

Environmental Crimes Joint Workshop ESA-JRC

11–12 June 2024 | ESA-ESRIN | Frascati (Rome), Italy



The European Commission's
science and knowledge service
Joint Research Centre



Conference Agenda

Date: Tuesday, 11/June/2024

8:30am Registration and welcome coffee
- Location: **Big Hall**

9:00am
9:00am **S1 - Opening and Welcome**
- Location: **Big Hall**

10:30am Chair: **Pieter S A Beck**, JRC-ISPRA
Chair: **Michela Corvino**, ESA

9:00am - 9:15am

ESA opening

Simonetta Cheli
ESA -ESRIN Director

9:15am - 9:30am

JRC opening

Alessandra Zampieri
JRC, Director of the Directorate for Sustainable Resources

9:30am - 9:50am

Practical Matters

Michela Corvino
ESA, Italy

9:50am - 10:10am

Making environmental enforcement more effective: the new Environmental Crime Directive and the importance of geospatial intelligence

Miroslav Angelov
DG ENV, Environmental Rule of Law & Governance

10:10am - 10:30am

Remote monitoring in combating deforestation in the Amazon

Daniel Moraes de Freitas², Jair Schmitt¹, Carolina Vieira Ribeiro de Assis Bastos¹, Renata Aquinoga Teures¹, Nara Vidal Pantoja²

1: Brazilian Institute of Environment and Renewable Natural Resources, Environmental Protection Directorate; 2: Brazilian Institute of Environment and Renewable Natural Resources, National Center for Environmental Monitoring and Information

10:30am **Coffee Break**
- Location: **Big Hall**

10:50am

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10:50am S2 - Perspectives from End Users

- 12:30pm Location: **Big Hall**

Chair: **Pieter S A Beck**, JRC-ISPRA

Chair: **Michela Corvino**, ESA

10:50am - 11:10am

Keynote by IES

Wouter J. Veening

Environmental Security Institute, Chair

11:10am - 11:30am

IMPEL Geospatial Intelligence for Environmental Damage Assessment (GIEDA) project

Federico Filippini¹, **Laura Calcagni²**, **Dario Bellingeri³**

1: National Research Council (CNR), Italy; 2: Institute for Environmental Protection and Research (ISPRA), Italy; 3: Regional Agency for the Protection of the Environment (ARPA) Lombardy, Italy

11:30am - 11:50am

SMART FOREST MONITORING The technological proposal by the Carabinieri for the protection of forests and natural CO2 tanks, to combat Climate Change.

Col. Giancarlo Papitto, **Pasquale Pistillo**

Arma dei CARABINIERI, Italy

11:50am - 12:10pm

Early Warning System for crimes on protected grasslands and its use in prosecution

Mathieu Olbrechts¹, **Bart Van Vossel²**, **Koen De Maesschalck²**

1: Agency for Nature and Forests, Flanders, Belgium; 2: Public Prosecution Office East-Flanders, Belgium

12:10pm - 12:30pm

Quantifying the responsibility of forest fire crime perpetrators through remote sensing techniques

GEMA ARMERO

GUARDIA CIVIL, Spain

12:30pm Round Table Discussion

- 1:00pm Location: **Big Hall**

Chair: **Lorenzo Colantoni**, IAI

Panelists:

- Marcello De Maria (WWF UK)
- Giuseppe Sgarbi (Fondazione Vittorio Occorsio)
- Col. Giancarlo Papitto (Carabinieri CUFAA)

1:00pm Lunch

- 2:00pm



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2:00pm - 4:00pm **S3 - Copernicus (services)**

Location: **Big Hall**

Chair: **Pieter S A Beck**, JRC-ISPRA

Chair: **Michela Corvino**, ESA

2:00pm - 2:20pm

DG for Defence Industry and Space (Remotely)

Hugo Zunker

DG DEFIS

2:20pm - 2:40pm

Leveraging Geospatial Intelligence to Combat Environmental Crime: The Role of Copernicus Emergency Management Service

Cristina Rosales Sanchez, Peter Spruyt

European commission JRC, Italy

2:40pm - 3:00pm

European Maritime Safety Agency: Leveraging Earth Observation Services to support the combat against environmental crime

Antonio Rocha

EMSA

3:00pm - 3:20pm

How the Copernicus SESA Service contributes to the environmental compliance assurance

Yannick Arnaud, Alessandra Ussorio, Gema Maza, Roberta Onori

European Union Satellite Centre, Spain

3:20pm - 3:40pm

Copernicus Land Monitoring Service: Operational NRT products for tackle environmental crimes.

