Classroom Temperature Sensors and Data Logging Software

WiFi Temp and Humidity Sensors

- Thermoworks Easylog temperature and humidity sensors were purchased and placed in all classrooms

- Installation complete and data started being logged just before classes started

- Outdoor weather stations are planned for installation too in spring

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Sensor Capabilities

- Stores up to 500,000 samples locally
  - Sampling currently time set at 1 min

- Communicates via WiFi for programming and download of data
  - One server PC at each school

- Alarms for max/min temperatures
  - Currently set up to notify staff if alarm is tripped
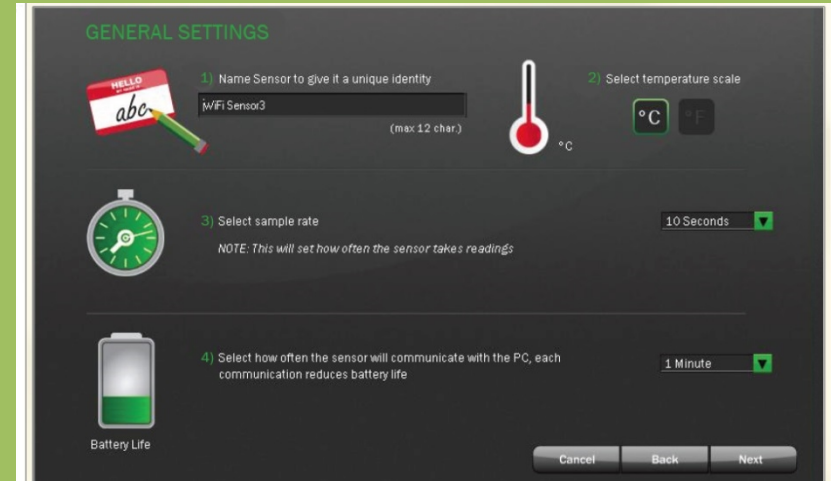
Analysis Software

- Select data over any range and plot
- Find data above or below a desired quantity
- Export data to text file or Excel spreadsheet

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Example Data

- Plots from 8/4 to 8/8 and 9/1 to 9/5

- Similar outdoor temp and humidity profile for both days with peak temperatures in high 80s and peak humidity in the 90% range.

