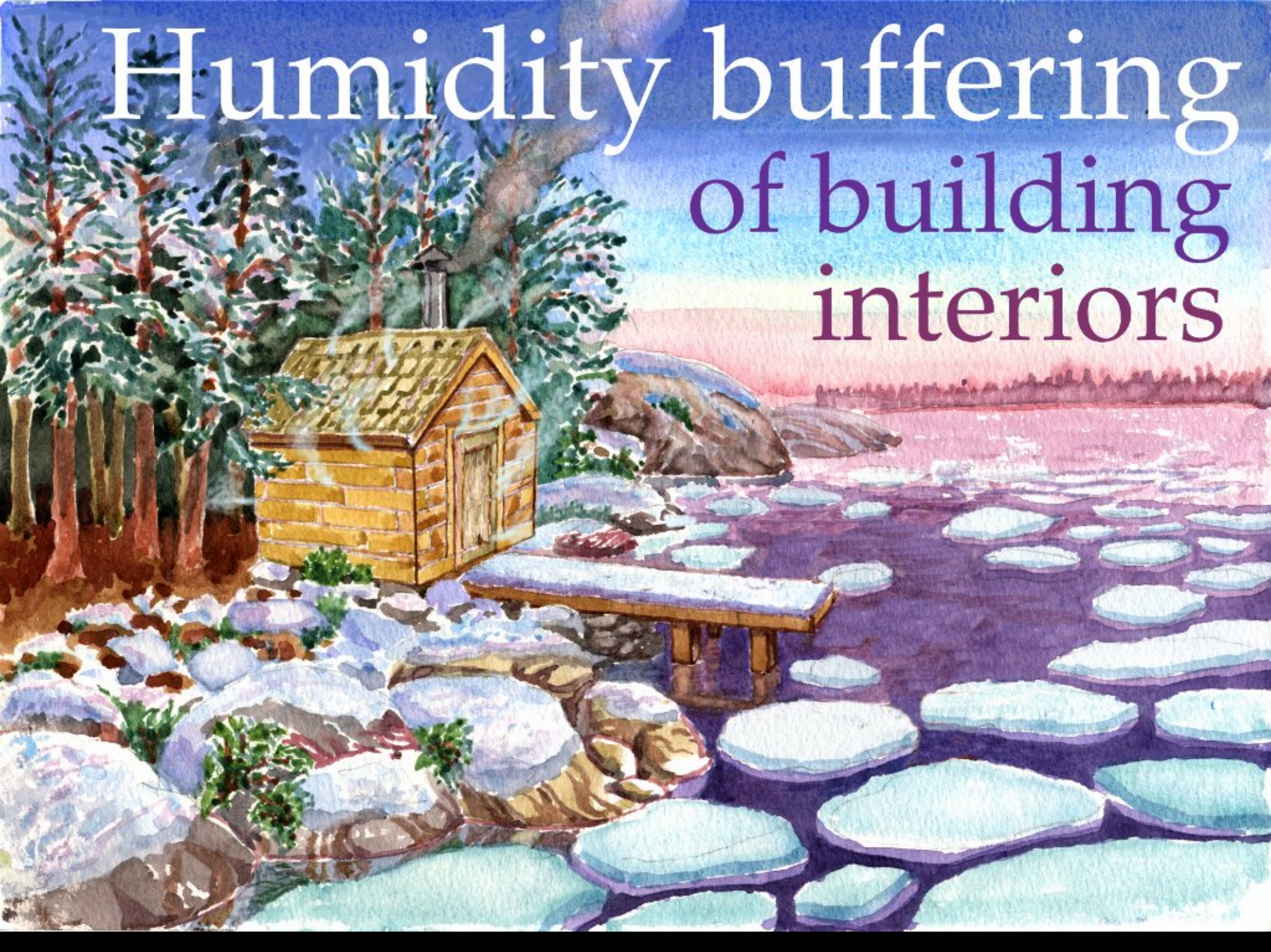


Humidity buffering of building interiors



A watercolor illustration of a cabin by a lake. The cabin is made of log wood with a gabled roof and a chimney. Smoke is rising from the chimney. The cabin is surrounded by trees and rocks. In the foreground, there is a wooden platform with a table. Two people are swimming in the lake. The sky is blue and the water is blue. The overall scene is peaceful and scenic.

