Cahiers de géographie du Québec

Wahl, Eberhard W. and Lahey, James F., *A 700 mb Atlas for the Northern Hemisphere*, Madison, University of Wisconsin Press, 1969, 147 pages.

Cynthia Wilson

Volume 16, numéro 37, 1972

URI : https://id.erudit.org/iderudit/021047ar
DOI : https://doi.org/10.7202/021047ar

Aller au sommaire du numéro

Éditeur(s)

Département de géographie de l'Université Laval

ISSN

0007-9766 (imprimé)
1708-8968 (numérique)

Découvrir la revue

Citer ce compte rendu

Wilson, C. (1972). Compte rendu de [Wahl, Eberhard W. and Lahey, James F., *A 700 mb Atlas for the Northern Hemisphere*, Madison, University of Wisconsin Press, 1969, 147 pages.] *Cahiers de géographie du Québec*, *16*(37), 181–182. https://doi.org/10.7202/021047ar

theoretical models, the emphasis in all cases to be on the micro and meso-scales. On the physical side, the subject matter includes the structure of turbulence, diffusion processes, heat transfer, evaporation, air-sea interaction, the dynamic response of tall structures to the wind, valley flows, sea-breezes and urban meteorology ; on the biological side, heat, water and CO_2 transfers to and from plants, animals and human beings will be considered, with a view to revealing the fundamental mechanisms, including biological response to atmospheric stresses.

In the issue received for review (volume I, no 3, January 1971), the articles are largely theoretical in nature or based on laboratory experiments, and deal with a wide range of the physical aspects. Particularly intriguing perhaps to Geographers, as an example of interdisciplinary study, is the paper by Wigley (in Mechanical Engineering) and Brown (in Geography), in which the theory of heat and mass transfer in turbulent pipe flow is demonstrated as applicable to cave microclimate studies, mine ventilation problems and to water flow in free-flow karst aquifers. The following number contains an article by Dr. Oke (formerly of the Department of Geography, McGill University, Montréal) and Dr. East (formerly of the École de Santé Publique, Université de Montréal) on the *Urban boundary layer in Montréal* (Volume 1, no 4, pp. 411-437). This is an important contribution to the study of the climate of this city.

The physical and biological problems which are encountered in the boundary layer are complex and difficult to define and to resolve, either in theory or by measurement. The new journal does not in general make for easy reading.

Cynthia WILSON
Centre d'Études nordiques
Université Laval

NORD

WAHL, Eberhard, W. and LAHEY, James, F., **A 700 mb Atlas for the Northern Hemisphere,** Madison, University of Wisconsin Press, 1969, 147 pages.

Following the publication of their *Atlas of 5-day normal sea-level pressure charts for the Northern Hemisphere* in 1958, the same authors now offer a similar series of maps for the 700-mb pressure surface (about 10 000 ft). These charts have been prepared from data for the 15-year period 1951 to 1965 provided by the U.S. National Oceanic and Atmospheric Administration (NOAA), consisting of height values (in feet) at the intersection points of a diamond grid, with latitude and longitude spacing of 5° and 10° respectively. From January 1, the year has been divided into 73 discrete 5-day periods, for each of which 3 maps are presented ; these show : (i) the 5-day mean height pattern of the 700-mb surface ; (ii) the spatial distribution of the standard deviation of the daily values from the mean ; (iii) the pattern of height change from the 5-day mean period in question to the following pentade.

General circulation normals are most often treated by month, and this break-down into 5-day periods provides valuable, more detailed information on the behaviour of the atmosphere. The choice of 5 days is in keeping with the Extended Forecast programme in the United States, which is based on 5 and 30-day periods. By including a measure of the variability of the daily patterns around the mean, the value of the normal maps has been greatly enhanced, since the relative stability of the normal pattern within each period can be assessed. At the 700-mb level, the atmospheric flow in most areas is essentially free from the surface influence, and indicates the principal direction of steering of surface sytems. The maps showing the height change from one pentade to the next are of particular interest ; as the authors note in the introduction, at certain times the magnitude of the changes increases considerably in certain geographical areas, possibly denoting preferred times of significant changes in the patterns of the 700-mb circulation.

In using and interpreting these maps, a number of basic questions are raised. Firstly, as so whether the atmosphere can be considered to fluctuate normally about the mean, or whether the large-scale synoptic situations tend to group themselves into regimes, lasting from a few days to a week or so. Furthermore, if such regimes do exist, what is the nature of the change from one to the next ? For mid-latitudes and the Arctic, there is considerable evidence in support of persisting large-scale patterns followed by short periods of abrupt break-down and reorganization. Secondly, there is the question as to the reality of singularities. Are certain atmospheric situations related to certain specific dates on the calendar, forced perhaps by solar or terrestrial events external to the atmosphere itself. In averaging over arbitrary periods, whether of 5 days or a calendar month, it may happen that the significant large-scale patterns in time, and the changes, are being lost. The successful application of these maps in long range probability forecasting, and in the synoptic typing of weather elements, as well as their contribution to the understanding of the atmosphere, depend to a large extent on the answers.

The authors are hoping to extend the series to other atmospheric levels. Unfortunately, the previous series of maps of the surface pressure distributions are not strictly compatible with the present 700-mb charts, owing to the different periods and quality of the data employed. The surface normals were compiled from 20 years of data, from 1907 to 1913, and 1925 to 1937, in which there was little or no coverage for sub-arctic and arctic regions. In addition, there were marked secular changes in the climate in many regions of the Northern Hemisphere between these earlier years of the century and the period from 1951 to 1965.

The format of the 700-mb Atlas is much more convenient in size and lay-out than that of the earlier publication, and the maps are very clearly and attractively presented. These two publications, together with the Atlases of wind characteristics for the 500 and 300-mb levels published by the same group, offer a large and important body of information for the study of the climatology of the large-scale circulation of the atmosphere.

Cynthia WILSON
Centre d'Études nordiques
Université Laval

MINET, A., BASTIN, B. et NOEL, R., **À la découverte de la Laponie,** Jeunesse scientifique de l'enseignement catholique, Louvain, Nauwelaerts, 1969, 188 pages.

This is an account of a field work experiment undertaken by two professors and ten young school students in collaboration with the Jeunesse scientifique de l'enseignement catholique, in Belgium. The organization was founded in 1963 to interest young people in scientific research by giving them closer contact with the pure and applied sciences. The scientists, MM. Minet and Bastin, were chosen because their interests ranged over a number of fields — Geography, Geology, Climatology, Agronomy and Botany. The choice of such a distant and relatively inaccessible region, although based partly on Monsieur Minet's familiarity with the area, was influenced above all by the spirit of adventure : « Qui, dans sa jeunesse, n'a pas rêvé d'aller mettre le pied au Cap Nord, l'extrémité septentrionale du Finmark, cette province infiniment lointaine et étrangère . . . ». Packed into two small *camionnettes*, the party set out from l'Institut Saint-Joseph de Couvin and covered 10 000 km (6 200 miles) in the 6-week expedition ; three of these weeks were spent under canvas, studying the geology, periglacial geomorphology and botany of the coastal region of the Varanger Fjord and Peninsula.