Average cloudiness and departures from the normal.

Districts.	Average.	Departure from the normal.	Districts.	Average.	Departure from the normal.
New England	4.7	− 0.4	Missouri Valley	3.8	− 0.4
Middle Atlantic	4.6	− 0 3	Northern slope	4.0	+ 0.3
South Atlantic	5 8	+ 0.6	Middle slope	4.0	− 0.1
Florida Peninsula	5.3	+ 0.3	Southern slope	3.0	− 1.5
East Gulf	6.3	+ 0.9	Southern Plateau	3.3	0 0
West Gulf	3 5	− 0.6	Middle Plateau	4.0	+ 0.9
Ohio Valley and Tennessee	5.7	+ 1.1	Northern Plateau	2.8	+ 0.1
Lower Lakes	4.0	− 0.5	North Pacific	4.1	− 0 5
Upper Lakes	4.3	− 0.3	Middle Pacific	4.8	+ 1.3
North Dakota	3.3	− 1.1	South Pacific	2.9	+ 0.1
Upper Mississippi Valley	4.4	+ 0.1			

Average relative humidity and departures from the normal.

Districts.	Average.	Departure from the normal.	Districts.	Average.	Departure from the normal.
New England	75	− 5	Missouri Valley	62	− 4
Middle Atlantic	72	− 2	Northern slope	50	− 2
South Atlantic	82	+ 2	Middle slope	54	− 6
Florida Peninsula	80	0	Southern slope	50	− 9
East Gulf	82	+ 4	Southern Plateau	43	+ 5
West Gulf	72	− 2	Middle Plateau	40	+ 8
Ohio Valley and Tenenssee	76	+ 7	Northern Plateau	34	− 4
Lower Lakes	69	0	North Pacific	73	+ 8
Upper Lakes	67	− 5	Middle Pacific	60	− 6
North Dakota	58	− 8	South Pacific	64	0
Upper Mississippi Valley	66	− 2			

RIVERS AND FLOODS.

By Prof. H. C. FRANKENFIELD, in charge River and Flood Division.

It is to be expected that a season of marked deficiency in precipitation will be followed by low stages of water in the rivers affected, but in the upper Mississippi River, during the month of July, good stages can reasonably be assured from the ebb of the spring rise, supplemented by summer showers during the preceding month. During the present month, however, owing to deficient precipitation, the Mississippi River, above the mouth of the Missouri, together with some of the tributaries, was abnormally low, and at a number of places the stages were the lowest of record for the month. At Red Wing, Minn., on the Mississippi River, the stage of −0.6 foot from July 29 to 31, inclusive, was the lowest recorded stage for any month, and a low-water record of −0.8 foot was established also at Chippewa Falls, Wis., on the Wisconsin River, on July 24. Low water prevailed also at other places in the country, notably in the Snake River in Idaho and its tributaries, and in portions of the Arkansas River, between Wichita, Kans., and Tulsa, Okla. The low water in Idaho seriously interfered with placer mining and irrigation interests. That in the Arkansas River was not of consequence, except that as a matter of record it should be stated that the stages of −3.8 feet from July 26 to 31, inclusive, at Wichita, and of 1 foot from July 29 to 31, inclusive, at Tulsa, were the lowest of record.

The stages in the Missouri River, in the Mississippi below the mouth of the Missouri, and in the Ohio were seasonable.

The rivers, as a rule, were free from floods, but there were torrential rains in several localities that caused the smaller tributaries to overflow with great resulting damage, much greater, in fact, than frequently follows a severe flood in a large river, as they occurred at the height of the crop season. During the night of July 15 one of these cloudbursts occurred over northwestern Kentucky, southwestern Indiana, and southeastern Illinois, and it is reported that crops, consisting principally of tobacco in Kentucky, and property, to the combined value of at least $2,000,000 were destroyed. The White and lower Wabash rivers rose rapidly and flood stages were reached in the west fork of the White River from July 17 to 20, inclusive, but the major portion of the damage fell upon the State of Kentucky.

On July 22 a severe rainstorm visited the mining town of Bisbee in southeastern Arizona, and the torrents from the mountains resulted in the loss of several lives and caused damage to the amount of about $150,000. Another cloudburst on the morning of July 29 caused the waters of Bear Creek to overflow at Hannibal, Mo., with resulting damage of the usual character to the amount of about $75,000, and on the same day rains of a similar character in eastern Colorado did still more damage, mainly to railroads. Large sections of track were completely washed away over the territory bounded by Colorado Springs, Trinidad, Salida, and La Junta, and traffic was necessarily suspended for some time. The greater portion of the water came down the Fountain River to Pueblo.