Humidity buffering of building interiors

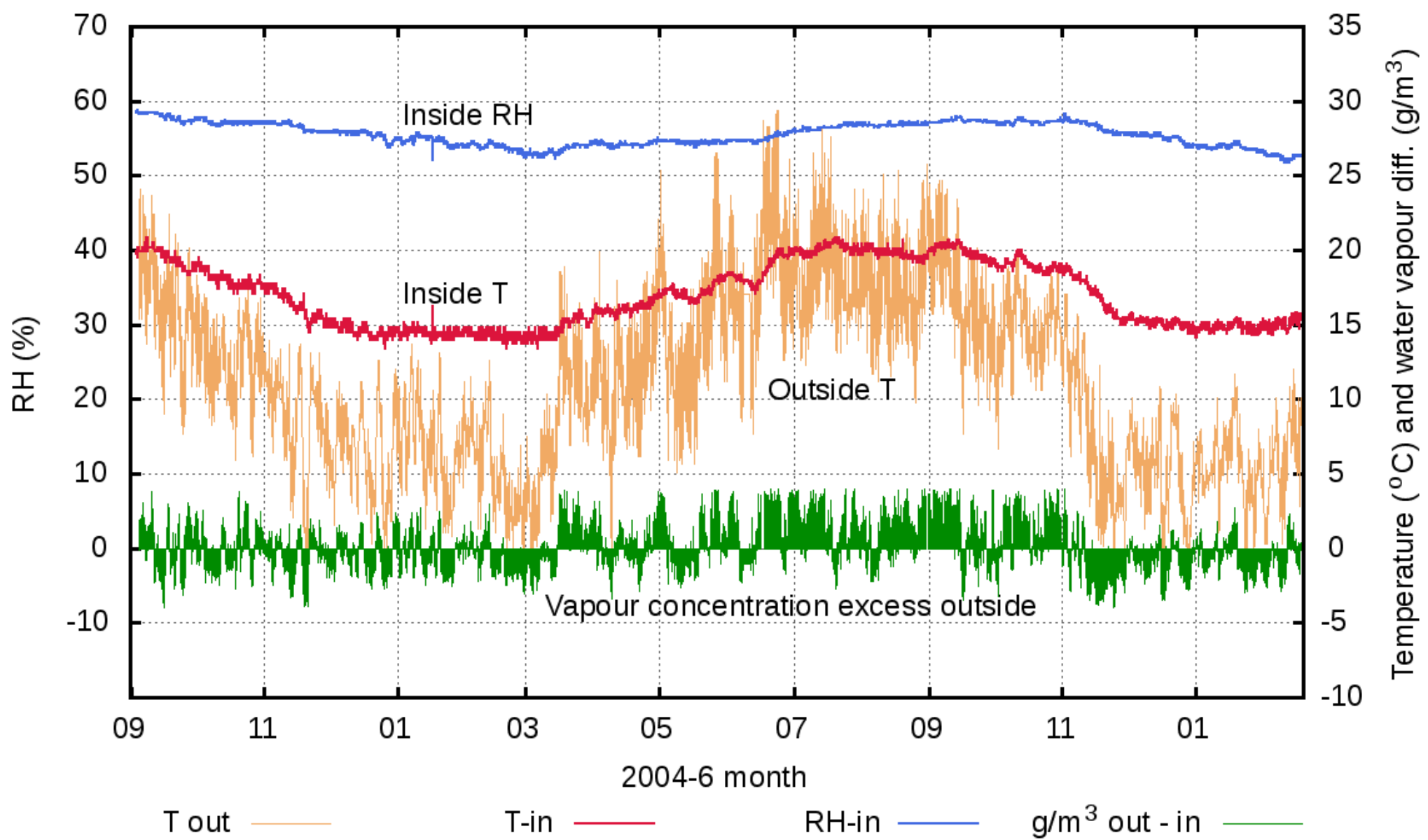
Tim
Padfield
Lars
Aasbjerg
Jensen



Already in 1934, engineer MacIntyre published the concept of humidity buffering a museum gallery



