Exploring Long-Range Data

Goals:

- Use graphs of long-range data to explore temperature and/or precipitation trends for a city in the US. Note that data for Phoenix, AZ and Marshalltown, IA is available on the website (Marshalltown plots are attached to this lesson plan). However, this should work for any location you have access to the data.
- Develop analytical skills
- Begin exploring the difference between weather and climate

Materials Needed:

- Printed copies of the Temp Graphs, created with data provided by NOAA. Enough for each group to have 1 decade each.

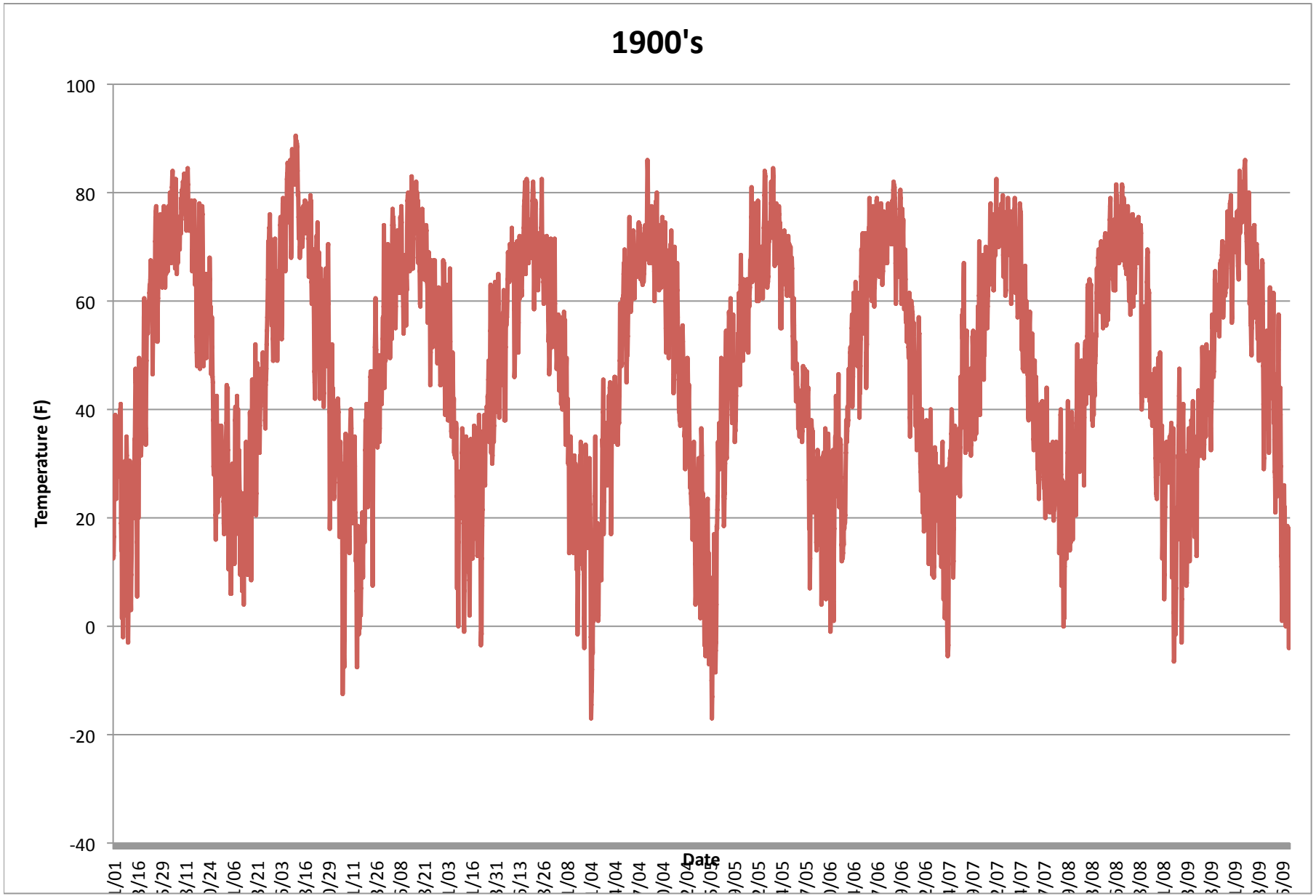
Instructions:

1. Divide groups into 2-3 students each.
2. Provide each group one graph. So that several groups are looking at different decades.
3. Have the students discuss in their groups what they notice about their graph.
    a. During this process, answer any questions they have about what the lines mean and what the y-axis means
    b. Note: this is a brainstorming session. Allow the students to generate a long list of whatever details they notice.
4. Reconvene as a large group and have groups share what they noticed. Do any groups notice different things?
5. Have the students arrange all their plots in order on an empty wall or along the floor or long table.
6. Ask the students to look at all the plots as a long line of data. In their small groups, have students discuss what they notice about all the graphs put together.
    a. Be sure to focus on comparing differences between all the decades
7. Reconvene as a large group and have students share what they noticed.
    a. Can they come up with consensus as to what interesting trends they noticed across all the decades?

Climate vs. Weather discussion:
Using graphs with this much data is an excellent time to discuss the difference between weather and climate.

1. Ask the students: What part of the plots can be considered weather? What part of the plots can be considered climate?
    a. The most basic answer to this question is that each individual plot on the graphs is weather, and all of them combined are climate.
    b. However, it can become a philosophical discussion when you ask the students how many points are needed before weather can be considered climate: is it 2? 4? 100?
    c. Can the students come up with consensus about how to define it?

