

## Advances in fibre optics and ground sensing technologies - instrumentation, theory and applications

SM5.1/ERE6.9/NH4.9

Convener: Gilda Currenti

Co-conveners: David Sollberger, Philippe Jousset, Felix Bernauer, Shane Murphy, André Gebauer, Zack Spica, Sneha Singh

Displays | Chat Wed, 06 May, 14:00–18:00

The session groups contributions on five main topics (Marine Environment, Geophysical Monitoring, Theoretical and Technological Innovation, Geophysical Applications, Instrument Designing and Performance), on which the live session will be focused.

**Chat time: Wednesday, 6 May 2020, 14:00–15:45**

### Marine Environment

Chairpersons: Shane Murphy

D1602 | EGU2020-12594 | solicited | **Highlight**

#### **Seafloor seismology with Distributed Acoustic Sensing in Monterey Bay**

**Nathaniel Lindsey**, Jonathan Ajo-Franklin, Craig Dawe, Lise Retailleau, Biondo Biondi, and Lucia Gualtieri

D1603 | EGU2020-5369

#### **The FOCUS experiment 2020 (Fiber Optic Cable Use for Seafloor studies of earthquake hazard and deformation)**

**Marc-Andre Gutscher**, Jean-Yves Royer, David Graindorge, Shane Murphy, Frauke Klingelhoefer, Chastity Aiken, Antonio Cattaneo, Giovanni Barreca, Lionel Quetel, Giorgio Riccobene, Salvatore Aurnia, Florian Petersen, Dietrich Lange, Morelia Urlaub, Sebastian Krastel, Felix Gross, Heidrun Kopp, Milena Moretti, Laura Beranzoli, and Nadia Lo Bue and the FOCUS Team

D1604 | EGU2020-13988

#### **The contribution of the CAM fibre optic submarine cable telecom ring to the early warning of tsunami and earthquakes**

**Luis Matias**, Yasser Omar, Fernando Carrilho, Vasco Sá, Rachid Omira, Carlos Corela, Rui A. P. Perdigão, and Afonso Loureiro

D1605 | EGU2020-12055

**Precise Distributed Acoustic Sensing measurements by using seafloor optical fiber cable system for seismic monitoring**

**Masanao Shinohara**, Tomoaki Yamada, Takeshi Akuhara, KImihiro Mochizuki, and Shin'ichi Sakai

D1606 | EGU2020-8484 | **Highlight**

**Automatic Earthquake Detection and De-noising for Distributed Acoustic Sensing: Examples from On-land and Underwater Fibers**

**Itzhak Lior**, Daniel Mata, Gauthier Guerin, Diane Rivet, Anthony Sladen, and Jean-Paul Ampuero

D1607 | EGU2020-11133

**Testing in sandbox experiments the potentialities of active-Distributed Temperature Sensing to quantify distributed groundwater fluxes in porous media**

**Olivier Bour**, Nataline Simon, Nicolas Lavenant, Gilles Porel, Benoit Nauleau, Behzad Pouladi, and Laurent Longuevergne

D1608 | EGU2020-22234

**Monitoring sediment coverage from Distributed Temperature Sensing measurements in the Port of Rotterdam, the Netherlands**

**Manos Pefkos**, Pieter Doornenbal, Arjan Wijdeveld, Ebi Meshkati Shahmirzadi, and Pauline Kruiver

## **Geophysical Monitoring**

Chairperson: Gilda Currenti, David Sollberger

D1609 | EGU2020-9825

**Effect of complex topography on the wavefield recorded by DAS and buried fiber optic cable at Azuma volcano, Northeast Japan**

**Kentaro Emoto**, Takeshi Nishimura, Hisashi Nakahara, Satoshi Miura, Mare Yamamoto, Shunsuke Sugimura, Takahiro Ueda, Ayumu Ishikawa, and Tsunehisa Kimura

D1610 | EGU2020-18084

**Four years of soil strain monitoring on Etna Volcano Mount by means of a Three-axial Fiber Bragg Grating Sensor**

**Umberto Giacomelli**, Enrico Maccioni, Giorgio Carelli, Daniele Carbone, Salvatore Gambino, Massimo Orazi, Rosario Peluso, and Fiodor Sorrentino

D1611 | EGU2020-14022

**Continuous source system and distributed acoustic sensing for reservoir to crust monitoring**

**Takeshi Tsuji**, Tatsunori Ikeda, and Koshun Yamaoka

D1612 | EGU2020-10096

**High precision and high resolution monitoring of subsurface changes with DAS and airgun**

**Baoshan Wang**, Xiangfang Zeng, Jun Yang, Yuansheng Zhang, Zhenghong Song, Xiaobin Li, Rongbin Lin, Manzhong Qin, and Congxin Wei

