the remarks themselves and certain other circumstances within our knowledge that they were not prompted by any spontaneous idea of the learned Père himself, but were suggested by someone quite unconnected with the (Hongkong) Observatory. (*The China Mail*, 1886b; c.f. *The North-China Daily News*, 1886h).

The most likely suspect in Father Dechevrens' mind was Dr Doberck, the foundering Director of the Hong Kong Observatory (for details about Doberck see MacKeon, 2009), and the Editor of *The China Mail* had unintentionally pointed to the tension these unfavorable comments imposed upon the Reverend Father. This time, Father Dechevrens perceived the report of the *Menzaleh* in the typhoon as another hostile criticism against him, though quite indirectly, delivered at Hongkong, and probably given by a rival weather forecaster in the new Observatory at Hongkong built just two years earlier.

Father Dechevrens had experienced similar unfavorable comments when he first proposed the installation of a time ball and weather semaphore to the French Municipal Council. With its regular sponsorship of Zikawei Observatory for the time ball and weather service, the French Municipality had tried to strengthen Father Dechevrens' influence via the establishment of a semaphore service at Shanghai during the turmoil of the Franco-Chinese War. Criticism arose when Zikawei's time-weather service was compared and contrasted with information that was offered by others. These differences threatened the prestige of the Reverend Father. The high vulnerability of the telephone line between the Observatory and the Bund hampered the punctuality of the dropping of the time ball, while the poor telegraphic connection between the Observatory and other meteorological stations outside Shanghai was threatening the fledgling capability and authority of Zikawei's typhoon forecasting.[1]

The *Menzaleh* controversy demonstrated how the mercantile community, which was closely associated with the shipping industry, scrutinized Zikawei Observatory's weather service, and how the press played a major role in such mercantile inspection. The power of the mighty pen had been reinforced by the press at other ports. It was not only the press in Shanghai, but also that in Hongkong, and more importantly, their mutual reprinting, which collectively opened up a public forum for discussing the possible track of a typhoon, a key issue in forecasting storms. The closely watched public service at Zikawei highlighted the prime importance of navigational safety to the nautical community. The unfavorable comments about Father Dechevrens reflected such concerns. As implied by Dechevrens himself, there may also have been unnecessary negative comments from the anti-French milieu, which was intrigued by the Franco–Chinese War. When providing shipping news, the press could compare weather data at sea sent by captains of every nationality, including those from France. For instance, observations made on board S.S. *Iraouaddy*, a steamer of a French steamship navigation company (the Messageries Maritimes) which remained at the port of Shanghai during the typhoon and showed hourly variation of barometric readings from 14 to 18 August, were furnished to the *NCDN* by the Company's agent (*The North-China Daily News*, 1886c).

Together with other information provided by ships at sea, the press could examine Zikawei' Observatorys 'diagnostic' of the typhoon track in detail. For instance, in the following days, on 16–18 August, the Shanghai press publicized the reports of the steamers arriving in Shanghai from the North, East and South. This compilation of all possible ship-logs in a typhoon was exactly what Father Dechevrens did when tracking every typhoon. However, the job of the Director of the weather service was more than mere data collection. He had to analyze the data and predict the possible track of the typhoon in advance using Zikawei's poor telegraphic connections. The task was difficult, in that Dechevrens had to make sure that his prediction did not contradict those onboard records collected and publicized by the press after a typhoon.

The heavy workload and his unrecognized contribution eventually led to Father Dechevrens' departure in 1887, five years after the CCMS had been established, and three years after the semaphore was erected. It was said at a much later time that he was sick in 1887 and that was why he left Shanghai (*Hongkong Daily Press*, 1924; *The North-China Daily News*, 1924; Pyenson, 1993: 159; Udías, 2003: 162, 302), but he went on to live a long life in Europe, dying in 1923. After returning to Europe, in 1893 he founded an observatory on the island of Jersey, where he continued his research and published many papers in *Nature* and in other journals. Nonetheless, Father Dechevrens never went back to China. Unfortunately, criticisms of his ability to track typhoons continued, even after his death. In a postmortem 'peer' review in 1924 by Coching Chu (竺可楨), a renowned Chinese meteorologist who graduated from Harvard, Father Dechevrens' work on typhoons was never mentioned, while data provided by Father Chevalier (who succeeded Father Dechevrens as the Director of Zikawei Observatory), Dr Doberck (the Hongkong Observatory Director) and Father José Algué (the Manila Observatory Director) were cited (Chu 1924; 1925). In short, the typhoon tracks predicted and tabulated by Father Dechevrens before 1887 were not included in the compilation of weather records by the later renowned meteorologist of China.

