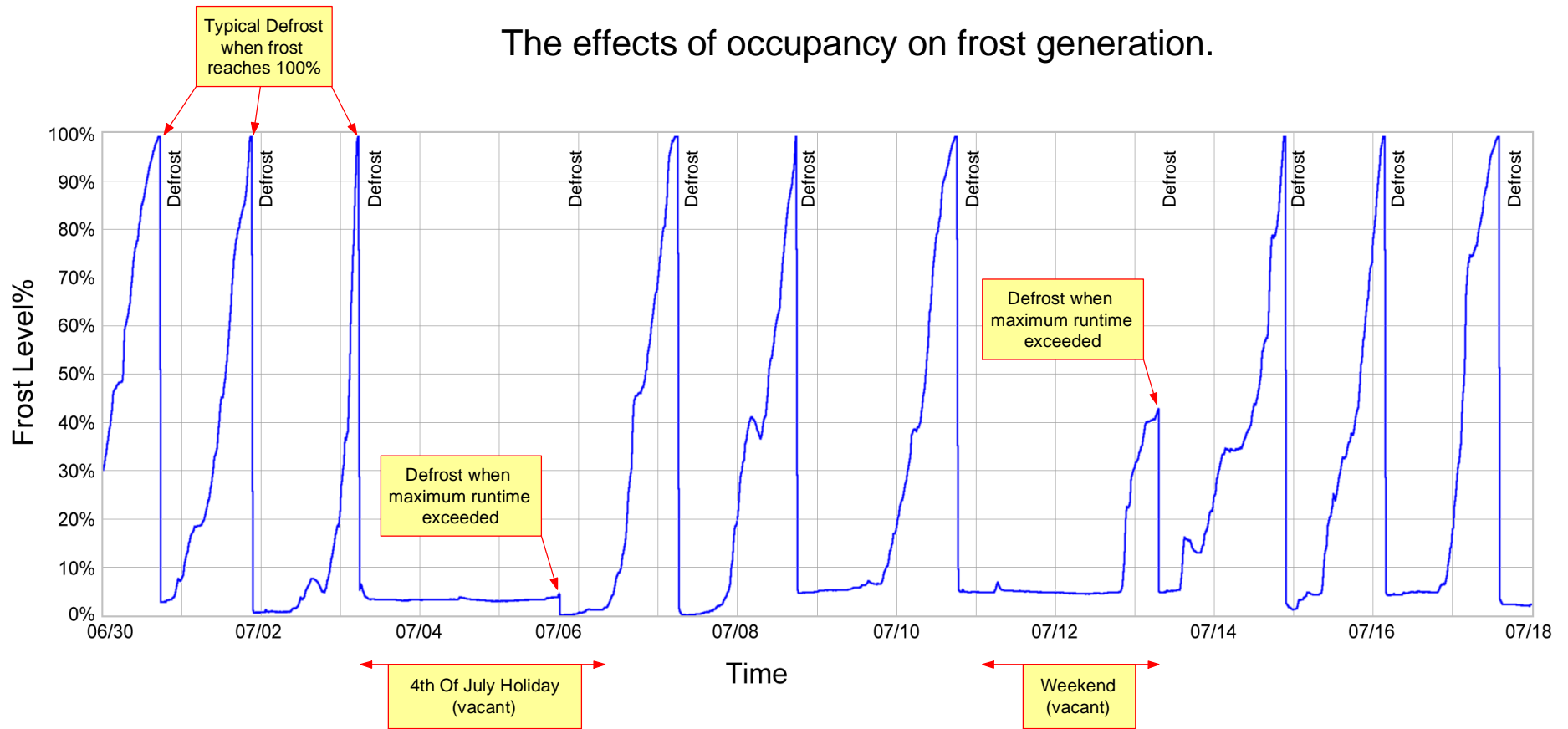


IntelliFrost - The Logix® Automatic Defrost System - Patent Pending

The effects of occupancy on frost generation.

