Ponderful

PONDS FOR CLIMATE



Deliverable D3.8

Report on Water Level Change in Ponds

Pond Ecosystems for Resilient Future Landscapes in a Changing Climate

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Ponderful Partners:

University of Vic – Central University of Catalonia (Spain) – Prof. Sandra Brucet (PI, Project coordinator), Dr. Diana van Gent (Project Manager)

IGB im Forschungsverbund Berlin (Germany) – Dr. Thomas Mehner (PI, Task lead 2.4)

Katholieke Universiteit Leuven (Belgium) – Dr. Luc De Meester (PI, WP2 coordinator)

Haute Ecole Spécialisée de Súisse occidentale (Switzerland) – Dr. Beat Oertli (PI, WP4 coordinator)

Universitat de Girona (Spain) –Dr. Dani Boix (PI)

Ecologic Institut gemeinnützige GmbH (Germany) – Dr. Manuel Lago (PI, Task lead 1.4)

University College London (UK) –Dr. Carl Sayer (PI)

Middle East Technical University (Turkey)– Dr. Meryem Beklioğlu (PI)

CIIMAR - Interdisciplinary Centre of Marine and Environmental Research (Portugal) –Dr. José Teixeira (PI, WP5 co-coordinator)

Aarhus University (Denmark) – Dr. Thomas A. Davidson (PI)

Uppsala University (Switzerland) –Dr. Malgorzata Blicharska (PI)

Bangor University (UK) – Dr. Sopan Patil (PI)

Technical University of Munich (Germany) – Dr. Johannes Sauer (PI, Task lead 1.6)

I.S.A.R.A. – Institut Supérieur d'Agriculture Rhône-Alpes (France) – Dr. Joël Robin (PI)

Middle East Technical University (Turkey) – Dr. Meryem Beklioğlu (PI)

Freshwater Habitats Trust (UK) – Dr. Jeremy Biggs (PI, WP5 co-coordinator)

Universidad de la República (Uruguay) – Dr. Matías Arim (PI)

Randbee Consultants SL (Spain) – Juan Arevalo Torres (PI)

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Authors:
Zuhal Akyurek, Çağrı Karaman, Mustafa Berkay Akpınar

Contributors:
Julie Fahy, Louisa-Marie von Plüskow, Helen Greaves, Penny Williams, Pieter Lemmens, Eti Ester Levi, Maria Cuenca Cambronero

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1. Executive Summary

This report on water level change in ponds presents the collected water level data in the ponds in Belgium, Denmark, Germany, Spain, Switzerland, Turkey and the UK for the period April 2021-April 2022.

2. Introduction

Monitoring the water level is needed to understand the water level change in the ponds. In order to make predictions of water level change according to climate change and land use change in the regions, the water level data have been collected in the ponds in Belgium, Denmark, Germany, Spain, Switzerland, Turkey and the UK. The water level in the ponds is measured by installed data loggers and visual monitoring at the time of field visit. The availability of the water in the pond is monitored by the installed temperature sensors inside and outside the ponds. The characteristics of the collected data in each country are given in Table 1.

Table 1. The Availabilities and Descriptions of Data Obtained for Water Level Changes.

	Description	Unit	Belgium	Denmark	Germany	Spain	Switzerland	Turkey	UK
PondCode	*Used within Ponderful*	-	Available	Available	Available	Available	Available	Available	Available
Hydro_temp	*Whether pond holds water using set of loggers*	0/1	Available	Available	Available	Available	Available	NA*	Available
Hydro_visual	*Whether pond holds water (visually)*	0/1	Available	Available	Available	Available	Available	Available	Available
Water_depth	*Measured Directly in the field*	cm	Available	Available	Available	Available	Available	Available	Available
Water_logger	*Water levels from loggers*	kPa	NA	NA	Available	Available	Available	Available	Available
Water_drop	*Decrease of water level relative to max. level*	cm	Available	Available	Available	Available	Available	Available	Available
Water_volume	*Volume of water level relative to maximum level*	%	Available	Available	Available	Available	NA	Available	Available
Water_area	*Water surface area relative to its maximum*	%	Available	Available	Available	Available	Available	Available	Available
Air_temp_logger	*Daily mean air temp. from logger outside the pond*	°C	Available	Available	Available	Available	Available	NA*	Available
Air_temp	*Daily air temp. from closest met. station*	°C	NA	Available	Available	Available	Available	Available	Available
Precipitation	*Daily precipitation*	mm	NA	Available	Available	Available	Available	Available	NA

*Stratified sampling of the ponds in Turkey has started in April 2022. NA: Not Available

2.1. Pressure Sensors:

The data logger is placed on the bed of the pond at the deepest part of the water body. An example of a data logger is given in Figure 1. A borehole or anchor system can be installed to keep the logger stable. The collected pressure values are corrected with the atmospheric pressure measured outside close to the pond. The data are downloaded during the field visits once every two weeks. The outputs of water temperature, relative humidity, pressure (pressure is the appropriate choice for water level observations) are obtained from the logger.

Figure 1. HOBO Water Level Data Logger.

2.2. Temperature Sensors

The temperature loggers are placed both at the bottom of the pond at the deepest location and outside of the pond so that air temperature can also be detected near to the pond. Available data are compiled every two to three weeks as well. Logging rate varies between 1 second to 18 hours for most of the time (depending on the model of the sensor). An example of a sensor used in measuring the temperature is given in Figure 2.

Figure 2. HOBO Pendant Temperature Data Logger.

2.3. Visual Inspection

Water depth and relevant change in water levels can be monitored during the field trips as well. One of the common methods is using the 'depth meters' (Figure 3). Depth meters are easy to use for large ponds, user needs to put the head of depth meters in the water and simply use the button. One disadvantage for depth meters is the possible presence of trashes/brushwoods at the bottom surface of the pond, which may lead to incorrect

water depth values. If these debris cover the whole surface of the bottom, the device cannot measure the depth properly and starts to underestimate water levels.

Second alternative is using the measurement sticks. The sticks include labelled dots to indicate water levels for visual data collection. Implementing regular field trips for water level monitoring, these visual methods might be pretty informative to obtain changes in water levels for different periods, although the time interval of data collection cannot be as much as time interval of pressure sensors.

Figure 3. Depth Meter for Manual Water Level Measurement.

2.4. Remote Sensing

Monitoring the availability of the water in the ponds with remote sensing approaches are presented with an application[1] for Ponderful. The algorithm of the application successfully captured ponds with a surface area larger than 0.5 ha, then hydroperiod of the ponds obtained with locally measured and remotely sensed surface areas as percentage (Eq.1).

$$Area\ found\ ,\% = \frac{Remotely\ Sensed\ Area}{Local\ Measured\ Area} * 100 \qquad (1)$$

where remotely sensed area is the area retrieved from the satellite images and local measured area is the area obtained from the pond owners. All data can be viewed and downloaded on a daily basis from the application. In order to exemplify, a snapshot and relevant hydroperiod data obtained from application for the 'Burnier Blanchet Teppes' pond in Switzerland represented in Figure 4.

[1] https://ponderful.hidrosaf.com/

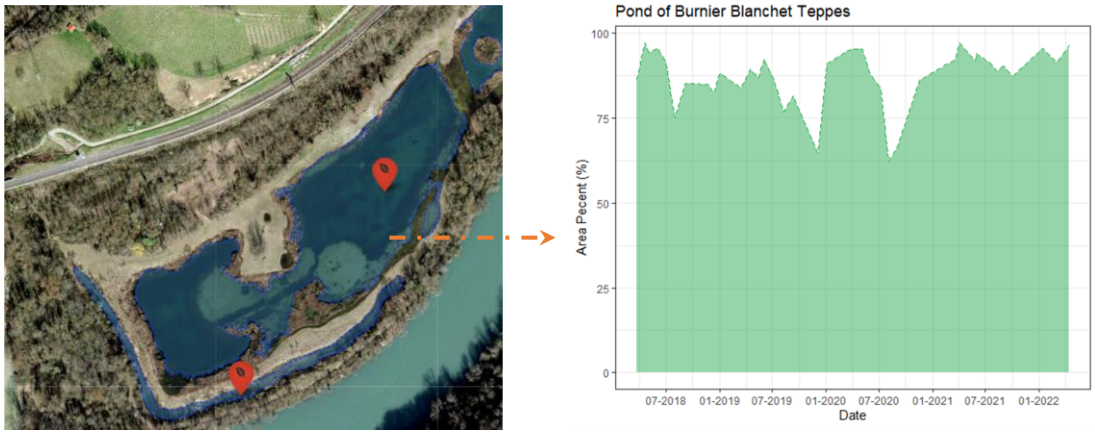


Figure 4. A Snapshot from the Application with Obtained Hydroperiod Data.

The data collected consist of hydroperiod related data, water storage related data and additional (if exist) variables (e.g. precipitation and air temperature). They are described as follows:

- PondCode →Pond code used within PONDERFUL, following the design of the stratified survey within WP2. The code consists of maximum 3 characters depicting the pondscape in which the pond is situated, followed by maximum 6 characters identifying the pond at pondscape level.
- Hydro_expected → indicates whether this pond is expected to be temporal (T), permanent (P), or semi-permanent (SP, in principle permanent but dries out once every several years).
- Hydro_temp → indicates whether a pond holds water at a given day as estimated using a set of two temperature loggers.
- Hydro_visual → indicates whether ponds hold water at a given day, visually assessed in the field.
- Water_depth → as measured directly in the field during field visits.
- Water_logger →water level for each day as measured using water level loggers.
- Water_drop→ decrease of water level relative to maximum pond water level.
- Water_volume →volume of water in pond relative to its maximum.
- Water_area →water surface area relative to its maximum.
- Air_temp_logger →daily mean air temperature from temperature logger outside pond.
- Air_temp → daily air temperature from closest meteorological station.
- Precipitation → daily precipitation from closest meteorological station.

3. Water Level Change

The water level data from the data loggers, visual inspection, temperature sensors and the RS application are plotted. The temperature and precipitation data from the closest meteorological station are presented. If the closest meteorological station data do not exist, daily average temperature and daily precipitation are obtained from ERA5land reanalysis product[2]

Belgium:
Data from 30 ponds are obtained. Among the 30 ponds, none of them are demo ponds. The locations of the ponds are shown in Figure 5.

[2] https://cds.climate.copernicus.eu/cdsapp#!/dataset/reanalysis-era5-land?tab=form

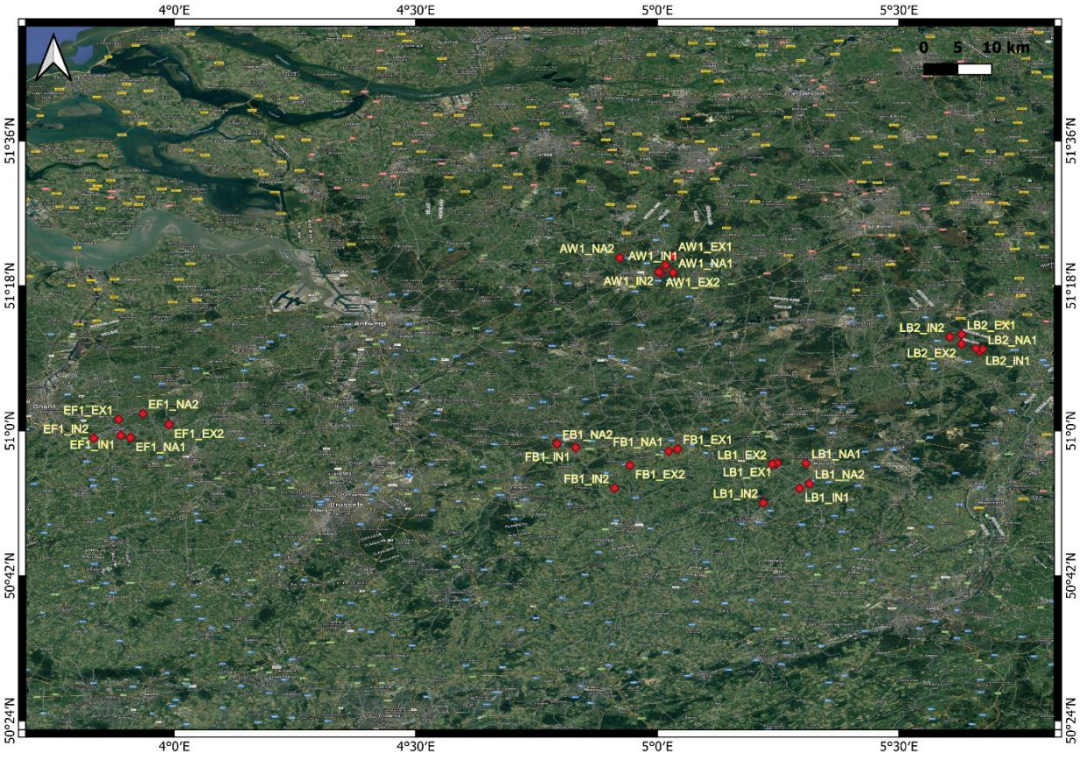


Figure 5. Locations of Ponds in Belgium

None of the pond water levels are monitored with pressure sensors. The visual inspection and temperature sensors are used to observe the change in water depth. The water level data are depicted in Figure 6 for pond AW1_EX1. The plots for all the ponds in Belgium are given in Appendix 1.