In reality, we get to define climate however we want. NOAA chose to define it as: "The average of weather over at least a 30-year period." However, NOAA also notes within the definition that, "The climate taken over different periods of time (30 years, 1000 years) may be different. The old saying is climate is what we expect and weather is what we get."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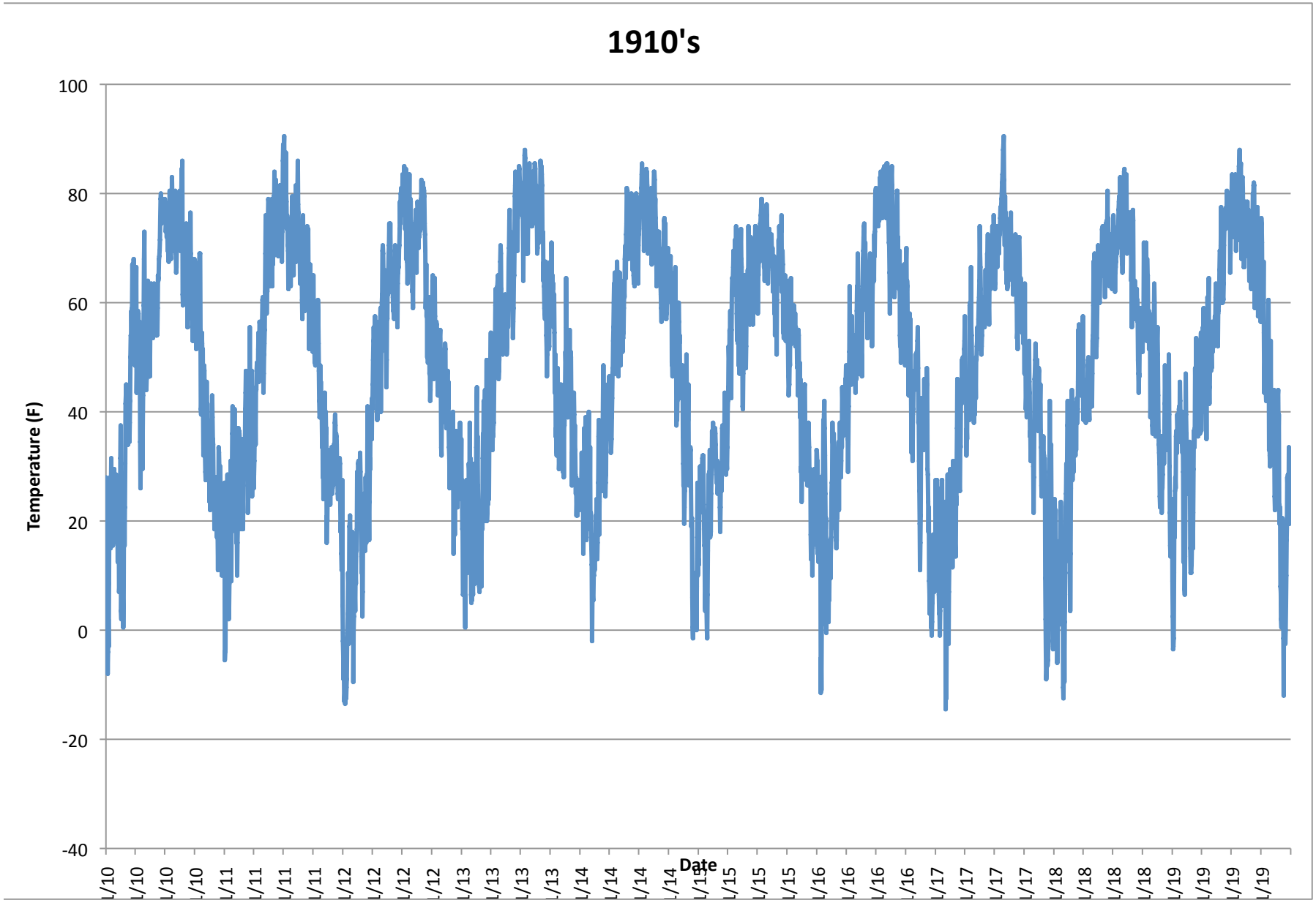
Temperature (F)
Date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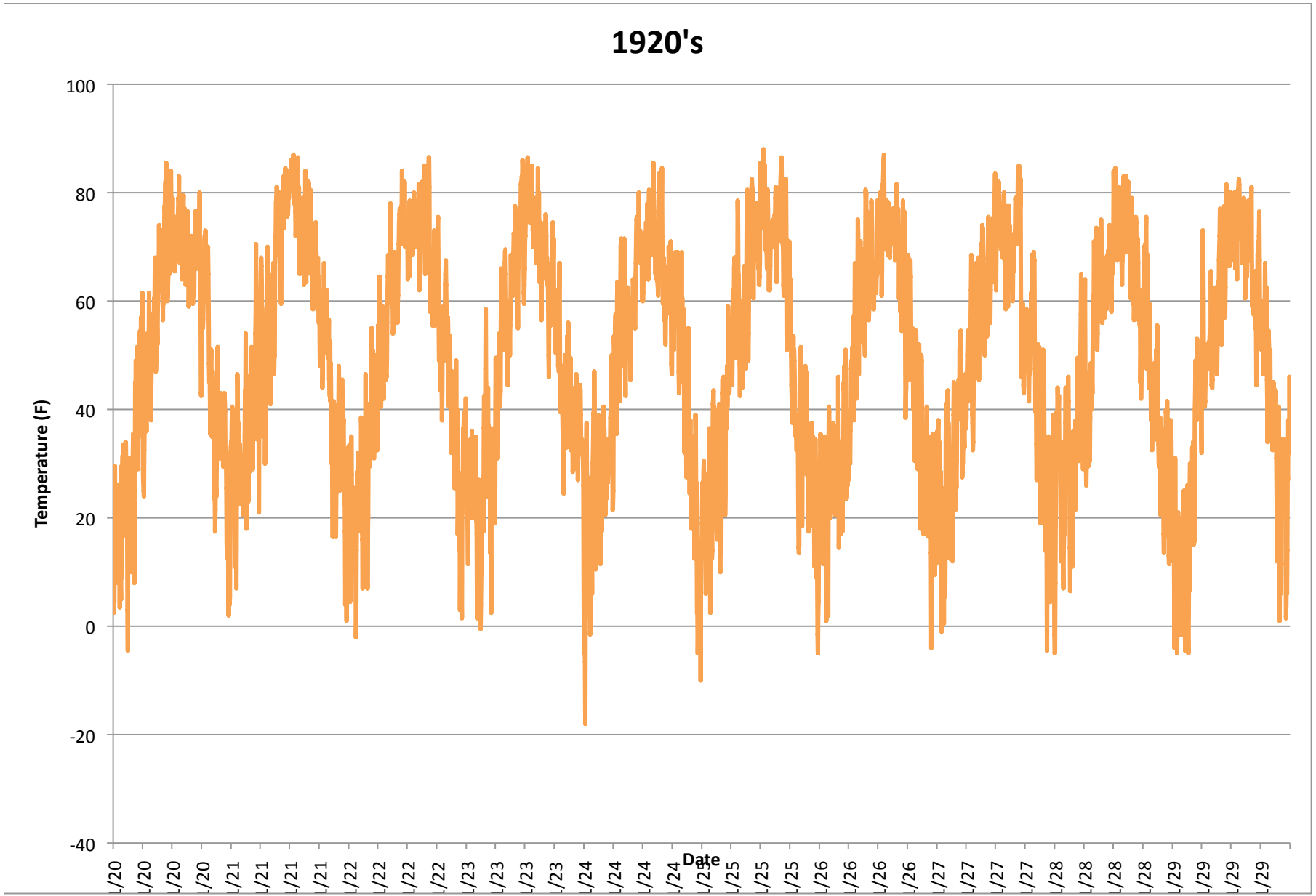
