Jerome Namias, March 19, 1910 - Feb. 10, 1997

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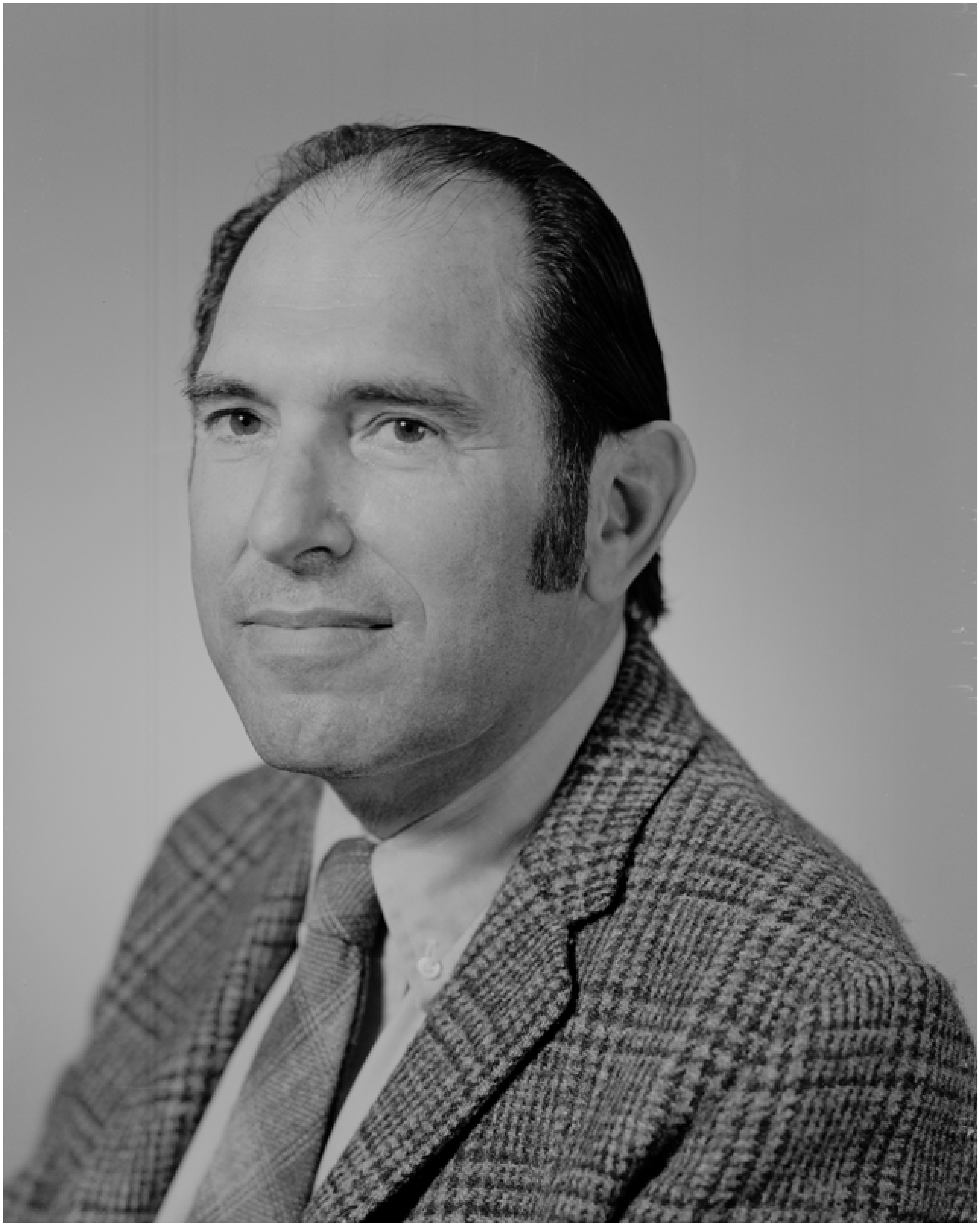

Jerome Namias was one of the world's greatest long-range forecasters of what he liked to call the world's second most complex problem [1]. Hecht (1986) described him as "A man who gives good reasons for any long range forecast, and even better reasons for why it fails ... a man who is an infinite source of good ideas ... who thinks fast on his feet, ... is always a scholar ... and a gentlemen." While lacking formal meteorological training, Namias eventually received the highest awards of the American Meteorological Society and helped to found the long-range forecasting branch of the U.S. Weather Service and the Climate Research Division and the Experimental Climate Prediction Center at the Scripps Institution of Oceanography. In November 1989, Namias suffered a stroke. Although he was aware of the events around him, he was partially paralyzed and was unable to speak or write thereafter. His loving wife Edith, daughter Judith Immenschuh, and grandchildren Dylan and Sionna survive him.

Fall River

Jerome Namias grew up in Fall River, Massachusetts, the son of Joseph and Sadie Jacobs. He became enthusiastic about the weather from a high school physics teacher and the town's amateur meteorologist, a cooperative observer for the U.S. Weather Bureau as well as a wealthy broker. Eventually Namias set up his own weather station, using instruments he bought from his earnings as a door to door salesman and a jazz drummer. When Namias heard about the American Meteorological Society, founded by Charles F. Brooks in 1919, and that the requirements for membership were modest - "a sincere interest and annual dues of $2 per year" - he immediately joined. Although his friends thought that Namias was getting into meteorology because of the money [2], his father initially saw little or no chance of Namias making a living on what he thought was a hobby [3]. Namias began his 'hobby' by keeping records and drawing weather maps from reports published in the daily newspaper but soon he began making forecasts for his friends, a practice he was to carry out to the extreme for the rest of his life [4].