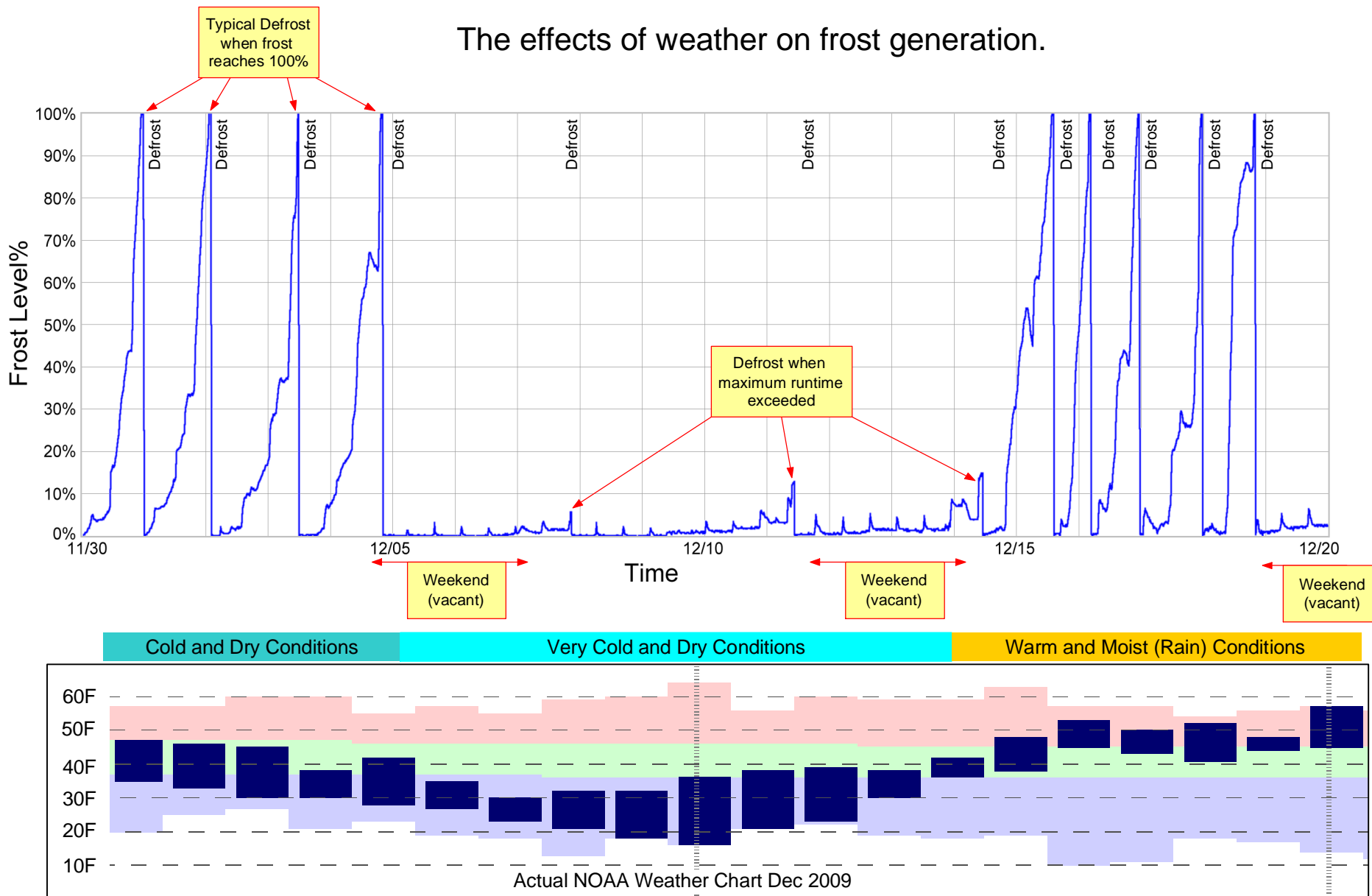


The IntelliFrost system directly measures frost accumulation and initiates a defrost sequence when the frost level reaches a user-defined 100% level. Optionally, a defrost sequence may initiate when a maximum air-unit cooling runtime is exceeded.

In the above chart showing frost measurement in a warehouse air unit, the effects of occupancy on frost generation can be observed. At this facility there is no activity during weekends or holidays, greatly minimizing the frost-forming moisture infiltration that occurs when warehouse doors are open. Prior to the installation of the IntelliFrost system, defrosts were initiated every 8 hours. After installation of the IntelliFrost system, defrost frequency was reduced from six times to once per weekend, reducing defrost load by 23%.

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The effects of weather on frost generation.



In the plot above, the effect of outside ambient conditions on frost generation can be observed. The subject facility is located in the greater Seattle area. During Nov 30th, 2009 through Dec 5th, the weather was dry and had a cooling trend. This slowed frost accumulation as can be seen by the increasing time between defrosts. Starting on Dec 5th, the temperature dropped significantly. That combined with an unoccupied weekend saw very little frost generation. Begin Dec 10th, the outside temperature slowly climbed. Small increasing amounts of frost were generated until Dec 15th. On Dec 15th the outside temperature rose significantly and it began to rain. This weather event had pronounced effects on frost generation. Also note the shorter time between defrosts as compared to the beginning of the month.