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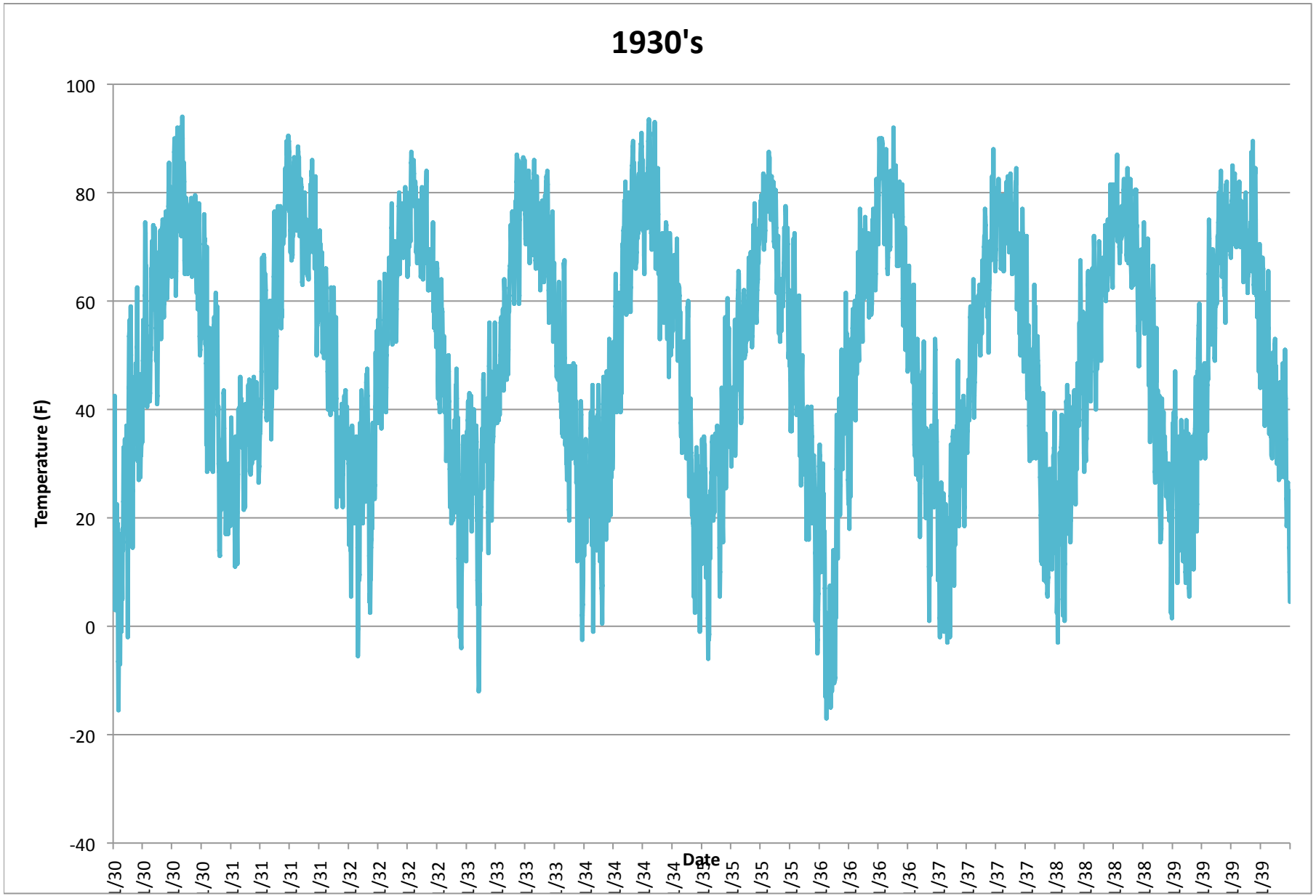
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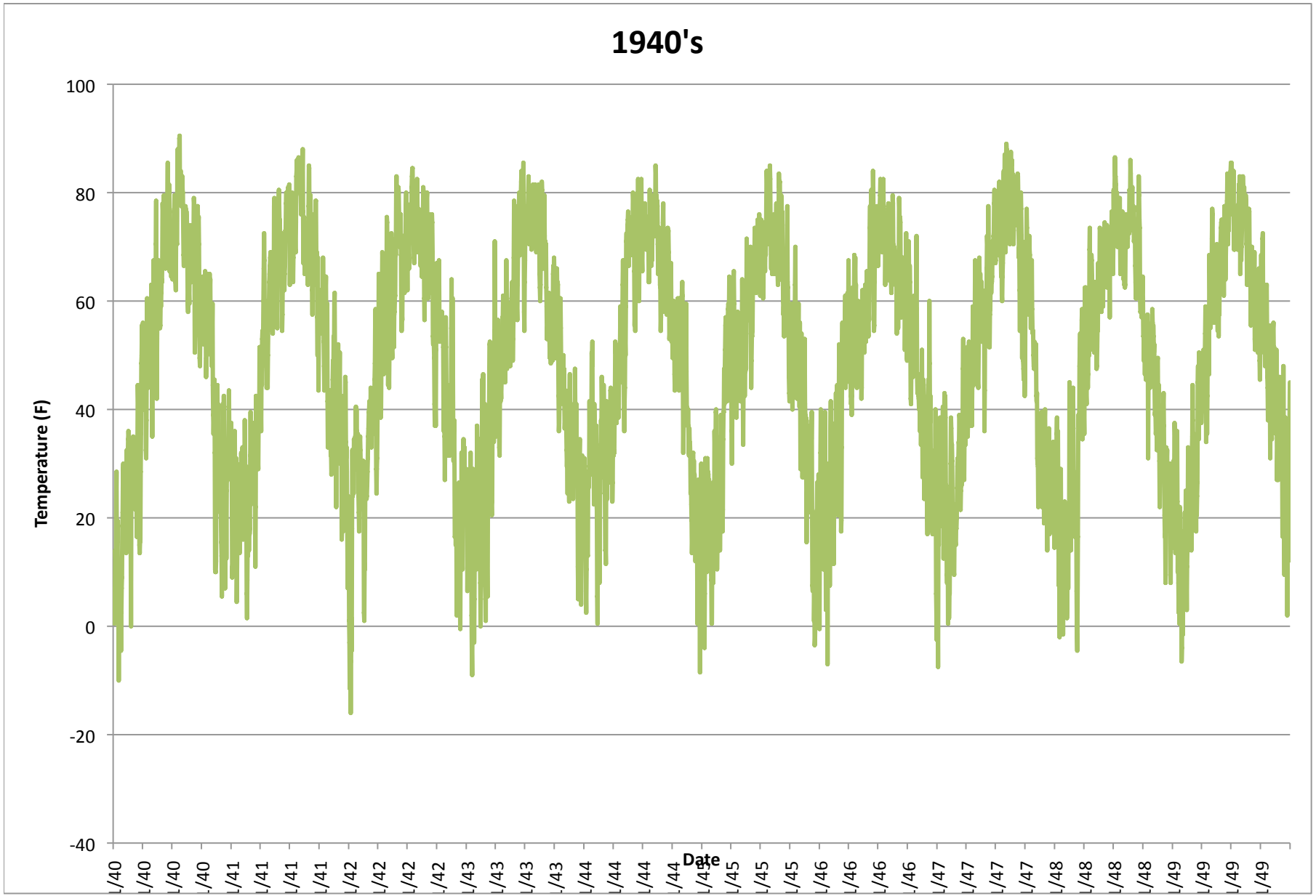
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