

## FY 2016 PHASE I AWARD WINNER

FIRM: LI-COR Biosciences, Inc.  
4647 Superior Street  
Lincoln, NE 68504

AWARD: \$119,959.00

PHONE: 408-992-0722

E-MAIL: serguei.koulikov@licor.com

PRINCIPAL INVESTIGATOR: Dr. Serguei Koulikov

TITLE OF PROJECT: High Stability Atmospheric Carbon Dioxide and Methane Analyzer

SUBTOPIC NUMBER: 8.3.2D

### TECHNICAL ABSTRACT:

LI-COR proposes to develop a next-generation CO<sub>2</sub>/CH<sub>4</sub>/H<sub>2</sub>O analyzer that will offer an unprecedented combination of high precision and stability, making it the first high-performance gas analyzer suitable for long-term unattended operation. The instrument will be smaller, lighter, and far less expensive than competing technologies. LI-COR's approach exploits a proprietary, revolutionary design that overcomes the limitations of existing techniques and enables a sophisticated spectroscopic analysis strategy that is far more robust than competing approaches. The objective of Phase I is to prove feasibility of meeting NOAA's proposed specifications through demonstration of a laboratory prototype that achieves the precision requirements and demonstrates stability for one month (limited by the six month duration of Phase I and the time required to design, build and test the prototype). In Phase II we will more thoroughly characterize stability over 12 months.

### SUMMARY OF ANTICIPATED RESULTS:

The anticipated result of Phase I is a laboratory prototype that proves feasibility of LI-COR's approach. The anticipated result of Phase II is a mature engineering prototype that will enable subsequent commercialization. The advantages of the commercial product — ultra-high performance, ultra-low drift, suitability for long-term unattended operation, small size, low weight, and low — will enable widespread deployment for climate studies and emissions verification in applications that are not currently feasible, such as onboard commercial aircraft. In addition to environmental research and compliance monitoring, the instrument will also address other spectroscopic applications in industrial process control, medicine, and agriculture.