- A/C Off for 8/4 to 8/8 and on 9/1 to 9/5

Hatch 307 A/C Off

Hatch 307 A/C On

Beye 300 Classroom, A/C Off

Beye 300 Classroom, A/C On

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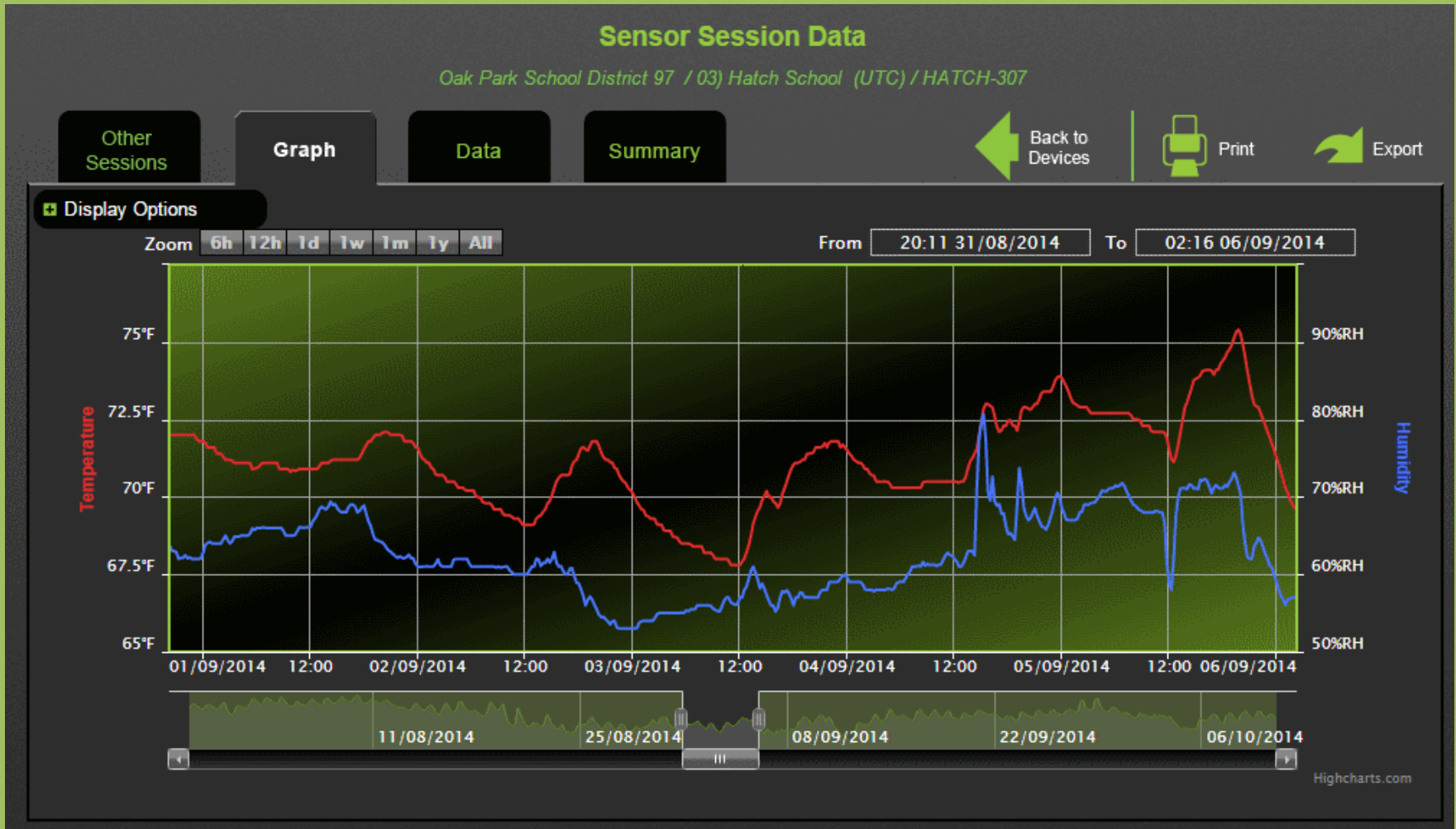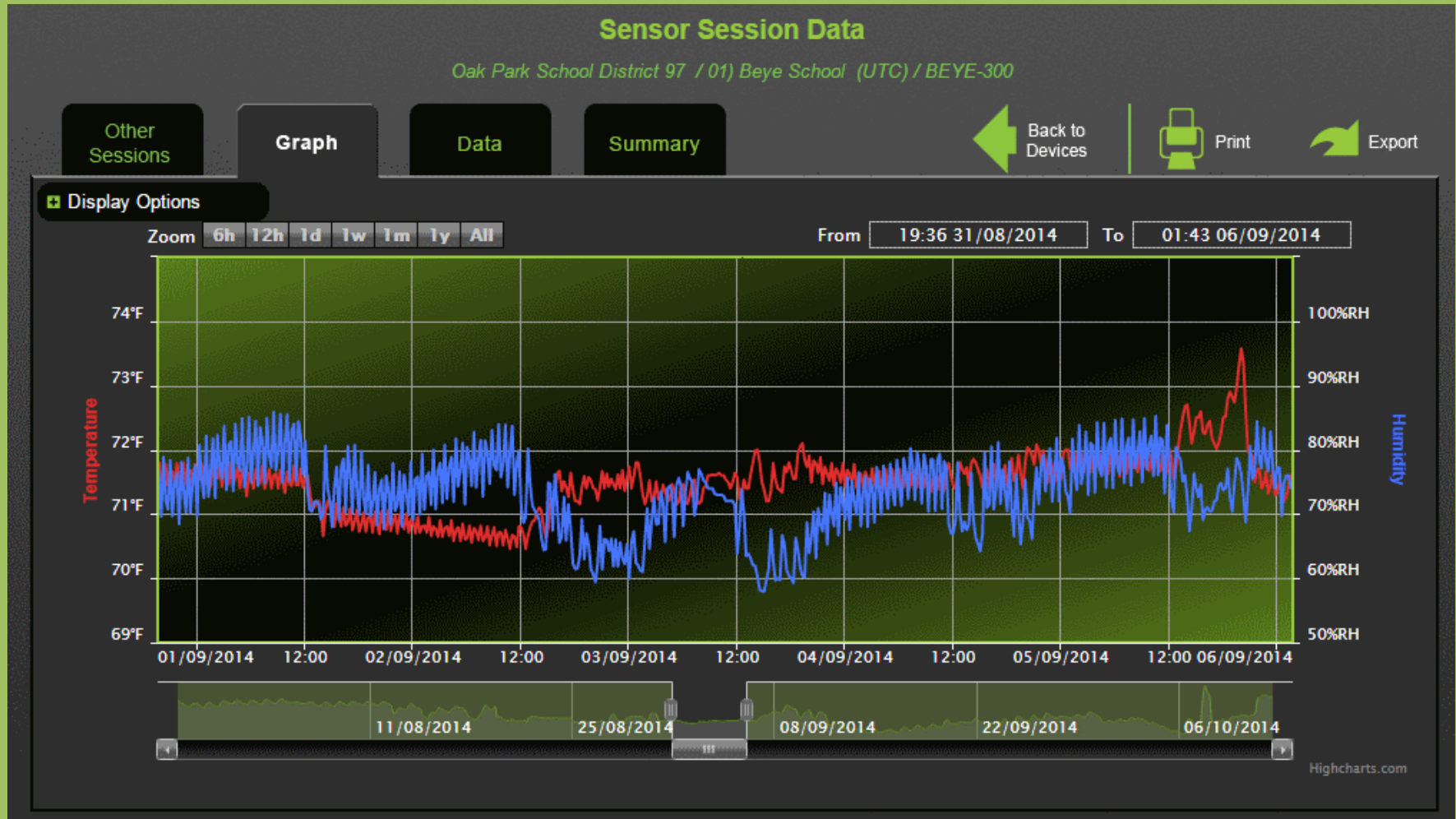
Possible Analysis of Data

- Identify faulty HVAC equipment/settings

- Determine hottest/coldest classrooms in each building

- Study patterns of hot and cold with season and class usage

- Compute Thermal Comfort / Heat Index from temp and humidity data

Questions?

FAQ

- Where are new sensors installed?
  - New sensors have been installed in classrooms only.
- When an alarm "trips" who is notified
  - Norm is notified via an email and text
- When are outdoor sensors anticipated to be installed
  - Norm is talking with installers. There are problems with wireless connectivity to outside so installation is not imminent and installation is not expected until for several months at least
- How long is the expected interval between system identifying over heating/cooling and staff intervention
  - During school hours, within a couple hours.   Out of school hours, by start of next school day.

FAQ

- At what point/level is variation between classrooms considered as needing remedy/intervention
  - This is TBD.   Norm is alerted to problems in individual classrooms but a maximum allowable variation between classrooms is a policy that that the board should set.
  - The board should also develop a policy for intervention for individual classrooms as well rather than just leave that to Norm
- How often is data to be analyzed and by whom?
  - This is TBD.   Norm is alerted to problems but other analysis will require hiring the district architect or a consultant to analyze the data.
  - One thing the board needs to decide is what sorts of analysis are desired in order to determine who can analyze and get quotes for this service

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