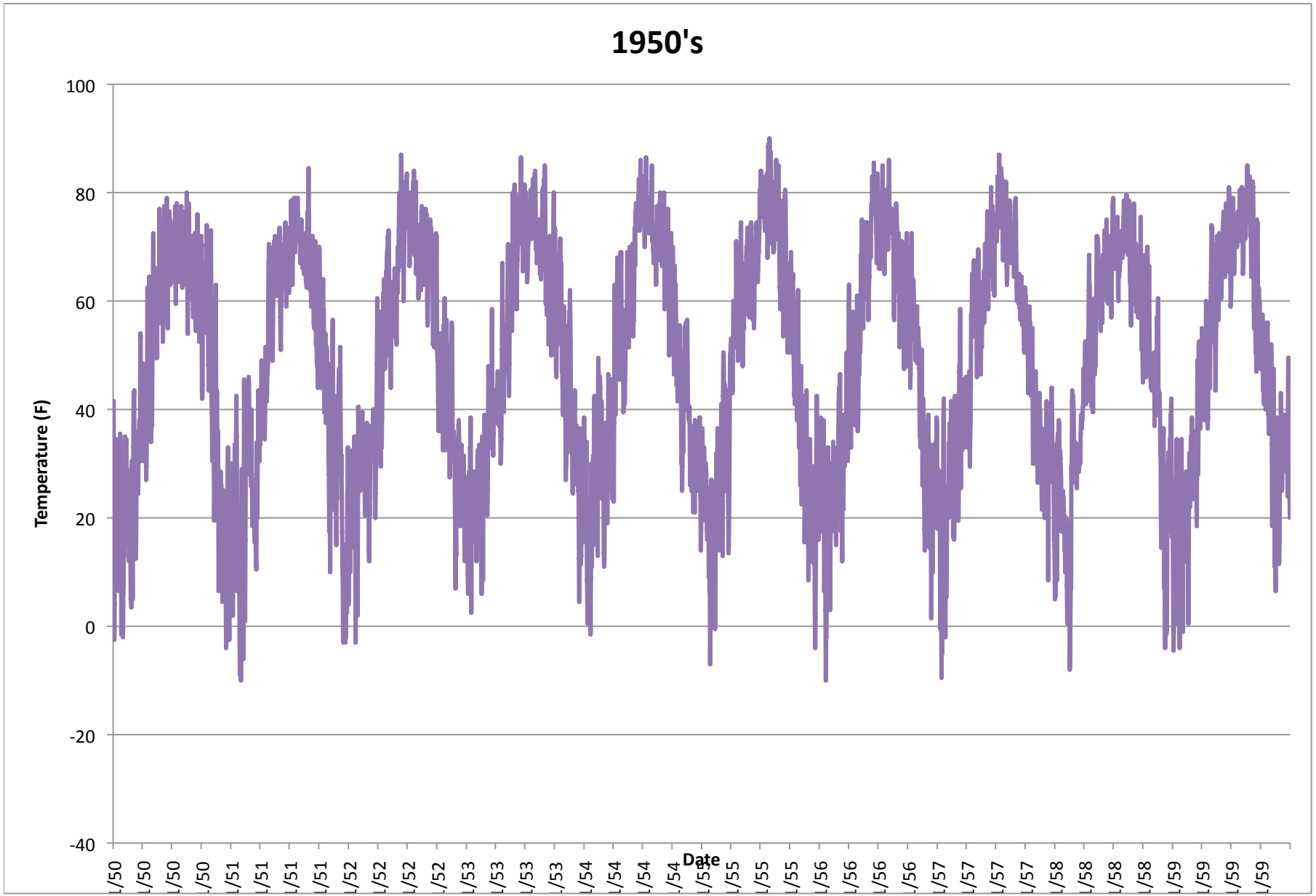
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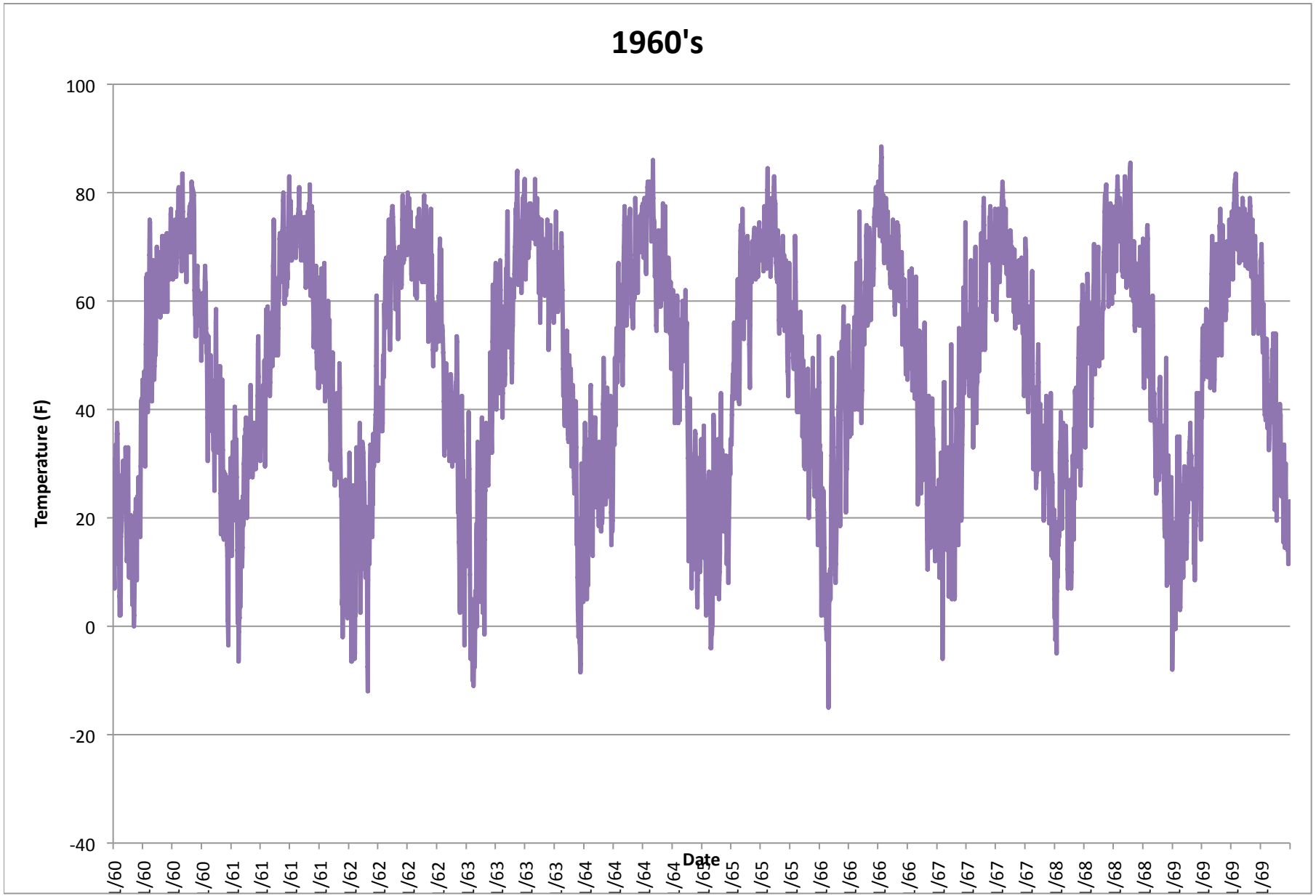
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