Upon graduation from high school, Namias was offered a four-year scholarship to Wesleyan University in Connecticut, but since his father was ill, Namias decided to stay home and try to find a job to help his family out since this was the start of the great depression. Namias subsequently became ill with tuberculosis and was confined to his home. However, his appetite for self-study soon emerged and he took many correspondence courses, including a course in meteorology given at Clark University by Charles F. Brooks. Although Namias was never to receive an undergraduate degree [5], he eventually received an M.S. (1941) from Massachusetts Institute of Technology (MIT), and in 1972 the Univ. of Rhode Island awarded him an honorary Ph.D., and in 1975 Clark University awarded him another honorary Ph.D.

First Meteorological Job

At the end of his confinement, Namias wrote letters to many meteorologists, asking for a job, citing his study of their papers and books. He was unsuccessful until H. H. Clayton at the Blue Hill Observatory, who was working with Charles G. Abbot, Secretary of the Smithsonian Institution, finally offered Namias a job. Clayton interviewed Namias by asking him to extract station pressures from the isobars on some random weather maps. Clayton took the same test and found that each made one mistake. Namias was hired on the spot and sent to the Weather Bureau in Washington D.C. where the data was (and still is). This position involved getting data for compilation of world weather records, an internationally known series put out by the Smithsonian; and also, for solar -weather studies. Namias took this opportunity to read and meet the many famous meteorologists whose articles and books he had previously read. In the Weather Bureau library, Namias soon discovered the many scholarly papers of the Norwegian or Bergen School [6] and these papers were to influence his later research. Namias also found the initial set of scientific reports issued by Carl G. Rossby's newly founded department of meteorology at the Massachusetts Institute of Technology (MIT), and with colossal nerve wrote a letter to Rossby politely questioning a couple of his statements in one of his papers. Soon thereafter, Namias received a response from Rossby saying that Namias was partially correct, and would Namias stop by and see him when he got a chance.

MIT

Rossby was to have a major influence upon Namias' life. To help out with undergraduate tuition, Rossby arranged a job for Namias. Namias began to take and analyze the recordings of the research aircraft instruments used by the department at the East Boston Airport. Sometimes, Namias' work entailed 14-hour days, which included tracking balloon runs with the help of a theodolite to determine the wind directions and speeds at various altitudes. This was sometimes dangerous work. According to Namias (1986) "On one occasion, a home town friend came to visit at the airport, and I encouraged him to watch me send up the pilot balloons. He came into the shed where the balloons were inflated. Shortly thereafter I noted that he was smoking - while I was inflating the balloons from the tank of hydrogen!"

Namias became especially interested in the structure of air masses and fronts as determined by the rapidly expanding aerological network of airplane soundings and pilot balloon wind soundings made in Boston as well as at other places like Detroit and Chicago. These new soundings made it possible for Namias to construct cross-sections through the fronts by combining ascents in time and space (Namias, 1934a,b). Some of the central ideas for Namias' analysis of the frontal structure stemmed from the work of J. Bjerknes, who had pioneered aerological studies of cyclones over Europe and also from research carried on at MIT by Prof. Hurd Willett, an authority on American air masses and fronts. Namias was to eventually to write series of introductory articles on stability and air mass properties (Namias 1936). [7]

With the advent of the rapidly expanding airline industry and their desire to establish meteorological departments [8], Namias was then offered and accepted (upon the advice of Rossby) a job at TWA (1934), first at Newark, then at Kansas City. In these assignments, Namias got a taste of the real world of meteorology - round the clock workshifts and stressful forecasting for early transcontinental airline flights. Problems involved icing on aircraft, low ceilings, zero-visibility due to fog, blowing dust over the Dust Bowl area, and hazardous winds. There was no time for scientific investigations, or for Namias to continue his undergraduate education and Namias eventually got the impression that airline meteorologists were "second class citizens around the air terminals who often served as scapegoats for weather related accidents." Therefore, when TWA had to temporarily downsize due to the curtailment of government airmail service, Namias was happy to return to part-time work at MIT and Blue Hill Observatory, even though he had to learn to live on student pay once again.

Namias was known now as an expert forecaster. He gave advice to Piccards in connection with his record setting high altitude balloon flights. He helped out at the National Gliding and Soaring contest in New York, where Dupont made a distance record for the United States by using Namias' forecast of a strong frontal passage to glide all the way to Boston. According to Namias (1986), "I still marvel at his courage - and my colossal nerve in proposing such a dangerous flight path!" Namias was not infallible. Asked to forecast for the Harvard Tercentennial, Namias forecast a light rain, which ultimately turned into a ruinous downpour. Bad forecasts [9] would disappoint but would never stop Namias, who felt that forecasts were one of the best teaching tools a meteorologist had. Gilman (1986), who succeeded Namias as chief of the weather bureau, would later stress the probabilistic nature of forecasts, which is especially important when dealing with the growing uncertainty at long ranges.

Namias then decided to finally get his undergraduate degree by enrolling at the Univ. of Michigan, where the tuition was more affordable than at MIT. Unfortunately, serious physical problems (pleural effusion) forced Namias to once again abandon his undergraduate plans and to return to Fall River, where he again proceeded with self-study and also published a seminal paper on atmospheric inversions (Namias 1936). Impressed once again, Rossby offered Namias a graduate assistantship beginning with the 1936 fall term at MIT. Rossby had just begun working on his theory of long waves on the westerlies and was trying to convince people of their validity. One of the main difficulties in applying Rossby's ideas involved the lack of data aloft, particularly over the oceans. At Rossby's suggestion, Namias constructed a trial upper-level map by judicial extrapolations, estimating quantitatively the flow patterns aloft over the North Atlantic, as well as the United States. Namias was later one of the unnamed contributors of Rossby's paper (Rossby and collaborators, 1939).[10]

It was at MIT that Namias met Edith Paipert, who was to become his wife in the fall of 1938. Harry Wexler, his best friend for many years since grammar school, had married her sister, Hannah, and years earlier Namias had introduced Harry to Rossby and the field of meteorology.[11] Edith was an artist,[12] had a feel for symmetry, balance and aesthetics and would make comments as to the artistic, or lack thereof, of Namias' weather maps. "It soon become clear that parts of my analysis that she did not like were incorrect and could be made both more artistically satisfying and scientifically correct by modification. It was then that I realized the close association between art and science. In fact, in a couple of courses I taught at MIT, this philosophy was stressed, much to the chagrin of a few of my contemporaries."