The continuous rains of the first decade of the month over Georgia, Alabama, and Mississippi were followed by decided rises in the rivers, but not to flood stages, except in the upper Yazoo River. At Swanlake, Miss., this river was above the flood stage of 24 feet from July 19 to 31, inclusive, and crop damage to the amount of about $8,000 was reported. Warnings were issued for several of these rises, and along the Alabama River they were of great benefit as the farmers were enabled to remove their cattle from the lowland pastures to places of safety.

Hydrographs for typical points on several principal rivers are shown on Chart I. The stations selected for charting are Keokuk, St. Louis, Memphis, Vicksburg, and New Orleans, on the Mississippi; Cincinnati and Cairo, on the Ohio; Nashville, on the Cumberland; Johnsonville, on the Tennessee; Kansas City, on the Missouri; Little Rock, on the Arkansas; and Shreveport, on the Red.

SPECIAL PAPERS ON GENERAL METEOROLOGY.

RECENT ADDITIONS TO THE WEATHER BUREAU LIBRARY.

C. FITZHUGH TALMAN, Librarian.

The following have been selected from among the titles of books recently received, as representing those most likely to be useful to Weather Bureau officials in their meteorological work and studies. Anonymous publications are indicated by a ——.

Ångström, A. Knutsson.
Une simple méthode pour déterminer la radiation nocturne, proposée par K[nut] Ångström, publiée par A. Knutsson Ångström. Upsala. 6 p. f°. (Nova acta reg. soc. sci. Upsala. s. 4. v. 2. n:o 8.)

British balneological and climatological society.
Journal of balneology and climatology. v. 13, 1909–10, with indices to the 13 volumes London. 1909–10. xii, 238p. 8°.

Budig [Wilhelm Heinrich] Walter.
Die durch Niederschläge hervorgerufenen Störungen des Luftelektrischen Feldes in Potsdam. Auf Grund 4-jähriger Registrierungen mit besondere Berücksichtigung von Böen. [Berlin.] 33, xviiip. 8°. (Inaug.-Dis.-Berlin.)

Charcot, J[ean]-B[aptiste].
Rapports préliminaires sur les travaux exécutés dans l'antarctique par la mission commandée par J.-B. Charcot de 1908 à 1910. Paris. 1910. ix, 103 p. 4°. (Académie des sciences.)

Dove, Karl, & Frankenhäuser.
Deutsche Klimatik. Grundriss der Lehre von den Luftkuren... unter besonderer Berücksichtigung Deutschlands. Mit Tabellen und 4 Karten. Berlin. 1910. xii, 280p. 8°.

Ebert, H., & Kurz, K.
Registrierungen der luftelektrischen Zerstreungen in unmittelbarer Nähe des Erdbodens. München. 1909. 68p. 4°. (Abhdlgn. k. bay. Akad. Wiss., math.-phys. Kl., 25. Bd. 2. Abhdl.)

Föyn, N. J.
Das Klima von Bergen. I.—Niederschläge. Bergen. 1910. 59p. 8°. (S. A., Bergens museum aarbok, 1910.)

Grohmann, E.
Hagelfälle und Blitzschläge auf Gebäude innerhalb des Königreichs Sachsen während der Jahre 1886–1905. [2 maps.] Dresden. 1910. 16p. 4°. (S.A. Zeitschr. des k. Sächs. Statist. Landesamts. Jahrg. 1909.)

Hayhurst, Walter, & Pring, John Norman.
The examination of the atmosphere at various altitudes for oxides of nitrogen and ozone. (Reprinted from Chem. soc., trans., 1910, 97: 868–877.)

Hildebrandsson, H. Hildebrand.
Quelques recherches sur les centres d'action de l'atmosphère. IV. Sur la compensation entre les types des saisons simultanés en différentes régions de la terre. (Suite.) Upsala. 1910. 22p. f°. (Kungla Svenska vetensk. hndlgr. Bd. 45. n:o 11.)

Hildebrandt, A.
Die Lufschiffahrt nach ihrer geschichtlichen und gegenwärtigen Entwicklung. 2. Vermehrte und verbesserte Aufl. München, etc. 1910. viii, 456p. 8°.

Leiter, Herman.
Die Frage der Klimaänderung während geschichtlicher Zeit in Nord-Afrika. 1 Karte, 5 Textfiguren. Wien. 1909. [vi], 143p. 4°. (Abhandl. k. k. Geogr. Gesellsch. Wien. 8. Bd. 1909. N:o 1.)

