

# **AGU-SEG | Davie, Florida | 11–13 June**

**9–10 June | Pre-Conference Workshop**

Florida Atlantic University, Davie Campus

## **Co-Chairs**

**Esben Auken**

Aarhus University

**John W. Lane, Jr.**

U.S. Geological Survey

**Burke Minsley**

U.S. Geological Survey

**Xavier Comas**

Florida Atlantic University

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Aarhus University

**Rosemary Knight**

Stanford University

**Kisa Mwakanyamale**

Illinois State Geological Survey

# Scientific Program

## SUNDAY, JUNE 09

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- 9:00 a.m.– 4:00 p.m.      **Airborne Electromagnetic Data Processing and Inversion: Day One**  
Convener(s): Esben Auken, Anders Christiansen  
Davie West Building, DW107

## MONDAY, JUNE 10

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- 9:00 a.m.– 4:00 p.m.      **Airborne Electromagnetic Data Processing and Inversion: Day Two (Optional)**  
Convener(s): Esben Auken, Anders Christiansen  
Davie West Building, DW107
- 9:00 a.m.– 5:00 p.m.      **From AEM Data to 3D Hydrogeological Conceptual Model**  
Convener(s): Mats Gulbrandsen  
Davie West Building, DW109
- 5:00 p.m.– 7:00 p.m.      **Ice Breaker**  
Student Union, SD105

## TUESDAY, JUNE 11

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- 9:00 a.m.– 9:15 a.m.      **Welcome & Announcements**  
Convener(s): Xavier Comas  
Davie West Building, DW103
- 9:15 a.m.– 9:45 a.m.      **Keynote**

Convener(s): Xavier Comas

Davie West Building, DW103

**Denys Grombacher** | An airborne EM survey of the  
McMurdo Dry Valleys in Antarctica (*Invited*)

9:45 a.m.– 12:00 p.m.

## **Energy, Minerals, and Hazards**

Convener(s): Paul Bedrosian

Davie West Building, DW103

9:45 a.m. –9:50 a.m.

**Paul Bedrosian** | Introduction to Session

9:50 a.m. –10:15 a.m.

**Timothy J Munday** | The combined use of airborne  
magnetic and electromagnetic methods for cover  
characterisation in the exploration for buried mineral  
systems (*Invited*)

10:15 a.m. –10:35 a.m.

**Marco Antonio Couto Jr.** | Inversion of AEM Data With  
Strong IP Effects Over Metallic Sulfide Dissemination  
Within Banded Iron Formations

10:35 a.m. –11:00 a.m.

Break

11:00 a.m. –11:20 a.m.

**Olawale Olakunle Osinowo** | Analysis of Time Domain  
Airborne Electromagnetic (TDEM) Data for Evaluating Gold  
Mineralization Potential of Ilesha Schist Belt, Southwestern  
Nigeria

11:20 a.m. –11:40 a.m.

**Paul Bedrosian** | Three-dimensional Structure of the  
Decorah Impact Structure: Constraints from AEM and  
potential-field modeling

11:40 a.m. –12:00 p.m.

**Wale Osinowo** | Analysis of High Resolution Aeromagnetic  
(HRAM) Data of Lower Benue Trough, Southeastern  
Nigeria for Hydrocarbon Potential Evaluation

12:00 p.m.– 1:00 p.m.

## **Lunch**

Student Union, SD105

1:00 p.m.– 4:15 p.m.

## **AEM System, Processing and Inversion Research and Development**

Convener(s): Burke Minsley, Esben Auken

Davie West Building, DW103

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| 1:00 p.m. –1:10 p.m. | <b>Burke J Minsley</b>   Announcements & Introduction to Session   |
| 1:10 p.m. –1:35 p.m. | <b>Anders Vest Christiansen</b>   Sensitivity functions of airborne EM systems over layered models ( <i>Invited</i> )  |
| 1:35 p.m. –1:55 p.m. | <b>Thomas Mejer Hansen</b>   Fast probabilistic inversion of AEM data using approximate rejection sampling   |
| 1:55 p.m. –2:15 p.m. | <b>Nicklas Skovgaard Nyboe</b>   Primary Field Compensation in Airborne TEM – Refining a Proven Technique through the Integration of High and Low Moment Information Projected onto a Common Exponential Basis |
| 2:15 p.m. –2:35 p.m. | <b>Nathan Leon Foks</b>   GeoBIPy – Geophysical Bayesian Inference in Python   |
| 2:35 p.m. –3:10 p.m. | Break  |
| 3:10 p.m. –3:30 p.m. | <b>Esben Auken</b>   Large scale Laterally Constrained Inversion of over steeping IP decays in AEM   |
| 3:30 p.m. –3:50 p.m. | <b>Noah Dewar</b>   Estimating the Depth to the Saturated Zone from Airborne Electromagnetic Data  |
| 3:50 p.m. –4:10 p.m. | <b>Xavier Comas</b>   Inferring peat thickness in Indonesian Peatlands using Airborne Electromagnetic methods  |
| 4:10 p.m. –4:15 p.m. | <b>Burke J Minsley</b>   Closing Announcements   |
| 4:15 p.m.– 5:30 p.m. | <b>Poster Session</b><br>Convener(s): John Lane<br>Davie West Lobby  |
| P-02                 | <b>Huaifeng Sun</b>   Modeling and inversion of semi-airborne transient electromagnetic data   |
| P-03                 | <b>Marian Takac</b>   Detecting Magnetic Anomalies Of Crater Fields By a Drone   |