Namias made a name for himself at MIT with his isentropic analyses (Namias 1938), which was the basis for him getting the first Meisinger Award of the AMS in 1938. Namias reasoned that isentropic analysis was an exceptionally valuable tool for precipitation forecasting, particularly when the moist and dry tongues were clear and easily identified. Isentropic trajectories often carried the high-level moisture southward into the southern states - even though the surface winds were blowing from the South. Thunderstorms occurred where the deep moist air enhanced convection, which is normally impeded by entrainment of dry air aloft. Summer thunderstorms over the great plains of the United States did not occur haphazardly but frequently moved in clusters within upper-air moist currents that flowed in great anticyclonic systems in mid-troposphere. Eliassen (1986) noted later that he and his contemporaries, who had studied Namias' aerological papers before the war were amazed to see someone their age (23) had written such extraordinary papers. Eliassen (1986) further noted that isentropic analysis has provided the basis for much of modern meteorological instability theory developed later by Charney and others.

Extended range forecasts

It was another aspect of Namias' research, though, that was to capture his attention and to eventually become part of Namias' identity. Namias was the junior member (graduate assistant) of the team that was trying to develop extended forecasting on time scales of the order of the order of a week. According to Hecht (1986) this was reported in the New York Times as "The weather bureau has enlisted aid of experts from several universities in starting a study of long range forecasting." According to Namias (1986) "It soon became clear that none of us knew what we were doing, other than coloring charts with red and blue crayons." In fact, Namias was instrumental in developing the scientific basis for experimental forecasts for times (then) as far as 5-days into the future.[13]

World War II

The military services became especially interested in MIT's extended forecast work (Namias et al. 1941) and it was eventually decided to shift the extended forecasting project to Washington, where it would be closer to defense preparations for the looming war. Namias was asked to head up the controversial project and take a one-year leave of absence from MIT. According to Namias (1986) "Our reception by some of the Weather Bureau personnel was not exactly cordial - attempting forecasts for a period of five days in advance was (thought to be) utterly foolish." Namias was to head the extended range forecast division for the next 30 years and ultimately wrote a monograph on extended forecasting techniques, which was promptly stamped CONFIDENTIAL. A few years later, this monograph was declassified, brought up to date and printed for general distribution (Namias 1947).

During the war, Namias supervised a historical sea level map project [14], lectured Air Force cadets, Navy officers, and civilians at various university training centers, and made extended predictions for many wartime events. Namias received a Citation from Navy Secretary, Frank Knox for his forecasts for the sea-state for the

North African invasion [15]. Namias also made forecasts for favorable periods for the transfer of disabled vessels to other ports for repair, estimates of the likely course of incendiary balloons from Japan, favorable and unfavorable conditions for the possible invasion of Japan, and certain aspects of the meteorology for bombing raids [16].

Numerical Weather Prediction

After the war, meteorology changed forever towards a more computational science. At the Institute of Advanced Study in Princeton, Johnny von Neumann initiated a project in numerical forecasting, with the use of the supercomputer of the day. This project involved Jule Charney, Phil Thompson, Johnny Freeman, Hans Panofsky, Ragnar Fjortoft, Arnt Eliassen, Joe Smagorinsky, Norm Phillips, and many others. Charney ultimately developed the first successful numerical forecast using the barotropic model, which Namias had been employing for several years following Rossby's classical 1939 work. Namias (1986) was fond of noting that "at the first meeting to discuss the new Princeton endeavor, to which about 35 of the nation's top meteorologists were invited to give advice, no one suggested, as a starting point, the barotropic model!" Although Namias was photographed with the group who made the first forecast (see Namias 1986), he was really only peripherally involved. His role was mainly to make sure the computer-generated forecasts resembled the real atmosphere [17].

Confluence

Rossby, who had returned to Sweden after the war to found a new International Institute of Meteorology, subsequently invited Namias to Stockholm [18]. There, Namias investigated variations in upper airflow patterns. Particularly noteworthy was his study of confluence, with his long time colleague, Phil Clapp (Namias and Clapp, 1949). Confluence and diffluence qualitatively describe asymmetric variations in the upper level winds. At the upper levels, the strongest climatological winds or jets occur off the coast of Eurasia and North America (and over North Africa). In the entrance region to these jets, a thermodynamically direct circulation occurs. That is, warm air rises in the south and sinks in the north. In the diffluent regions over the ocean, an opposite indirect circulation occurs. As discussed by Newton (1986) confluence theory has been increasingly studied in recent meteorological literature (jet streaks) and it's popularity will grow as we gain more experience understanding vertical circulations.

Index Cycle

Namias' stay in Sweden resulted in another notable paper, a study of the index cycle (Namias 1950) - the slow wintertime phenomenon when the westerlies first slowly decline and then recover in a cycle of about four to six weeks. As noted by Lorenz (1986) the zonal index or blocking variations appears to happen at about the same time each year (spring) and carry with them similar alterations in the positions and intensities of the centers of action. Implicit in this and other work was the fact that synoptic scale systems often went through a cycle in about a week, only to return in similar form in the following week or so - suggesting quasi-periodicity although Lorenz (1986) noted that the motions were actually chaotic. Lorenz further noted that these kinds of studies were forgotten for some time because of the advent of numerical prediction. It was only much later that people began to realize that even these kinds of slowly varying and seemingly predictable phenomenon were in fact quite sensitive to initial conditions. Models to date have not yet been wholly successful in predicting the onset or demise of high and low index conditions.

