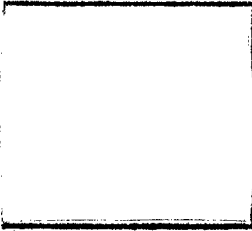


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22 March 1960

DEVELOPMENT OF METEOROLOGICAL SERVICES
IN CHINA IN THE PAST DECADE

-COMMUNIST CHINA-

By Lu Ho and
Wang Peng-fei

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DEVELOPMENT OF METEOROLOGICAL SERVICES
IN CHINA IN THE PAST DECADE

[The following is a full translation of an article written by Lu Ho and Wang Peng-fei of the Central Meteorological Bureau in Ch'i-hsiang Hsueh-pao (Journal of Meteorology), Vol XXX, No 3, October 1959, pages 197-201.]

SUMMARY

This article describes the growth of New China's meteorological services since the founding of the People's Republic ten years ago. Relying upon the Party and the masses, this undertaking started from non-existence to reach prosperity, grew from small to large and from plain to complex. The development of the service has already shown conspicuous effect on the national defense and people's economy.

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All branches of science in China today, including the meteorological undertaking, are dedicated to the construction of socialism. The course of development in the meteorological service in the past decade has been one of enlargement and concrete deepening of the meteorological undertaking under the leadership of the Party in order to work for the benefits of socialist construction.

The meteorological undertaking is primarily devoted to solving two problems: to develop meteorological science as one of the truly effective devices to serve socialist construction and to enable people's economic agencies engaged in production to obtain timely and high quality weather reports and meteorological data and to use them correctly in order to reach the aim of increased production.

To solve these two problems we must engage them on three fronts; namely, the ideological, technical and organizational. These are three phases of a potential problem and the most important one among them is the ideological one.

Only after the ideological problem is solved will meteorological technology and the organizational process be able to follow the demands of the objective situation and proceed to develop.

Motivated by many political movements, especially the rectification campaign, the victory of socialist revolution and the big leap forward in industrial and agricultural construction for production purposes our meteorological service, as did the other branches of science, experienced unprecedented gains under the glowing light of the General Line of socialist construction and by basing its work upon the foundation of political firmness and ideological liberation.

The meteorological science of our country has had a long history. But it could not flourish under the rule of feudalistic emperors.

In the years after the Opium War the world imperialists, one after another, established meteorological observatories and stations in our country to serve the needs of their aggression. They openly stole our country's meteorological data for the benefit of their warships and merchant fleets.

During the period of the Kuomintang reactionary rule meteorological work was also devoted solely to serve imperialist interests, and the reactionary ruling class suppression of the Chinese people and the civil war which they created.

The meteorological service itself was elementary semifeudal and semicolonial in nature during that period. Only after the liberation and under the leadership of the Chinese Communist Party was a people's meteorological service founded. Meteorological work was thus endowed with a new life, and it began to truly serve the people and satisfy the demands of socialist economic construction.

New China's meteorological service was established after the founding of the People's Republic of China in 1949. At that time due to the need of the meteorological service to support military missions and the urgent demands of national defense modernization, the administration first decided to establish a meteorological service in the military branches.

The service's main task was to serve defense reconstruction and military missions, and at the same time to try to fulfill the requirements of various economic agencies. This decision proved its worth during the struggle of Oppose America and Aid Korea campaign.

In accordance with a national decision, the administration created the Military Commission Meteorological Bureau (Chun-wei Ch'i-hsiang Chu) in late 1949, and at the same time laid down a course of "constructive, unified and service directives."

At that time the building up of the meteorological undertaking was a considerably large and difficult task.

After the Kuomintang reactionary clique fled to Taiwan what remained on the mainland was a decaying installation of a few stations, obsolete instruments and an underdeveloped technical force. New China's meteorological undertaking had to be built upon these ruins.

To develop the meteorological service the Military Commission Meteorological Bureau, in accordance with directives of the Party and with the principle of "divisional construction and central direction," first built observatories and stations in areas where meteorological services were most urgently needed for the support of national defense and the people's economy.