The Suffolk Record Office, Ipswich, UK
The climate is controlled by winter heating alone



The climate within the Suffolk Record Office. The green trace shows the imbalance in water vapour concentration inside and out

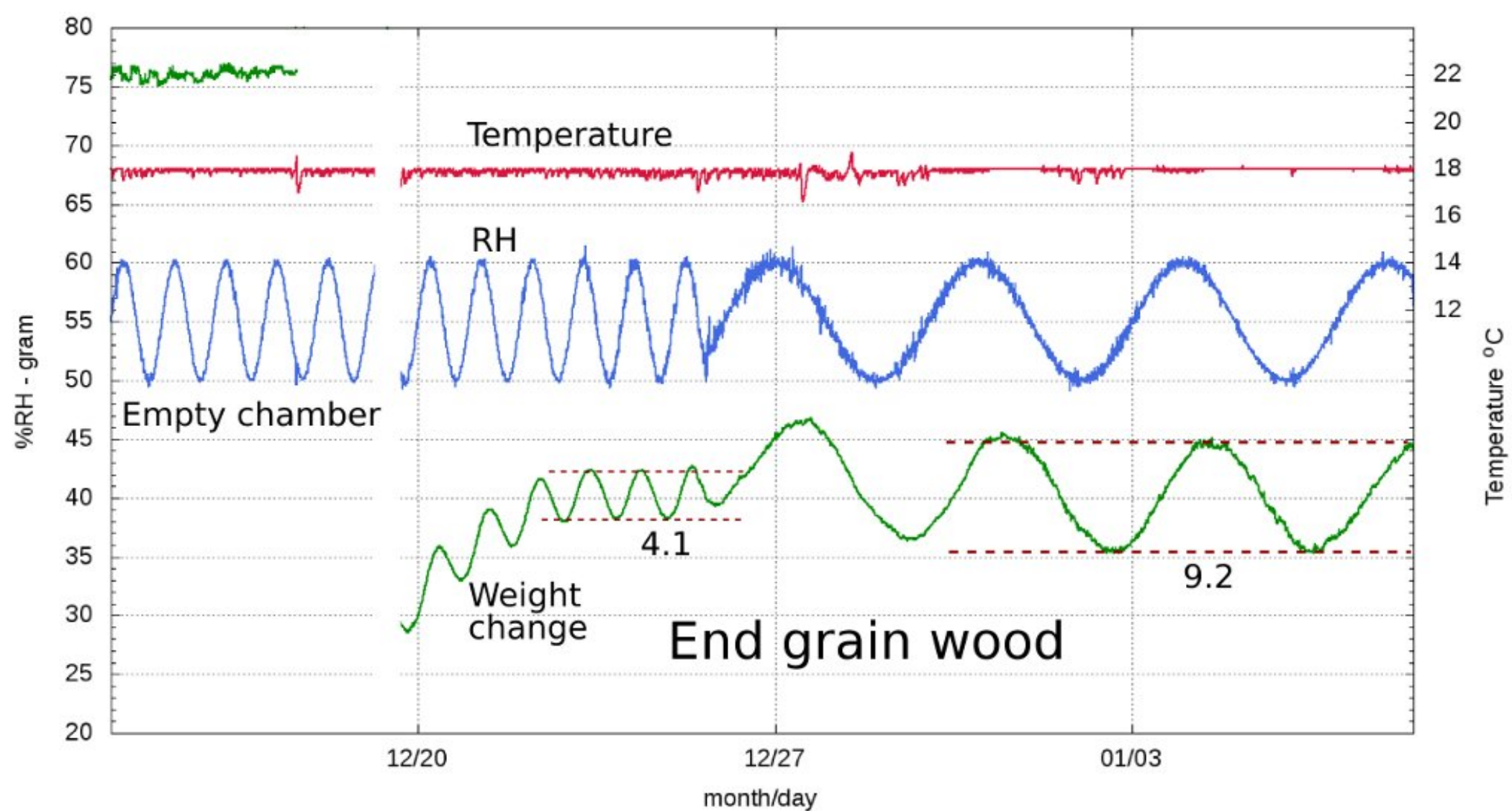


The record office is full of paper. Can one stabilise the RH in a sparsely furnished space?