Nonetheless, because of their potential for prediction, people will continue to search for these and other periodicities. Namias (1986) wrote that Dr. Irving Langmuir, the Nobel Laureate, had tried to show that his seeding of clouds in New Mexico was responsible for establishing a weekly periodicity in many meteorological elements as far away as the Ohio Valley. Langmuir became greatly interested in Namias' work and invited him to spend a few days with him at the GE's Knolls Laboratories near Schenectady. "Although he worked hard to convince me that the periodicity found over the Ohio Valley was due to seeding in New Mexico, I was able to demonstrate in this and in other cases, that periodicity could be explained in terms of the evolution of the general circulation on the appropriate time scales."

Based on the low frequency variations in the index cycle and other evidence, Namias (1953) then decided to expand the 5-day predictions, which were by then routine, to 30 days. He also began to issue advisory statements, a month in advance, about hurricane probabilities. Namias reasoned that changes in the large-scale wind patterns could be used to determine whether or not small-scale hurricanes would be more or less threatening to the U.S. East Coast. A lot of publicity was generated, which ultimately resulted in the establishment of the National Hurricane Center (Taba 1988). Namias' advisories were later stopped since it was claimed they were harming the tourist trade. Although Namias (Taba 1988) called this progressive public service, which gave him regular appearances on TV (Namias always enjoyed the limelight), his efforts were always at the hazy frontier and not altogether popular at the more conservative weather bureau. Nonetheless, these efforts as well as the many previously mentioned efforts by Namias ultimately resulted in him being given (1955) the highest AMS award, the award for Extraordinary Achievement [19].

Land Influences

In the same year, Namias received the Rockefeller Public Service Award, which made it possible for him to spend a year at a place of his choice and Namias once again chose Stockholm. As summarized by Walsh (1986) and Anthes and Kuo (1986), Namias began to write there what about the influence of the land and snow on the atmosphere. Namias (1955) suggested that the soil moisture in the Great Plains of the U.S. played an important role in the Great Plains drought by varying the heat input to the overlying atmosphere. That is, heat could be used for sensible heating of the soil or for producing long period lags in the general circulation. This paper also stressed that the drought-producing upper level high-pressure cell over the Great Plains is dependent upon similar anomalous cells over both the North pacific and North Atlantic, operating through teleconnections. Once this triple cell pattern was established, soil moisture deficits could feed back to help maintain the continental high cell. These effects were later exploited by Van den Dool and others and are still being explored in modern coupled (air-land) hydrologic experiments started by GEWEX (Global Energy and Water Cycling Experiment).

Ocean Influences

A major turning point for Namias occurred at the 1957 Rancho Santa Fe CalCOFI (California Cooperative Fisheries organization) Conference of the Scripps Institution of Oceanography. Invited by John Isaacs to be the leadoff speaker for a quite anomalous period that had sparked the conference, Namias (1959) gave a standard climate diagnostics talk about the anomalous midlatitude events and then set back to listen to the other speakers (Bjerknes, Charney, Munk, Stommel, among others). A remarkable oceanic warming (which we now all know of as El Nino) had occurred over the eastern Pacific. Southern fish were being caught in the northern waters, unusual typhoons were observed and in general both atmosphere and ocean were far from normal. This sea-surface-temperature abnormality also included anomalies in the marine biota, the California current and some marine chemical properties. Namias (1986) wrote, "The inter-associations quickly became clear, and it struck me that some of the secrets of long range weather forecasting might lie in the coupled air-sea system. It was especially noteworthy that the mismatch of time scales in the two media, air and sea, could account for the frequently observed long term memory required for long range problems."

Namias began to thereafter draw upon the influence of the ocean surface in other studies. However, it was really to be several years, before Namias could actually begin to work full time on the large-scale air-sea interaction and persistent boundary condition problem, efforts that were to occupy the rest of his life. His mentor, Rossby, had just passed away; his best friend and brother in law, Harry Wexler, passed away from heart problems; Namias also had a coronary heart attack in 1963. In the summer of 1964, Namias was involved in a bad automobile accident in Boston even though he never actually learned how to drive. Namias was also growing increasingly tired of all the budget battles [20] and finally decided to retire from the weather bureau.[21]

Scripps

Actually, Namias never retired; he just changed locations.[22] Namias' earlier work had increasingly drawn the attention of many diverse groups of scientists, including John Isaacs at the Scripps Institution of Oceanography where he had earlier been stimulated to begin working on ocean atmosphere problems. Namias (1986) wrote, "My new friends were most receptive to fresh ideas about low frequency phenomena in the upper ocean and lower atmosphere. Consequently, I returned each of the succeeding three years for six months at a time before deciding to retire from NOAA and live in La Jolla, a decision I never regretted." In the years following his move to La Jolla, many air-sea problems attracted his interest within the newly formed climate research group (which initially included Barnett and later became a separate research division under Somerville) that he founded with the help of the Director, Bill Nierenberg. Initial studies were concerned with defining the time and space scales of large-scale air-sea interactions (Namias and Born, 1970; Namias 1972) and ultimately Namias put out several important large-scale air-sea atlases (Namias 1975, 1979, 1981) that were used by many other researchers. Namias would use his long experience with climate variations to carefully diagnose low frequency atmospheric and oceanic behavior.[23]

From a number of carefully analyzed case studies (e.g. Namias 1976a), it became evident to Namias that if abnormally warm water was generated at high latitudes during the summer, the Aleutian Low in the subsequent fall would be intense. Similarly, cold water in the summer would lead to abnormally high pressure in fall. He reasoned that warm anomalies would amplify cyclones by destabilizing cool air masses by the contributions of the surface sensible and latent heat whereas the opposite situation would occur over the cold anomalies. Namias further suggested that pools of anomalous water might be hidden at depths below the surface thermocline during the warm season. With the onset of increased fall storminess, these subsurface anomalies could be vertically mixed again, thus providing for the generation of surface anomalies unaccounted for by other factors. In 1981, Namias received the Sverdrup Gold Medal of the AMS for these pioneering efforts on air-sea interactions.