Simone Balbo¹, **Andreas Brink**¹, **Usue Donezar Hoyos**², **Ludvig Forslund**², **Nadine Gobron**¹

1: Joint Research Centre, European Commission, Italy; 2: European Environment Agency, Denmark

3:40pm - 4:00pm

KCEO Deep Dive Assessment on the use of EO to support compliance assurance

Christelle Vancutsem, R. Grecchi, M. Lahsaini, D. Weckmueller, C. Kilsedar, Pieter Simon Alexander Beck, P. Strobl, M. Dowell

European Commission, Joint Research Centre (JRC), Ispra, Italy

4:00pm - 5:45pm

Round Table Discussion - New Space for Copernicus Contributing Missions: overview of environmental crimes use cases

Location: **Big Hall**

Chair: **Peggy Fischer**, ESA

Panelists:

- Michal Shimoni, Kuva Space
- Pia Feurstein, OroraTech
- Markel Aramberri, Satlantis
- Joseph Thuillier, Endurosat
- António Rocha, EMSA
- Cristina Rosales Sanchez, EC JRC
- Simone Balbo, EC JRC



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5:45pm
-
8:00pm

POSTER SESSION - WELCOME DRINK

Location: **Uliveto Terrace**

Civil society mobilising geospatial data to demonstrate environmental incomppliance

Anna Berti Suman

Luiss University - Law School, Rome, Italy

Erth Observation, Artificial Intelligence, Compliance Assurance and Environmemt Criminal Protection

Giuseppe Giovanni Sgorbati^{2,3,6}, **Pasquale Fimiani**^{1,2,5}, **Fabio Carella**^{4,6}

1: Cassation Court, Italy; 2: Fondazione Vittorio Occorsio, Italy; 3: Milano Bicocca University., Italy; 4: Environment Protection Regional Agency (ARPA) Lombardia, Italy; 5: ENPE (EU); 6: IMPEL (EU)

The new Environmental Crime Financial Toolkit: a practical resource to detect red flags in financial flows linked to environmental crimes

Marcello De Maria^{1,2}, **John Dodsworth**¹, **Aimee Hanson**¹

1: WWF-UK, United Kingdom; 2: University of Reading, UK

Using Sentinel data to fight environmental crimes: best applications and challenges

Lorenzo Colantoni

IAI, Italy

AI-based geospatial intelligence solutions to analyse satellite earth observation imagery for detecting activities related to environmental crime – the PERIVALLON project

Federico Benolli¹, **Piero Fraternali**⁵, **Theodora Tsikrika**³, **Dario Bellingeri**⁸, **Jose Santos**⁶, **Jimmy Berggren**⁹, **Eduardo Villamor Medina**², **Sandra Balbierz**⁴, **Christina Dolianidi**⁷

1: Fondazione SAFE; 2: Politecnico di Milano, POLIMI; 3: Information Technologies Institute, CERTH; 4: Agenza Regionale per la Protezione dell'Ambiente della Lombardia, ARPA; 5: European Union Satellite Centre, SATCEN; 6: Polismyndigheten Swedish Police Authority, SPA; 7: Grupo Etra; 8: Hochschule fur den offentlichen dienst in Bayern, BayHfoD; 9: Draxis Environmental SA, Draxis

Harnessing EO Technologies: Advancing Human Rights and Environmental Protection in Fair Water Use Initiatives

Seonaid Rapach¹, **Annalisa Riccardi**¹, **Rhonda Wheate**¹, **Viktoria Nemeth**²

1: University of Strathclyde, United Kingdom; 2: Water Witness, United Kingdom

Is remote sensing the new space police?

Camilla ACQUARONE, **Pranav Satyanath**, **Virginia MARAGLINO**, **Roohi Dalal**

SGAC

Lake Victoria: A Convergence of Environmental Crimes

Willis Okumu

Institute for Security Studies, Kenya

LAND CONSUMPTION FOR WASTEWATER TREATMENT PLANT DESIGN – THE LAMBRO STUDY TO ASSESS WATER QUALITY

Daniela Drimaco, **Giulio Ceriola**, **Davide Passarelli**

Planetek Italia s.r.l., Italy

Frontiers of remote sensing the environmental impacts of armed conflicts: ethics towards impacted communities, international norm building, addressing legal accountability

Marie Schellens

PAX for Peace, Netherlands, The

MoRe4nature: Empowering citizens in collaborative environmental compliance assurance; promote, monitor and enforce.