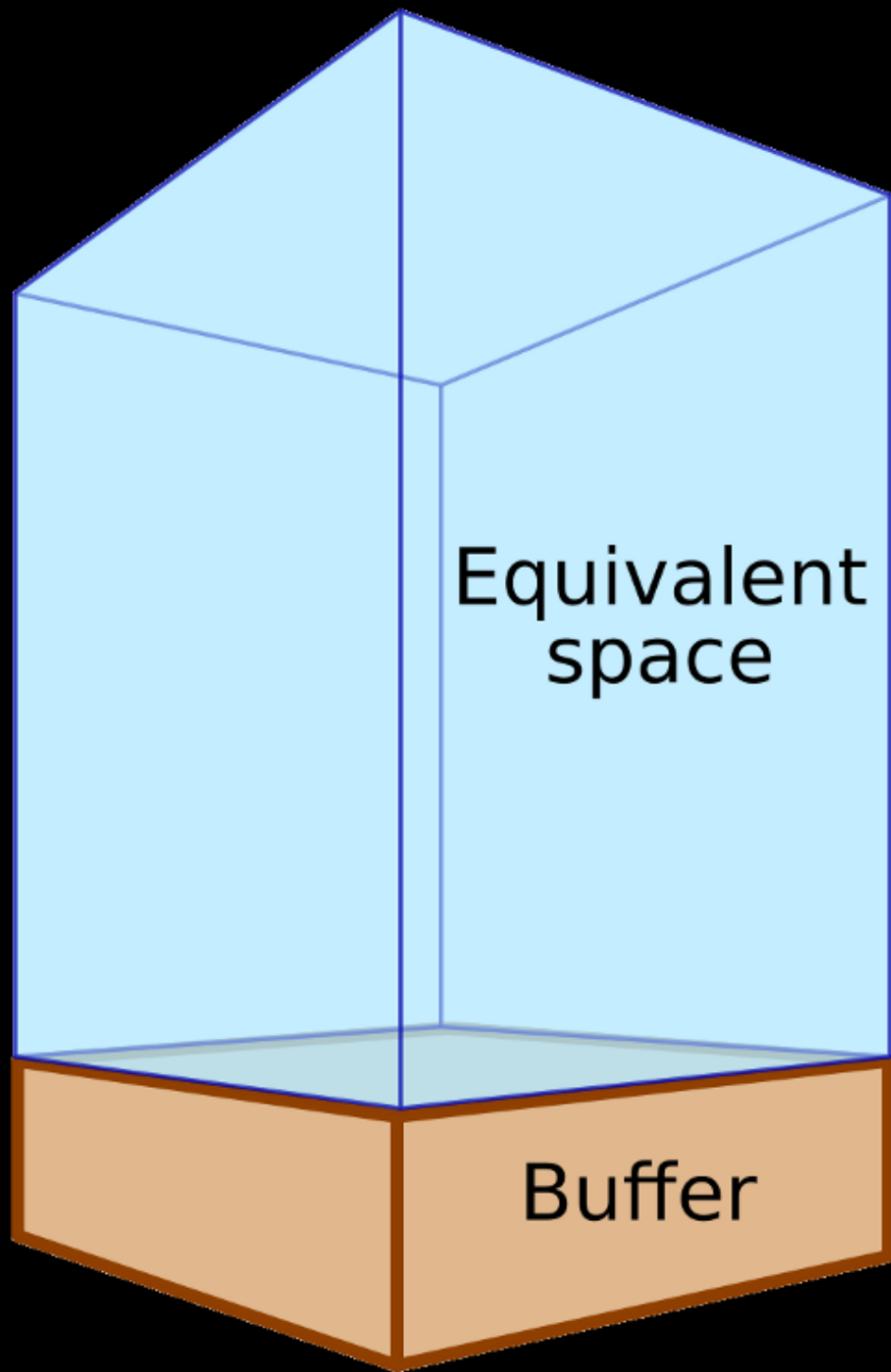
(Sharpham House, Devon UK)



The experimental apparatus. Unfired perforated brick is exposed in an airtight chamber to a fluctuating RH

