



AIR CENTRE
ATLANTIC INTERNATIONAL RESEARCH CENTRE

Harnessing Space Technological Applications in Sustainable Urban Development

All Saints Bay, Bahia, Brazil.
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- Implementing Organisation(s)

AIR Centre (Atlantic International Research Centre)

UNCTAD (UN Trade and Development)

- Recipient Countries

- Brazil: **LAMCE** (Laboratory of Computational Methods in Engineering)

- South Africa: **SANSA** (South African National Space Agency)

- Events

Total of 5 events: 4 in-person and 1 fully remote

- Participants

More than a hundred per event



Funding

Governo da República Portuguesa; Ministério dos Negócios Estrangeiros; Missão Permanente de Portugal junto das Nações Unidas e outras organizações internacionais em Genebra.

Budget

UMOJA WBSE: USD 75'000 SB-023015, 100% executed.

Dates

Activities between: 8 Jan 2024 to 6 Jan 2025.

Purpose

The purpose of the training workshop is to develop skills in the use of Julia programming language to visualize and process earth observation data with more emphasis on sustainable human settlement applications.

Outcomes

- Improved capacities, with an emphasis on female scientists, to access process, visualise and analyse satellite data for earth observation towards sustainable urban development.
- Enhanced capacities to monitor and track progress towards SDG's, particularly SDG 11 and 6 using satellite technology.
- Enhanced capacity to harness science, technology, and innovation (STI) for sustainable urban development.



- Executive Summary Table (5 events)

Events	Location	Date	Status
<i>Workshop Julia EO 2024 titled “Global Workshop on Earth Observation with Julia”</i>	Angra do Heroísmo, Azores, Portugal	January 8-12, 2024	Executed ✓
<i>Workshop titled “Harnessing Space Technological Applications in Sustainable Urban Development, Julia applications in Earth Observation”</i>	Rio de Janeiro, Brazil	April 3-5, 2024	Executed ✓
<i>Workshop titled “Harnessing Space Technological Applications in Sustainable Urban Development Using the Julia Programming Language”</i>	Pretoria, South Africa	August 6-8, 2024	Executed ✓
<i>Workshop titled “Intermediate-Level Workshop on Earth Observation with Julia”</i>	Remote	November 20, 2024	Executed ✓
<i>Workshop Julia EO 2025</i>	Angra do Heroísmo, Azores, Portugal	January 6-10, 2025	Executed ✓



- **In-person workshop Julia EO 2024 in Angra do Heroísmo, Azores (January 8-12, 2024)**, titled “Global Workshop on Earth Observation with Julia”. The JuliaEO 2024 workshop featured 22 speakers and attracted 43 in-person and 120 online participants. It covered a range of expertise levels, focusing on Earth Observation concepts and programming skills.



- **In-person workshop in Rio de Janeiro, Brazil (April 3-5, 2024)**, titled "Harnessing Space Technological Applications in Sustainable Urban Development, Julia applications in Earth Observation". There were 42 participants, of which 14 were speakers, and three were from the Julia community. There were participants attending online as well.





- **In-person Workshop in Pretoria, South Africa (August 6-8, 2024)**, titled "Harnessing Space Technological Applications in Sustainable Urban Development Using the Julia Programming Language". There were 49 participants, of which 5 were speakers, and three were from the Julia community. There were participants attending online as well.



- **Remote Workshop (November 20, 2024)**, titled "Intermediate-Level Workshop on Earth Observation with Julia" (up to 60 participants from recipient countries). This workshop was hosted on the AIR Centre's online platform (Zoom-like). The topics covered included more advanced topics in Julia for Earth observation.





- **In-person workshop Julia EO 2025 in Angra do Heroísmo, Azores (January 6-10, 2025).** The third edition of JuliaEO25 marked the final event of the "Harnessing Space Technological Applications in Sustainable Urban Development" project. It gathered 15 international speakers, five AIR Centre speakers, 30 in-person participants, and 64 remote attendees from renowned institutions such as ESA, DLR, MIT, and NASRDA, reinforcing its global and collaborative nature.





- Conclusion

- The project successfully demonstrated to participants how geospatial technologies (GST) and the Julia programming language can advance **sustainable urban planning and contribute to monitoring and achieving the Sustainable Development Goals (SDGs)**.
- A series of workshops in Brazil, South Africa, and Portugal provided participants with essential knowledge and technical skills to leverage Earth Observation data effectively. The involvement of **scientists, policymakers, and technical experts emphasized the importance of a collaborative approach** in tackling urban development challenges, particularly in developing nations.
- A key achievement of this initiative was its capacity-building efforts, with a strong focus on **supporting STI experts, particularly female scientists, in using GST for evidence-based decision-making**. Training sessions covered fundamental and moderately advanced aspects of Julia programming for Earth Observation, equipping participants with practical skills in data processing, visualization, and real-world urban applications.



- The project fostered **strong collaborations** between institutions such as UNCTAD, the AIR Centre, SANSA, and LAMCE, laying the foundation for future cooperation beyond the scope of this initiative.
- As the project concludes, its impact continues through follow-up initiatives, including the **upcoming workshops planned by the AIR Centre** for 2025 and 2026. The sustained interest and demand for continued training from recipient countries highlight the value and long-term benefits of this initiative.
- Moving forward, it is crucial to maintain support for STI-driven solutions, expand knowledge-sharing networks, and promote inclusive participation. These efforts will ensure that **developing nations** fully harness the potential of geospatial technologies to build **resilient and sustainable cities**.

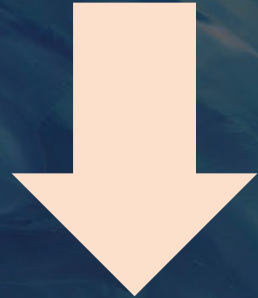
Soft Networking



WEBINARS
YOUNG
MOBILITY

LITERACY &
OUTREACH

Engagement



COOPERATIVE
PLATFORMS

CITIZEN
MONITORING

Mutualized Services



ECON/SOCIAL
DRIVEN SERVICES

INSTITUTIONAL
COMMITMENT

Partnership



STAFF AND
INFRASTRUCT.

INTERNATIONAL
PARTNERSHIP





THANKS !

