



Océanopolis, Brest

# Program of the sessions

5 October Version

## Monday 3rd October

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|-------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 08:30 | Welcome                                                                                                                                                                                                        |                                                                                                                                                                                                        |
| 09:00 | <b>President &amp; local representatives</b>                                                                                                                                                                   |                                                                                                                                                                                                        |
| 09:30 | <b>Session I – 8 talks</b><br>Platforms, optical sensors and (underwater) image acquisition, calibration and preprocessing<br><i>Chair: Oscar Pizaro (Norway)</i><br><i>Co-chair: Valentin Foulon (France)</i> | <b>David Nakath (Germany – Onsite)</b><br>(Inverse) Volumetric Raytracing Methods for Physically Faithful Simulation and Estimation of Underwater Scenes                                               |
| 09:45 |                                                                                                                                                                                                                | <b>Carlos Dominguez-Carrió (Portugal - Onsite)</b><br>Exploring deep-sea benthic ecosystems of the Azores with a cost-effective imaging tool: how much ground have we covered with the Azor drift-cam? |
| 10:00 |                                                                                                                                                                                                                | <b>Helena Hauss (Germany - Onsite )</b><br>Comparing particle spectra across a suite of pelagic imaging systems                                                                                        |
| 10:15 |                                                                                                                                                                                                                | <b>Li Jianping (China – Online)</b><br>Imaging Plankton Probe (IPP): an AI-empowered Imager for Underwater Imaging of Marine Plankton                                                                  |
| 10:30 | Coffee break                                                                                                                                                                                                   |                                                                                                                                                                                                        |
| 10:50 |                                                                                                                                                                                                                | <b>Simone Marini (Italie - Onsite )</b><br>Autonomous and Intelligent Underwater Video Monitoring: the GUARD1 Approach                                                                                 |
| 11:05 |                                                                                                                                                                                                                | <b>Jan Taucher (Allemagne - Onsite)</b><br>PISCO - An extended depth-of-field imaging system for improved observations of plankton in the ocean                                                        |
| 11:20 |                                                                                                                                                                                                                | <b>Tom Kwasnitschka (Germany - Online)</b><br>Large-scale photogrammetry and immersive visualization of seafloor outcrops                                                                              |
| 11:35 |                                                                                                                                                                                                                | <b>Loic Van Audenhaege (France - Onsite)</b><br>A new workflow for space-time continuity and management of data acquired from deep-sea imagery observatory                                             |
| 11:50 | <b>Discussion Session I</b><br>Platforms, optical sensors and (underwater) image acquisition, calibration and preprocessing                                                                                    |                                                                                                                                                                                                        |
| 12:35 | Lunch * 1.25 hours                                                                                                                                                                                             |                                                                                                                                                                                                        |

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| 14:00 | <b>Session II – 8 talks</b><br>Tools for image annotation<br><i>Chair: Timm Schoening (Germany)</i><br><i>Co-chair: Marjolaine Matabos (France)</i>           | <b>Kevin Barnard (USA – Onsite)</b><br>Evolving annotations: new tools to supplement existing annotations for machine learning                                     |
| 14:15 |                                                                                                                                                               | <b>Valentin Buck (Allemagne - Online)</b><br>Collaborative Exploration and Annotation of 4D geospatial data with the Digital Earth Viewer                          |
| 14:30 |                                                                                                                                                               | <b>Greg Baillie (Canada – Online)</b><br>SeaTube V3 : Evolution of a browser-based underwater video annotation tool                                                |
| 14:45 |                                                                                                                                                               | <b>Mehul Sangekar (Japan - Online)</b><br>RESTful API plugins for SquidJam - a video annotation ecosystem for multi-camera datasets                                |
| 15:00 |                                                                                                                                                               | <b>Alexandre Morimitsu (Brazil - Online)</b><br>An interactive tool for labeling plankton image datasets                                                           |
| 15:15 |                                                                                                                                                               | <b>Brian Schlining (USA – Onsite)</b><br>Managing Digital Video at MBARI                                                                                           |
| 15:30 | Coffee break                                                                                                                                                  |                                                                                                                                                                    |
| 15:50 |                                                                                                                                                               | <b>Simon-Martin Schröder (Germany – Online)</b><br>Efficient Annotation of Plankton Images: Progress of the MorphoCluster project                                  |
| 16:05 |                                                                                                                                                               | <b>Martin Zurowietz (Germany – Online)</b><br>Past, present and future of the BIIGLE annotation software                                                           |
| 16:20 | <b>Discussion Session II</b><br>Tools for image annotation                                                                                                    |                                                                                                                                                                    |
| 17:05 | <b>Session III – 9 talks</b><br>Automated image processing<br><i>Chair: Alicia Romero-Ramirez (France)</i><br><i>Co-chair: Pierre-Olivier Liabot (France)</i> | <b>Débora Borges (Portugal – Onsite)</b><br>Exploring the potential of using multispectral imagery for mapping coastal living resources of intertidal rocky shores |
| 17:20 |                                                                                                                                                               | <b>Amaya Alvarez (Espagne – Online)</b><br>On the importance of training dataset preparation for fishes detection and classification in underwater images          |
| 17:35 |                                                                                                                                                               | <b>Danelle Cline (USA – Onsite)</b><br>Cloud-enabled benthic underwater video annotation                                                                           |
| 17:50 | <b>FORSSEA Robotics</b>                                                                                                                                       |                                                                                                                                                                    |
| 18:00 | Poster session & Ice breaker                                                                                                                                  |                                                                                                                                                                    |