At the same time, according to the anticipated needs for weather reports and meteorological services, the administration made great efforts to speed up the establishment of a weather information network.

Meanwhile, the quality of weather information and recorded meteorological data was the foremost concern of meteorological work. Therefore, the standard of meteorological technology had to be unified.

During the time at the beginning of reconstruction, the Military Commission Meteorological Bureau in 1950 compiled principle rules concerning meteorological forecasting and reporting such as "The Essentials of Meteorological Surveys" and so forth. By this they ended the extreme confusion in the technical field which was left over from the Kuomintang period.

Furthmore, in order to expand the technical force, the central government and every major military district co-sponsored short-term training classes. In a comparatively short period a large number of technical cadres in meteorology were graduated from the increasing number of such classes or courses, thus fulfilling the urgent demand created by the increasingly greater number of weather stations and the development of the meteorological services.

Due to the correct leadership of the Party, the positive endeavor of all personnel and through selfless Soviet assistance, our nation's meteorological services had fundamentally accomplished the reconstruction of a weather information network by the end of the rehabilitation period of the people's economy (1953). Accordingly, other related organizations and agencies were also established.

Right from the start, New China's meteorological undertaking immediately obtained positive cooperation from meteorological research and education agencies. Early in 1950, the Military Commission Meteorological Bureau and Academy of Sciences' Institute of Geo-Physics co-sponsored a combined Weather Analysis Report Center and a combined data department in the Central Meteorological Observatory, and cooperatively conducted services and technical direction of weather analysis forecasting and compilation of meteorological data.

In this process, a number of new technical cadres were also created. All these efforts not only promoted the growth of meteorological services at that time, but also laid the foundation for the future development of meteorological work.

During the rehabilitation period of the people's economy, the meteorological services did a great deal by playing a supporting role in the recovery of off-shore islands and

consolidation of national defense. Warmings of winter tides and typhoons were released before they occurred, which benefited the agencies concerned with agriculture, salt mining, fisheries, water conservation, mining and communications.

Meanwhile, concerned agencies established hurricane warning stations on the sea coast, and along the coasts of lakes and rivers, to conduct the tasks of receiving and transmitting hurricane warnings. These efforts immediately resulted in a decrease in damages as a result of typhoons, storms, floods or frost.

Because these warnings were made available by the meteorological services, local party functionaries and administrative leaders and related agencies were able to take preventive measures in time and minimize the affect of damaging weather conditions.

By the beginning of 1953, the rehabilitation period of the people's economy had ended and our nation entered the First Five-Year Plan in the reconstruction of the people's economy. At that time, the meteorological work in the military branches already had a firm foundation.

To meet the development of the objective situation, the administration decided to transfer meteorological agencies under military branches to the Government Administrative Council (Ching-wu Yuan) and local administrative agencies in order to better serve the reconstruction of the people's economy.

In order to fulfill the demands of the economic reconstruction agencies and in taking over this glorious task, the Central Meteorological Bureau and various district and provincial meteorological control organizations conducted investigations, visits and meetings in an effort to understand the requirements of the agencies for meteorological services.

At the same time, they undertook a total reorganization of observatories and stations, and more weather stations and high altitute stations were quickly added. Regulations and rules for forecasting and reporting were revised in order to improve their quality. A total re-editing of various weather data urgently needed by national recon-

struction was undertaken. And furthermore, the methods of weather analysis and forecasting were improved and the quality of forecasts regarding disastrous weather was raised to a new level.

Meanwhile, the meteorological services also started trial operation on the mid-phase forecast of rain fall. In the eyes of the Party and the administration, an improved meteorological service was essential to development of the people's economy.

In March of 1954, the Government Administrative Council (Ching-wu Yuan) released the "Directive for Strengthening Efforts in Disastrous Weather Forecasting Warnings and Prevention." These measures stimulated recognition of the importance of meteorological services by all levels of Party, administrative and economic construction agencies and all the people of China, and thus created favorable conditions for the expansion of the weather forecasting service and for the organization of preventive efforts [in the event of bad weather].