Müller-Pouillet.
Lehrbuch der Physik und Meteorologie. 10. Aufl. herausgegeben von Leop. Pfaundler. 4. Band. 1. Abth. Braunschweig. 1909. xii, 622 p.8°.

National antarctic expedition, 1901–1904.
Album of photographs and sketches, with a portfolio of panoramic views. London. 1908. xvi, 303 p. f°.

Quayle, E. T.
On the possibility of forecasting the approximate winter rainfall for northern Victoria. Melbourne. [1910.] 8 p. f°. (Australia. Commonwealth bur. meteorol. Bul. 5.)

von Haimberger, Paul.
Beiträge zur Bestimmung der Strahlenbrechung über der Meeresfläche. Freiberg in Sachsen. 1910. 45p. 4°. (Inaug.-Diss.—Tech. Hochsch. Danzig.)

von Hermann, Charles F.
How farmers may utilize the special warnings of the Weather bureau. Washington. 1910. p.387–397. 8°. (Extr. Yearbook, U. S. Dept. agric., 1909.)

Westman, J.
Beobachtungen über die Sulitälma-Gletscher in Sommer 1908. Stockholm. 1910. 44p. f°. (Sverig. geol. undersök. afhdl...in 4°. Ser. C a. n:o 5.)

Wiechert, E. & Zöppritz, K.
Über Erdbebenwellen. I. Theoretisches über die Ausbreitung der Erdbebenwellen. II. Laufzeitkurven. n.p. [1907.] 135p. 8°. (Nachr. k. Gesell. Wiss., Göttingen, Math.-phys. Kl., 1907.)

Zöppritz, Karl, & Geiger, Ludwig.
Über Erdbebenwellen. III. Berechnung von Weg und Geschwindingkeit der Vorläufer. Die Poissonsche Konstante im Erdinnern. n.p. [1909.] 30 p. 8°. (S. A. Nachr. k. Gesell. Wiss., Göttingen, Math., phys. Kl., 1909.)

RECENT PAPERS BEARING ON METEOROLOGY AND SEISMOLOGY.

C. FITZHUGH TALMAN, Librarian.

The subjoined titles have been selected from the contents of the periodicals and serials recently received in the Library of the Weather Bureau. The titles selected are of papers or other communications bearing on meteorology or cognate branches of science. This is not a complete index of the meteorological contents of all the journals from which it has been compiled; it shows only the articles that appear to the compiler likely to be of particular interest in connection with the work of the Weather Bureau. Unsigned articles are indicated by a ——.

American journal of science. New Haven. v. 30. August, 1910.
Bigelow, Frank H. The inversion of temperature amplitudes and departures in the United States. p. 115–127.

American review of reviews. New York. v. 42. August, 1910.
——Facts and fancies concerning thunderstorms. p. 230–231.

Engineering News. New York. v. 64. August 25, 1910.
Robinson, H. F. Report of the flood on the Zuni River, September 6, 1909.

India. Meteorological department. Memoirs. Simla. v. 21, pt. 2.
Walker, Gilbert T. Correlation in seasonal variations of weather p. 24–45.

Japan. Central meteorological observatory. Bulletin. Tokio. 1910.
Okada, T., & Yoshida, Y. Pyrheliometric observations on the summit and at the base of Mount Fuji. p. 1–8. (no. 3.)
Fujihara, S. Note on the problem of ice-formation. p. 9–18. (no. 3.)
Okada, T. Some researches in the centres of action of the atmosphere in the far East. p. 1–12. (no. 4.)
Fujihara, S., & Miyazawa, T. On the linear flow of the heat in snow on the ground. p. 1–19. (no. 4.)
Tsuiji, Y. On the double diurnal variations of the velocity of wind at Nagasaki. p. 1–21. (no. 4.)

Nature. London. v. 84. August 11, 1910.
Lockyer, William J. S. Does the Indian climate change? p. 178. [Review of memoir by Walker.]

Popular science monthly. New York. v. 77. August, 1910.
Udden, J. A. Observations on the earthquake of May 26, 1909. p. 154–162.

Scientific American. New York. v. 103. August 6, 1910.
——Dew-ponds. p. 100.
——The revival of ozone studies in meteorology. p. 107.

Scottish geographical magazine. Edinburgh. v. 26. August, 1910.
Mossman, R. C. Meteorology in the Weddell quadrant during 1909. p. 407–417.

