



Governo dos Açores



European Union Network for
the Implementation and Enforcement
of Environmental Law

IMPEL Mini-Conference on “Advances in the use of technology in environmental and regulatory monitoring”

Conferência Nacional IMPEL
14/02/2020
Funchal



European Union Network for
the Implementation and Enforcement
of Environmental Law

IMPEL Cross-cutting Tools and Approaches Expert Team

- Agência Europeia do Ambiente, Copenhaga, dias 7 e 8 de novembro de 2019;



Programa



European Union Network for
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of Environmental Law

Thursday 7th November 2019 (0830 Registration)

1	Registration	08:30 - 09:00
1.1 30 mins	Registration	All
2	Welcome & Introductions	09:00 - 09:15
2.1 10 mins	Welcome	Simon Bingham
2.2 5 mins	Tour de table	All
3		09:15 - 10:15
3.1 60 mins	The Finnish MONITOR program	Petri Lijaniemi Finland
***	Coffee Break	10:30 - 11:00
4		10:45 - 13:00
4.1 45 mins	Applications of advanced data analytics for environmental oversight	Jasper van Vliet Netherlands
4.2 45 mins	Cutting edge technology for environmental monitoring	Joel Davidse Netherlands
4.3 45 mins	Copernicus data for water management authorities in Germany - water quality assessment, flood prevention, enhancement of hydrological models.	Annalena Goll Germany

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5		14:00 - 15:30
5.1 45 mins	The future of bio-monitoring	Willie Duncan United Kingdom
5.2 45 mins	Operational use of innovative monitoring techniques in the Environment Agency	Alison Matthews United Kingdom
***	Coffee Break	15:30 - 16:00
6		16:00 - 17:00
6.1 60 mins	Open session exploring the barriers, challenges and opportunities to implementing new technology	All

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Friday 8th November 2019 (0825 Start)

7	Welcome back	08:25 - 08:30
7.1 5 mins	Welcome	Simon Bingham
8		08:30 - 10:45
8.1 45 mins	Estonian Environmental Inspectorate drone program	Allar Leppind Estonia
8.2 45 mins	GPS tracking of waste	Jonas Lundin Sweden
8.3 45 mins	Application of mobile technology for waste inspections	Stuart Fallis United Kingdom
***	Coffee Break	10:45 - 11:15
9		11:15 - 12:45
9.1 45 mins	Smart2019 at the Province of Overijssel	Remko Wicherson Netherlands
9.2 45 mins	Scotland's digital end-to-end system for diffuse pollution farm inspections: 4 years on.	Jonathan Bowes United Kingdom
10	Close out	12:45 - 13:00
10.1 15 mins	What next?	Simon Bingham



Ympäristöministeriö
Miljöministeriet
Ministry of the Environment

Part 1: New methods for environment monitoring and surveillance – MONITOR 2020-programme, Finland

IMPEL-Conference, Copenhagen 7.11.2019
Petri Liljaniemi
Ministry of the environment FINLAND

Part 2: Satellites in environmental surveillance and monitoring – Finnish solutions

IMPEL-Conference, Copenhagen 7.11.2019
Petri Liljaniemi
Ministry of the environment FINLAND



Human Environment and Transport Inspectorate
Ministry of Infrastructure and Water Management



Human Environment and Transport Inspectorate
Ministry of Infrastructure and Water Management

Jasper van Vliet

Assistance from algorithm:
Selecting inspection targets

Algorithms for the
Verification of Emissions
from ships with Satellites
(AVES)

Which schip has the highest priority for inspection ?



Schip A

- Diepgang: 1½ meter
- Tonnage: 1.000 ton
- Eigenaar heeft ook nog twee andere schepen in bezit
- Eigenaar is een investeerder die zijn hoofdactiviteiten BUITEN de scheepvaart heeft
- Vaart voornamelijk in Brabant en Limburg



Schip B

- Diepgang: 3½ meter
- Tonnage: 8.000 ton
- Eigenaar heeft alleen dit schip in bezit
- Eigenaar heeft zijn hoofdactiviteiten binnen de scheepvaart
- Vaart voornamelijk in Friesland

AVES Project ambitions

Design a robust methodology to detect emission profile of individual ships: NO_x, SO_x.