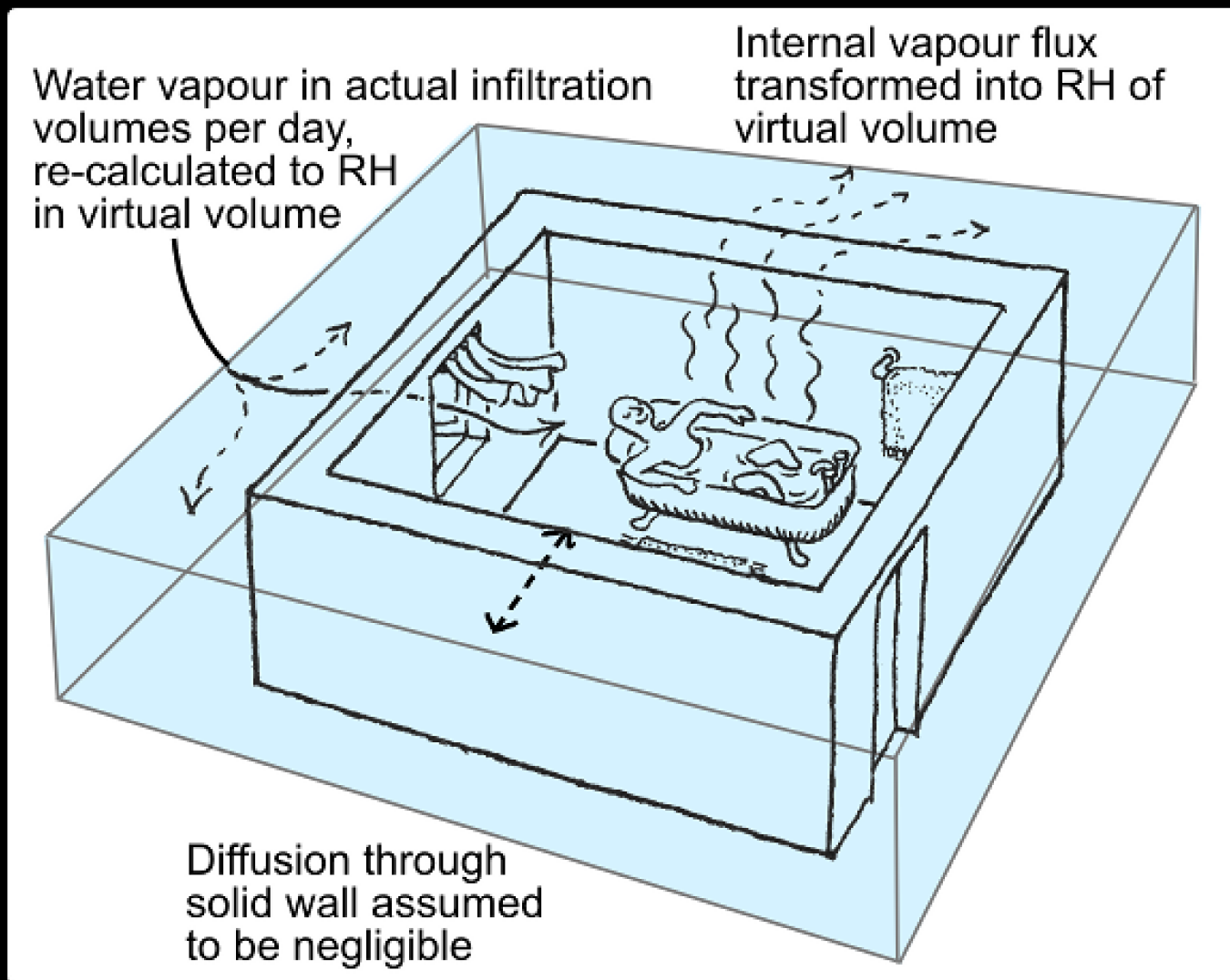


An example of the raw data format: the water exchanged in grams as the RH fluctuates between 50% and 60%



The weight change is converted into the volume of air which will accept the same weight of water as the specimen for the same rise in RH

This is the **B-value**, expressed as metres above a flat surface of one square metre