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Joan Maso², Uta Wehn¹ 1: IHE Delft, Netherlands; 2: CREAM, Spain

Remote sensing and data science techniques to enhance monitoring and detection of illicit synthetic drug waste dump sites: examples from the NarcoView project

Tatjana Kuznecova, Nilay Swarge

Saxion University of Applied Sciences, Netherlands

Bringing transparency to the fight against methane emissions and deforestation

Marion Messador

Kayrros, France

Climate Data and Early Warning System for Climate Action

Mustapha Abdurrahman

One Forest Youth Initiative, Nigeria

Combination of satellite and ground based digital data for automatic illegal logging detection

Gianni Picchi¹, Lorenzo Arcidiaco¹, Antonio Ruano², Manuela Corongiu³, Tiziana De Filippis¹, Stefano Romanelli³

1: CNR-IBE, Italy; 2: CTFC, Spain; 3: Consorzio Lamma, Italy

Assessing sugarcane encroachment on riparian buffer zones in the Cauca Valley, Colombia

Teresa De Marzo, Flaviano Bianchini

Source International Onlus, Italy

Biodiversity-Cert: to monitor environmental crimes by agriculture (fashion, food and beverage industries).

Chandra Prakash Jha

FFBS Fashion For Biodiversity Solutions GmbH, Germany

Harnessing Earth Observation to Combat Deforestation: WFP's Insights from Sierra Leone

Savana de Gorostizaga, Sarah Mary Muir, Rogerio Bonifacio, Hannah Kemper, Paola Di Francesco, Ivana Petrakovic, William Hopkins

World Food Programme, Rome

Monitoring and fighting environmental crimes with VHR satellite imagery

Cesario Vincenzo Angelino, Luca Cicala, Donato Amitrano, Sara Parrilli, Francesco Gargiulo, Marco De Mizio, Vincenzo Rosario

Baraniello, Giuseppe Persechino

CIRA, Italy

Restoring Forests with Earth Observation: A Holistic Approach

Domiziana Ferrari

Independent Consultant, Italy

Change detection of marble quarry activity based on a machine learning approach of multi-temporal Sentinel-2 imagery

Erhan ŞENER, Şehnaz ŞENER

Süleyman Demirel University, Türkiye

Copernicus Security Service – Strategic Research Agenda

Evaldas Kristopaitis

European Commission, Belgium



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Date: Wednesday, 12/June/2024

9:00am S4 - Monitoring 1 - water

Location: **Big Hall**

10:40am Chair: **Pieter S A Beck**, JRC-ISPRA

Chair: **Michela Corvino**, ESA

9:00am - 9:20am

Keynote by Interpol

Marco Foddi

Programme Manager, Illicit Markets Sub-Directorate, Environmental Security, Interpol

9:20am - 9:40am

The Use of Earth Observation for Detection and Monitoring of Waste Water

Zane Walden Ferch

TechWorks Marine, Ireland

9:40am - 10:00am

Applying Earth Observatory Data to the Surveillance of Large Lakes Under Shared Governance

Jérôme Marty

International Association for Great Lakes Research (IAGLR), Canada

10:00am - 10:20am

Satellite and Underwater in-situ Data Processing and Integration for Environmental Crimes Detection and Monitoring

Michele Nati, Maria Angelucci

WSense S.r.l., Italy

10:20am - 10:40am

A near real-time oil spill detection and forecasting Ocean Twin

Sabrina Outmani¹, Katerina Spanoudaki², Noemi Fazzini¹, Maria Luisa Quarta¹, Laura Vettorello¹, Riccardo Ratta¹, Marco Folegani¹, Nikos Kampanis²

1: Meteorological Environmental Earth Observation-MEEO S.r.l, Ferrara, Italy; 2: Coastal & Marine Research Laboratory, Foundation for Research and Technology Institute of Applied and Computational Mathematics, Heraklion, Crete, Greece

10:40am Round Table Discussion - Pollution crimes and depletion of water resources

Location: **Big Hall**

11:10am Chair: **Maiken Ristmae**, ESA - Esrin

Chair: **Elena Morando**, European Space Agency

Panelists:

- Willis Okumo, Institute for Security Studies, Kenya
- Daniela Trimaco, Planetek
- Mariana Damova, Mozajka Ltd
- Seonaid Rapach, University of Strathclyde

11:10am Coffee Break

Location: **Big Hall**

11:30am

11:30am S5 - Monitoring 2 - Land Environmental Crimes and Illicit Trafficking

Location: **Big Hall**

1:10pm Chair: **Pieter S A Beck**, JRC-ISPRA

Chair: **Michela Corvino**, ESA

11:30am - 11:50am

Keynote by UNODC

Anja Korenblik

Deputy Chief of the Research Branch, United Nations Office on Drugs and Crime (UNODC)

11:50am - 12:10pm

EO4SEC - Environment crimes monitoring



Annalaura Di Federico¹, Adriano Benedetti Michelangeli¹, Alix Leboulanger³, Anne-Lynn Dudenhoefer⁴, Jan Huch², Valerio Botteghelli¹
1: e-geos, Italy; 2: GAF; 3: JANES; 4: HENSOLDT

12:10pm - 12:30pm

Detecting waste crime with satellite models: From Sentinel-2 to Super-Resolution deep learning for enhanced waste site detection

George Boldeanu¹, Mihaela Violeta Gheorghe¹, Teodora Selea¹, Ray Purdy²

1: GMV Romania; 2: ASE-Air and Space Evidence

12:50pm - 1:10pm

Mapping Wildlife Corridors for Effective Park Management in Africa

Iain Cameron

EOLAS Insight, United Kingdom

Lunch

Round Table Discussion - Environmental Crimes, society and human rights

Location: **Big Hall**

Chair: **Marie Schellens**, PAX for Peace

Panelists:

- Tatjana Kuznecov, Saxion University of Applied Sciences
- Narjes Davari, INESC TEC - Institute for Systems and Computer Engineering, Technology and Science
- Anna Berti Suman, LUISS
- Wouter Veening – IES

S6 - Forest and agriculture related crime

Location: **Big Hall**

Chair: **Pieter S A Beck**, JRC-ISPRA

Chair: **Michela Corvino**, ESA

2:40pm - 3:00pm

Guardians from above: leveraging Earth Observation to Combat Environmental Crimes. The Nature FIRST experience

Boris Hinojo¹, Ondrej Koporec², Gemma Prieto Bonete³, Tania de la Fuente De Andrés³, Jan-Kees Schakel⁴, Júlia Janka Faller⁵, Linda van Duivenbode⁵

1: 3edata; 2: Department for Detection of Hazardous Substances and Environmental Crime, National Central of Specific Types of Crime, Presidium of the Police Force, Slovakia; 3: Technical Unit for the Environment (UT-UCOMA), Seprona, Civil Guard, Spain; 4: Sensing clues; 5: dotSPACE

3:00pm - 3:20pm

The role of cutting-edge technologies in safeguarding the Amazonian rainforest

FAUSTINO GUDIN

EUFJE.

3:20pm - 3:40pm

Satellite monitoring and forest crime: experiences and lessons from the Amazon Basin

C. Ruth Nogueron

World Resources Institute, United States of America

Coffee Break

Location: **Big Hall**

S6 - Forest and agriculture related crime - continued

Location: **Big Hall**

Chair: **Pieter S A Beck**, JRC-ISPRA

Chair: **Michela Corvino**, ESA

4:00pm - 4:20pm

Geospatial intelligence to identify illegal forest logging: user requirements perspective

Federico Filippini¹, Emiliano Agrillo², Alice Pezzarossa², Laura Calcagni², Nico Bonora²

1: National Research Council (CNR), Italy; 2: Institute for Environmental Protection and Research (ISPRA), Italy



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4:20pm - 4:40pm

Elevating Agricultural Compliance and Regulations: Harnessing Earth Observation and Remote Sensing for Enhanced Environmental Enforcement

Rushanka Amrutkar, Simon Barron

Environment Agency, England, United Kingdom

4:40pm

-

5:10pm

Round Table Discussion - Illegal logging and deforestation

Location: **Big Hall**

Chair: **Pieter S A Beck**, JRC-ISPRA

Panelists:

- Gianni Picchi, CNR
- Mariona Massador, Kayrros
- Mustapha Abdurrahman, One Forest Youth Initiative

5:10pm

-

5:20pm

Conclusions from the organizers

Location: **Big Hall**