For pond AW1_EX1 the water level changes between 38.6 – 87 cm for the period April-October 2021. The temperature sensor indicates that the pond is a permanent one for the observation period.

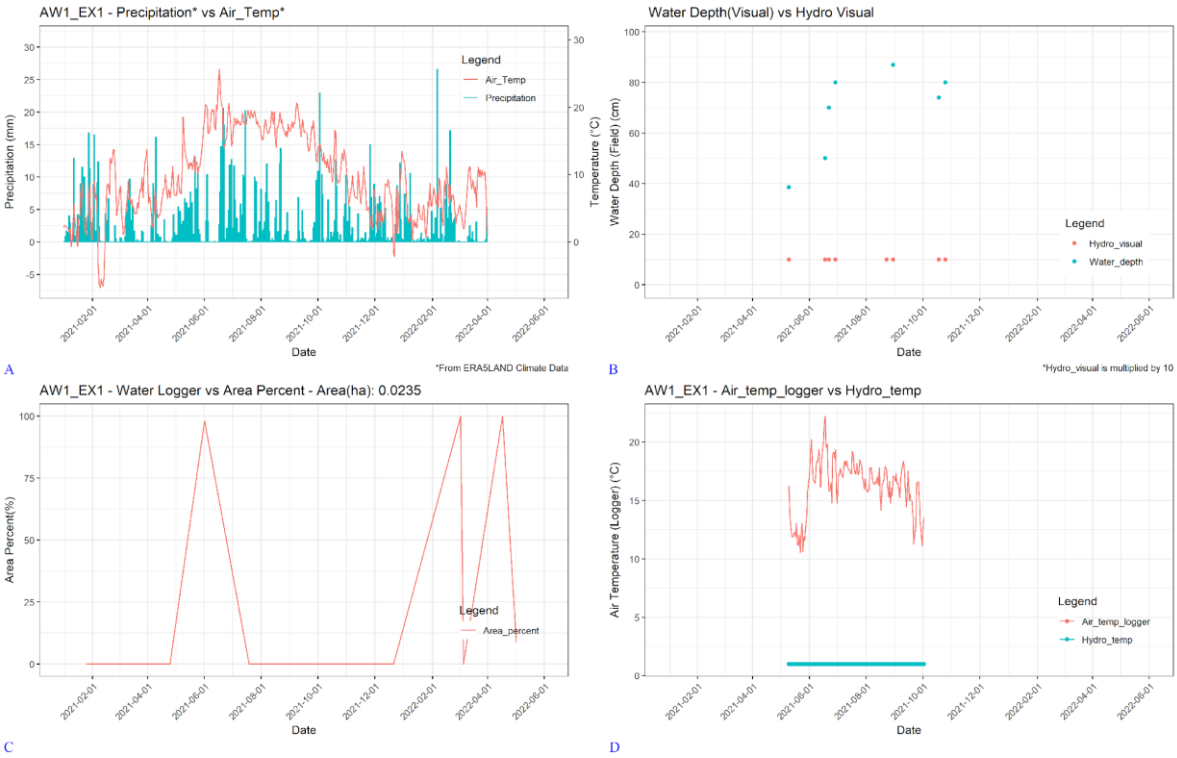


Figure 6. Data of the Pond AW1_EX1 (A:Daily precipitation and average temperature at the closest station, B:Water depth and water availability through visual inspection, C:Water depth from pressure loggers and surface area retrieved from satellite images, D: hydroperiod retrieved from temperature loggers)

Among 30 pongs in Belgium, it is observed that only LB2_IN2 pond is a temporary one, water temperature data indicate that it gets dry in September 2021. The visual inspection supports the situation in the pond. From the visual inspection pond EF1_IN2 is a temporary one too. The water level increases or stays stable in many of the ponds. The RS application results are not so dependable for the ponds in Belgium, since the ponds are so small having the water surface area between 0.0008 ha-0.1844 ha.

Denmark:

Data from 30 ponds are obtained. Among the 30 ponds, 9 of them are demo ponds. The locations of the ponds are shown in Figure 7.

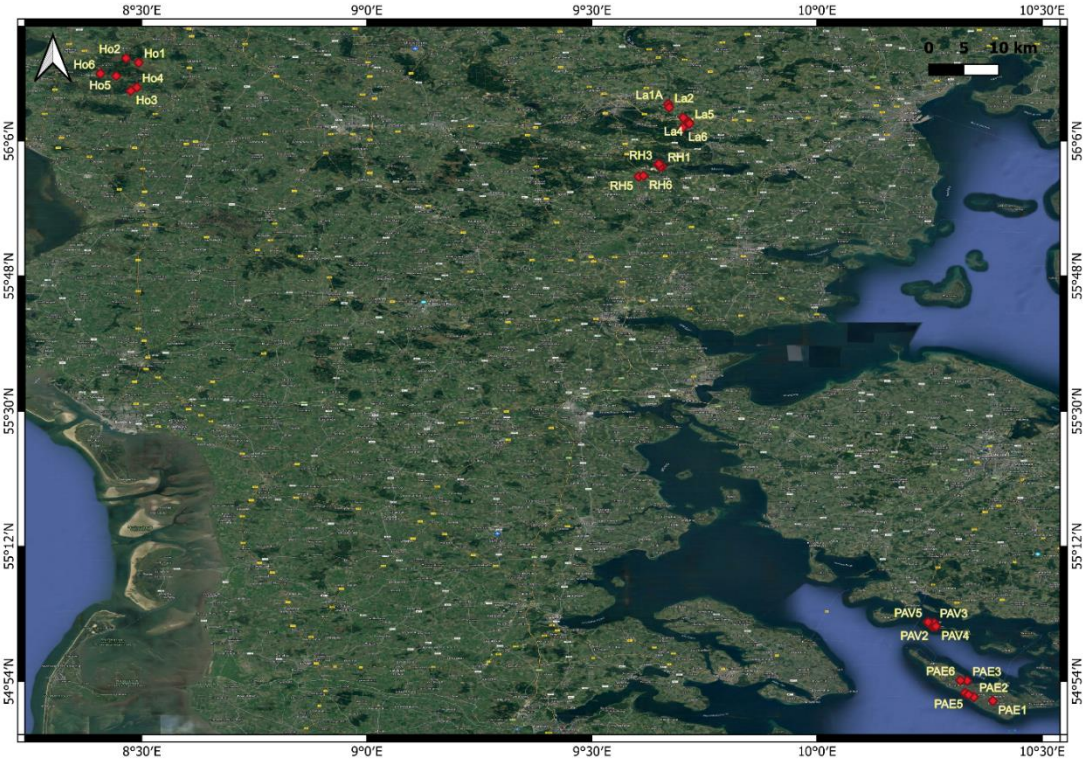


Figure 7. Locations of Ponds in Denmark

The water level data are depicted in Figure 8 for pond Ho1. The plots for all the ponds in Denmark are given in Appendix 2.

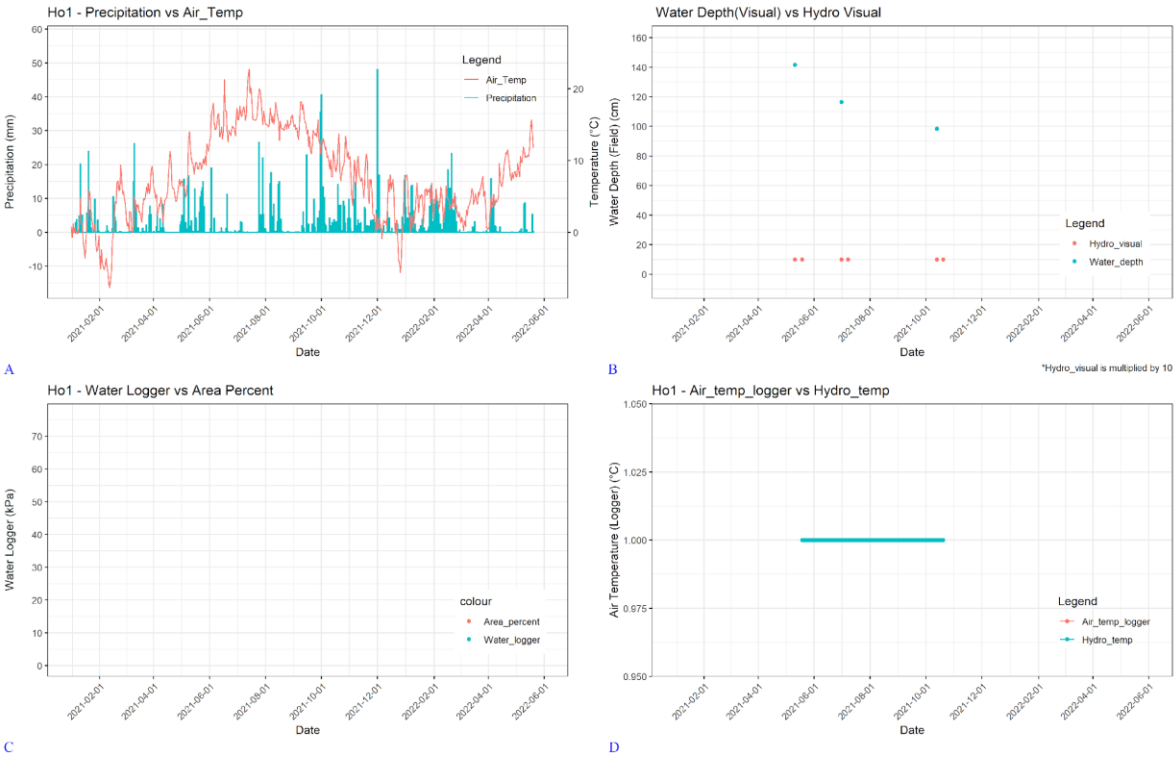


Figure 8. Data of the Pond Ho1(A:Daily precipitation and average temperature at the closest station, B:Water depth and water availability through visual inspection, C:Water depth from pressure loggers and surface area retrieved from satellite images, D: hydroperiod retrieved from temperature loggers)

There is no pressure sensor installed in ponds in Denmark. The water level change is monitored through visual inspection and the availability of water is observed by installed temperature sensors. PAE4 and PAE6 ponds are temporary, thus there was no water in the ponds in September 2021. The temperature sensors and the visual inspection support the situation. The water level in ponds HO1, HO3, LA2, La6, PAE1, PAE2, PAE3, PAE5, PAV1, PAV2, PAV3, PAV4, PAV5, PAV6, RH2 and RH6 decreased for the observation period April-October 2021. The RS application results are not so dependable for the ponds in Denmark, since the ponds are so small having the water surface area between 0.0121 ha-0.096 ha.

Germany:

Data from 30 ponds are obtained. Among the 30 ponds, 6 of them are demo ponds. The locations of the ponds are shown in Figure 9.

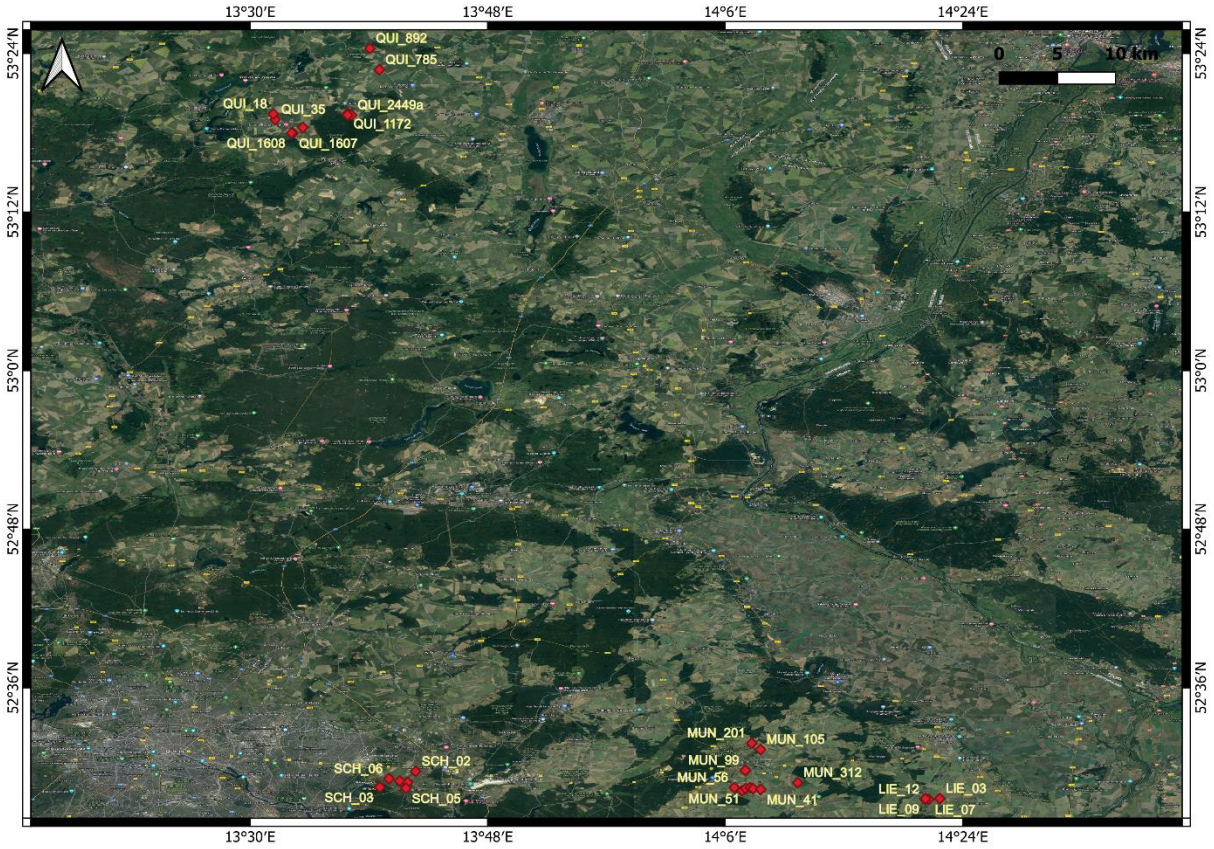


Figure 9. Locations of Ponds in Germany.