Namias' air-sea interaction theories were not universally accepted. As noted by Haney (1986), a number of subsequent papers by Hasselmann, Frankignoul, Davis and others showed that it was much easier to produce SST anomalies from atmospheric anomalies than it was to produce atmospheric anomalies from SST anomalies. A number of early general circulation model (GCM) sensitivity experiments by Kutzbach, Huang, Chervin, Houghton and others also showed a remarkable insensitivity [24] to midlatitude SST anomalies whereas these same early GCM experiments at least showed some sensitivity to tropical SSTs.

Now, Namias has sometimes been identified as being a strict proponent of only midlatitude SST effects, in part because he was somewhat skeptical that influences from remote tropical SSTs could overwhelm more local SST anomalies. According to Smagorinsky (1986), this discounting of tropical effects was due in part to the standard weather service Northern Hemisphere maps, to which Namias had access.[25] Still, when the TOGA (Tropical Ocean, global atmosphere) program was launched, Namias was a strong supporter, although he probably would have been a stronger supporter if it had been named GOGA (global ocean, global atmosphere). Namias' many teleconnection and midlatitude air-sea studies had convinced him that knowledge of the global ocean and global atmosphere would ultimately be required. Despite Namias' tropical skepticism, he did do some seminal ENSO (El Nino, Southern Oscillation) work. As noted by van Loon (1986), Namias (1976b) was the first person to describe both extremes of the ENSO cycle, as well as the association with temperate latitude wind systems over the North Pacific. Perhaps more characteristically, though, Namias and Cayan (1984) demonstrated the lack of uniqueness in middle latitudes for different El Nino years. In much of his work (midlatitude and equatorial), Namias had the encouragement of J. Bjerknes, the great pioneer in El Nino and Southern Oscillation studies, who was stationed nearby at UCLA and worked with Namias on the NORPAX program.[26]

Seasonal Forecasts

Even though Namias had officially retired from government service in 1971, several requests for forecast information from high government sources continued. Among these requests were estimates of the character of the forthcoming winter over the East during the oil embargo of 1974. After several cold winters, Namias predicted that this critical winter would be mild and on the basis of this prediction, the Carter administration decided not to issue gas-rationing cards. Namias was right this time, although there were a few notable examples when he was not as right.

Another case of weather and climate aberrations occurred during the winter of 1976-77, when the Far West suffered a severe drought and the eastern two-thirds of the nation was very cold with frequent snows. These abnormalities were associated with large anomalies in upper air wind patterns and in North Pacific sea-surface temperatures. The pressure patterns had a strong ridge in the Far West and a strong trough over the East. Namias wrote, "These patterns were remarkably stable from month to month over a six month interval from fall to winter, so that a persistence forecast would have been quite successful. Of course, one would have had to know in advance that the period was to be so persistent." Namias (1978) suggested that several premonitory signs showed up in the fall of 1976, including the forcing Pacific SST patterns, atmospheric flow patterns with strong teleconnections, an El Nino in the tropics, and some early snows, providing enhanced baroclinicity along the eastern seaboard. All of these factors and the suggested enhancement by the normal general circulation led to an excellent forecast for the 1976-77 winter.

Many numerical studies of this abnormal winter have since been conducted. At a large NATO-sponsored workshop in Italy both Joe Smagorinsky of GFDL and Namias were invited to speak. Namias discussed the synoptic and statistical characteristics of the meteorological situation as well as his intuitive forecast. Smagorinsky then described the results obtained by Miyakoda of his staff at GFDL, Princeton, which employed a sophisticated model to predict the weather for the entire month of January 1977, using the data of January 1, 1977, as initial data. Namias was so impressed by Miyakoda's predictions that he stated that he felt privileged to be present at this public unveiling, much as he had been present on the occasion of the first numerical forecast made a few decades earlier in Princeton. Later less skillful numerical forecasts, though, reinforced his often-stated opinion, that a machine would never replace but instead would only be one of the tools a human forecaster would need to use at long ranges.

Conclusion

One of Namias major accomplishments at Scripps was to help develop an experimental climate forecast center where novel techniques could be developed and tested before being put into operational use by the weather services. Namias was among several meteorologists who testified before congressional committees relative to the desirability of passage of this act and Namias was especially impressed by the interest and questions by Senator Hubert Humphrey and Representative Charles Mosher as well as those of Senators Alan Cranston, Adlai Stevenson, Jr., and others. Eventually the National Climate Act was passed, and in the ensuing competitive competition among peers, Namias and Scripps colleagues obtained the first such center for Scripps beginning in 1981. This center has continued to thrive, as has the Climate Research Division, which he had founded earlier. Namias' work had thus come full circle. From the earliest beginnings at MIT, where Namias was a junior member of a project devoted to making experimental 5-day forecasts, to the Scripps Experimental Climate Prediction Center (ECPC), where he started experimental seasonal forecasting efforts, Namias was the extreme forecaster.

Namias was so much more than what he modestly described himself (Namias 1986), "a good synoptic meteorologist who was fortunate enough to have been on the scene when great advances were being made - and one who had participated in some of the advances." Namias was an inspiration to several generations [27] of meteorologists and climatologists, not only from the podium of a large lecture hall but also in one-on-one conversations. Namias, therefore, rightly gathered a number of honors over the years. The most gratifying of all these honors was his election to the National Academy. Namias wrote, "something I thought would never happen because of the fuzzy nature of my field of research and my poor formal background. ... It is an honor that strengthens my belief in our system, whereby a person is judged solely on the basis of his contributions."