D1613 | EGU2020-7495

**Integration of Machine Learning on Distributed Acoustic Sensing Surveys**

**Camille Jestin**, Clément Hibert, Gaëtan Calbris, and Vincent Lanticq

D1614 | EGU2020-20516

**Rotation in civil engineering structures: analysis of the City-Hall (Grenoble) building using 3C and 6C sensors**

**Frédéric Guattari**, Philippe Gueguen, Coralie Aubert, and Théo Laudat

D1615 | EGU2020-10742

**Fiber Optics foR Environmental SENSE-ing (FORESEE) at Pennsylvania State University**

**Eileen Martin**, Tiejuan Zhu, Junzhu Shen, Srikanth Jakkampudi, Weichen Li, and Ayush Dev

## **Theoretical and Technological Innovation**

Chairpersons: Felix Bernauer, Gilda Currenti

D1616 | EGU2020-7343

**Distributed Acoustic Sensing from mHz to kHz: Empirical Investigations of DAS Instrument Response**

**Patrick Paitz**, Pascal Edme, Cédric Schmelzbach, Joesph Doetsch, Dominik Gräff, Fabian Walter, Nathaniel Lindsey, Athena Chalari, and Andreas Fichtner

D1617 | EGU2020-18525

**Comparing high-sensitivity geophones to fiber-optic DAS technologies in a hard-rock VSP survey**

**Björn Lund**, Anna Stork, Michael Roth, Ari David, Andy Clarke, Carl Nygren, and Sam Johansson

D1618 | EGU2020-12695

**Simulation of Rotational ground motion in the near field region**

**Raghukanth Stg** and Varun K singla

D1619 | EGU2020-7381

**The ROMY project: A 4-component ring laser for geophysics and geodesy**

**Heiner Igel**, Felix Bernauer, Joachim Wassermann, Shihao Yuan, Andre Gebauer, and Ullrich Schreiber

D1620 | EGU2020-8434

**Towards a two-axis cold-atom gyroscope for rotational seismology**

**Remi Geiger**, **romain gautier**, **leonid sidorenkov**, and **arnaud landragin**

D1621 | EGU2020-13360

**Resolving dynamic ground motions with high-rate GNSS and implications for data fusion in broadband seismology and Earthquake Early Warning**

**Roland Hohensinn**, **Nikolaj Dahmen**, **John Clinton**, **Alain Geiger**, and **Markus Rothacher**

## **Chat time: Wednesday, 6 May 2020, 16:15–18:00**

### **Geophysical Applications**

Chairpersons: **Zack Spica**, **Sneha Singh**

D1622 | EGU2020-21787

**The seismic broad-band antenna of the Low Noise Underground Laboratory (LSBB, Rustrel, France): a tool for measuring the rotation ground motion.**

**Olivier Sèbe**, **Stéphane Gaffet**, **Roxanne Rusch**, **Jean-Baptiste Decitre**, **Charly Lallemand**, **Daniel Boyer**, **Alain Cavaillou**, **Jean-Marc Koenig**, **Serge Olivier**, and **François Schindele**

D1623 | EGU2020-15258

**Direct and array-derived rotations in the Gran Sasso underground laboratory: application to earthquakes and seismic noise.**

**Andreino Simonelli**, **Matteo Desiderio**, **Umberto Giacomelli**, **Gaetano De Luca**, **Aladino Govoni**, and **Angela Di Virgilio**

D1624 | EGU2020-15252

**Monitoring volcanic and seismic activity with multiple fibre-optic Distributed Acoustic Sensing units at Etna volcano**

**Charlotte Krawczyk**, **Philippe Jousset**, **Gilda Currenti**, **Michael Weber**, **Rosalba Napoli**, **Thomas Reinsch**, **Giorgio Riccobene**, **Luciano Zuccarello**, **Athena Chalari**, and **Andy Clarke**

D1625 | EGU2020-11641

**Fibre optic Distributed Acoustic Sensing of volcanic events at Mt Etna**

**Gilda Currenti**, **Philippe Jousset**, **Athena Chalari**, **Luciano Zuccarello**, **Rosalba Napoli**, **Thomas Reinsch**, and **Charlotte Krawczyk**

D1626 | EGU2020-2321

**Long-Term Monitoring with Fiber Optics Distributed Temperature Sensing at Campi Flegrei: The Campi Flegrei Deep Drilling Project**