In accordance with the spirit of the directive, the Central Meteorological Bureau co-authored on a separate basis with mining, agricultural, communications and transportation agencies rules governing the release of disastrous weather forecasts. All levels of meteorological organizations and various related agencies also established direct supply relations. Thus, the efforts of meteorology to serve the economic agencies of the people were widely expanded.

From 1955 to 1956, the rural cooperativization campaign of our country developed at an increasing rate, and the socialist reform of agriculture was achieved during that period. The proclamation of the Agriculture Development Platform (in draft form), brought with it important tasks for the meteorological undertaking.

To satisfy the demand of rural areas for meteorological services, meteorological agencies expanded weather forecasting and warning services deep into rural areas. Some of the areas formulated methods for transmitting weather forecasts and warning information to remote farming areas in order to keep them informed of weather changes, especially warnings of disastrous weather in order to protect harvests.

Since 1 June 1956, meteorological observatories in all parts of the country have utilized local newspapers and people's broadcasting stations to make daily scheduled releases of local and district weather forecasts to people in different areas. Some of the provinces and autonomous regions organized "mobile weather stations" to serve rural areas during busy farming seasons.

Due to the leadership of various Party and administrative organs and the support rendered by agencies concerned, these endeavours immediately brought positive support to the prevention of natural calamities and guaranteed a bumper harvest.

The gathering of weather data was also greatly improved during the First Five-Year Plan period. Meteorological agencies conducted mass re-editing of weather data and a five-year weather evaluation program. More than 10 items of illustrated weather data of a nation-wide character were completed. The compilation of individual station weather data approached 400 points. These efforts resulted in the availability of necessary weather data for the planning of 156 major engineering construction projects.

Furthermore, the central, provincial and district meteorology agencies also carried out more than 60 items of important weather analysis, including regulated weather analyses of more than 20 river basins. Special weather data service was also expanded.

Meanwhile, individual provinces and districts, started a service of publishing meteorological periodicals concerned with agriculture.

At the end of 1957, the number of all levels of meteorological observatories and stations throughout the country had increased 22 times over the early period following the liberation. Even in comparison with 1952, the number increased at least more than four times.

Before liberation, high altitude observation and survey work was non-existent. But by the end of 1957, after the reconstruction efforts of the First Five-Year Plan, a high altitude observation network (including atmospheric and high altitude wind detection) had fundamentally been completed.

Furthermore, new frontiers of meteorological observation and survey work such as agricultural meteorology, a survey of the sun's rays and the equilibrium of heat energy and radio detection of wind velocity in cloudy weather and others were opened up. By that time, 90 percent of the meteorological observatories' and stations' observation facilities met required standards.

Most elementary meteorological instruments and equipment had been inspected and found to be in good order. With the total support of related industrial agencies, meteorological instruments and devices could mostly be manufactured in China, thus fulfilling the demand for reconstruction of the domestic meteorological undertaking.

From the fall of 1957 to the summer of 1958, the great rectification campaign and anti-rightist struggle won a great victory in the socialist revolution on the ideological and political fronts.

Under the glowing light of the Party's General Line, the main idea of which was to go all out, press consistently forward, achieve greater, faster, better and more economical results in building socialism, and to reach the highest possible targets in the shortest possible time people in all parts of the country went all out to liberate ideology, wipe out superstition and carry out a great technical and cultural revolution.

At the same time, a new situation had been opened up on the industrial, agricultural, communications and transportation fronts which progressed in the form of big leap forward of unprecedented momentum. The rapid development of the people's commune movement had powerfully pushed the productive power full steam ahead, which accelerated the socialist economic construction and provided the best basis for the transformation of cooperative ownership of rural areas to ownership by all the people. This phase of the socialist revolutionary movement greatly enhanced the development of the meteorological undertaking and lifted it to a new historical stage.

Through the rectification campaign, meteorological service agencies first recognized that their work must rely upon the Party and the masses. In other words, the meteorological undertaking must rely upon the whole Party and all of the people in order to flourish.