## Tuesday 4th October

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| 08:30 | Welcome                                                                                                                                                       |                                                                                                                                                               |
| 09:00 | <b>Session III – 9 talks</b><br>Automated image processing<br><i>Chair: Alicia Romero-Ramirez (France)</i><br><i>Co-chair: Pierre-Olivier Liabot (France)</i> | <b>Valentin Foulon ( France – Onsite)</b><br>Find the good imaging technique for automatic identification of meiofauna - Part of the Blue Revolution project. |
| 09:15 |                                                                                                                                                               | <b>Chloe Game (UK – Online)</b><br>Simple and accessible machine learning for automatic classification of broad-benthic habitats                              |

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| 09:30 |                                                                                                                                                                                  | <b>Chris Jackett (Australia – Online)</b><br>Conserving deep-sea coral reefs: applying deep learning to remote sensed image data                                                 |
| 09:45 |                                                                                                                                                                                  | <b>Katija Kakani (USA – Onsite)</b><br>FathomNet: An open-source image database for training underwater artificial intelligence                                                  |
| 10:00 |                                                                                                                                                                                  | <b>Thang Duong Quoc Le (France – Online)</b><br>Plankton image classification using convolutional neural networks and image features                                             |
| 10:15 |                                                                                                                                                                                  | <b>Xabier Lekunberri (Espagne – Online)</b><br>Identification and measurement of tropical tuna species in purse seiner catches using computer vision and deep learning           |
| 10:30 | Coffee break                                                                                                                                                                     |                                                                                                                                                                                  |
| 10:50 | <b>Discussion Session III</b><br>Automated image processing                                                                                                                      |                                                                                                                                                                                  |
| 11:35 | <b>Session IV – 12 talks</b><br>Quality control, standardisation and sharing of imagery data<br><i>Chair: Heidi Sosik (USA)</i><br><i>Co-chair: Dominique Pelletier (France)</i> | <b>Katharine Bigham (New Zealand - Online 22:35)</b><br>A method for scaling seafloor images when laser lights are not present                                                   |
| 11:50 |                                                                                                                                                                                  | <b>Jan Jansen (Australia – Online 20:50)</b><br>The Antarctic Seafloor Annotated Imagery Database                                                                                |
| 12:05 |                                                                                                                                                                                  | <b>Jennifer Durden (UK – Online)</b><br>How to evaluate the outputs of automated classifiers – why computer vision metrics are not enough                                        |
| 12:20 |                                                                                                                                                                                  | <b>Marin Marcillat (France – Onsite)</b><br>From 2D to 3D annotations: a process to accurately georeference image annotation data with ray-tracing                               |
| 12:35 | <b>Group photo</b><br>Lunch * 1.25 hours                                                                                                                                         |                                                                                                                                                                                  |
| 14:00 |                                                                                                                                                                                  | <b>Mathilde Dugenne (USA – Onsite)</b><br>PSSdb: A pelagic size structure database from multiple in situ imaging devices                                                         |
| 14:15 |                                                                                                                                                                                  | <b>Catherine Borremans (France - Onsite)</b><br>iMagine: Imaging data and services for aquatic science                                                                           |
| 14:30 |                                                                                                                                                                                  | <b>Timm Schoening (Germany – Onsite)</b><br>Making marine image data FAIR with iFDOs                                                                                             |
| 14:45 |                                                                                                                                                                                  | <b>Catherine Borremans (France - Onsite)</b><br>Ocean Spy: a platform dedicated to image annotation by citizen for the study of marine ecosystems                                |
| 15:00 |                                                                                                                                                                                  | <b>Kerry Howell (UK – Onsite)</b><br>Introducing a Standardised Marine Taxon Reference Image Database (SMarTaR-ID) to help promote standardisation in deep-sea image annotation. |
| 15:15 | <b>Schmidt Ocean Institute</b>                                                                                                                                                   | <b>Corinne Bassin (USA – Onsite)</b>                                                                                                                                             |
| 15:30 | Coffee break                                                                                                                                                                     |                                                                                                                                                                                  |
| 15:50 | <b>Keynote Dr. Edith Widder</b>                                                                                                                                                  |                                                                                                                                                                                  |
| 16:35 |                                                                                                                                                                                  | <b>Rainer Kiko (Germany – Onsite)</b><br>Why and how plankton imaging could become operational at basin scales                                                                   |
| 16:50 |                                                                                                                                                                                  | <b>Massimo Di Stefano (USA - online)</b><br>A framework for Coupling underwater acoustic and image surveys                                                                       |

