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Bergen South: The Americanization of the Meteorology Profession in Latin America during World War II

by Gregory T. Cushman
University of Kansas
gcushman@mail.ku.edu

World War II represented a watershed for the meteorological profession in North America. The war provided Scandinavian-born adherents of the Bergen School with the opportunity to reform the atmospheric sciences in the United States. Not least among these acts was the recruitment of Jacob Bjerknes to form a new Meteorology Department at the University of California, Los Angeles (UCLA), the second major research and training center to be established on the Pacific Coast of the Americas after Cal Tech.

World War II also provided an enormous stimulus to the meteorology profession in Latin America. Carl-Gustaf Rossby masterminded a plan to train dozens of southern scientists in the elements of meteorological theory and practice originally developed by the Bergen research school. Though encoded in the multilateralist language of the Good Neighbor Policy, his plan was explicitly intended to bolster the United States' hemispheric "defense program" and other interests--including the elimination of German primacy in regional aviation and military affairs.

Leading architects of the "military-industrial-academic complex" in California embraced these programs. They fit perfectly with a long-standing strategy to convert California into a global scientific powerhouse. For years, the construction of a vast, informal scientific empire to the south and west had been integral to this strategy. These programs also served the developmental ambitions of Latin American technocrats.

More broadly, this case shows that scientific internationalism has been integral to empire-building in the post-colonial era. Scientific internationalism typically serves several nationalist goals—though rarely in a clear-cut fashion. Thus, "Scandinavian" meteorology could serve as an instrument of U.S. cultural imperialism. The migration of the Bergen School west and south represents a classic case of Roy McLeod's "moving metropolis" in environmental science.

Bergen West

The Bergen School was already moving west well before World War II. In July 1939, Jacob Bjerknes embarked on an extended tour of meteorological institutions in North America. Bjerknes was thousands of kilometers away when Germany invaded Poland on 1 September. During this trip, the University of California's entrepreneurial president, Robert G. Sproul, and two stalwarts of the Bergen School already in the U.S., Rossby and Harald Sverdrup, worked furiously to convince Bjerknes to stay in California. They wanted him to become the cornerstone of a new center for atmospheric research, the Pacific Coast's answer to Sverre Petterssen's program at MIT. The invasion of Norway by German forces on 9 April 1940 and Sverdrup's proximity at the Scripps Institution of Oceanography (SIO) near San Diego led Bjerknes to agree to a high-paid position at UCLA, though not without first negotiating the hire of his compatriot, Jørgen Holmboe, from MIT. The vicissitudes of war had once led to the formation of the original Bergen Geophysics Institute in 1917. In 1940, they led to its partial reformation in Southern California.

Bjerknes's decision served several interests. It furthered Sproul's project to turn his home state into a scientific research center—and servant—for the U.S. military and Los Angeles's flourishing aeronautics industry. Bjerknes's decision advanced Rossby's long-standing plan to bolster meteorological research and instruction in the United States according to the Bergen model. Both Rossby and Sverdrup hoped Bjerknes would use his acumen to advance Pacific maritime meteorology from its backwater status. Most importantly, the U.S. Weather Bureau and Army Air Corp had immediate plans to convert UCLA into a centerpiece of their emergency defense training program, as the United States prepared for going to war. Bjerknes embraced these interests, many of which had been integral to the formation of the original Bergen School. From 1940-1945, UCLA and SIO together trained some 1,400 military forecasters.

Bergen South

Latin America was an important part of these endeavors. From the beginning, the U.S. Weather Bureau included Latin American meteorologists as part of its defense training program. After Bjerknes's first semester at UCLA, he headed south to Mexico City on a lecture tour. In the autumn of 1941, Rossby proposed an elaborate program to strengthen "cooperation with

Latin American meteorologists.” Rossby saw his plan as a natural extension of the United States’s Good Neighbor Policy, the formal diplomatic position of Franklin Roosevelt’s government rejecting U.S. military intervention in Latin America and embracing bilateral, North-South collaboration. Rossby’s plan noted the growing number of U.S. meteorologists employed by Latin American airlines and the value of training locals to fill these positions. He also highlighted the need for improved observation and reporting from distant regions. Such collaboration was important not only for weather prediction in strategic overseas areas such as the Panama Canal, but also for improving forecasts close to home. Rossby thought these plans were so important that he volunteered himself and Bjerknes to undertake the mission, the immediate needs of UCLA’s training program notwithstanding. The Good Neighbor Policy provided the inspiration for a number of similar scientific and military missions to Latin America during the years leading up to World War II.

The United States’s full mobilization for war in the aftermath of Japan’s attack on Pearl Harbor precluded this trip south. But the rest of Rossby’s plan was implemented on a scale far grander than he initially envisioned. Supporters embraced the training of Latin American meteorologists as an explicit means to eliminate German influence over South American aviation and prevent “Nazi sabotage.” (The popularity of the Junkers aircraft had enabled Germans to establish a controlling interest in several South American airlines during the 1920s and 1930s.) Others viewed California’s leadership in these endeavors as a natural geographical extension of the “long background of connections . . . this part of the country has with Latin-American affairs.”

In the spring of 1942, Peruvian geophysicist Rafael Dávila Cuevas—on his own initiative—became the first South American to attend UCLA’s wartime “crash course.” This was only the beginning. In 1943, the U.S. Weather Bureau provided 200 scientists with six-months of skills and English training at the Inter-American Institute of Meteorology held at Medellín, Colombia. Those with sufficient talent and English skills were given scholarships to receive advanced training in the United States. The majority went to UCLA. At least 35 students from 17 countries graduated from Bjerknes, Holmboe, and Sverdrup’s program with firm grounding in the theory and techniques of the Bergen School. To various extents, these events marked the Americanization, Latin Americanization, and Scandinavianization of the

meteorology profession in the Americas. Back home, Dávila Cuevas trained a new generation of Peruvian scientists in the elements of physical meteorology.

There were other legacies. UCLA quickly converted to a center for training civilian forecasters, though Bjerknes and UCLA maintained a close relationship with the U.S. military's postwar aerospace programs. As in so many collaborative endeavors, the United States lost interest in Latin American meteorology after the war. Germans ended up heading the UN-WMO team that modernized Peru's observation network in the 1950s, while Hermann Flohn's Meteorological Institute at the University of Bonn led the way in academic investigations of tropical meteorology in South America. Nevertheless, Bjerknes again turned his scientific gaze west and south. During the late 1950s, thanks in large part to the special relationship Scripps Institution of Oceanography reestablished with Latin American scientists, Bjerknes became interested in air-sea interactions related to the El Niño phenomenon. He formulated the "Walker Circulation" theory describing the dynamics of the El Niño-Southern Oscillation and traveled several times to South America in subsequent years. Thus, the institutional migration of the Bergen School west and south enabled a fundamental advance in environmental understanding.