**Renato Somma**, **Claudia Troise**, **Luigi Zeni**, **Alessandro Minardo**, **Alessandro Fedele**, **Maurizio Mirabile**, and **Giuseppe De Natale**

D1627| EGU2020-8442

**Danish earthquake recorded by distributed acoustic sensing (DAS)**

**Camilla Rasmussen**, Peter H. Voss, and Trine Dahl-Jensen

D1628| EGU2020-6767

**Catalog of 3C rotations measured at the LSBB's antenna.**

**Roxanne Rusch**, Olivier Sebe, Jean-Baptiste Décitre, and Stéphane Gaffet

D1629| EGU2020-16191

**Towards field data applications of six-component polarization analysis**

**David Sollberger**, Heiner Igel, Cedric Schmelzbach, Felix Bernauer, Shihao Yuan, Joachim Wassermann, André Gebauer, Ulrich Schreiber, and Johan Robertsson

D1630| EGU2020-11000

**Challenges of DAS measurements in seismic urban areas: case study at Etna volcano eastern flank**

**Rosalba Napoli**, Gilda Currenti, Athena Chalari, Camille Jestin, Danilo Contrafatto, Philippe Jousset, Graziano Larocca, Daniele Pellegrino, Mario Pulvirenti, and Antonino Sicali

D1631| EGU2020-8225

**Urban Distributed Acoustic Sensing Using In-Situ Fibre Beneath Bern, Switzerland**

**Krystyna Smolinski**, Patrick Paitz, Daniel Bowden, Pascal Edme, Felix Kugler, and Andreas Fichtner

## **Instrument Designing and Performance**

Chairpersons: David Sollberger, Philippe Jousset

D1632| EGU2020-20200

**New prototype of 6-component seismograph Rotaphone CY: laboratory testing and pilot measurements**

**Jiri Vackar**, Jiri Malek, and Johana Brokesova

D1633| EGU2020-19873

**Quantum sensors for gravimetry and gravity gradiometry**

**Christian Schubert**, Waldemar Herr, Sven Abend, Naceur Gaaloul, Dennis Schlippert, Wolfgang Ertmer, and Ernst M. Rasel

D1634| EGU2020-19987

**Assembly of optical fiber sensors for rotational seismology - data coherence and comparability issues in field application**

**Anna Kurzych**, Leszek R. Jaroszewicz, Michał Dudek, Zbigniew Krajewski, Jerzy K. Kowalski, Sławomir Niespodziany, Felix Bernauer, Joachim Wassermann, and Heiner Igel

D1635| EGU2020-11887

**Extending the Pegasus Portable Technology Platform to Apply to More Geophysical Monitoring Use**

**Bruce Townsend**, Andrew Moores, and Sylvain Pigeon

D1636| EGU2020-6145

**In-Situ Calibration of Differential Pressure Gauges on OBSIP Ocean Bottom Seismometers**

**Gabi Laske** and Adrian Doran

D1637| EGU2020-4256

**Rotation and Strain Instrument Performance Tests with Active Seismic Sources**

**Felix Bernauer**, Joachim Wassermann, Katrin Behnen, Heiner Igel, Stefanie Donner, Pascal Edme, David Sollberger, Patrick Paitz, Jonas Igel, Gizem Izgi, Eva P.S. Eibl, Stefan Buske, Christian Veress, Frederic Guattari, Olivier Sebe, Basil Brunner, Anna T. Kurzych, Piotr Bonkovsky, Piotr Bobra, and Johana Brokesova and the Fürstenfeldbruck Experiment Team

D1638| EGU2020-15759

**Assessing a 6C Kalman filter using experimental datasets from an industrial robot**

**Yara Rossi**, Eleni Chatzi, Markus Rothacher, John Clinton, and Cédric Schmelzbach

D1639 |

D1639| EGU2020-7759

**Deployment recommendation for Distributed Acoustic Sensing at the surface**

**Pascal Edme**, Patrick Paitz, Ana Nap, Francois Martin, Valentin Metraux, Luca Guglielmetti, Cedric Schmelzbach, Vincent Perron, Daniel Bowden, David Dupuy, Andrea Moscariello, Andreas Fichtner, and Johan O. A. Robertsson

D1640| EGU2020-5602

**Multiple 6C-station Huddle Test in Fürstenfeldbruck, Germany**

**Gizem Izgi**, Stefanie Donner, Felix Bernauer, Daniel Vollmer, Klaus Stammler, Mathias Hoffmann, and Eva P.S. Eibl