- P-04                      **Joan Marie Blanco** | INFACt's Airborne Geophysical Campaign in Geyer, Germany
- P-06                      **Lyndsay B Ball** | USGS AEM Survey Inventory and Web Interface: Improving Data Visibility and Accessibility
- P-07                      **Noah Dewar** | Estimating the Depth to the Saturated Zone from Airborne Electromagnetic Data
- P-08                      **Lanbo Liu** | Formation conductivity inverted from multi-frequency, multi-elevation electromagnetic induction data
- P-09                      **Benoit Vittecoq** | Contribution of an heliborne EM-magnetic survey to the understanding of the hydrogeological functioning of a volcanic island (Martinique – Caribbean island)
- P-10                      **Jesse Korus** | Mapping the Boundary of the High Plains Aquifer in Nebraska with AEM and Hydraulic Head Data
- P-11                      **Esben Auken** | Large scale Laterally Constrained Inversion of over steeping IP decays in AEM
- P-12                      **Marco Antonio Couto Jr.** | Inversion of AEM Data With Strong IP Effects Over Metallic Sulfide Dissemination Within Banded Iron Formations
- P-13                      **Ronald Bell** | MagArrow™ Drone Enabled Aeromagnetic Surveys in the Great Sand Dunes National Park - San Luis Valley, CO
- P-14                      **Cian Dawson** | Low-altitude airborne surveys for hydrologic studies: lessons learned and a path forward
- P-15                      **Wade Hampton Kress** | Regional-scale Airborne Geophysics Reveals Hidden Complexity of Mississippi River Alluvial Valley (*Invited*)
- P-16                      **Burke J Minsley** | Airborne geophysical characterization of critical zone structure in a mountain headwater system, upper East River, Colorado (*Invited*)

## WEDNESDAY, JUNE 12

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- 9:00 a.m.– 9:15 a.m.      **Welcome & Announcements**  
Convener(s): Esben Auken, Xavier Comas  
Davie West Building, DW103
- 9:15 a.m.– 12:00 p.m.      **Aquifer Mapping Programs I**  
Convener(s): Anders Vest Christiansen, Kisa  
Mwakanyamale  
Davie West Building, DW103
- 9:15 a.m. –9:25 a.m.      **Anders Vest Christiansen |** Introduction to Session
- 9:25 a.m. –9:50 a.m.      **Wade Hampton Kress |** Regional-scale Airborne  
Geophysics Reveals Hidden Complexity of Mississippi  
River Alluvial Valley (*Invited*)
- 9:50 a.m. –10:10 a.m.      **Jared Dale Abraham |** Comparison of a decade of  
examples of AEM vs Drilling results for Groundwater  
Exploration: The Good, the Bad and the Ugly
- 10:10 a.m. –10:30 a.m.      **Mats Lundh Gulbrandsen |** Multiple Point Statistics – A  
Case Study from Indian Wells Valley, California
- 10:30 a.m. –11:00 a.m.      Break
- 11:00 a.m. –11:20 a.m.      **Theodore H Asch |** Airborne Electromagnetics for  
Characterizing Water Quality Due to Saltwater Intrusion
- 11:20 a.m. –11:40 a.m.      **Andrea Viezzoli |** Reduction of Ambiguity in Modelling and  
Hydrogeological Interpretation of Airborne EM Data in  
Complex Coastal Environment.
- 11:40 a.m. –12:00 p.m.      **Timothy J Munday |** Treading where ground geophysics  
can't venture – the use of airborne geophysics to  
characterise remote freshwater lens systems in tropical  
island settings in Northern Australia.
- 12:00 p.m.– 1:00 p.m.      **Lunch**  
Student Union, SD105