The *Menzaleh* controversy was not the only doubt cast upon Father Dechevrens' ability in tracking typhoons. With insufficient weather data and a particular theory about the formation of storms, Dechevrens had charted typhoons with tracks extending far inland. He claimed in 1882 to have proved that

> … the fact of a typhoon leaving the sea and going on to the mainland, does not necessitate the cessation of the whirlstorm [*sic*], as some meteorologists and other authorities have been inclined to believe. (*The North-China Daily News*, 1882a; c.f. *Bulletin Mensuel* …, 1881: 151–171).

Father Dechevrens' assertion was illustrated by his track analysis of three typhoons in October 1881 (see Figure 8), which he described as a "… very strange odyssey." (*Bulletin Mensuel* …, 1881: 151). Take the second typhoon, for instance. Dechevrens claimed that it swept over Hongkong and the Canton River (珠江) on 14 October. Coming from Luzon (northern Philippines), it recurved northward and eastward on the Asian continent, and took to the sea again at the latitude of Shanghai between 16 and 17 October, although with a greatly diminished force (see Track 2 in Figure 8). Father Dechevrens' unique theory of land-crossing tropical storms and their 'strange odyssey' was reviewed by the *NCDN*, in which the Zikawei annual weather report was praised for containing a rich collection of magnetic and meteorological observations, and was profusely illustrated by explanatory diagrams such as Figure 8. In terms of present-day knowledge about typhoons, we now know that it is impossible for them to go across land over such long distances, as shown in Figure 8. Nevertheless, the Shanghai press of the early 1880s did not make any unfavorable comments that might discredit Father Dechevrens' incorrect 'diagnostics'.

5 CONCLUSION: FATHERS DOOMED TO BE BLAMED

We are usually laypersons who receive information and knowledge from various kinds of scientific prophets without any doubts. The meteorological story in the treaty-port of Shanghai in the 1880s addressed something very different to our one-way traffic of scientific knowledge in our 'black-box age'. Along the coasts of China in the nineteenth-century, the bargaining power of not-so-lay persons could haunt the scientists in carrying out their professions. The media began with a nearly daily frequency to serve as a public forum by publishing often conflicted scientific messages issued from different authorities, such as naval and mercantile captains, and contemporary scientific authorities to the south. More than being an impartial judge, the media in this case was initially a 'propaganda machine' for both Father Dechevrens and the Shanghai mercantile public during the establishment of the CCMS.

But in the treaty-port economy of the 1880s, the mercantile community's expectation of a timely and accurate typhoon-warning system provided by Zikawei Observatory failed as a result of poor telegraphic connections with the other ports, especially those to the south of Shanghai. Among them, Hongkong had even established a British colonial observatory, whose ambitious Director, a 'lay' scientific counterpart to Father Dechevrens, could freely despatch his typhoon messages to the Shanghai press. Thus, in the media, various 'scientific authorities' sometimes published contradictory typhoon messages, as in the case of the 13 August 1886 typhoon and S.S. *Menzaleh*.