Education

B.M.C. Durfee High School, Fall River, Massachusetts

Massachusetts Institute of Technology, 1932-34; 1940-41, MS Degree

University of Michigan, 1934-35

University of Rhode Island, D.Sc. (Hon.) 1972

Clark University, Worcester, Massachusetts D.Sc. (Hon.) 1984

Awards:

Meisinger Award, American Meteorological Society, 1938

Citation from Navy Secretary, Frank Knox, for Weather Forecasts in connection with Invasion of North Africa, 1943

Meritorious Service Award from U.S. Department of Commerce, 1950

Award for Extraordinary Scientific Accomplishment from American Meteorological Society, 1955

Rockefeller Public Service Award, 1955 (Year of Research at International Institute of Meteorology in Stockholm)

Department of Commerce Gold Medal Award, 1965

Rossby Fellow, Woods Hole Oceanographic Institution, 1972

Visiting Scholar, Rockefeller Study and Conference Center, Bellagio, Italy, September, 1977

San Diego Press Club, Headliner Award (Science) 1978

Sverdrup Gold Medal, American Meteorological Society, 1981

Marine Technology Society's Compass distinguished Achievement Award, 1984

UCSD Chancellor's Associates Award for Research, 1984

Department of Commerce Certificate of Appreciation, presented by Malcolm Baldrige, Secretary of Commerce, 1985

Societies:

American Meteorological Society (Fellow) Councilor during 1940-42, 1950-53, 1960-63, 1970-73

Sigma Xi (elected at MIT, 1939)

American Geophysical union (Fellow)

Royal Meteorological Society of Great Britain (Member)

Washington Academy of Sciences (Fellow)

National Weather Association (Member)

Mexican Geophysical Union

American Association for the Advancement of Science (Fellow)

Board of Editors, Geofisica Internacional, Mexico

The Explorers Club (Fellow)

National Academy of Sciences (Member)

American Academy of Arts and Sciences (Fellow)

Selected Publications:

1934

Namias, J. 1934a: Structure of a wedge of continental polar air determined from aerological observations. Massachusetts of Technology Course, Professional Notes No. 6., 39pp

Namias, J. 1934b: Subsidence within the atmosphere. Harvard University Press, Harvard Meteorological Studies, the Blue Hill Meteorological Observatory of Harvard University, No. 2., 61 pp.

1936

Namias, J. 1936: An introduction to the study of air mass analysis. Bull. Amer. Meteor. Soc., 17, 84 pp. (a series of ten articles originally published serially in the AMS Bulletin during 1934, 1935, 1936) was later published in Namias, J., 1940: Air Mass and Isentropic Analysis, 5th edition, Amer. Meteor. Soc., Milton, MA, 232 pp.

Namias, J., 1936: Structure and maintenance of dry-type moisture discontinuities not developed by subsidence. Mon. Wea. Rev., 64, 351-358.

1938

Namias, J. 1938: Thunderstorm forecasting with the aid of isentropic charts. Bull. Amer. Meteor. Soc., 19 (1), 1-14.

1939

Rossby, C. -G. and Collaborators (1939): Relation between variations in the intensity of the zonal circulation of the atmosphere and the displacement of the semi-permanent centers of action. J. Marine Res., 2, 38-55.

1941

Namias, J., H. C. Willett. and R. A. Allen. 1941: Report of the five-day forecasting procedure, verification and research as conducted between July 1940 and August 1941. (Papers in physical oceanography and meteorology) Massachusetts Institute of Technology and Woods Hole Oceanographic Institution, IX (1), 88 pp.

1947

Namias, J. 1947: Extended forecasting by mean circulation methods. Extended Forecast Section, U.S. Weather Bureau, 89 pp.

1949

Namias, J. and P. F. Clapp, 1949: Confluence theory of the high tropospheric jet stream. J. Meteor. 6, 330-336.

1950

Namias, J. 1950: The index cycle and its role in the general circulation. J. Meteor. 7 (2), 130-139.

1953

Namias, J. 1953: Thirty-day forecasting: A review of a ten-year experiment. AMS Meteor. Monographs, 2, 83 pp.

1955

Namias, J., 1955: Some empirical aspects of drought with special reference to the summers of 1952-54 over the United States. Mon. Wea. Rev., 83, 199-205.

1959

Namias, J. 1960: Recent seasonal interactions between North Pacific waters and the overlying atmospheric circulation. J. of Geophys. Res., 64, 631-646.

1970

Namias, J. and B. M. Born, 1970: Temporal coherence in North Pacific sea-surface temperature patterns. J. Geophys. Res., 75, 5952-5955.

1972

Namias, J., 1972: Space scales of sea-surface temperature patterns and their causes. Fish. Bull, 70, 611-617.

1975

Namias, J., 1975: Northern Hemisphere seasonal sea level pressure and anomaly charts, 1947-1974. CalCOFI Atlas 22, June 1975, Eds, A. Fleminger and J. Wyllie, Scripps Institution of Oceanography, La Jolla, CA 92093, 243 pp.

Namias, J., 1975: The contributions of J. Bjerknes to air-sea interaction. In: Selected Papers of Jacob Aall Bonnevie Bjerknes (M. G. Wurtele ed.). Western Periodical Company, North Hollywood, CA, 16-18.

1976

Dickson, R. R. and J. Namias, 1976: North American influences on the circulation and climate of the North Atlantic sector. Mon. Wea. Rev., 104, 1255-1265.

Namias, J., 1976a: Negative ocean feedback systems over the North Pacific in the transition from warm to cold seasons. Mon. Wea. Rev., 104, 1107-1121.

Namias, J., 1976b: Some statistical and synoptic characteristics associated with El Nino. J. Phys. Oceanogr, 6, 130-138.

