



Day	Date	Time	Open Hardware	Open Software
Monday	13/05/2024	9:00-10:30 (1h30)	<p>Welcoming</p> <p>Presentation of UNESCO, IAEA, ICTP and key elements [30 mins with 10 mins each]</p> <ul style="list-style-type: none"> - Innovation and Open Hardware in Malawi (Chomora Mikeka) [45 mins] - Introduction to the UNESCO Recommendation on Open Science (Koen Verbist) [15 mins] 	
		10:30-11:00 (0h30)	Break	
		11:00-13:00 (2h00)	<ul style="list-style-type: none"> - Introduction to Open Hardware/Open Software (Wouter Buytaert & Ann van Griensven) [30 mins] - Introduction of the Citizen Science application by Quartex (preparation for field trip) [15 mins] 	
			<ul style="list-style-type: none"> - Introduction to Internet-of-Things for SDGs (Marco Zennaro) [30-45 mins] - Open Hardware Solutions for environmental Sensing (Wouter Buytaert) [30-45 mins] 	Introduction to Open Software/Open Data + SWAT-co-SWAT (Ann van Griensven and James Chawanda) [75 mins]
		13:00-14:00 (1h00)	Lunch	
		14:00-15:30 (1h30)	Lab: Getting started with Arduino (Wouter Buytaert) [90 mins]	Lab: Introduction to the Soil and Water Assessment Tool (SWAT+version) (James Chawanda) [90 mins]
		15:30-16:00 (0h30)	Break	
		16:00-18:00 (2h00)	Lab: Getting started with Arduino (continued) [90 mins]	Lab: Setting up SWAT+ model (James Chawanda) [90 mins]

			Introduction to the assignment to be presented on Friday [30 min]	
Tuesday	14/05/2024	9:00-10:30 (1h30)	- Building an environmental logger with Arduino (Wouter Buytaert) [45 mins] - Communications options for IoT (Marco Zennaro) [45 mins]	Introduction to the SWAT+ toolbox for calibration and visualisation of the results. Climate Impact simulation using SWAT+ (James Chawanda) [90 mins]
		10:30-11:00 (0h30)	Break	
		11:00-13:00 (2h00)	- SmartWater sensors for water quality (Abdella Touhafi and Mateusz Zawadski) [60 mins]- ARM education (Peter) [60 mins]	Introduction to the SWAT+ toolbox for calibration and visualisation of the results. Climate Impact simulation using SWAT+ (James Chawanda) [120 mins]
		13:00-14:00 (1h00)	Lunch	
		14:00-15:30 (1h30)	Lab: Automated water level sensing with Arduino (with telemetry) (Wouter Buytaert) [90 mins]	Lab: SWAT+ (James Chawanda) [90 mins]
		15:30-16:00 (0h30)	Break	
		16:00-18:00 (2h00)	Lab: Automated water level sensing with Arduino (with telemetry) (continued) [120 mins]	Lab: SWAT+ (James Chawanda) [120 mins]
Wednesday	15/05/2024	07:15	Gathering of group	
		07:30	Departure	
			IoT Sensors in Eerste Rivier: how does real-time monitoring supports flood warnings? (Arthur Chapman) [60 mins]	
			Demonstration of Citizen Science application in Cape Winelands Biosphere Reserve with 3 instruments (MiniSASS, Clarity, Streamflow) + smartphone application (Quartex) [120 mins]	

		12:00-13:00	Lunch	
			Challenges and solutions with field installation pilot at Kruger to Canyons Biosphere Region (SAEON - Ndlovu Node) [30 mins]	
			Visit to the 'Smart University' and School for Data Science and Computational Thinking []	
		15:00	Return to hotel	
Thursday	16/05/2024	9:00-10:30 (1h30)	Introduction to MQTT (Marco Zennaro) [90 mins]	J2000/J2000iso numerical rainfall-runoff model: Improving the ability to capture hydrological and anthropogenic change (Yulia Vystavna and Andrew Watson) [90 mins]
		10:30-11:00 (0h30)	Break	
		11:00-13:00 (2h00)	Lab: Sending data via MQTT (Marco Zennaro) [90 mins]	Lab: Hands-on exercise using J2000 (Yulia Vystavna and Andrew Watson) [90 mins]
			AI and ML for water management (Koen Verbist) [30 mins]	
		13:00-14:00 (1h00)	Lunch	
		14:00-15:30 (1h30)	Lab: Build your first AI model to support water management (Yulia Vystavna) [90 mins]	
		15:30-16:00 (0h30)	Break	
		16:00-18:00 (2h00)	Lab: Build your first AI model to support water management (Yulia Vystavna) [120 mins]	
Friday	17/05/2024	9:00-10:30 (1h30)	- Introduction to TinyML (Marco Zennaro) - Citizen Science applications in Biosphere Reserves: development, technology, back-end (Quartex)	

	10:30-11:00 (0h30)	Break
	11:00-13:00 (2h00)	- Open Data and Software Applications for Water quality (Sofi La Fuente) [60 min] - An introduction to the Soil Moisture TOMST network (Katoria Lekarkar) [60 min]
	13:00-14:00 (1h00)	Lunch
	14:00-15:30 (1h30)	Network development (teamwork and presentations)
	15:30-16:00 (0h30)	Break
	16:00-18:00 (2h00)	Network development (teamwork and presentations)