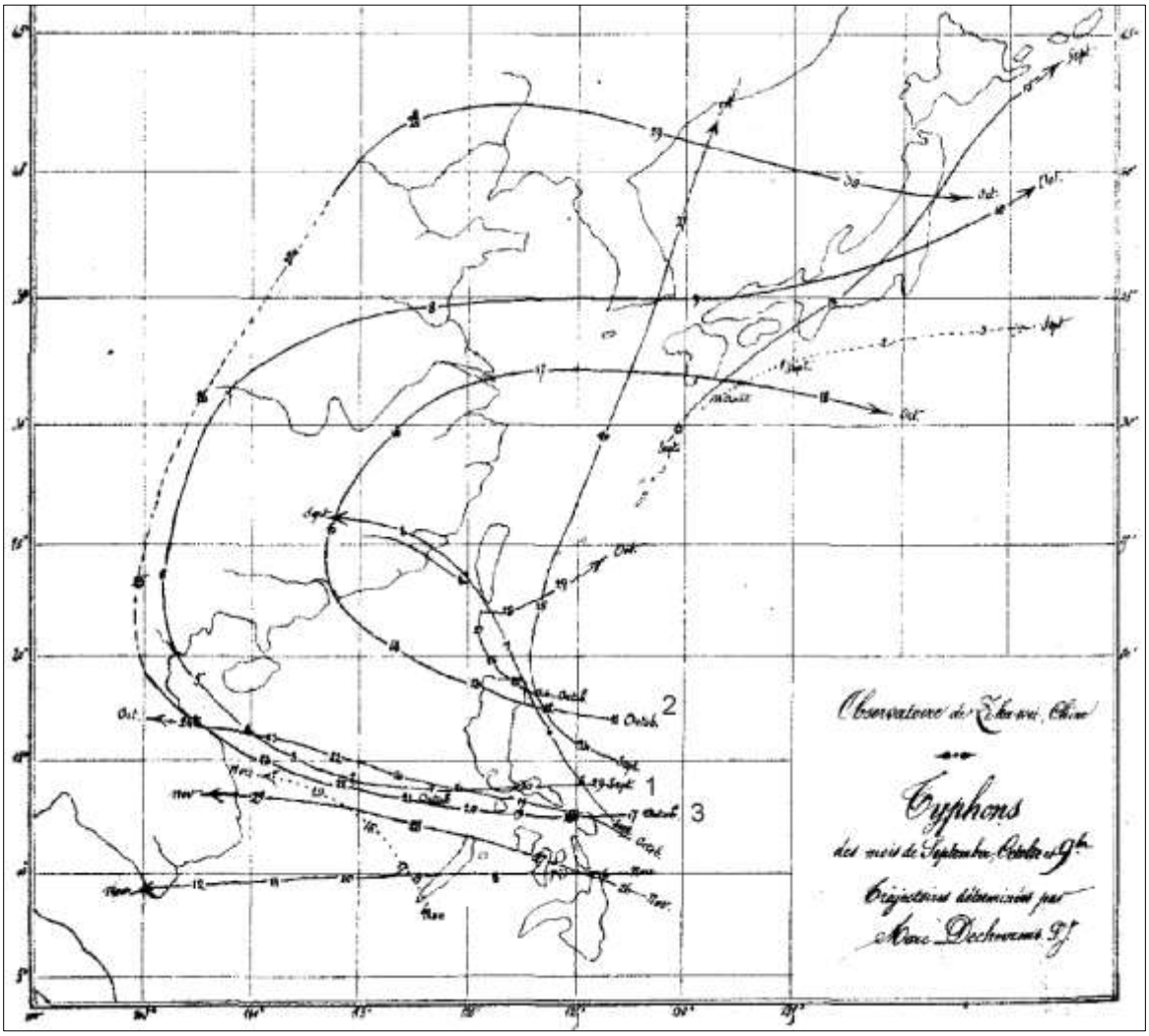


Figure 6: Dechevrens' 'Very Strange Odyssey' of three land-crossing typhoons in October 1881 (after *Bulletin Mensuel* …, 1881: 154a).

With expertise offered by the local mercantile-marine community *and* the competitive scientist at Hongkong Observatory (see Mackeown, 2011) the Reverend Fathers at Zikawei Observatory were doomed, especially given their limited access to telegraphic communication.[2]

6 NOTES

1. For information about the Shanghai time ball and other time balls, time lights, time flags and time guns found in China, Korea, Japan and Vietnam see Kinns (2022: 661–666).
2. The only positive support that Zikawei Observatory could count on only came later, from French Jesuits in Hai Phong (present-day northern Vietnam), after Phù Liễn Observatory was founded in 1899 (Phuong, 2023).

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Marlon's recent effort has been to transcribe the manuscript letters of Jardine, Matheson & Co., which was the most eminent British trading firm during the colonial period. He is also working on a book about energy and empires in mid-nineteenth century East Asia.