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| 17:05 |                                                                                              | <b>Emma Curtis (UK – Onsite)</b><br>Impacts of multi-user annotations on Machine Learning segmentation in seafloor images |
| 17:20 | <b>Discussion Session IV</b><br>Quality control, standardisation and sharing of imagery data |                                                                                                                           |
| 18:05 | Free                                                                                         |                                                                                                                           |

## Wednesday 5th October

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|-------|-----------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 08:30 | Welcome                                                         |                                                                                                                                                                                    |
| 09:00 | <b>Hands-on sessions</b>                                        | <b>3D mosaics</b> (M. Ferrera, France) ; <b>ImmerSea</b> (M. Kernec, France) ; <b>SQUIDLE+</b> (A. Friedmann, Australia)                                                           |
| 10:30 | Coffee break                                                    |                                                                                                                                                                                    |
| 11:00 | <b>Hands-on sessions</b>                                        | <b>3D mosaics</b> (M. Ferrera, France) ; <b>ImmerSea</b> (M. Kernec, France) ; <b>FAIR data</b> (T. Schoening, Germany) ; <b>SQUIDLE+</b> (A. Friedmann, Australia)                |
| 12:35 | Lunch * 1.25 hours                                              |                                                                                                                                                                                    |
| 14:00 | <b>Hands-on sessions</b>                                        | <b>FathomNet</b> (K. Katija, USA) ; <b>SMarTaR-ID</b> (K. Howell, UK) ; <b>ImmerSea</b> (M. Kernec, France) ; <b>BIIGLE 4 Beginners</b> (M. Zurowietz, T. Nattkemper, Germany)     |
| 15:30 | Coffee break                                                    |                                                                                                                                                                                    |
| 16:00 | <b>Hands-on sessions</b>                                        | <b>FAIR data</b> (T. Schoening, Germany) ; <b>SMarTaR-ID</b> (K. Howell, UK) ; <b>ImmerSea</b> (M. Kernec, France) ; <b>BIIGLE 4 All</b> (D. Langenkämper, T. Nattkemper, Germany) |
| 17:30 | Free                                                            |                                                                                                                                                                                    |
| 19:30 | Workshop Dinner at Le Ruffé, 1 bis rue Yves Collet, 29200 Brest |                                                                                                                                                                                    |