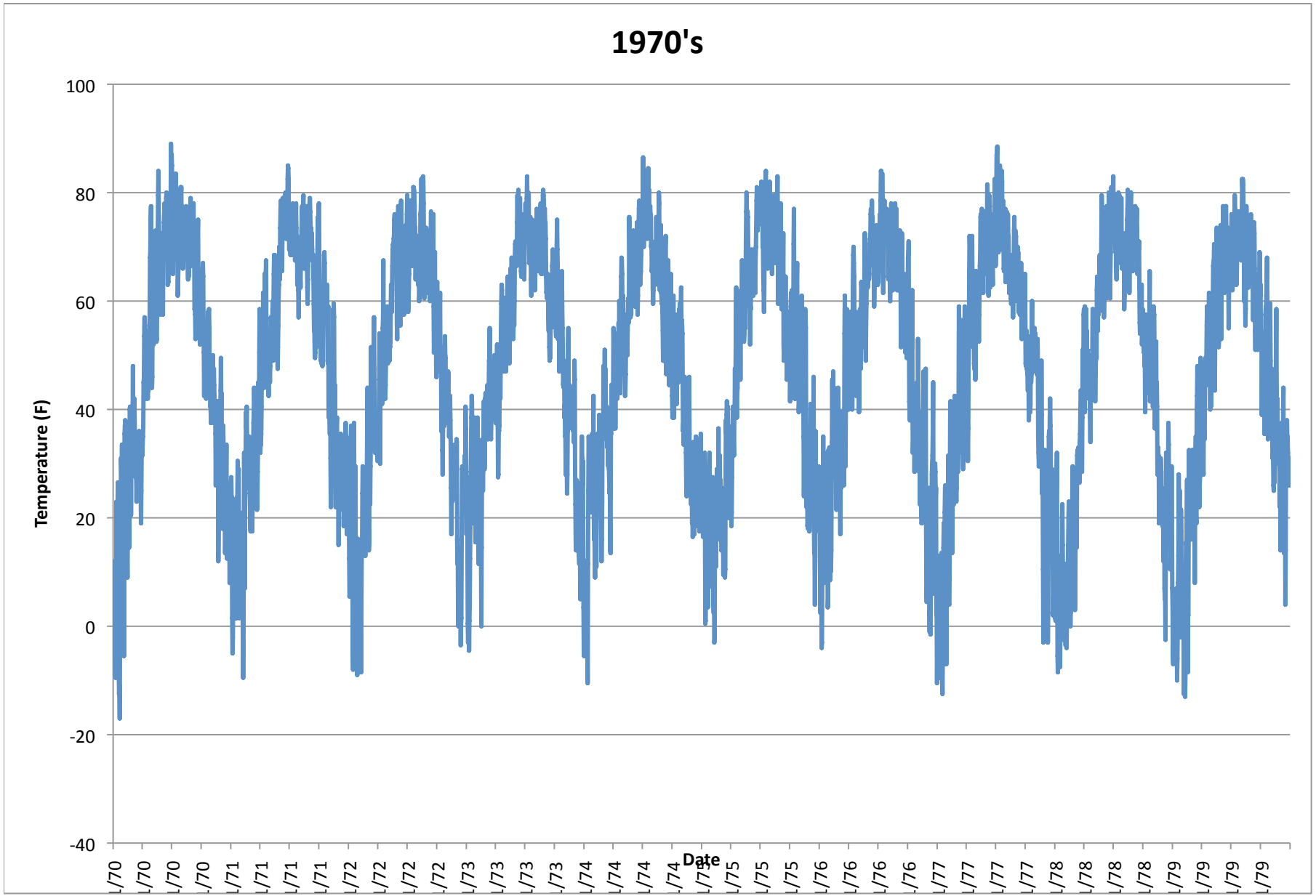
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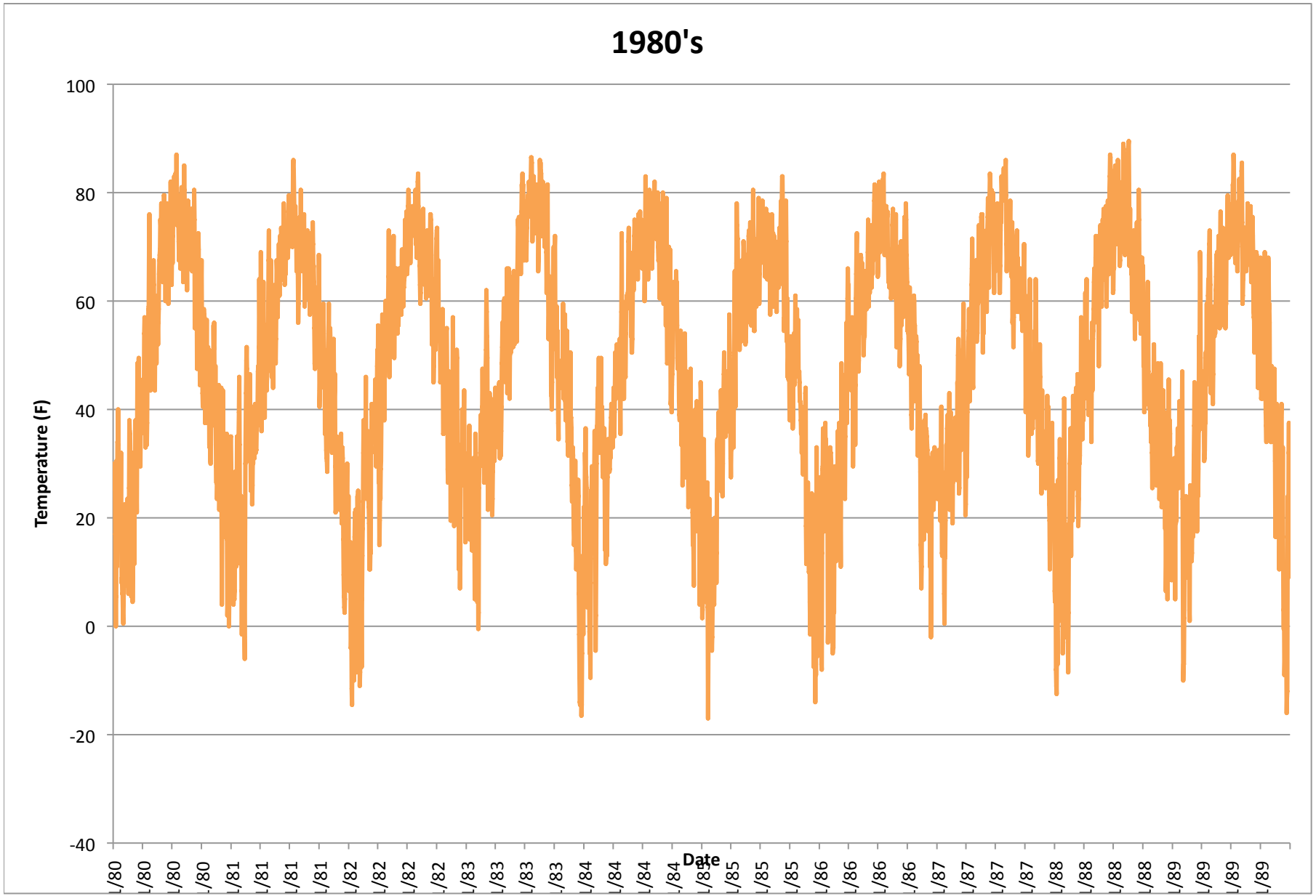
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