The sum of all B-values, converted to volume, becomes a virtual volume for the room which is used to calculate the effect on the interior climate of all moisture fluxes



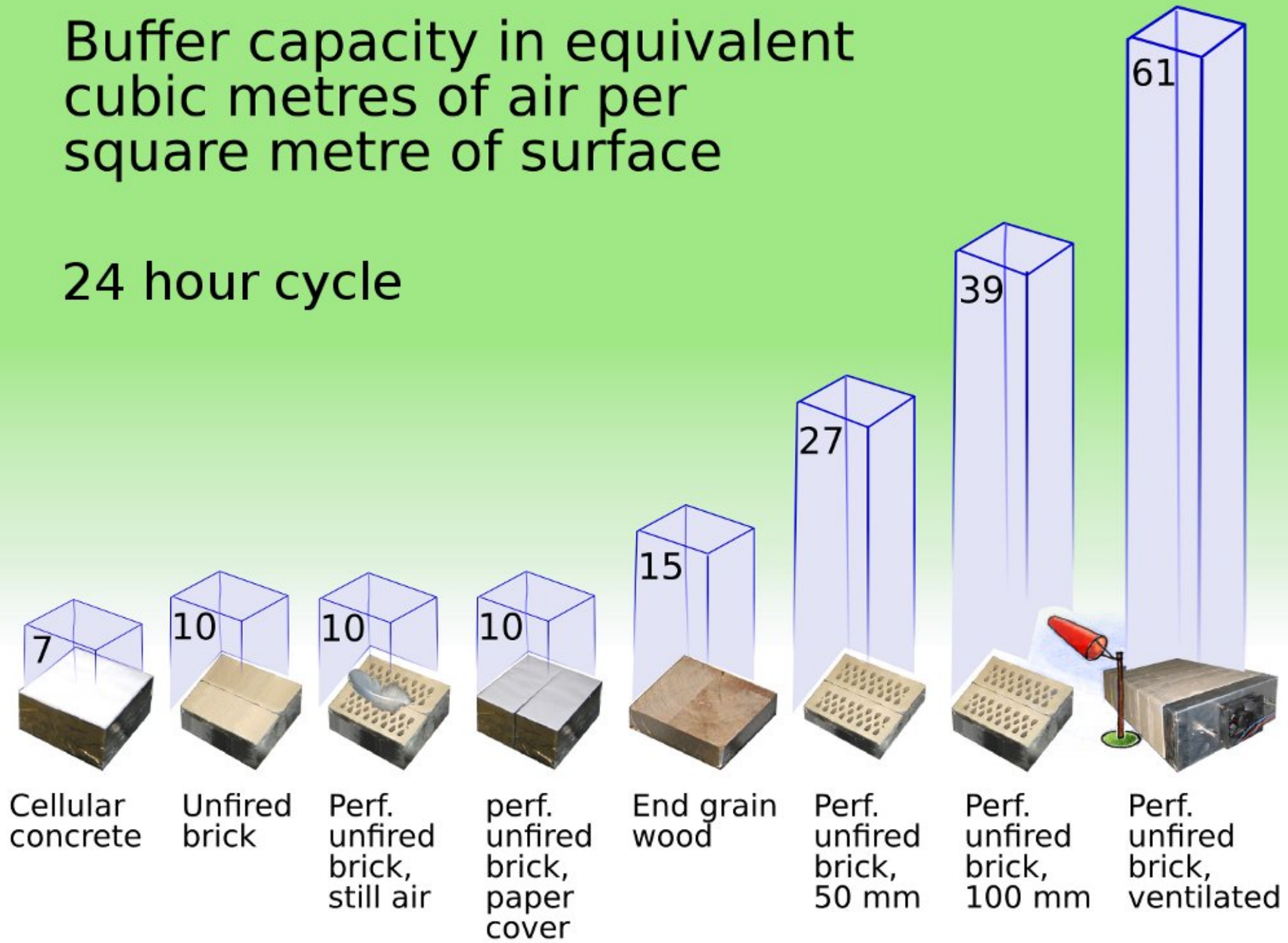
For rooms with absorbent furniture and waistcoats, a ventilation test is followed by...