The water level data are depicted in Figure 10 for pond SCH_02. The plots for all the ponds in Germany are given in Appendix 3.

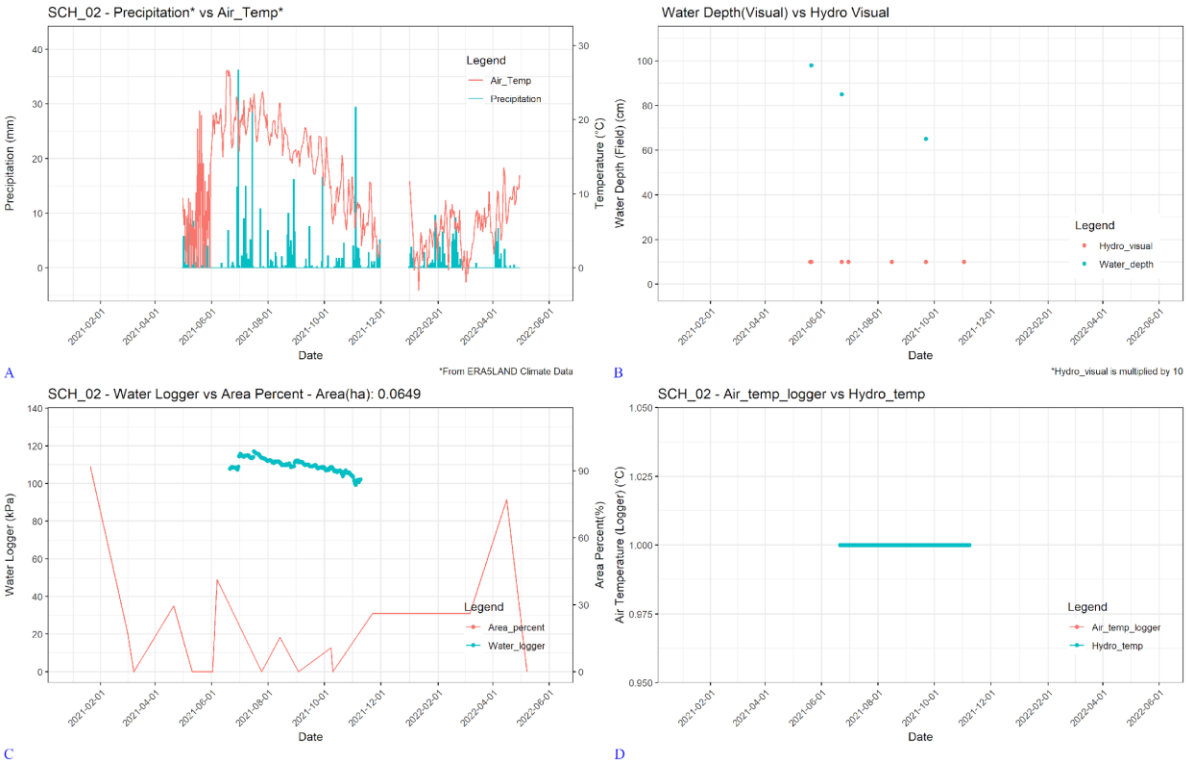


Figure 10. Data of the Pond SCH_02 (A:Daily precipitation and average temperature at the closest station, B:Water depth and water availability through visual inspection, C:Water depth from pressure loggers and surface area retrieved from satellite images, D: hydroperiod retrieved from temperature loggers)

Seven ponds in Germany have pressure sensors. The water level change is monitored through visual inspection and the availability of water is observed by installed temperature sensors. LIE_03, LIE_07, LIE_09, LIE_12, MUN_43, MUN_44, MUN_51, MUN_53, MUN_99, MUN_201, MUN_312, QUI_18, QUI_1172, QUI_2449a, QUI_ex2, SCH_06 and SCH_07 are temporary ponds, thus there was no water in the ponds in September 2021. The temperature sensors and the visual inspection supports the situation. The temperature sensors in LIE_07, LIE_09 and LIE_12 did not work. The water levels in ponds LIE_09, MUN_56, MUN_312, QUI_892, QUI_1607, SCH_02 and SCH_07 decreased for the observation period April-October 2021. The absolute water levels cannot be obtained from the pressure data because of outside pressure values do not exit. The RS application results are not so dependable for the ponds in Germany, since the ponds are so small having the water surface area between 0.0044 ha-0.382 ha.

Spain:

Data from 18 ponds are obtained. The rest of the ponds are being sampled in 2022 (because during the 2021 campaign they were dried) and thus the water level data is not yet available. Among the 18 ponds, none of them are demo ponds. The locations of the ponds are shown in Figure 11.

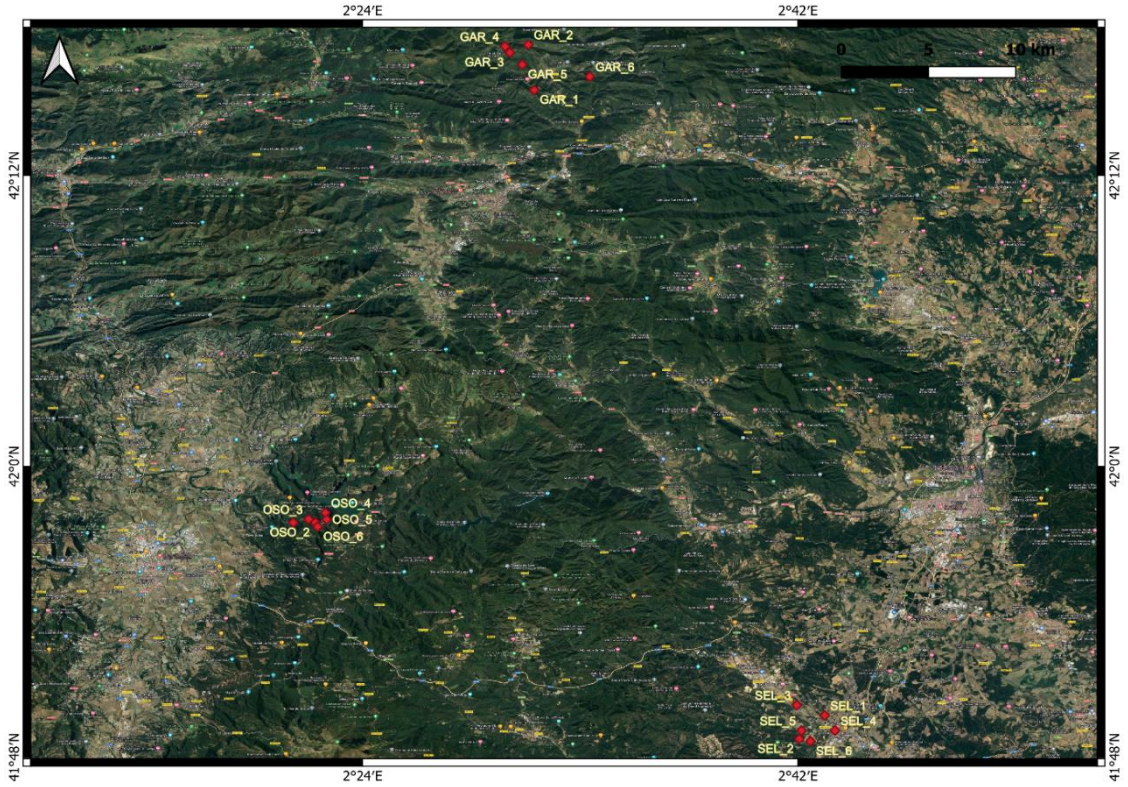


Figure 11. Locations of ponds in Spain.

The water level data are depicted in Figure 12 for pond SEL_1. The plots for all the ponds in Spain are given in Appendix 4.

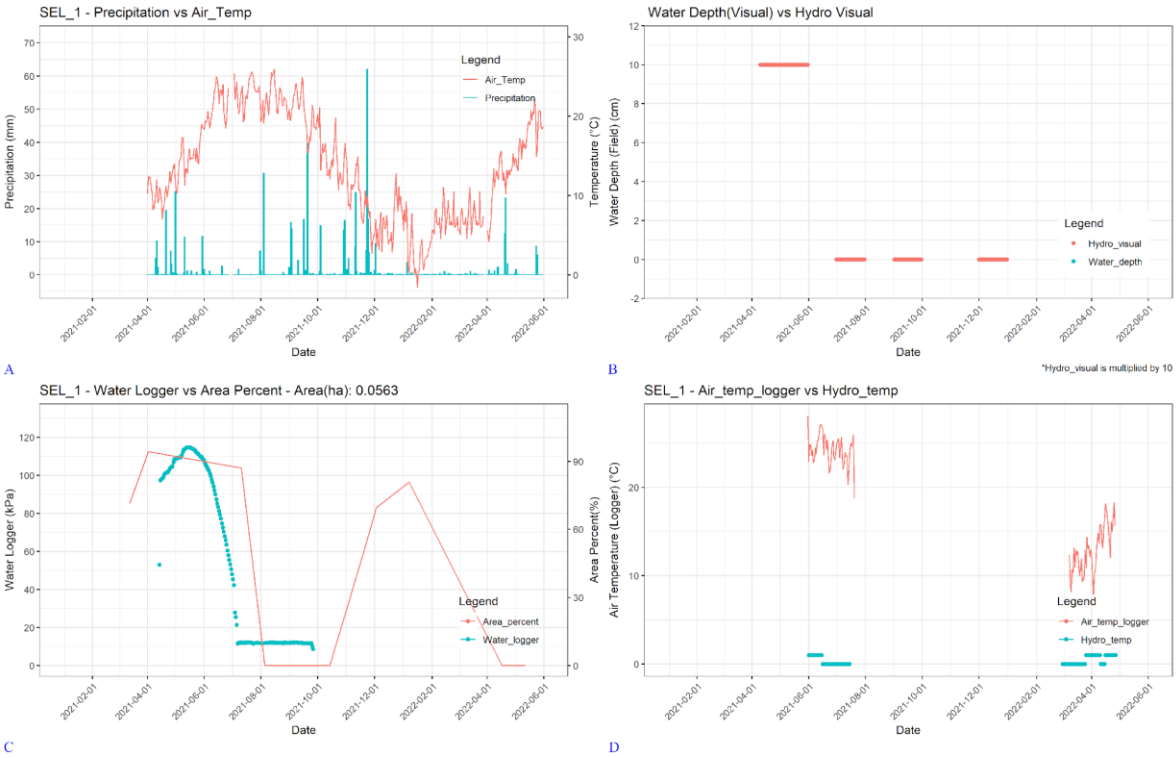


Figure 12. Data of the Pond SEL_1 (A:Daily precipitation and average temperature at the closest station, B:Water depth and water availability through visual inspection, C:Water depth from pressure loggers and surface area retrieved from satellite images, D: hydroperiod retrieved from temperature loggers)

Four ponds in Spain have pressure sensors. The water level change is monitored through visual inspection and the availability of water is observed by installed temperature sensors. Spain has the longest period data from April 2021 to June 2022.