- State of the Art
- Explainable
- Clarity on weak and strong points
- Open access

Technology



Opportunities with:

Satellites

Drones

GIS



Implementation:

Barriers

Challenges

Joël Davidse MSc Geo-Information Science
ID-LAB (50%) data analyst GIS & Remote Sensing
ILT AEROSENSING (50%) drone operator



COPERNICUS data

for water management authorities in Germany

—
water quality assessment, flood prevention,
enhancement of hydrological models

Dr. Annalena Goll, Copernicus for LAWA

Ministry for Environment, Energy, Food and Forestry Rhineland-Palatinate



CLIMATE CHANGE



MARINE MONITORING



ATMOSPHERE MONITORING



LAND MONITORING



SECURITY



EMERGENCY MANAGEMENT

The Future of Biomonitoring- Catching the Wave



Willie Duncan
SEPA

Why do we monitor the environment

To understand the environmental condition.

To understand the impact of discharges.

To track improvements arising from interventions.



Operational use of innovative monitoring techniques in the Environment Agency

Dr Alison Matthews, Geomatics Manager
Jon Hateley, Crispin Hambidge, Matt Loewenthal, Jonathan Porter

IMPEL conference on Advances in the use of technology in
environmental and regulatory monitoring

7th and 8th November 2019 Copenhagen



Contents

- Introduction to the Environment Agency
- The case for innovation
- Case studies
 - Earth observation
 - Fish passage
 - Continuous monitoring
 - Microbial source tracking
 - eDNA
- The future

Estonian Environmental Inspectorate „drone program“

“Advances in the use of technology in environmental and regulatory monitoring”

7th – 8th November, Copenhagen

Ardi Lepp



OUR DRONES

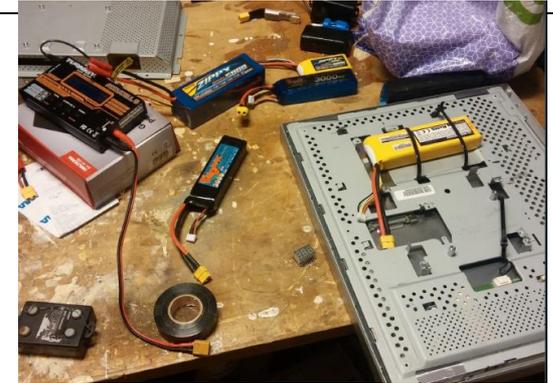
- 18 drones (at least 1 in each County Office)
- DJI Phantom 2 (1 pcs)
- DJI Phantom 3 Adanced (3 pcs)
- DJI Phantom 4 Pro + (10 pcs)
- DJI Mavic 2 Pro (3 pcs)
- DJI Inspire 1 V2.0 + Zenmuse XT Thermo
- Ca 2000 euros (15000 euros)



TOPICS

- Introduction
- Drones
- Drone users
- Possibilities
- Regulations
- Case studies
- Limitations and setbacks
- Next steps
- Key notes

GPS TRACKING PROJECT



GPS TRACKING PROJECT – TRACKING ILLEGAL WASTE STREAMS WITH GPS TRACKERS

GPS TRACKING PROJECT



DEVELOPMENT

- WEEE tracking development by Swedish regional authorities.
- Lead-acid battery tracking development by Finnish national authorities.
- Both authorities helped each other in their respective development project.
- Meetings in Finland on two separate occasions. One for the planning phase and one for the execution phase.



Holanda



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SMART 2030

Remko Wicherson

Manager Innovation- and Datalab
Province of Overijssel, the Netherlands
November 8th, 2019



4 types of innovation

- UAV images
- Aerial and satellite images
- Sensors
- Other data

sand extractions



number of swimmers



wheat plantations
in reet fields





How?



2 types of compliance inspection:

1. Full farm
2. Follow-up



On:
 Field management
 Fertilizer & pesticide handling
 Slurry, manure & oil storage
 Drainage
 Waste

- Using 15 farm specialists with Ruggon PX501B tablets
- Bespoke GeoField software (mobile GIS, data capture)
- Tibco Spotfire (dashboards, analytics)

Benefits



- Efficiency & cost savings (~80% back office)

- 3.5 hours saved per initial visit
- 1.5 hours is saved per follow-visit
- ~£120 saving per inspection

- GeoField cost (£280k) – ROI in ~2 years
- Data quality radically improved:
 - digital
 - Consistent
 - Georeferenced

- Dynamic data access (in field) – classification, NVZ, farm details, licensed points etc etc
- Rapid farmer feedback - days not months
- Accelerated environmental improvement
- Freeing up OPS staff to focus on real work not paper shuffling/data cleansing

RBMP Cycle	No. farms	Savings (FTE)		
		Initial visit	Revisit (63%)	Total
2012-2015	2500	7.1	1.2	8.3
2016-2021	11530	32.0	8.6	40.6
		= 48.9 FTE or £1.4m		

Dificuldades e desafios



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Oportunidades



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