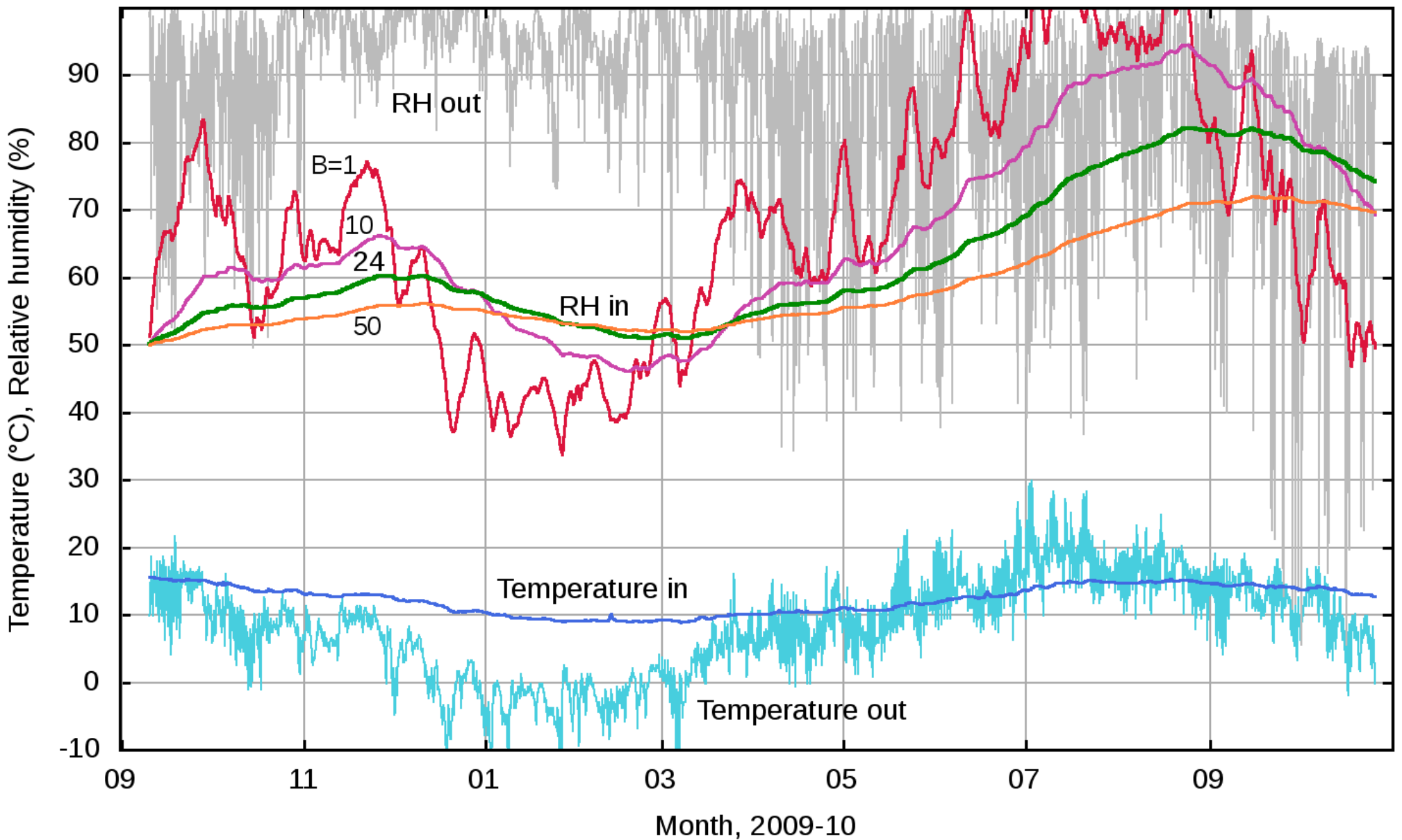


... a steam test to find the B-value

Buffer capacity in equivalent cubic metres of air per square metre of surface

24 hour cycle





The effect of varying B-value on the projected rate of change of RH in an empty store room lined with perforated unfired brick. Air exchange rate 0.03/hr

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Lars

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