GAR_1, GAR_2, GAR_3, GAR_4, GAR_5, GAR_6, OSO_1, OSO_2, OSO_4, OSO_5, OSO_6, SEL_1, SEL_2 and SEL_4 are temporary ponds, thus there was no water in the ponds in September 2021. The availability of the water in OSO_1 changes during time. There may be a problem in the collected temperature data in this pond. The water level was not measured at the site. The pressure sensors in ponds OSO_2, SEL_1, SEL_2 and SEL_6 show the decrease in water level. The absolute water levels cannot be obtained from the pressure data because outside pressure values do not exist. The RS application results are not so dependable for many of the ponds in Spain, since the ponds are so small having the water surface area between 0.0054 ha-0.1401 ha. For pond SEL_1 and pond SEL_2 the water level change and the water availability in the pond (in %) from RS show good agreement.

Switzerland:

Data from 30 ponds are obtained. Among the 30 ponds, 14 of them are demo ponds. The locations of the ponds are shown in Figure 13.

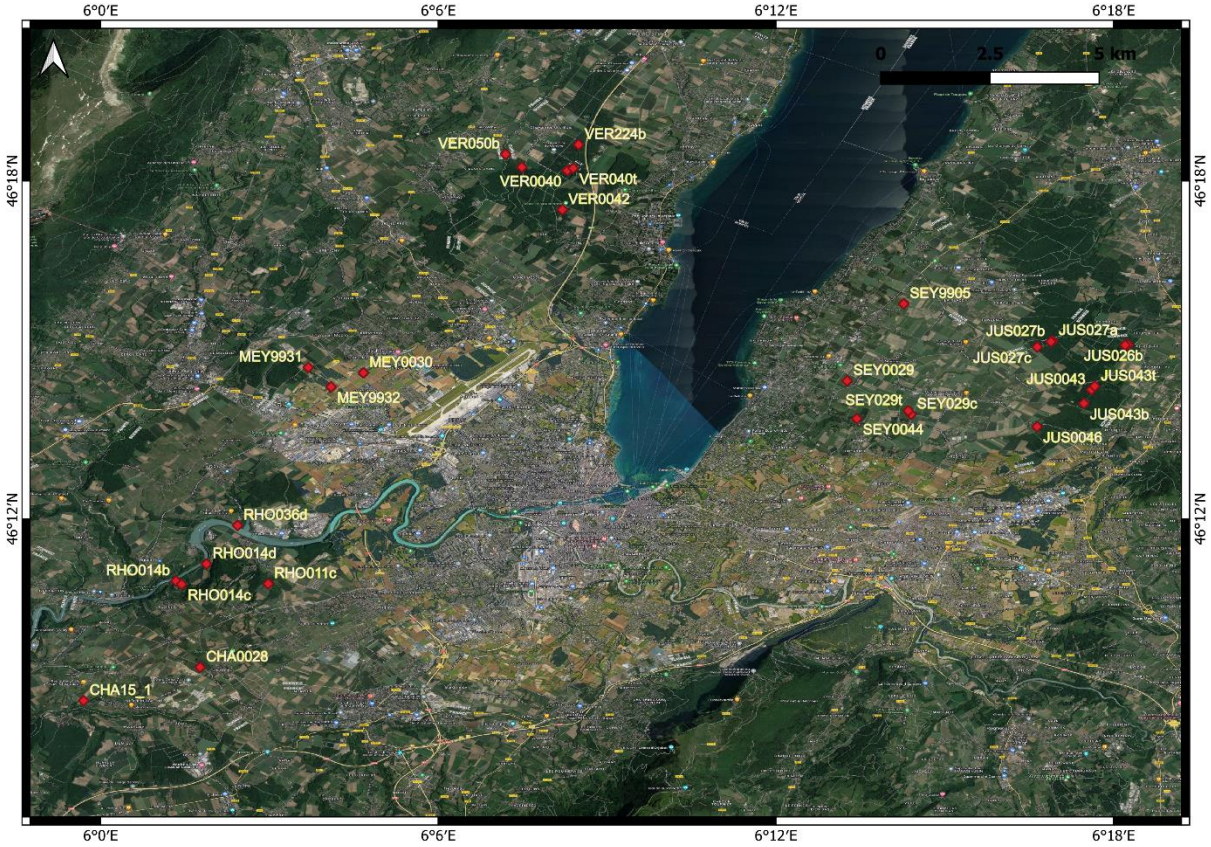


Figure 13. Locations of ponds in Switzerland.

The water level data are depicted in Figure 14 for pond RHO014c. The plots for all the ponds in Switzerland are given in Appendix 5.

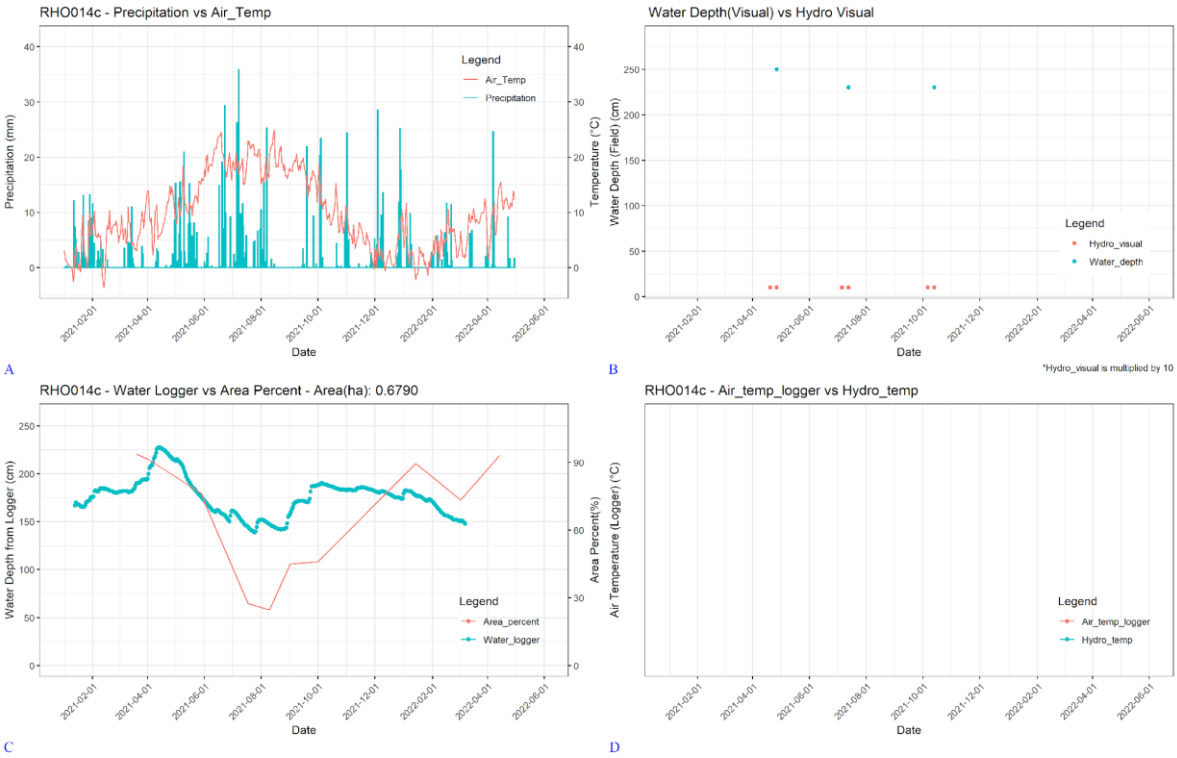


Figure 14. Data of the Pond RHO014c (A:Daily precipitation and average temperature at the closest station, B:Water depth and water availability through visual inspection, C:Water depth from pressure loggers and surface area retrieved from satellite images, D: hydroperiod retrieved from temperature loggers)

22 ponds in Switzerland have pressure sensors. The water level change is monitored through visual inspection and the availability of water is observed by installed temperature sensors. According to the temperature sensor pond SEY9905 and VER040t are temporary ones. No water is observed in September 2021, yethe pressure sensor during this time indicates the availability of water. Since the water depth is below 30 cm, the pressure sensor may give incorrect values. The decrease in water level is observed in the end of June until October in many of the ponds. However, the water level in JUS043b continuously decreases from April 2021 until April 2022. Recently, water depth was observed as 22 cm on April 19, 2022 and 17 cm on July 11, 2022. This pond has a levee and recently it's found out that it is leaking. The ponds in Switzerland are larger compared to the other ponds in the other countries. Pond surface area changes between 1.2165 ha and 0.0208 ha. The RS Pond surface area percentage values have a good agreement with the water level changes for ponds RHO014b and RHO014c, where the surface area of the ponds is 0.8912ha and 0.679 ha respectively.

Turkey:

Data from 30 ponds are obtained. Among the 30 ponds, 5 of them are demo ponds. The locations of the ponds are shown in Figure 15. Since the stratified sampling has started in April 2022, the water level change is presented only for demo ponds which have water level data loggers.

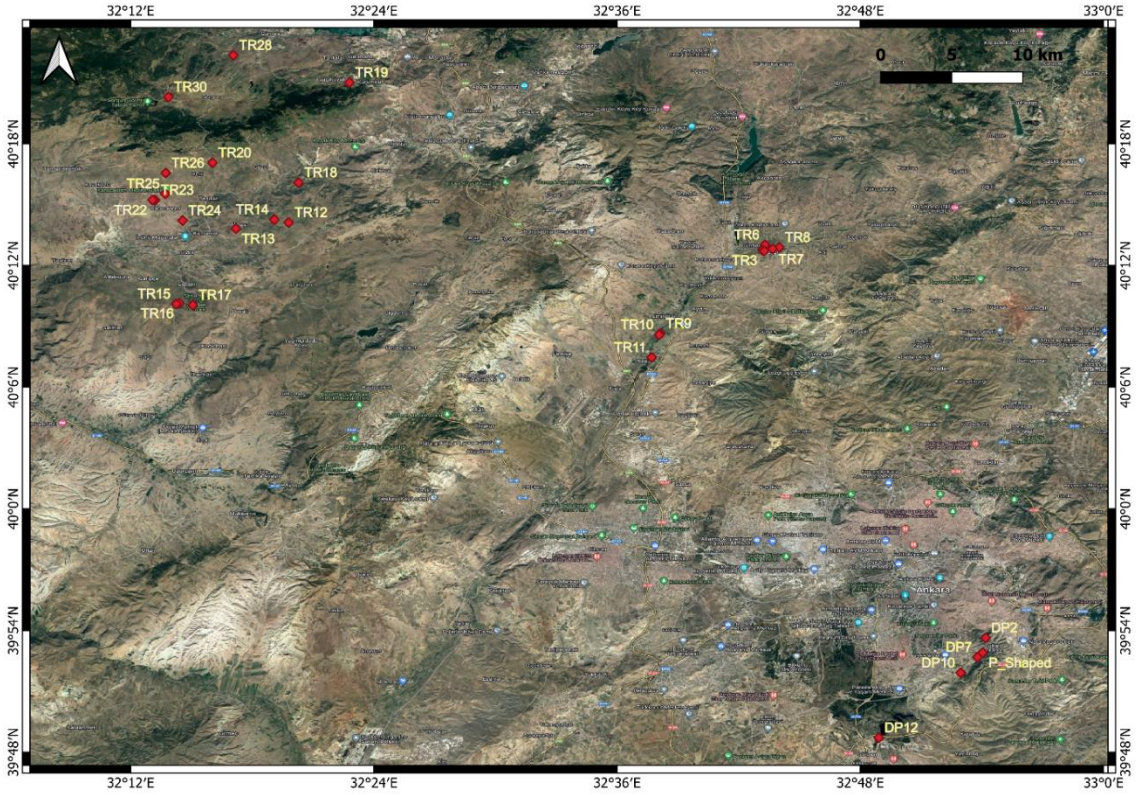


Figure 15.. Locations of the ponds in Turkey.

The water level data are depicted in Figure 16 for pond DP2. The plots for all the demo ponds in Turkey are given in Appendix 6.