## Thursday 6th October

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| 08:30 | Welcome                                                                                                                                                                                      |                                                                                                                                                                                     |
| 09:00 | <b>Hands-on sessions wrap-up</b>                                                                                                                                                             |                                                                                                                                                                                     |
| 09:15 | <b>Keynote Prof. Chris Lintott</b>                                                                                                                                                           |                                                                                                                                                                                     |
| 10:00 | <b>Session V – 14 talks</b><br>Scientific advancements in biology and geology using (underwater) imagery data<br><b>Chair: Fanny Girard (USA)</b><br><b>Co-chair: Lénaïck Menot (France)</b> | <b>Miriam Beck (France – Onsite)</b><br>Morphological diversity increases with oligotrophy along a zooplankton time series                                                          |
| 10:15 |                                                                                                                                                                                              | <b>Margaux Perhirin (France – Onsite)</b><br>Deciphering the impact of mesozooplankton diversity on the ecosystem functioning in the Sargasso Sea, using molecular and imaging data |
| 10:30 | Coffee break                                                                                                                                                                                 |                                                                                                                                                                                     |
| 10:50 | <b>Presentation of the next organisers</b>                                                                                                                                                   |                                                                                                                                                                                     |
| 11:05 |                                                                                                                                                                                              | <b>Julien Simon (France - Online)</b><br>Automatic and non-invasive initial stock assessment of the sea cucumber <i>Cucumaria frondosa</i> in the EEZ of St-Pierre-et-Miquelon      |
| 11:20 |                                                                                                                                                                                              | <b>Clara Flintrop (Germany – Onsite)</b>                                                                                                                                            |

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|       |                                                                                                               | A revised derivation of aggregate sinking velocity and its implications for particle flux measurements using underwater camera systems                                                                                                     |
| 11:35 |                                                                                                               | <b>Fanny Girard (USA – Onsite)</b><br>An image-based multi-scale approach to map the distribution of deep-sea coral and sponge communities                                                                                                 |
| 11:50 |                                                                                                               | <b>Melissa Hanafi Portier (France – Onsite)</b><br>A morpho-functional approach to palliate poor taxonomic resolution of cnidarians and poriferans from deep-sea images: case studies from poorly sampled areas                            |
| 12:05 |                                                                                                               | <b>Larissa Oliveira (Ireland – Onsite)</b><br>Classification of cold-water coral (CWC) reefs in high resolution: using 3D photogrammetry and machine learning for CWC habitat classification of the Piddington Mound, southwest of Ireland |
| 12:20 |                                                                                                               | <b>Nils Piechaud (UK – Online)</b><br>Application of automated object detection for quantitative deep-sea benthic ecology                                                                                                                  |
| 12:35 | Lunch * 1.25 hours                                                                                            |                                                                                                                                                                                                                                            |
| 14:00 |                                                                                                               | <b>Autun Purser (Germany – Onsite)</b><br>Fish nests, crawling sponges and deep diving whales: Spatial assessment of new deep sea ecosystems / seafloor interactions with photo and acoustic cameras                                       |
| 14:15 |                                                                                                               | <b>Heidi Sosik (USA – Onsite)</b><br>High resolution characterization of plankton and particles with multi-scale imaging in the North Atlantic                                                                                             |
| 14:30 |                                                                                                               | <b>Bastien Taormina (Norway – Onsite)</b><br>Marine imaging mapping and characterisation of vulnerable habitats in Norwegian fjords                                                                                                        |
| 14:45 |                                                                                                               | <b>Marie Walde (France – Onsite)</b><br>Subcellular monitoring of viral infections in marine diatoms by automated confocal microscopy                                                                                                      |
| 15:00 |                                                                                                               | <b>Jack Williams (UK – Onsite)</b><br>In situ Particle Measurements Deemphasize the Role of Size in Governing Particle Sinking Velocity                                                                                                    |
| 15:15 |                                                                                                               | <b>Kea Witting (Germany – Onsite)</b><br>Characterizing Pathways of the Biological Carbon Pump in two Fjords with Contrasting Pelagic Food Web Structures                                                                                  |
| 15:30 | Coffee break                                                                                                  |                                                                                                                                                                                                                                            |
| 15:50 |                                                                                                               | <b>Dominique Pelletier (France – Online)</b><br>The QuatreA initiative: sharing image-derived biodiversity data between Australian and French researchers                                                                                  |
| 16:00 | <b>Discussion Session V</b><br>Scientific advancements in biology and geology using (underwater) imagery data |                                                                                                                                                                                                                                            |
| 16:45 | <b>Closing &amp; Photo competition price</b>                                                                  |                                                                                                                                                                                                                                            |