Homework – Module 1

Name:

1) Warning signs such as the one to the right are common before bridges. And they are put there for good reason.

Why does the bridge get icy before the pavement on the ground when air temperatures drop below freezing? Use heat transfer concepts to explain your answer. Assume that wind is calm to simplify the discussion.



2) One of my many humbling experiences as a fledgling forecaster (a.k.a. learning experiences)

occurred for a forecast for Corvallis, Oregon during the winter of 1979-80. I forecast mostly clear, calm conditions overnight with a low near freezing (33°F). It was indeed calm all night, and clear too... most of the night. Unfortunately for my forecast, low-clouds (stratocumulus) began to drift overhead after midnight, at which time the temperature warmed to 45°F and stayed there through the rest of the night. My forecast low ended up 8°F too cold, a major bust!

Use heat transfer concepts to explain why the surface temperature warmed when the low clouds moved overhead.