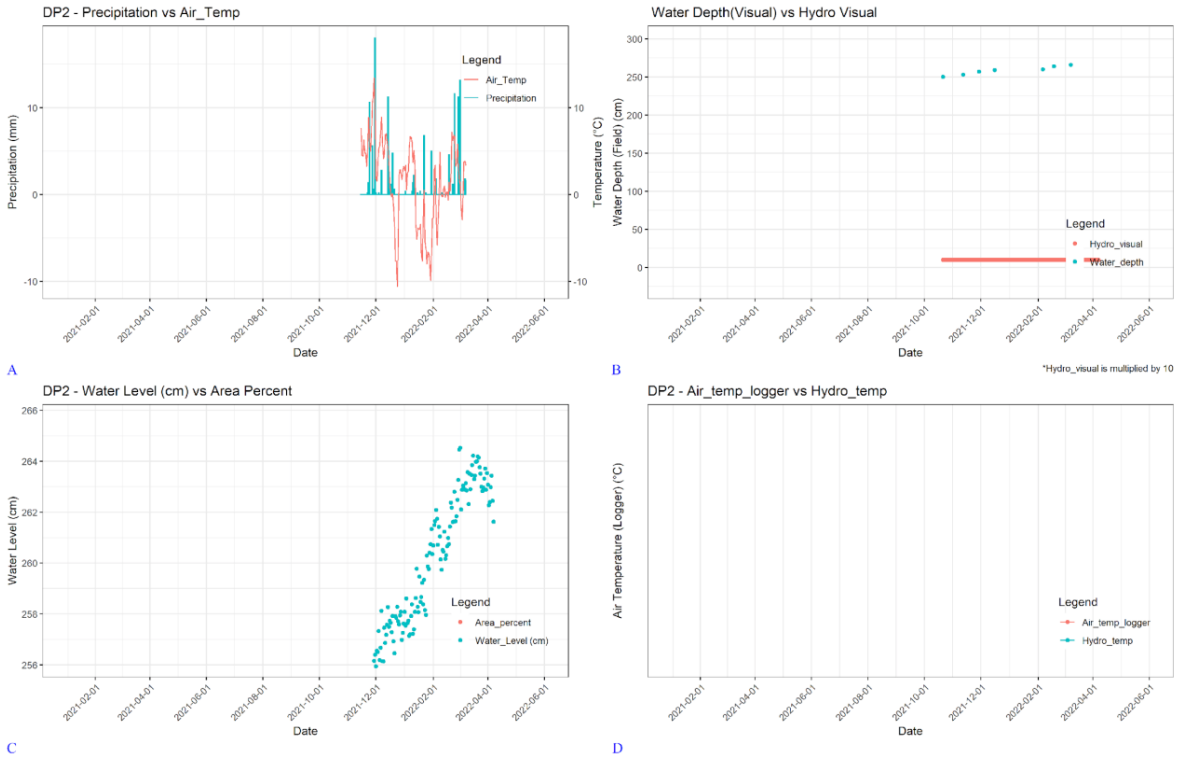


Figure 16. Data of the Pond DP2 (A:Daily precipitation and average temperature at the closest station, B:Water depth and water availability through visual inspection, C:Water

depth from pressure loggers and surface area retrieved from satellite images, D: hydroperiod retrieved from temperature loggers)

The water level change is seasonal for many of the ponds in Turkey. The ones having increase in water level are the ponds having control structures at their outlets.

United Kingdom:

Data from 30 ponds are obtained. Among 30 ponds, none of them are demo ponds. The locations of the ponds are shown in Figure 17.

Figure 17. Locations of the ponds in the UK.

The water level data are depicted in Figure 18 for pond CSH-Wood. The plots for all the ponds in the UK are given in Appendix 7.

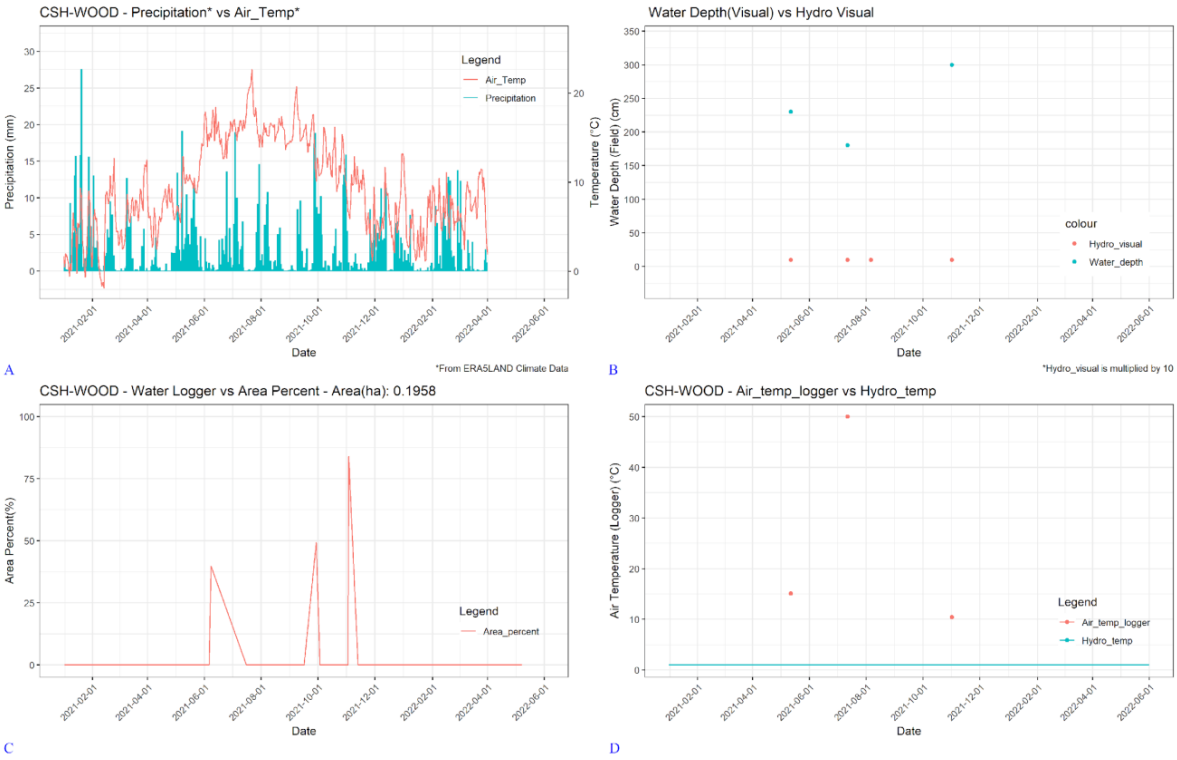


Figure 18. Data of the Pond CSH-Wood (A:Daily precipitation and average temperature at the closest station, B:Water depth and water availability through visual inspection, C:Water depth from pressure loggers and surface area retrieved from satellite images, D: hydroperiod retrieved from temperature loggers)

There is no continuous water level data obtained from pressure sensors in the ponds. The water level change is monitored through visual inspection and the availability of water is observed by installed temperature sensors. According to temperature sensor ponds LAN-KED and LAN-MART were temporary ones. During June-August 2021 Pond LAN-KED was dry and in August pond LAN-MART was dry. From the visual inspections in the ponds CSH-MEAD, LAN-GTPD and LAN-RABIT the water level does not change from May to November in 2021. However, the water level has decreased in the ponds NH-SHEP2, NH-PYE2B, NH-PYE2A, NH—KEEL1, NEH-COLG4, NH-BOF1, NHB-BR112, NHB-BR117, NHB-BEAN, NBB-SHOOT, NBB-SABA, NBB-MYST, NBB-CAT2, NBB-CAT1 and NBB-BECK. In the other ponds a seasonal drop in the water level in July was observed. The RS application results are not so dependable for the ponds in the UK, since the ponds are so small having the water surface area between 0.0033 ha-0.1958 ha.

The summary of the water level changes in the ponds is given in Table 2.

Table 2. Summary of the water level changes in the ponds (blue: permanent, yellow: temporary)

Belgium Ponds	Water Level Change	**Denmark Ponds**	Water Level Change	**Germany Ponds**	Water Level Change	**Spain Ponds**	Water Level Change	**Switzerland Ponds**	Water Level Change	**Turkey Ponds**	Water Level Change	**UK Ponds**	Water Level Change
AW1_EX1	Increase	HO1	Decrease	LIE_03		GAR_1		CHA15_1	Decrease	DP2	seasonal	CSH-GAME	Seasonal
AW1_EX2	Increase	HO2	No Change	LIE_07		GAR_2		CHA0028	Seasonal	DP7	increase	CSH-ISLA	Seasonal
AW1_IN1	NA	HO3	Decrease	LIE_09		GAR_3		JUS026b	Seasonal	DP10	increase	CSH-KAREN	Decrease
AW1_IN2	Increase	HO4	Seasonal	LIE_12		GAR_4		JUS026t	Seasonal	DP12	seasonal	CSH-MEAD	No Change
AW1_NA1	Increase	HO5	Seasonal	MUN_41	Decrease	GAR_5		JUS027a	No Change	P_Shaped	increase	CSH-SECU	Seasonal
AW1_NA2	Seasonal	HO6	Seasonal	MUN_43		GAR_6		JUS027b	Seasonal			CSH-WOOD	Seasonal
EF1_EX1	Increase	LA1	No Change	MUN_44		ODO_1		JUS027c	Seasonal			LAN-GTPD	No Change
EF1_EX2	Seasonal	LA2	Seasonal	MUN_51		OSO_2		JUS0043	Seasonal			LAN-KEND	
EF1_IN1	Increase	LA3	No Change	MUN_53		OSO_3	Seasonal	JUS043b	Decrease			LAN-MART	
EF1_IN2		LA4	No Change	MUN_56	Decrease	OSO_4		JUS043t	Seasonal			LAN-RABIT	No Change
EF1_NA1	Seasonal	LA5	No Change	MUN_99		OSO_5		JUS0046	Decrease			LAN-SELDIM	Seasonal
EF1_NA2	No Change	LA6	Decrease	MUN_105	Seasonal	OSO_6		MEY0030	Decrease			LAN-THEF	Seasonal
FB1_EX1	No Change	PAE1	Decrease	MUN_201		SEL_1		MEY9931	Seasonal			NBB-BECK	Decrease
FB1_EX2	Seasonal	PAE2	Decrease	MUN_312		SEL_2		MEY9932	Seasonal			NBB-CAT1	Decrease
FB1_IN1	Seasonal	PAE3	Decrease	QUI_18		SEL_3	Seasonal	RHO011c	Seasonal			NBB-CAT2	Decrease
FB1_IN2	Seasonal	PAE4		QUI_35	Seasonal	SEL_4		RHO014b	Decrease			NBB-MYST	Decrease
FB1_NA1	Seasonal	PAE5	Decrease	QUI_785	Seasonal	SEL_5	Seasonal	RHO014c	No Change			NBB-SABA	Decrease
FB1_NA2	No change	PAE6		QUI_892	Seasonal	SEL_6	Seasonal	RHO014d	Seasonal			NBB-SHOOT	Decrease
LB1_EX1	Seasonal	PAV1	Decrease	QUI_1172				RHO036d	Decrease			NHB-BEAN	Decrease
LB1_EX2	NA	PAV2	Seasonal	QUI_1607	Seasonal			SEY0029	Seasonal			NHB-BRI12	Decrease
LB1_IN1	Seasonal	PAV3	Seasonal	QUI_1608	Seasonal			SEY029c	Decrease			NHB-BRI17	Decrease
LB1_IN2	Increase	PAV4	Seasonal	QUI_2449a				SEY029t	Decrease			NHB-FISH	NA
LB1_NA1	Increase	PAV5	Seasonal	QUI_ex2				SEY0044	Decrease			NHB-GOFF5	Increase
LB1_NA2	Seasonal	PAV6	Decrease	QUI_ex5	Seasonal			SEY9905				NH-BONF1	Decrease
LB2_EX1	Seasonal	RH1	Decrease	SCH_01	Decrease			VER0040	Seasonal			NHB-PIPO	Increase
LB2_EX2	Seasonal	RH2	Decrease	SCH_02	Decrease			VER040t				NH-COLG4	Decrease
LB2_IN1	Seasonal	RH3	No Change	SCH_03	Seasonal			VER0042	Decrease			NH-KEEL1	Decrease
LB2_IN2		RH4	Decrease	SCH_05	Seasonal			VER0050	Seasonal			NH-PYE2A	Decrease
LB'_NA1	Seasonal	RH5	Increase	SCH_06				VER050b	Seasonal			NH-PYE2B	Decrease
LB2_NA2	Seasonal	RH6	Decrease	SCH_07				VER224b	No Change			NH-SHEP2	Decrease