1:00 p.m.– 3:50 p.m.	<b>UAS Geophysics I</b> Convener(s): John Lane, Cian Dawson Davie West Building, DW103
1:00 p.m. –1:10 p.m.	<b>John W Lane Jr</b>   Announcements & Introduction to Session
1:10 p.m. –1:35 p.m.	<b>Garret Veloski</b>   The Use of Drone Geophysics to Locate and Map Legacy Oil and Gas Infrastructure <i>(Invited)</i>
1:35 p.m. –1:55 p.m.	<b>Yuleika Madriz</b>   UAS aeromagnetic survey and hyperspectral data for mineral exploration
1:55 p.m. –2:15 p.m.	<b>Ronald Bell</b>   MagArrow™ Drone Enabled Aeromagnetic Surveys in the Great Sand Dunes National Park - San Luis Valley, CO
2:15 p.m. –2:35 p.m.	<b>Rongyi Qian</b>   The study of Low-altitude Rapid Detection Technology base on UAV in Complex Environment
2:35 p.m. –3:10 p.m.	Break
3:10 p.m. –3:30 p.m.	<b>Huaifeng Sun</b>   UAV-based tilt photogrammetry for fast and accuracy 3D terrain acquisition
3:30 p.m. –3:50 p.m.	<b>Cian Dawson</b>   Low-altitude airborne surveys for hydrologic studies: lessons learned and a path forward
5:00 p.m.– 7:00 p.m.	<b>Conference Banquet</b> Student Union, SD105

## THURSDAY, JUNE 13

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9:00 a.m.– 9:15 a.m.	<b>Welcome &amp; Announcements</b> Convener(s): Burke Minsley Davie West Building, DW103
9:15 a.m.– 10:20 a.m.	<b>UAS Geophysics II</b>

Convener(s): Cian Dawson, John Lane

Davie West Building, DW103

- 9:15 a.m. –9:20 a.m.      **Cian Dawson** | Introduction to Session
- 9:20 a.m. –9:40 a.m.      **Lanbo Liu** | Formation conductivity inverted from multi-frequency, multi-elevation electromagnetic induction data
- 9:40 a.m. –10:00 a.m.      **Huaifeng Sun** | UAV-based semi-airborne transient electromagnetic survey in challenging terrain environment
- 10:00 a.m. –10:20 a.m.      **John W Lane Jr** | Development of a Drone-deployed Ground-Penetrating Radar System for Non-contact Bathymetry of Freshwater Systems
- 10:20 a.m.– 10:45 a.m.      **Break**  
Davie West Lobby
- 10:45 a.m.– 12:00 p.m.      **Aquifer Mapping Programs II**  
Convener(s): Lyndsay Ball, Wade Kress  
Davie West Building, DW103
- 10:45 a.m. –10:55 a.m.      **Lyndsay B Ball** | Introduction to Session
- 10:55 a.m. –11:20 a.m.      **Ken Lawrie** | The Exploring for the Future (EftF) Groundwater Program: Successful Application of Airborne Geophysics within a Multi-physics, Inter-disciplinary Approach for Rapid Mapping and Assessment of Groundwater Systems and Resources in Frontier Palaeozoic Sedimentary Basins and Cenozoic Paleovalleys in Northern Australia (*Invited*)
- 11:20 a.m. –11:40 a.m.      **Benoit Vittecoq** | Contribution of an heliborne EM-magnetic survey to the understanding of the hydrogeological functioning of a volcanic island (Martinique – Caribbean island)
- 11:40 a.m. –12:00 p.m.      **Subash Chandra** | Quantitative Application of AEM for Regional Groundwater Productivity in Fractured Basement Rocks
- 12:00 p.m.– 1:00 p.m.      **Lunch**

Student Union, SD105

1:00 p.m.– 2:30 p.m.	<b>Aquifer Mapping Programs III</b> Convener(s): Lyndsay Ball Davie West Building, DW103
1:00 p.m. –1:05 p.m.	<b>Lyndsay B Ball</b>   Introduction to Session
1:05 p.m. –1:30 p.m.	<b>Burke J Minsley</b>   Airborne geophysical characterization of critical zone structure in a mountain headwater system, upper East River, Colorado ( <i>Invited</i> )
1:30 p.m. –1:50 p.m.	<b>Sebastian Uhlemann</b>   Linking geomorphological and environmental indices with ground-based and airborne geophysical data to upscale bedrock properties of mountainous watersheds
1:50 p.m. –2:10 p.m.	<b>Lyndsay B Ball</b>   Hydrostratigraphic Model Development from Ground and Airborne Geophysical Surveys of the Western Hualapai Reservation near Grand Canyon West, Arizona, USA
2:10 p.m. –2:30 p.m.	<b>Jesse Korus</b>   Mapping the Boundary of the High Plains Aquifer in Nebraska with AEM and Hydraulic Head Data
2:30 p.m.– 3:00 p.m.	<b>Break</b> Davie West Lobby
3:00 p.m.– 4:30 p.m.	<b>Wrap-Up</b> Convener(s): Esben Auken, John Lane, Xavier Comas, Burke Minsley Davie West Building, DW103
3:00 p.m. –3:20 p.m.	Introduction to White Paper and Next Steps
3:20 p.m. –4:15 p.m.	Panel
4:15 p.m. –4:30 p.m.	<b>Xavier Comas</b>   Closing Announcements

The workshop organizers acknowledge the following sponsors for their generous support:

