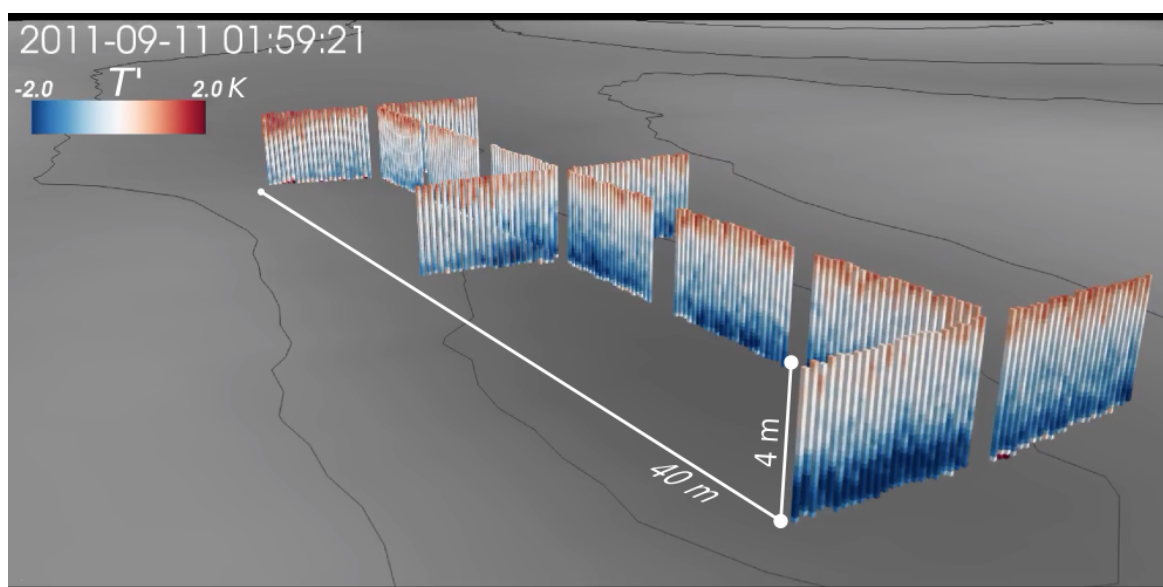


NS41C-05 Recent developments in the use of DTS to monitor atmospheric flows (Invited)

Favorite
Scheduled **Thursday, December 18, 2014 09:00 AM - 09:15 AM**
Moscone South
302

We discuss recent applications of distributed temperature sensing (DTS) to resolve temperature structures in air near the surface. Traditionally, such temperature structures are observed using time series of air temperature perturbations in a single point. The observed temperature signal is typically the result of a mix of turbulent and non-turbulent processes with different time and length scales. The superimposed nature of the temperature signal impedes the identification of key temperature patterns and their governing flow processes. Using DTS, we can acquire air temperature measurements in many points. We will show how the additional spatial detail helps reveal temperature structures and flow processes near the surface. The state-of-the-art for using DTS to quantify temperature structure scales and flow is presented with a case study on stable nighttime conditions (Fig. 1). In addition, we discuss the current limitations in the application of DTS to monitor atmospheric flow near the surface.

Figure 1: Observations of air temperature perturbations (T') using DTS with a quasi three-dimensional array of optical fiber.



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