Bibliography

1. River Floods and Melting Snow

By Charles A. Mixer, Civ. Eng., Rumford Falls, Me,

Apr. 25, 1903. MWR 31.4. (Apr. 1903) p. 173 ff

Cuts cores with cylinder. ~~Melts? then~~.

Charts of precip., temp. + run-off

Notes parallelism between temp. and run-off charts.

2. Snowfalls, Freshets, and the Winter Flow of Streams in the State of New York,

By Robert E. Horton, Hydrographer, U.S. G.S. Utica, N.Y., Apr. 18, 1905.

MWR 33.5 (May 1905) ~~p. 196 ff~~ pp. 196-202,

Table of Depth and Water Ratio of Old Snow Cover and Fresh Snow Cover

Potsdam, Prussia 1896 and 1897

\# (Water Equiv. of Snow in New England 1903-4 by N. C. Grover.

Similar Table at Utica, N.Y. by Robert E. Horton " 1903-05.

Max. depth approx. 2 feet.

Winter and Spring run-off bear no relation to contemporary precipitation

"measured run-off during winter season nearly equals and sometimes for several months exceeds the measured precipitation at nearby stations"

"The ground-water level is nearly

always drawn down considerably in the course of a long, cold winter".

[This may account for continued run in winter in Tahoe basin. But does not freezing reduce such flow?].

3- Sur la couverture de neige de la Suède centrale et septentrionale

par J. Westman. March 14, 1906.
Archiv för ~~Matematik~~, astronomi och Fysik Band 3 No. 3.

Place lat. long. Exact location Altitude Slope Inclination and Face. Exposure No. of Meas.

Meas. made 1903-05

Depth only. yet many data after snow had settled and sinking = melting.

Temp. of ground at various (snow) depths (under snow)

Increasing thickness of snow by Condensation

Variation in depth in 24 hours, etc.

" " " at various Altitudes

Specific density of snow.

* Mean disappearance of depth of snow drifts in 24 hours at different altitudes

Comparison of variations in depth of the snow covering and insolation and mean temperature of the air

Difference between measured and computed melting. Min. — 0.5 Max. — 2.9.

Max. rate of melting in July 18.8 cm.

Relative Density of Snow at Vassijaure.
July 8 and 13, 1905.

✕ Max. density of snow attained long after melting has begun.

Max. density found during measurements 0,656.

In packed drifts 0,489 March ~~21~~, 1902 at Upsala, and 0.530 July 3 at Treuenberg.

Appendix of 12 tables.

4. Quelques recherches sur la couverture de neige. par M. Jansson et J. Westman.

Reprinted from Bull. of the Geol. Instit. of Upsala No. 10, Vol. V, Part 2, 1901.

Depth of a Snow Covering.

Month.	Date at Midday	Variations in Preced. 24 Hrs	Temp. of Air	Strength of Wind met. per sec.

Quelques recherches sur la couverture de neige
par M. Jansson et J. Westman (Cont.)
-1901-

Tables -

~~Settling~~ Depth of the snow cover.

~~Snow~~ Variations in depth with mm of precipitation, ~~specif.~~ relative density, etc., temp. + winds

Temperature de la couverture de neige.

at depths of 5, 10, 15, + 20 cm below surface.
Tubes in contact with snow.
Air for soil temperature.

Temp. taken at midday.
To depth of 8 in. rise + fall occurs in response to changes in air in temp.

Table of variation between surface of snow and ~~a~~ air.

Max. diff. +8.6° in Feb. and
+7.7 in April + March.

Max + min. differences due primarily to ~~has~~ cloudiness and radiation.

Rel. humid. Jan + Feb. 90%

at a depth of 20 cm the temp of soil is always positive. At depth of 10 cm the temp was below 0° only three times

Relative Density.

Cylinder 5.75 cm in diam.
19.7 " in height.

512 cub. cms.

Density computed from weight and
known volume of cylinder.
Each density is mean of two separate
measurements.
Max. depth 30 cm. Max density 0.372.
on April 5.

Varied from 0.209 Jan. 5, 1902 to
0.380 Apr. 5, 1902.

Density of newly fallen snow

Snow fell at −3°. Six hours
after the fall depth was 8 in.
Density .0907, .0878, + .0881, Mean .0889.
After 24 hrs mean dens. of ~~3~~ meas.
was .1489.