Secondly, it was understood that the meteorological effort must not only take service as its platform with the servicing of agricultural production as its main task, but also to concurrently serve various industries and enterprises. Also, that the meteorological agencies should look upon production and the masses as the recipients of the services.

Finally, it was recognized that the course of "walking with both legs," advocated by the Party, must be carried out in all sorts of services. Central and local administrations should act in harmony and take the course of consolidation between science and the experiences of the masses, between science organizations and the mass movements and between large, medium and small agencies. Through this course, a way to achieve greater, faster, better and more economical results had been found in the development of the meteorological organization of our country.

In July 1958, the Central Meteorological Bureau sponsored the Third National Meteorological Conference in Kuei-lin. That conference was an important turning point for our nation's meteorological undertaking. The conference evaluated the achievements of the meteorological service during the First Five-Year Plan and pointed out the accomplishments and experiences gained through expansion of the meteorological services in order to help agriculture, to stir up a mass movement, and to develop supplementary forecastings in Kwangsi and Yunnan provinces.

The conference then pointed out the future course for China's meteorological undertaking, which is to work with the masses, taking service to production as the platform and to serve agriculture as the main objective, and under the guidance of all levels of Party commissars, to organize a national meteorological service network.

The conference also proposed a resolution to realize in the shortest period of time the situation in which "every special district has an observatory, every hsien a station, every hsiang a sub-station and every group a sky observation sub-committee." Every man is required to know meteorology, to work for meteorology and to use meteorology.

After the Kuei-lin conference, meteorological service units, under the leadership of all levels of Party commissars, launched a vigorous mass movement in all parts of the country and speedily built a meteorological service network through which the new frontiers of supplementary reporting and forecasting and agricultural meteorological work were widely expanded.

At the end of 1958, 70 percent area of our country had already been covered by the network and the targets of "every special district [having an] observatory, every hsien a station, every hsiang a sub-station and every group a sky observation sub-committee" had materialized.

Compared to 1957, the number of government operated meteorological observatories and stations had increased another 70 percent.

In addition, the number of meteorological detachments operated by the people's communes has approached several thousands, the number of sky observation sub-committees is near several hundred thousand and the number of huge meteorological armies of the masses was estimated at several million. Thus, meteorological work to serve agricultural production had been pushed another step forward.

station historical meteorological data and so forth.

The Medium and Long Range Forecast Conference convened in Lan-chou in October 1958 evaluated these experiences. That conference called on agencies concerned to combine these efforts in practice and to make improvements gradually. This no doubt will push the development of medium and long range forecasting service one more step forward.

The Civil Aeronautic-Meteorological Service has for some time been following a specialization process. The traffic of our nation's main air routes has become heavier and heavier every day. Provincial and regional airways are also in the development stage.

In addition, more airplanes are being used in geographical surveys, mine detection, forest protection, locust control and so forth. These air routes and special flying not only need strongly organized weather information but also require accurate weather forecasts at airports, along air routes and in air districts.

The Aeronautic Meteorological Technology Conference, which convened in Wuhan in the spring of 1959, discussed and evaluated the technical experiences in the aeronautical meteorological field which enhanced the objectivization of statistics on aeronautical meteorological reporting.

In the summer of 1958, artificially induced rain was successfully tested in Kirin Province. The tests were the result of cooperation between commissioners of Kirin City and related agencies. From 8 October to 13 September, 20 sorties were flown on trial runs and dry ice was used as catalyst. It was estimated that the rain fall reached 66 million cubic meters (including natural rain fall), which provided fundamental relief from the drought existing at that time. This trial powerfully stimulated research work on the artificial control of local weather.

In Hopeh, Kansu, Anhwei, Kiangsu, Hunan, Hupeh, Kiangsi, Chekiang, etc., these efforts were in progress. In terms of the people's meteorological undertaking, 10 years is a very short period.

combinations" means that on the basis of supplementary forecasting, the farmers' agriculture-meteorological experiences, the previous weather data and the most recent physical weather surveys and observations should be combined and analyzed.