Symons's meteorological magazine. London. v. 45. August, 1910.
Gooding, H. J. Insurance against wet weather. p. 121–123.
Henkel, F. W. Comets and the weather. p. 128–131.

Aérophile. Paris. 18 année. 1910.
Lorenc, Wladimir, & Lorenc, Victor. Du rôle du vent dans l'aviation. p. 227–229. (15 juillet.)
Tanakadaté, A. Étude photographique du courant aérien produit par les hélices. p. 379–380. 15 août.)

Annales de chimie et de physique. Paris. 8 sér. Tome 20. Août 1910.
Claude, Georges. Sur la composition de l'atmosphère après le passage de la comète de Halley. p. 573–574.

Ciel et terre. Bruxelles. 31 année. Août 1910.
Mascart, Jean. Études dans la zone des alizés. p. 323–334.

Cosmos. Paris. 59 année. 6 août 1910.
Nodon, A. Le rôle de l'électricité en météorologie. p. 159–162.

France. Académie des sciences. Comptes rendus. Paris. Tome 151. 1 août 1910.
Bouty, M. E. Rapport sur un mémoire de M. Schwoerer intitulé "Sur les phénomènes thermiques de l'atmosphère. p. 362–364.

Géographie. Paris. Tome 21. 15 juin 1910.
Maillet, E. Le régime hydrologique du bassin de la Seine et les crues de janvier et février 1910. p. 409–420.

Nature. Paris. 38 année. 6 août 1910.
Coupin, H nri. Les animaux et la météorologie. p. 145–147. [Describes e periments on the effects of weather on caterpillars, beetles, etc., and their ability to forecast weather changes. Illustrated.]

Annalen der Hydrographie und maritimen Meteorologie. Berlin. 38. Jahrgang. August 1910.
Peterson, Johannes. Unperiodische Temperaturschwankungen im Golfstrom und deren Beziehung zu der Luftdruckverteilung. p. 397–417.

Aus dem Archiv der deutschen Seewarte. Hamburg. 33. Jahrgang. 1910.
Kremer, Eduard. Die unperiodischen Schwankungen der Niederschläge und die Hungersnote in Deutsch-Ost-Afrika. p. 1–64. (No. 1.) [Includes collected rainfall data for 39 stations.]
Semmelhack, Wilhelm. Beiträge zur Klimatologie von Nordspanien und Portugal. 1. Teil: Die Niederschlagsverhältnisse. p. 1–82. (No. 2.)

Meteorologische Zeitschrift. Braunschweig. Band 27. Juli 1910.
Maurer, Julius. Einige Ergebnisse aus Schneemessungen in den schweizer Hochalpen und ihre Beziehungen zu den Schwankungen der Firnlinie. p. 289–301.
Trabert, Wilhelm. Der Zusammenhang zwischen Luftdruck- und Temperaturverhältnissen. p. 301–307.
Kerner, Fritz von. Versuch einer indirekten Schätzung des Gesamtniederschlages auf der Nordhalbkugel. p. 307–313.
Riegel, Alexander. Der Benndorfsche Potentialregistrator während des Kometendurchganges am 18. und 19. Mai 1910 zu Kalocsa, Raynald-Observatorium. p. 313–314.
Kesslitz, W[ilhelm] von. Luftelektrische und erdmagnetische Beobachtungen am Hydrographischen Amte in Pola während der Passage des Halleyschen Kometen. p. 316–318.
——Windverhältnisse von Han-kow, China. p. 331.

Mitteilungen aus den deutschen Schutzgebieten. Berlin. 23. Band. 1910.
Sieglerschmidt, R. Das Klima der Nieder-Guinea-Küste und ihres Hinterlandes. p. 1–43. (1. Heft.)
——Ergebnisse der Regenmessungen in Togo im Jahre 1909. p. 68–71.

Petermanns Mitteilungen. Gotha. 56. Jahrgang. 1910.
Hedin, Sven von. Die wissenschaftliche Ergebnisse meiner Reise in Tibet 1906–08. III. Meteorologische Beobachtungen. p. 5. [Preliminary account of the climate by Nils Ekholm.]
Rudolph, Emil. Einrichtung eines Erdbebenbeobachtungsdienstes in Chile und Argentina. p. 14–15.
Dove, [Karl]. La città e il clima di Addis Abeba. p. 45–46. [Abstract of memoir by L. de Castro.]

Prometheus. Berlin. Jahrgang 21. August 17, 1910.
Eckhardt, Wilh. R. Eigentümlichkeiten der geologischen Klimate, insbesondere des Paläozoikums. p. 740–744.