1978

Namias, J., 1978: Multiple causes of the North American abnormal winter 1976-1977. Mon. Wea. Rev., 106, 279-295.

1979

Namias, J., 1979: Northern Hemisphere seasonal 700 mb height and anomaly charts, 1947-79, and associated North Pacific sea surface temperature anomalies. CalCOFI Atlas 27. Ed. A. Fleminger, MLR, Scripps Institution of Oceanography, La Jolla, CA 92093, June 1979, 275 pp.

1981

Namias, J., 1981: Teleconnections of 700-mb height anomalies for the Northern Hemisphere. CalCOFI Atlas No. 29, August 1981. Ed., A Fleminger, Marine Life Research Program, Scripps Institution of Oceanography, 265 pp.

1982

Douglas, A. V., D. R. Cayan and J. Namias, 1982: Large-scale changes in North Pacific and North American weather patterns in recent decades. Mon. Wea. Rev., 110, 1851-1862.

1984

Namias, J. and D. R. Cayan, 1984: El Nino: Implications for forecasting. Oceanus, 27, 41-47.

Historical articles about Jerome Namias

Anthes, R. A. and Y. -H. Kuo, 1986: The Influence of Soil Moisture on Circulations over North America on Short Time Scales. Namias Symposium, 1986. J. O. Roads, Editor, Scripps Institution of Oceanography Reference Series 86-17. 202 pp.

Cayan, D. C., 1997: Tribute to Jerome Namias: The Scripps Era. Namias Symposium on the Status and Prospects for Climate Prediction. 78th AMS annual Meeting, Phoenix, AZ.

d'Ursin, P. and Roads, J. O., 1988: Jerome Namias: The World and I, Time Magazine Publications.

Eliassen, A., 1986: A Method Pioneered by Jerome Namias: Isentropic Analysis and its Aftergrowth. Namias Symposium, 1986. J. O. Roads, Editor, Scripps Institution of Oceanography Reference Series 86-17. 202 pp.

Fultz, D. 1986: Residence Times and Other Time-Scales Associated with Norwegian Air Mass Ideas. Namias Symposium, 1986. J. O. Roads, Editor, Scripps Institution of Oceanography Reference Series 86-17. 202 pp.

Gilman, D. L., 1986: Expressing Uncertainty in Long-Range Forecasts. Namias Symposium, 1986. J. O. Roads, Editor, Scripps Institution of Oceanography Reference Series 86-17. 202 pp.

Ghil, M., 1988: Namias Symposium. J. O. Roads, Ed., 1986. Book Review. Bull. Amer. Meteor. Soc., 69, 418-419.

Haney, R. L., 1986: Some SST Anomalies I Have Known, Thanks to J. Namias. Namias Symposium, 1986. J. O. Roads, Editor, Scripps Institution of Oceanography Reference Series 86-17. 202 pp.

Hecht, A. D., 1986: Certificate of Achievement. Namias Symposium, 1986. J. O. Roads, Editor, Scripps Institution of Oceanography Reference Series 86-17. 202 pp.

Lorenz, E. N., 1986: The Index Cycle is Alive and Well. Namias Symposium, 1986. J. O. Roads, Editor, Scripps Institution of Oceanography Reference Series 86-17. 202 pp.

Newton, C., 1986: Global Circulation to Frontal Scale Implications of the Confluence Theory of the High Tropospheric Jet Stream. Namias Symposium, 1986. J. O. Roads, Editor, Scripps Institution of Oceanography Reference Series 86-17. 202 pp.

Namias, J., 1986: Autobiography. Namias Symposium, 1986. J. O. Roads, Editor, Scripps Institution of Oceanography Reference Series 86-17. 202 pp. http://repositories.cdlib.org/sio/arch/biog/namias/

Rasmusson, E., 1997: Tribute to Jerome Namias: The Pioneering Years. Namias Symposium on the Status and Prospects for Climate Prediction. 78th AMS annual Meeting, Phoenix, AZ.

Smagorinsky, J., 1986: The Long Range Eye of Jerry Namias. Namias Symposium, 1986. J. O. Roads, Editor, Scripps Institution of Oceanography Reference Series 86-17. 202 pp.

Taba, H. 1988: The Bulletin Interviews Dr. Jerome Namias, WMO Bulletin, 37, 156-169.

van Loon, H., 1986: The Characteristic of Sea Level Pressure and Sea Surface Temperature During the Development of a Warm Event in the Southern Oscillations. Namias Symposium, 1986. J. O. Roads, Editor, Scripps Institution of Oceanography Reference Series 86-17. 202 pp.

Walsh, J., 1986: Surface-Atmosphere Interactions over the Continents: The Namias Influence. Namias Symposium, 1986. J. O. Roads, Editor, Scripps Institution of Oceanography Reference Series 86-17. 202 pp.

Historical articles by Jerome Namias

Namias, J., 1968: Long-range weather forecasting: history, current status and outlook. Bull. Amer. Met. Soc., 49, 438-470.

Namias, J., 1983: The history of polar front and air mass concepts in the United States-an eyewitness account. Bull. Amer. Meteor. Soc., 64, 734-755.

Namias, J., 1984: Short period climatic variations-Collected works of J. Namias: Volumes I and II (1934 through 1974), Volume III (1975 through 1983), Volume IV (1984-1989) UCSD Press.