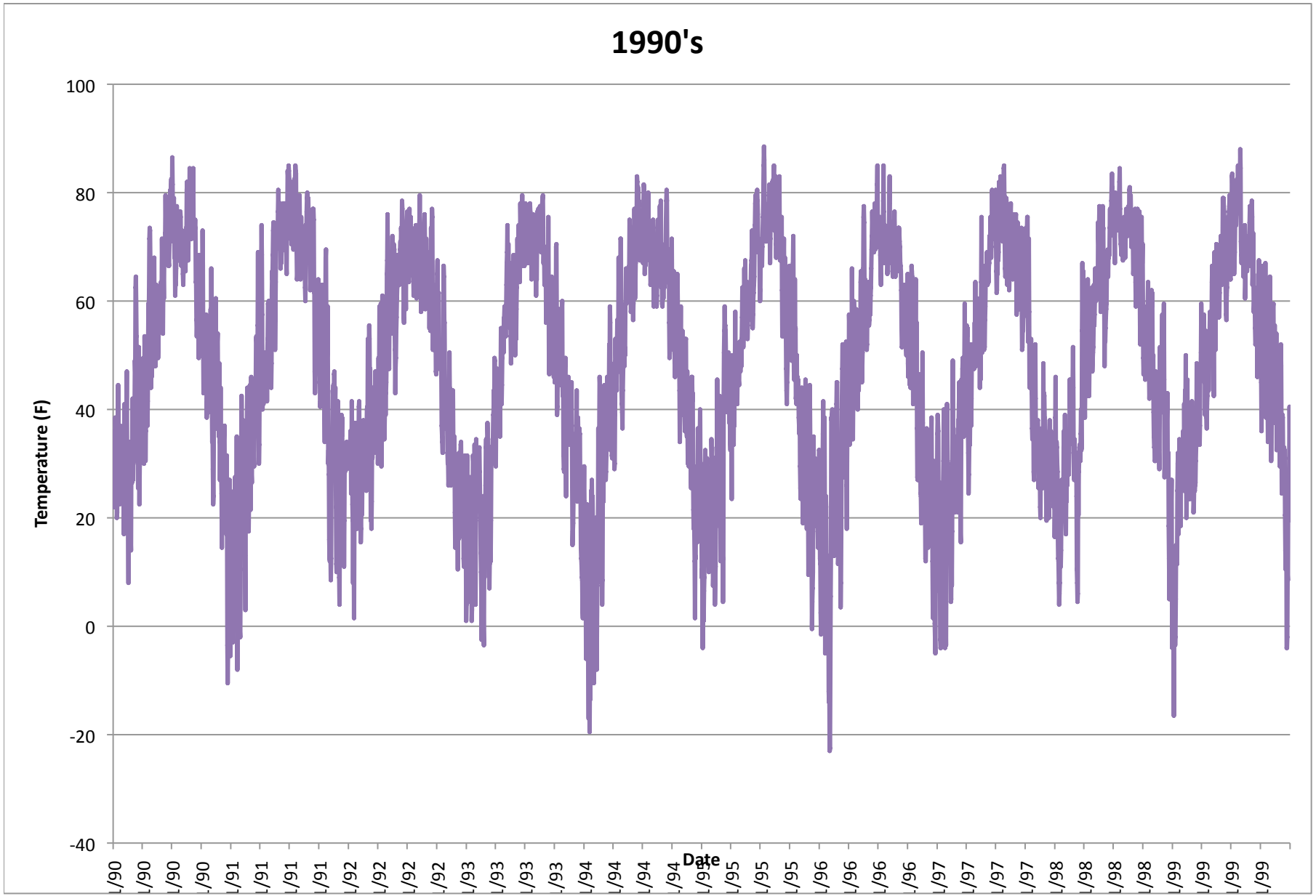
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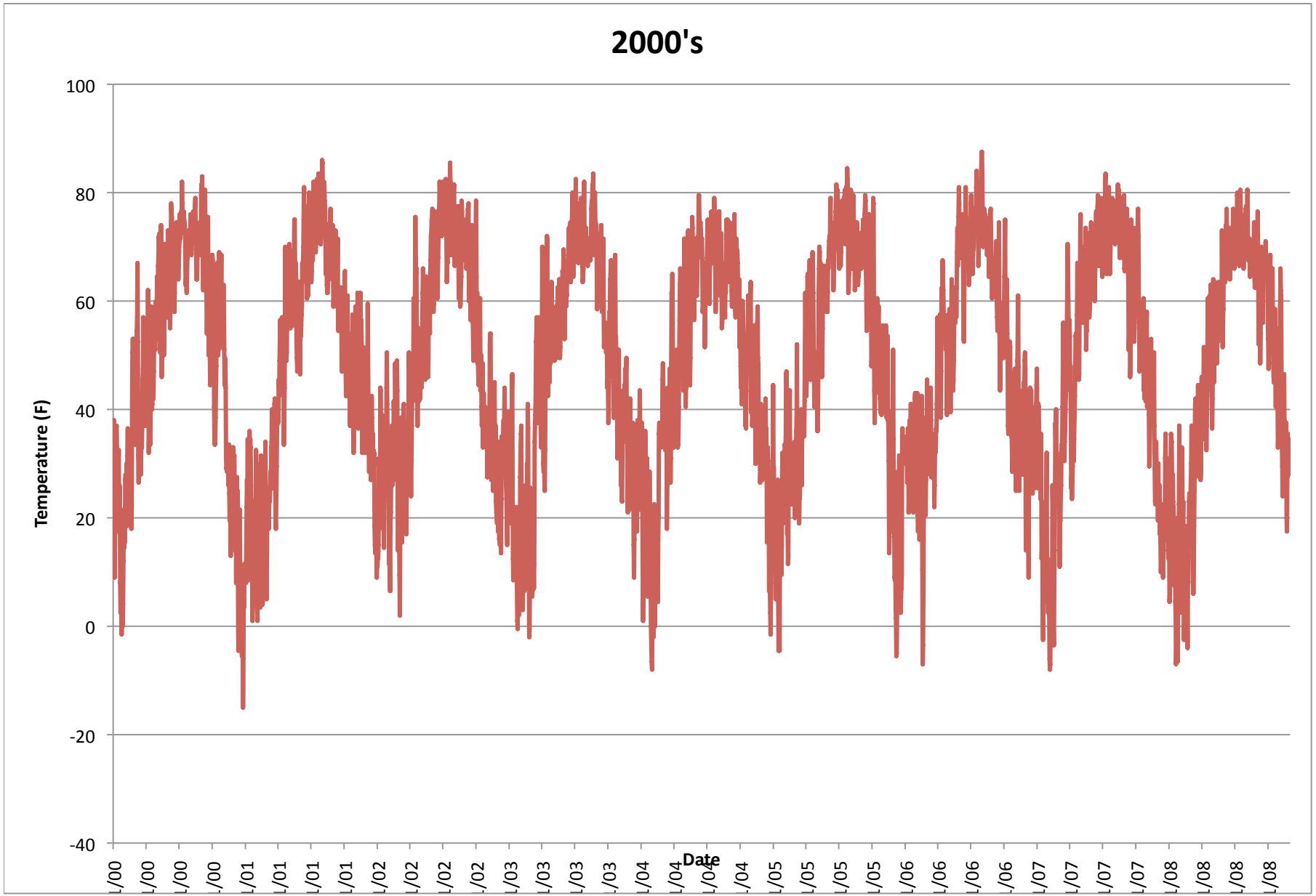
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