

Dear Reviewer and dear Editor,

we contacted the companies that provided the fibre-optic sensing system and performed the measurements. They provided information that in our opinion were sufficient to answer the questions related to the calibration of the sensor and the effect of strain on the measurements.

The following paragraphs were added in the manuscript.

Section 2.2:

“The sensing system was calibrated in the laboratory. Although field calibration is generally recommended, laboratory calibration was considered sufficient in this case, since the main interest was on temperature variations (both in space and in time) rather than on absolute temperature values. A reproducibility of less than 0.1°C was obtained for a fibre length less than 1000 m, which was the case in the field experiment. Another feature that can be source of inaccuracy in the measurements is signal attenuation due to sharp bends in the fibre. In the setup the curvature radius between each strip was more than 20 cm, which produces no attenuation. “

Section 2.3:

“It can be excluded that the temperature measurements were influenced by excessive strain experienced by the fibre during the experiment. Indeed the maximum strain measured by the single-mode fibre after four days of testing was around 400  $\mu$ strain. The strain experienced by the multimode fibres dedicated to temperature measurements was certainly much smaller since these fibres are placed into loose tubes to prevent excessive stresses.”

Pictures that were not introduced in the manuscript but might be of interest for the reviewer are given in the following page.

The comments about minor issues have all been used to improve the manuscript.

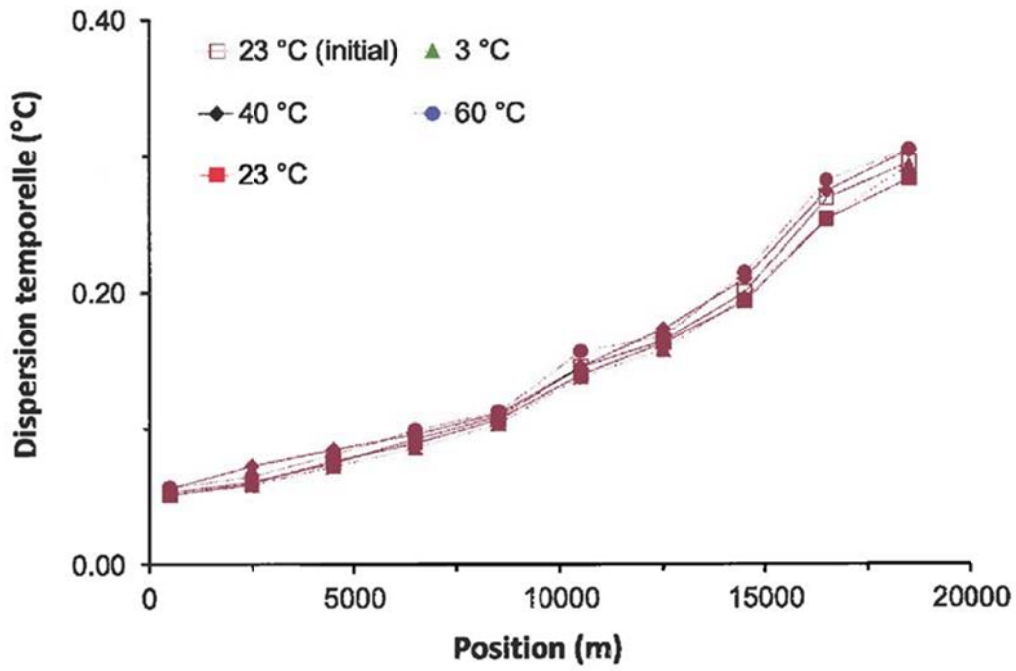


Figure 1 - Laboratory calibration of the sensing system.

## STRAIN

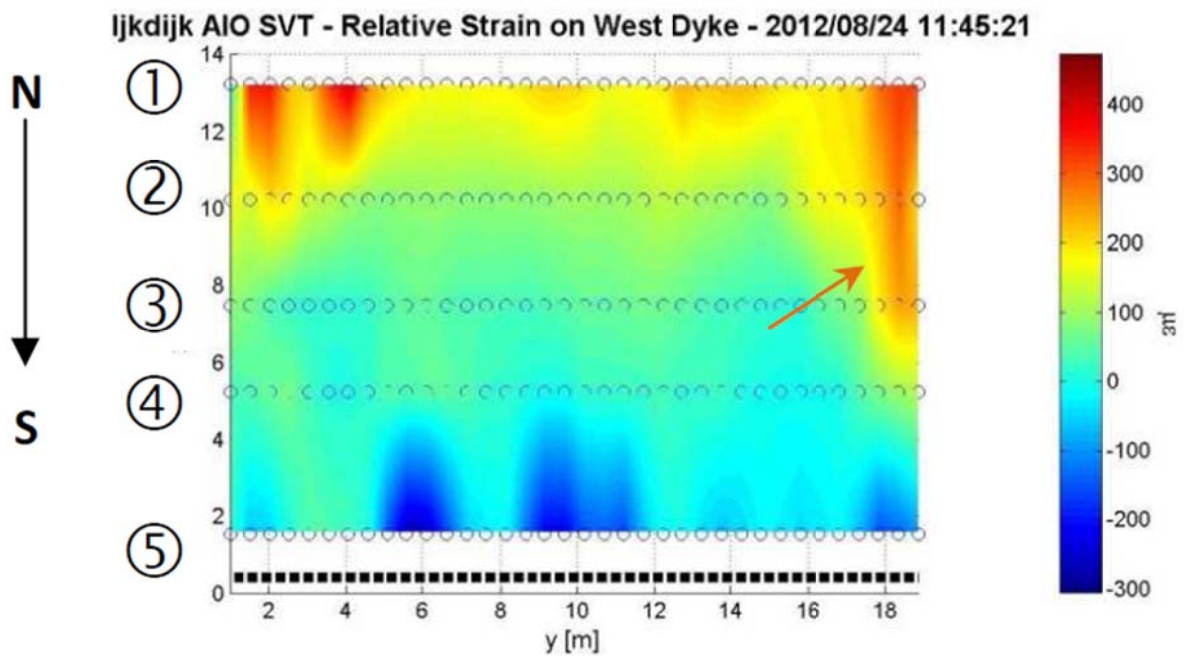


Figure 2 - Distributed strain measurements after four days of testing (source: Report TenCate GeoDetect on Ijkdijk AIO SVT, October 15<sup>th</sup> 2012).