Footnotes

1. Namias liked to say that predicting human behavior was the most complex problem.
2. The cooperative observer was a millionaire.
3. His father was an optometrist for the immigrant New England Mill Workers and wanted Jerome to follow in his footsteps, much like his older brother.
4. Namias always liked to give a detailed exposition, to anyone who would listen, upon where the climate system had been and where it was headed, while pointing out many pertinent features on some of the many synoptic maps covering his office walls.
5. Namias may be the only member of the National Academy that never received an undergraduate degree.
6. C. Rossby and J. Bjerknes were members of this school.
7. As noted by Fultz (1986), Namias was instrumental in introducing air mass concepts to the U.S. community.
8. The aviation industry has always been highly dependent upon and a strong supporter of the national weather service. Standard products and forecasts are tailored precisely for them.
9. A number of other bad forecasts are mentioned in Namias's (1986) autobiography, including one on his honeymoon.
10. According to Lorenz (1986), the Rossby and collaborators (1939) paper may be one of the best-known meteorological papers ever published.
11. Harry Wexler would eventually go on to become Chief of Research at the National Weather Service.
12. Among the many paintings of Edith Namias is the cover of the NAS/NRC GOALS document.
13. Extended-range forecasts at 5 days are standard weather service medium-range forecast products; the weather service as well as many other groups are now making even longer range seasonal forecasts.
14. As noted in a Namias memorial talk given by van den Dool at the 22nd Annual Climate Diagnostics Workshop, this was really the first major reanalysis project. All of the major numerical weather prediction centers have since carried out major reanalyses, which now involve both model predictions as well as observations.
15. Sverdrup and Munk developed the oceanographic prediction techniques, which depended on estimates of the wind systems over much of the North Atlantic several days in advance.
16. According to Edith Namias, because men's lives were at stake, this was the most stressful period of Namias's life.
17. Many years previously, ca. 1920, the great British scientist, Richardson, had made the world's first numerical forecast and was notably wrong by many orders of magnitude.
18. According to Edith Namias, because of Rossby and all his parties, their stay was very pleasant in Sweden.
19. The AMS award for Extraordinary Scientific Achievement was later named the Rossby Research Medal.
20. Rasmusson (1998) noted that the then developing field of numerical weather prediction eclipsed empirical research for the next several decades, which ultimately resulted in a real decline in budget dollars for Namias's empirical efforts.
21. His long time collaborator Phil Clapp was also retiring at the same time and Clapp also passed away in 1997, a few weeks after Namias.
22. As noted by Cayan (1998), Namias's Collected Works (1984) contain the same number of papers before Scripps (73) and after he began work at Scripps (72).
23. Namias was among the first to describe interdecadal variability, which was later amplified by other collaborators (e.g. Dickson and Namias, 1976; Douglas et al. 1982) and is now being reinvestigated with modern coupled models and improved data sets.
24. Some of this insensitivity was probably due to the model used, which was part of the early generation of general circulation models. Other models have since shown greater sensitivity to global SSTs.
25. Not too many years ago, only information north of 20N was included in almost all weather map displays.
26. NORPAX was an outgrowth of the Scripps North Pacific Studies started earlier by John Isaacs.
27. Namias often liked to mention the time that someone came up to him after a lecture and congratulated him on following in his father's footsteps.

Short Biography

Deborah Day, Scripps Institution of Oceanography Archives

Jerome Namias never earned a bachelor's degree or doctorate, but did complete a master's degree in meteorology from the Massachusetts Institute of Technology in 1941. He was Chief of the Extended Forecast

Division of the U.S. Weather Bureau (1941-1971) before joining UCSD's Scripps Institution of Oceanography as a research meteorologist, later Head of the Climate Research Group. He is renowned for his pioneering work in extended weather forecasts and the study of air-sea interactions as they relate to the weather.

Namias secured a position at the U.S. Weather Bureau as a research assistant following his high school graduation and a few correspondence courses in the early 1930s. During this time, he met Carl-Gustaf Rossby who made it possible for him to study at MIT's graduate meteorology department, despite his lack of qualifications for admission to the Institute. In 1934, he worked as a meteorologist for TransWorld Airlines before entering the University of Michigan. Illness forced him to leave Michigan and resume correspondence courses and work at the Blue Hill Meteorological Observatory in Blue Hill, Massachusetts.

Following favorable reviews of several of his papers, Namias was invited by Rossby to join MIT's Meteorology Department as a research associate in 1936. Funding for his position was provided by the Bankhead-Jones Act to support research into the causes of the Dust Bowl.

In May 1940, Namias was sent on a one year leave of absence to direct MIT's Extended Forecast Project at the U.S. Weather Bureau, where Air Force and Navy officers attended meetings of the Forecast Group. In 1941, Namias was appointed the first Chief of the Extended Forecast Division of the U.S. Weather Bureau. During the war, Namias lectured to military personnel and university training centers, made forecasts for the military, and worked on special military-related research projects. His entire career at the Weather Bureau extended for thirty years.

After a 1958 CalCOFI (California Cooperative Fisheries Investigation) meeting sponsored by SIO, Namias began studying air-sea interaction which occupied the rest of his career. From 1968-1971 he split each year between the Weather Bureau and SIO as Research Meteorologist. Finally, in 1971 he accepted a full-time position at SIO as Head of the Climate Research Group, conducting research funded by the Office of Naval Research. He was also involved in the creation of the Experimental Climate Forecast Center at SIO, the first such center in the country.

Namias published over 200 papers, monographs, and encyclopedia articles. His work has been recognized on numerous occasions since 1938, including a citation from the Navy Secretary for forecasts in connection with invasion of North Africa in 1943; the Rockefeller Public Service Award in 1955 which he used to spend a year studying meteorology in Stockholm; the Department of Commerce Gold Medal in 1965; and the Sverdrup Gold Medal of the American Meteorological Society in 1981. In 1983, he was elected to the National Academy of Sciences. He is also a Fellow of the American Academy of Arts and Sciences.

In November 1989 Namias suffered a stroke. Although he was aware of events around him, he was partially paralyzed and was unable to speak or write thereafter; he passed away on February 10, 1997. He was survived by his wife Edith, daughter Judith Immenschuh, and grandchildren Dylan and Sionna.