The "running two obstacles" means that prior to the making of an agriculture-meteorological forecast, an agriculture-meteorological survey must be carried out and then after the agriculture-meteorological forecast is prepared, the opinion of local farmers should be obtained and the forecast should be supplemented and subject to revision by various local stations and detachments.

The purpose of the agriculture-meteorological survey is to evaluate the agriculture-meteorological experiences of local farmers in combination with the weather data analysis of past years. This is done in order to establish the general level of agriculture-meteorological forecasting in relation to the essential farm production which constitutes the elementary bases for the compilation of agriculture meteorological forecast.

This procedure, which prior to the formal agriculture-meteorological evaluation effort, had not been able to obtain refined standards of agriculture meteorological forecasting was the basic road followed in developing the special agriculture-meteorological service.

At the present time supplementary forecasting and the easily understood agriculture-meteorological forecast in all parts of the country have already become two powerful devices of meteorology used to serve agricultural production. Combined with the nation wide meteorological service network, the effect of these efforts will no doubt increase with time.

Pushed by the great leap forward in the people's economic production, medium and long range forecasts also improved greatly. Many areas devised numerous new forecasting methods. These were mainly the weather climatology method and the statistical method, including the patterning of essential weather changes, classification of weather patterns and the rules of change; and also the statistical method of recording individual

The wide development of supplementary forecasting and the establishment of a national meteorological service network were mutually beneficial. The supplementary forecasting was a sort of local weather forecast based on the broadcasts of various meteorological observatories: general weather forecast and area weather forecast, and was compiled according to the local topographical and geographical analyses and local weather tendencies with reference to the local data and experience gained through sky observation.

Because the supplementary forecasting used the combination method of weather map forecasting and individual station forecasting, its content was more comprehensive, more detailed and more accurate and it could serve the demands of agricultural production when it was needed.

By the expansion of the supplementary forecasting method, not only could the meteorological observatory release weather forecasts, but also various local meteorological observatory stations and detachments and sky observation sub-committees could release local weather forecasts. This increased the practical functions of the "Meteorological Observatory."

At the end of 1958, a total of 66 percent of the meteorological stations had already engaged in supplementary forecasting. A part of the meteorological detachments and sub-committees, during the transmission of forecasts, also did supplementary revision of them. According to incomplete statistics, the accuracy of 24 hour local weather forecasts, after supplementary revision, had been lifted about 10 percent.

Besides the supplementary forecast, various local meteorological stations, in accordance with the resolution adopted by the Nanking Agriculture Meteorological Conference in November 1958, expanded the use of the easily understood agricultural meteorological forecast services.

The easily understood method of agriculture meteorological forecasting, in general terms, means "four combinations" and "running two obstacles." The "four

However, in these few years, our nation's meteorological undertaking has already experienced unprecedented progress. At present all kinds of meteorological services are still enjoying fruitful development. The quality of the services is also improving.

Meteorological services have already been extended to every corner of urban and rural areas. Of course, this does not mean that New China's meteorological service has already reached a stage of perfection. The accuracy of our forecasting must continuously be raised; medium and long range forecasting methods must continuously be improved; agriculture meteorological efforts must be greatly extended and civil aeronautical meteorological services must also be deeply exploited.

More research work should be done on the problem of artificial control of local weather. And, oceanic meteorology is an area in which construction work should be speedily established. The meteorological services must base their work on characteristics and requirements of service targets to provide the forecasts and data needed by the economy to increase production. Meteorological service and research work must cooperate more closely.

But we believe that as long as we strongly rely upon the leadership of our great Party and as long as we believe in the masses, and rely on the masses and work with them and hold fast to the platform of serving production, and at the same time under the total efforts of our meteorological workers with firm political belief and liberated ideology, these tasks will definitely be achieved. The people's meteorological undertaking will then follow the continuous leap forward of the construction movement with ceaseless progress and will leap from victory to victory.

END

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