Damp snow .161.
With low temp. dens. as low as .038.

Density under Strong Wind —

1902
Feb. 16 — violent wind max. strength 10.9 met. per sec
made compact drifts.
Feb. 17 the drift composed of an
amorphic mass of very fine grains
Dens. .3732 + .3847

But after thaw of Feb. 28 - March 1, changed rapidly. Grains appeared large. + stuck together in a great mass. Dens. also greater than that of prev. fine grains, becoming .3917 + .3937

New Snow a poor Conductor of Heat.

1.12° per cm. For density .063, the coefficient of conductability is 0°.00017.

* Value of coeffic. for air is 0.00005, for ice 0.00568

Table showing "Diathermanité" of snow, i.e. the penetration of heat and its activity on opaque substances under the snow.

Influence of Condensation + Evaporation on the depth of a Snow Covering.

White cuvettes 15.5 × 22 cm²

Test Feb. 18-26. Mean Evap. 3 cuvettes buried in snow -0.03 mm.

Mean of hanging pan -0.19

Rel. Humidity 92.3 - 99.0. But no precip.

Combined condensation and evap. do not exceed 0.1 mm in 24 hrs (i.e. .004 in)

Note sur la condensation et l'évaporation qui se produisent à la surface d'une Couche de neige. Par Bruno Rolf.

March 11, 1914.

Experiments made 1905-06

Arkiv för Matematik, Astronomi och Fysik

Band 9. No. 35. Reprinted.

Humidity a factor of decisive importance in evaporations

4 dishes "cuvettes"

615-626 cm^2 in surface

3.3 - 3.4 cm deep.

2030 - 2091 cm^3 capacity.

Read every 24 hrs in winter and 12, 6, 3 or even 2 in spring.

Dec. 10, 1905 - July 25, 1906. W

~~Hence~~

~~Storms of winter & heat of (spring)~~ éte

distort results; latter by excessive evaporations. Consequently but few usable measurements.

.1 mm.

$\frac{1}{10\,000}$

.0040

10 000) 40.000 | .004
40 000

When surface of pan presented more than (plus de son cinquième d'eau liquide), the weighing was rejected. Also discordant measurements between pans were rejected.

Total water condensed (+) or evaporated (—) from a snow covering 1905–1906 at Vassijaure, (Swedish Lapland).

A Constant based on superficial temp. of snow and temp. of air.

	1905			1906				
	Oct. mm	Nov. mm	Dec. mm	Jan. mm	Feb. mm	Mar. mm	Apr. mm	May mm
0°.0	−6.0	−3.6	−5.5	−3.5	−2.5	−2.9	−8.7	−8.2
1.0	−2.8	−0.8	−2.6	−0.7	−0.9	−1.1	−6.0	−5.8
2.0	+0.2	+1.5	+0.2	+1.7	+0.7	+0.5	−3.4	−3.4
3.0	+3.0	+3.5	+3.0	+4.0	+2.2	+2.0	−0.7	−0.9
3.5	+4.3	+4.5	+4.4	+5.2	+2.9	+2.7	+0.8	+0.6
4.0	+5.6	+5.6	+5.7	+6.3	+3.6	+3.4	+2.3	+2.2

"our phenomenon has had an insignificant influence on the quantity of water (emmagas

Suggestion by author: To avoid effects of heat, make pans deeper (at least 10 cm). and of material more transparent to (rayonnement) than zinc, ~~Freq~~ Weighings less frequent, for balance employed is not sensitive enough

Desirable to determine vapor tension of air and superficial temperature of snow cover. With this one could analyze the influence of the wind and the temperature, ainsi que des facteurs plus importants: les configurations des amoncellements de neige et la nature et l'etat du sol nu.

J. Westman, Beobachtungen über den Wasseraustausch, etc.

Einleitung:-

Während der Zeit der Abschmelzung der Schneedecke im Frühling erwies sich die Verdunstung von der Schneedecke her als grösser, schien aber doch nicht im Mittel für niederschlagsfreie Periode 0.3 mm (Wasser) während 24 Stunden zu übersteigen. Während vereinzelter Tage konnte die Verdunstung bis zu 0.5 mm betragen. Die Kondensation machte sich während dieser Periode nur ausnahmsweise bemerkbar. Der Platz für diese Messungen lag 25 m über dem Meere.