4. Conclusions

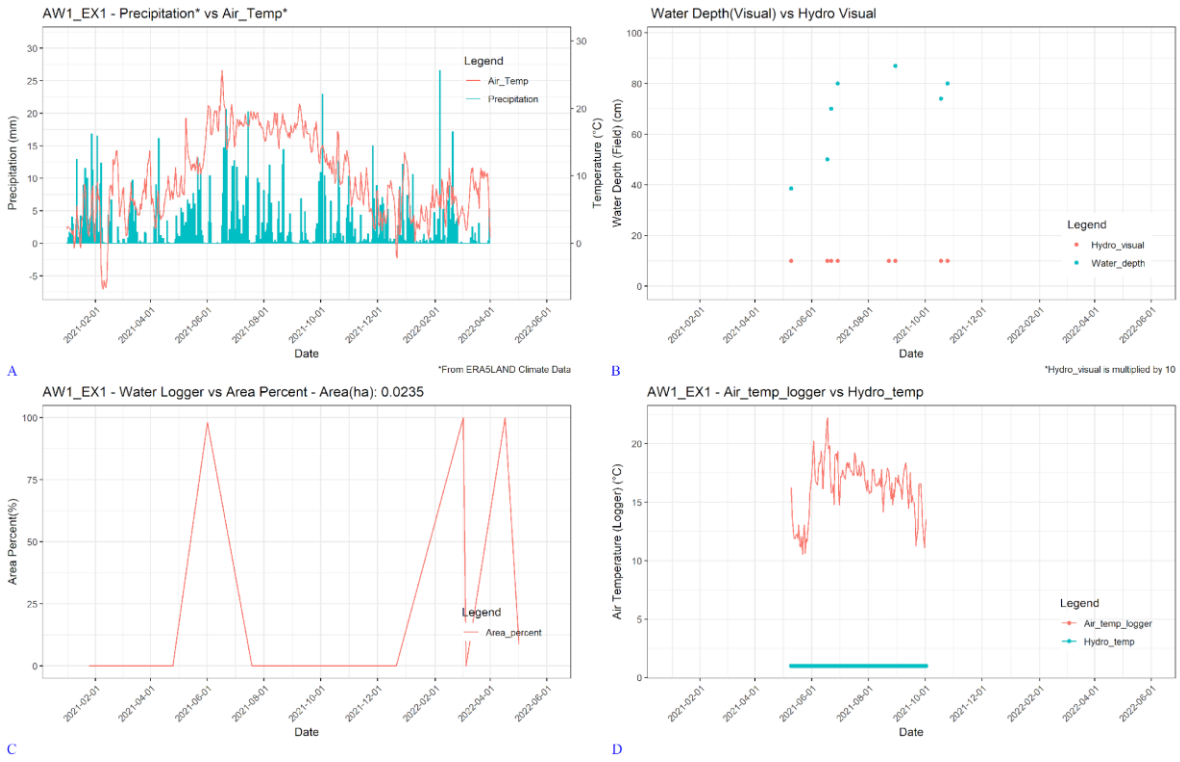
The water level data obtained from pressure loggers, visual inspection and the availability of the water in the ponds obtained from temperature sensors, visual inspection and remote sensing application are gathered and presented in this report. The temporary and permanent ponds are classified for 2021. In order to reach a final classification one more year of monitoring is needed. Two ponds in Belgium, Denmark, Switzerland and the UK are temporary. 17 ponds in Germany and 14 ponds in Spain are temporary. The number of temporary ponds in Turkey is not known yet, since the sampling has started in April 2022.

In some of the ponds it is observed that the ponds' water level changes according to season. When there is less precipitation and high temperature the water level decreases, but in the wet season it starts to increase. Some of the ponds do not follow the seasonal change. The water level increases in some of them, for these ponds to understand the reason of water level increase the hydrology of the pond must be analyzed in detail. The availability of a culvert or a control structure at the connection of the pond can be a reason. If there is no control structure at the exit of the pond, the pond may be fed by groundwater. Except Belgium, water level of many ponds in the other countries has decreased in 2021. The pressure sensors are good in monitoring the water level change continuously. The remote sensing application results are in good agreement with the ponds having surface area larger than 0.5 ha.

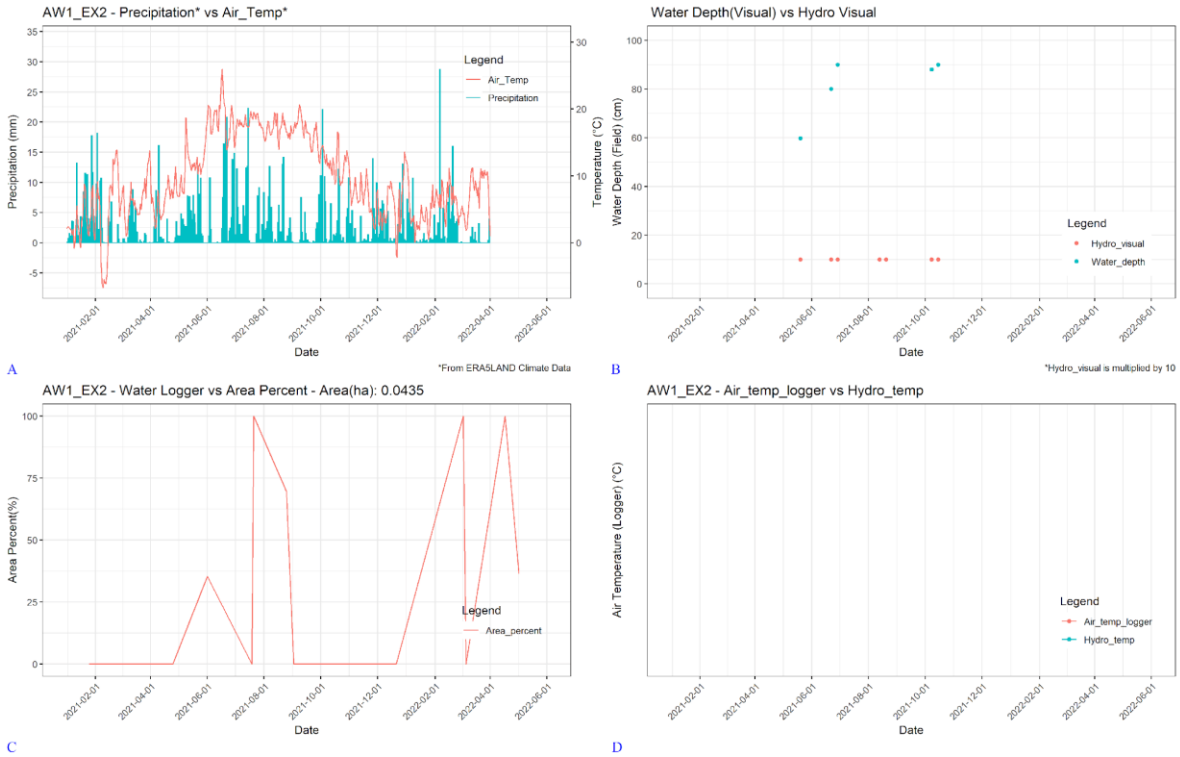
5. Appendices

The plots of precipitation and temperature at the closest meteorological station (A), water depth and availability of water through visual inspection (B), the water level values from pressure sensor and surface water area percentage retrieved from RS application (C), the water availability in the ponds from temperature loggers (D) are presented here.

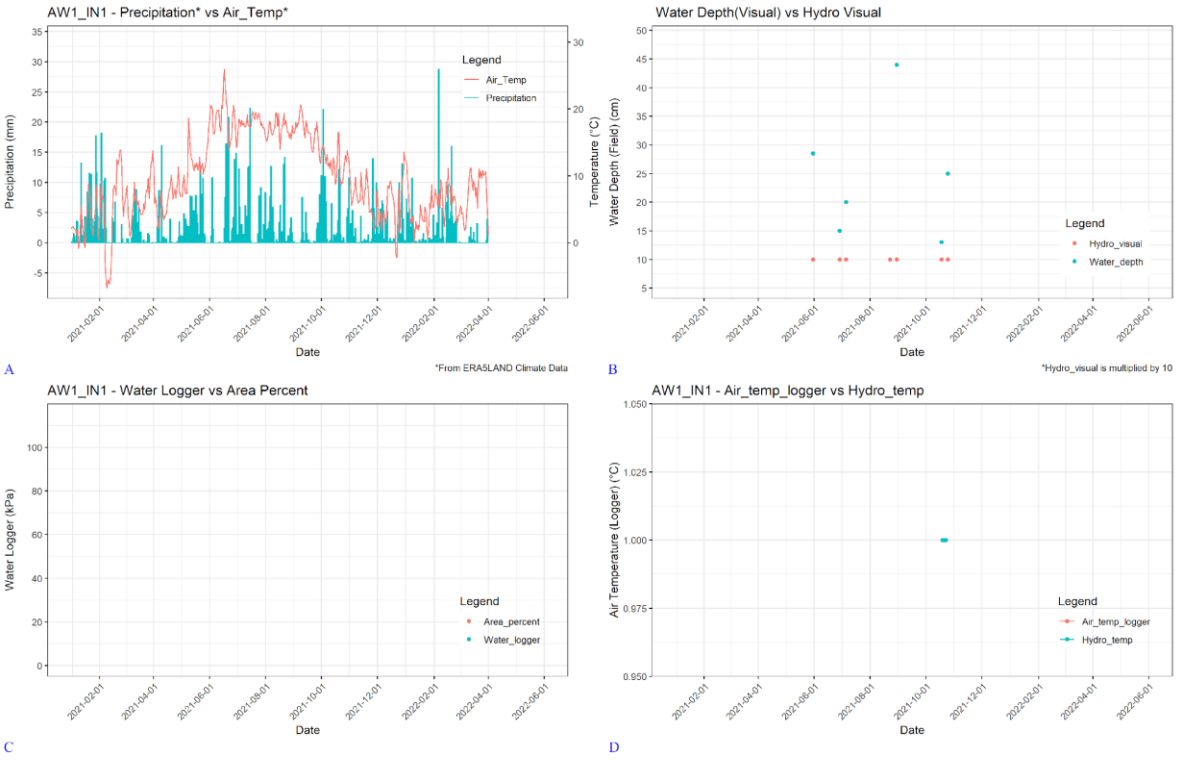
Appendix – 1 - Belgium



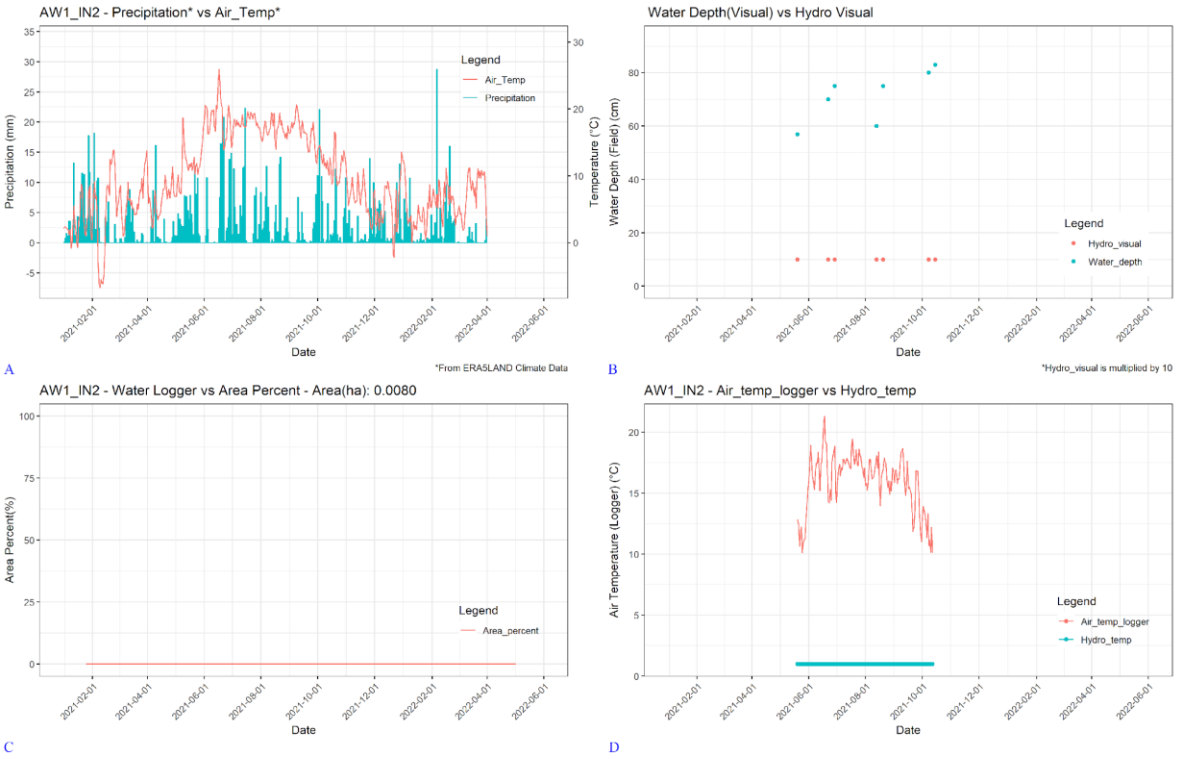
Plot 1. Pond AW1-EX1 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable



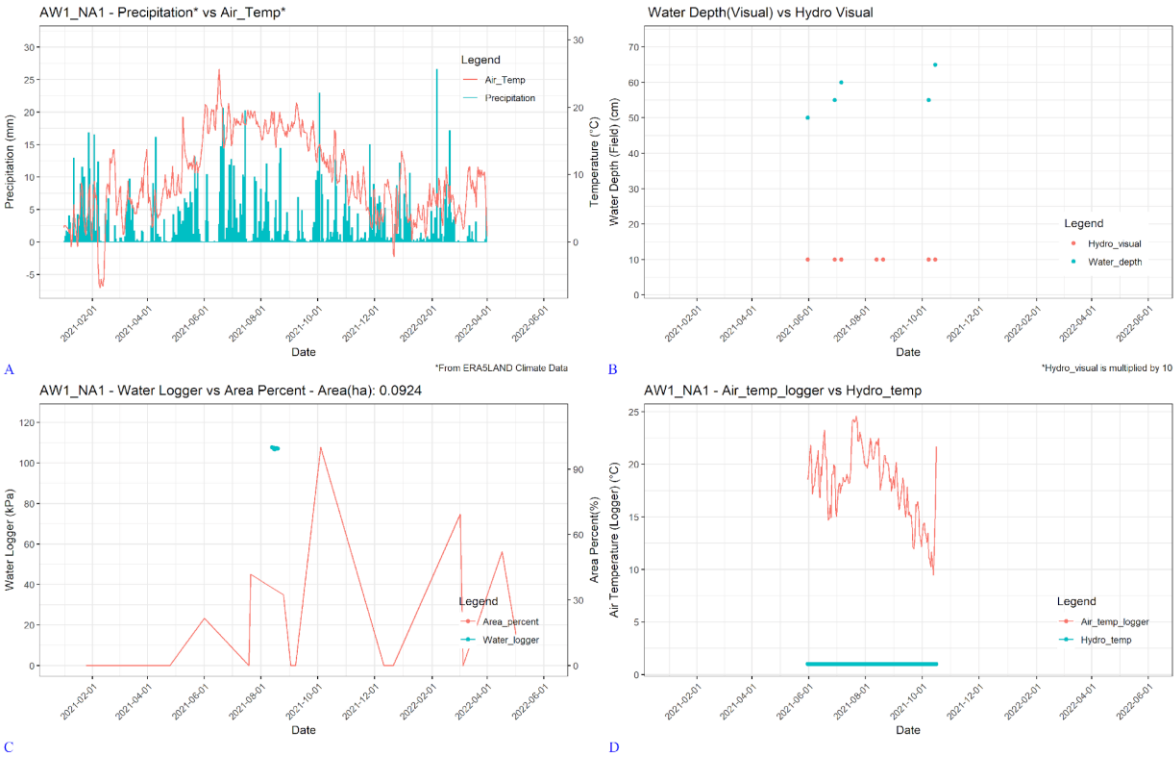
Plot 2. Pond AW1-EX2 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable.



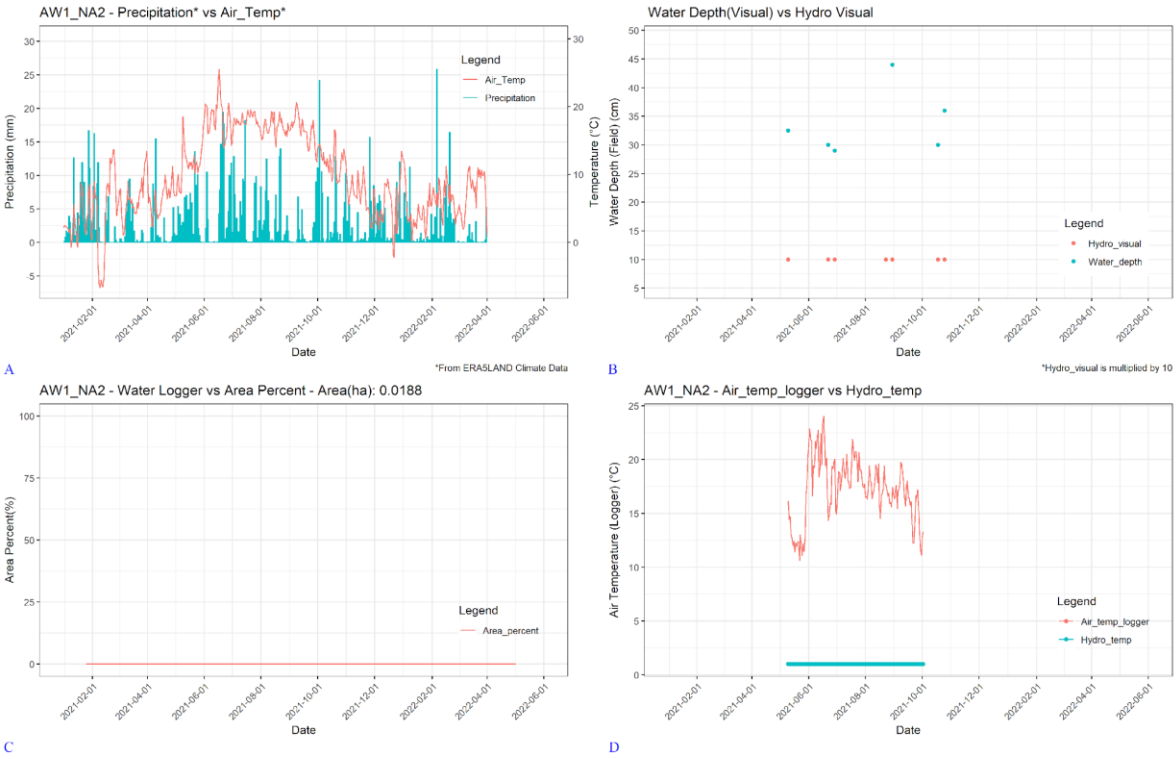
Plot 3. Pond AW1-IN1 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable



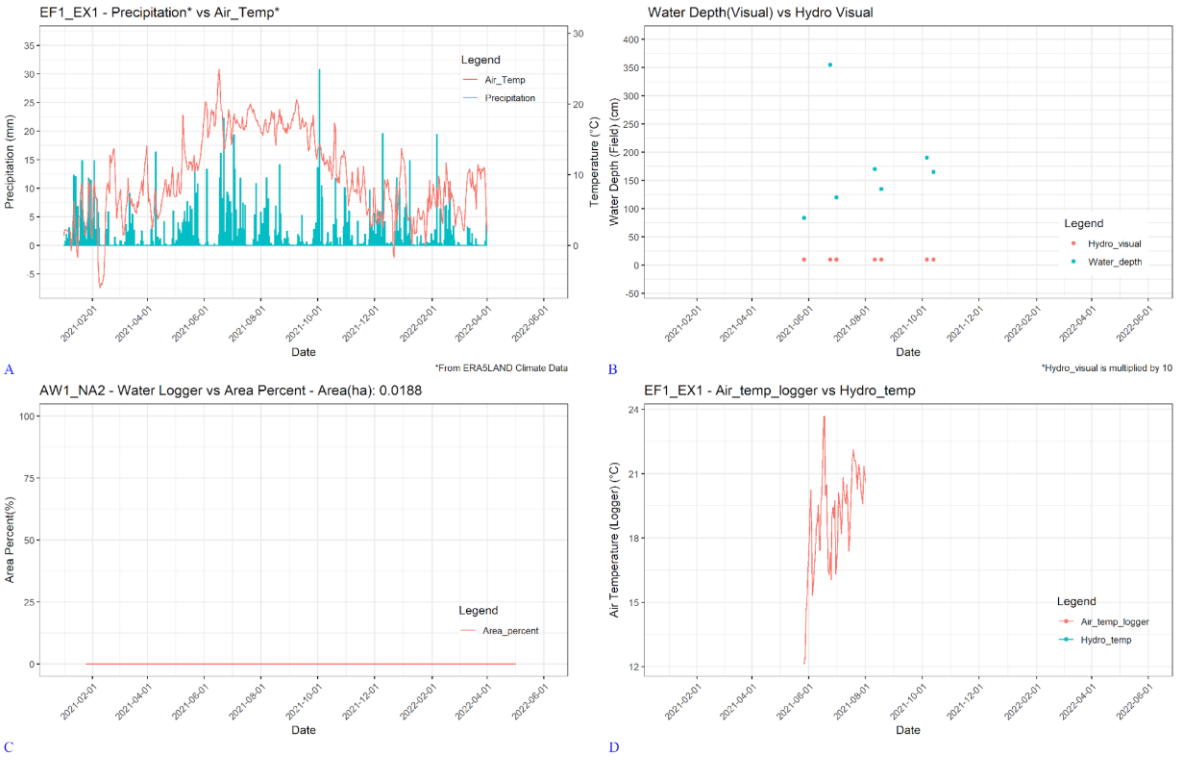
Plot 4. Pond AW1-IN2 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable



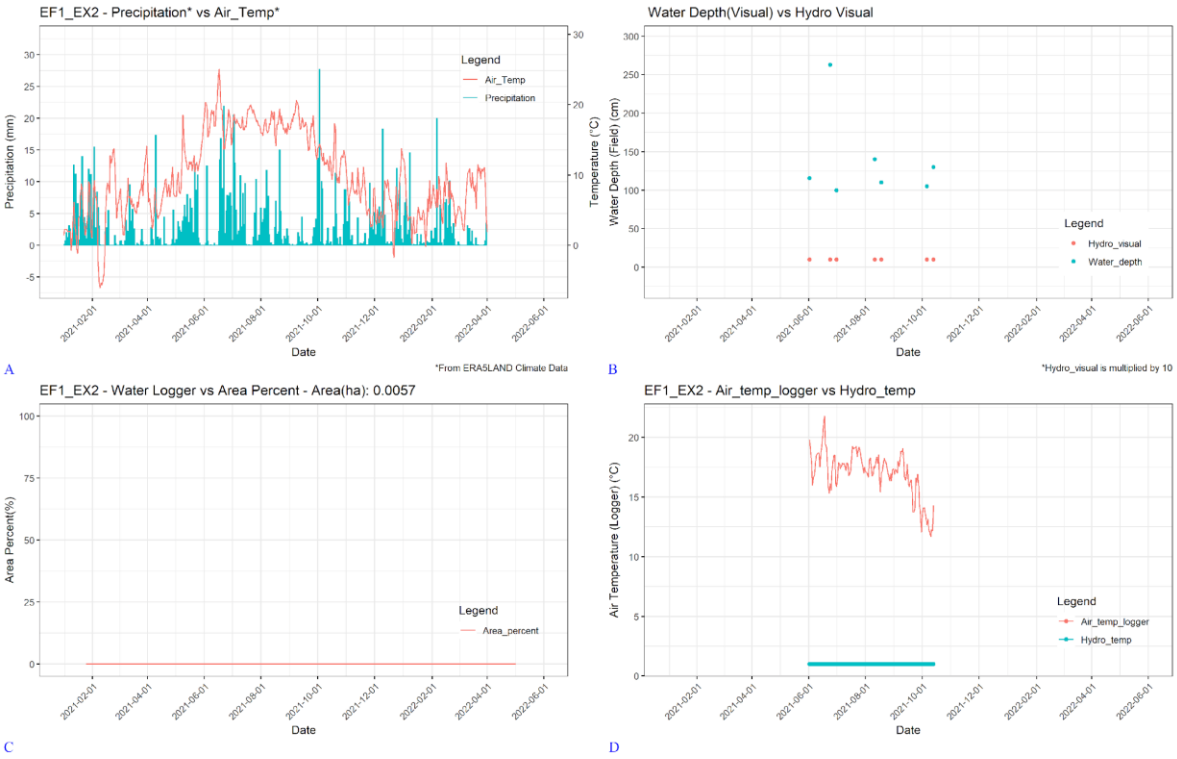
Plot 5. Pond AW1-NA1 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable



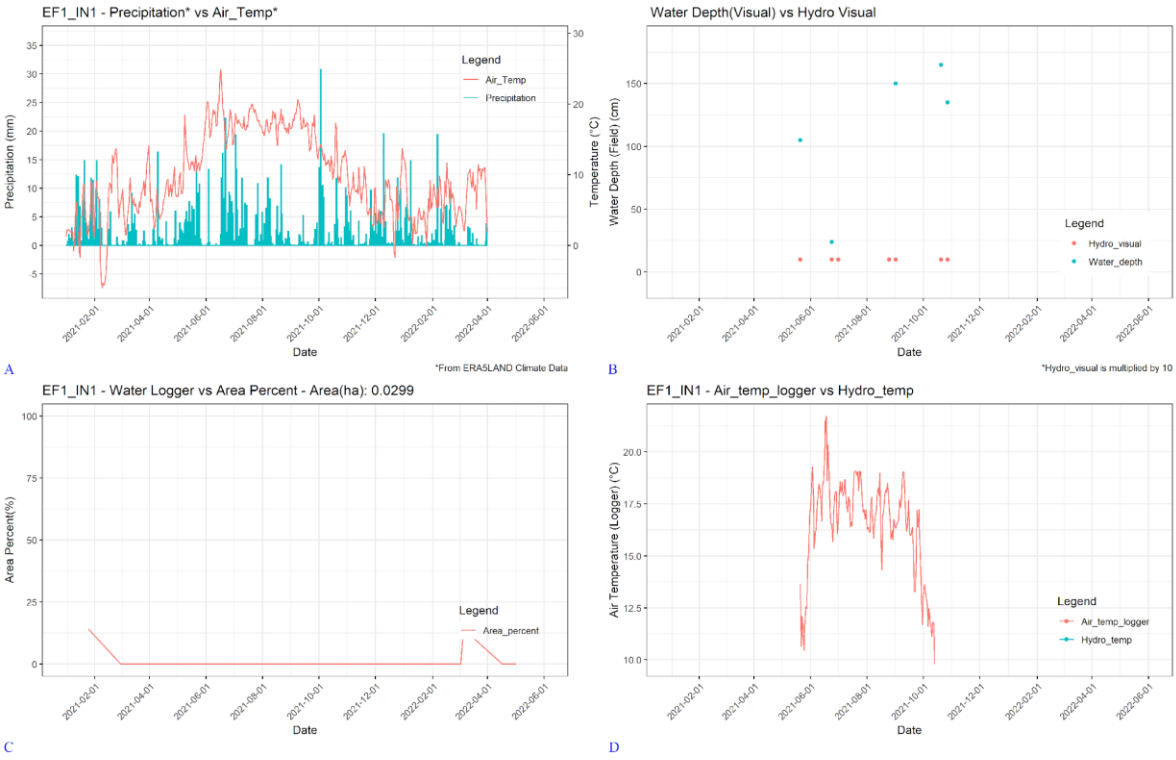
Plot 6. Pond AW1-NA2 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable



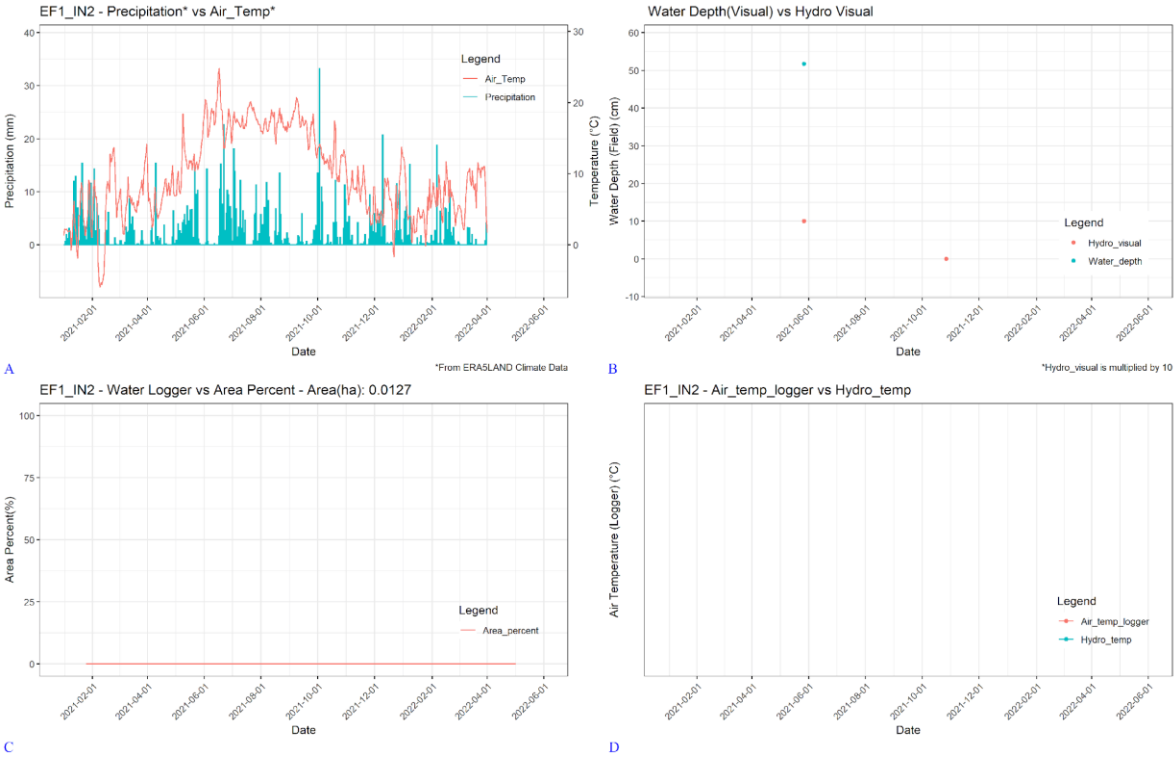
Plot 7. Pond EF1_EX1 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable



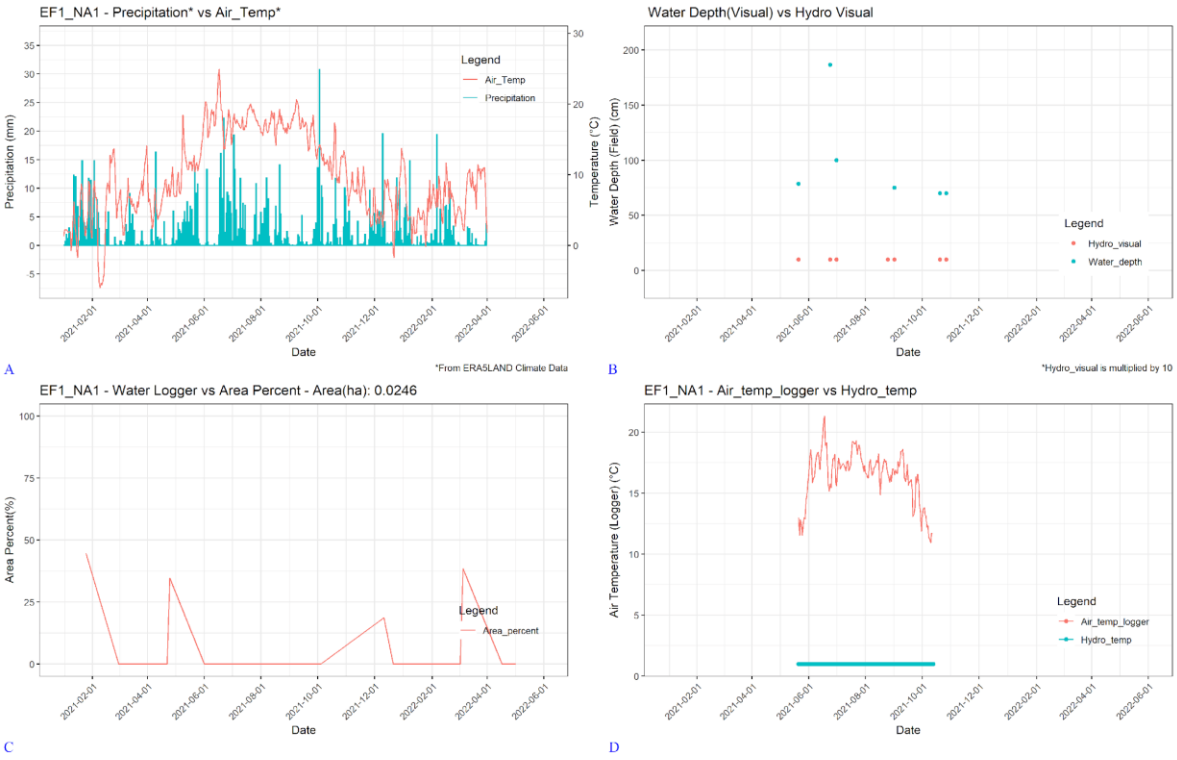
Plot 8. Pond EF1_EX2 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable



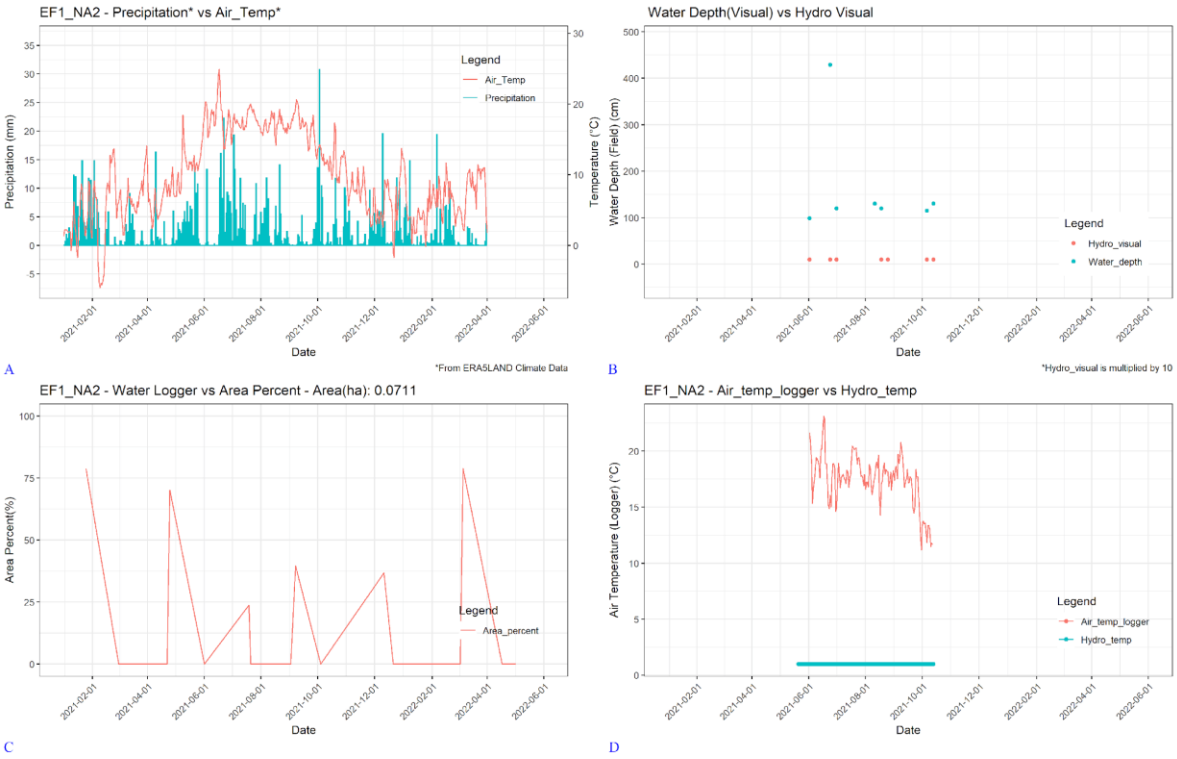
Plot 9. Pond EF1_IN1 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable



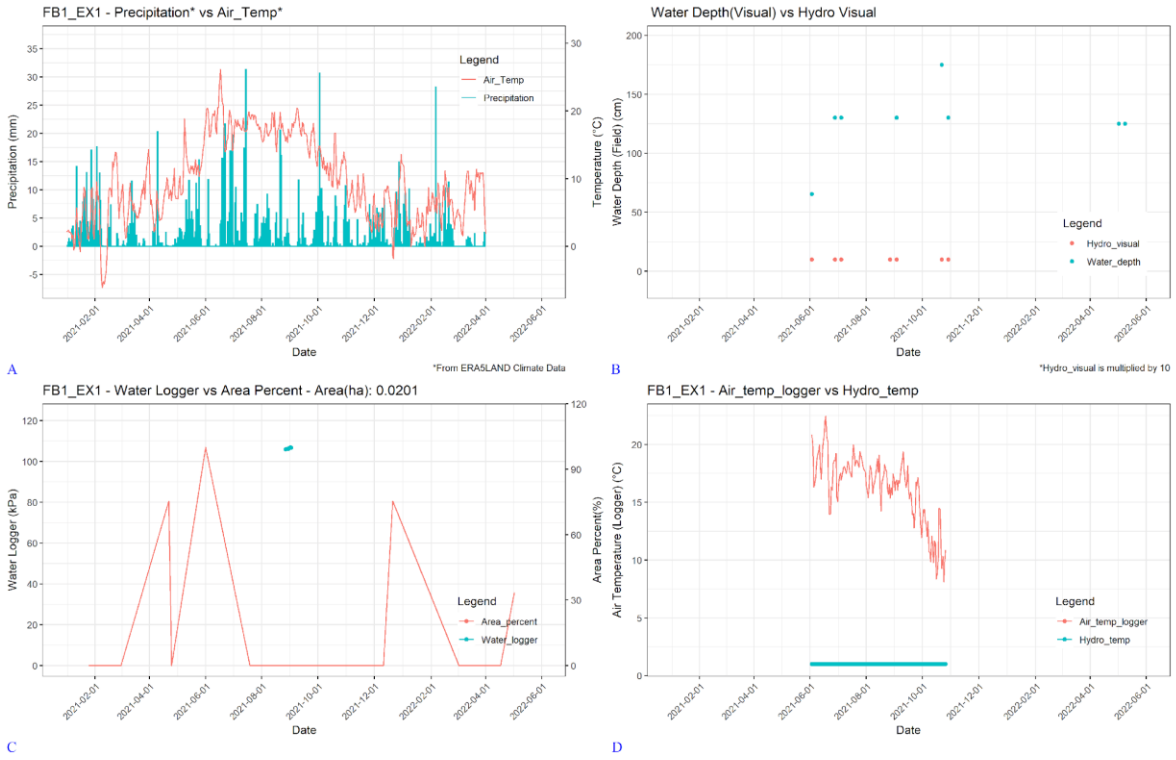
Plot 10. Pond EF1_IN2 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable



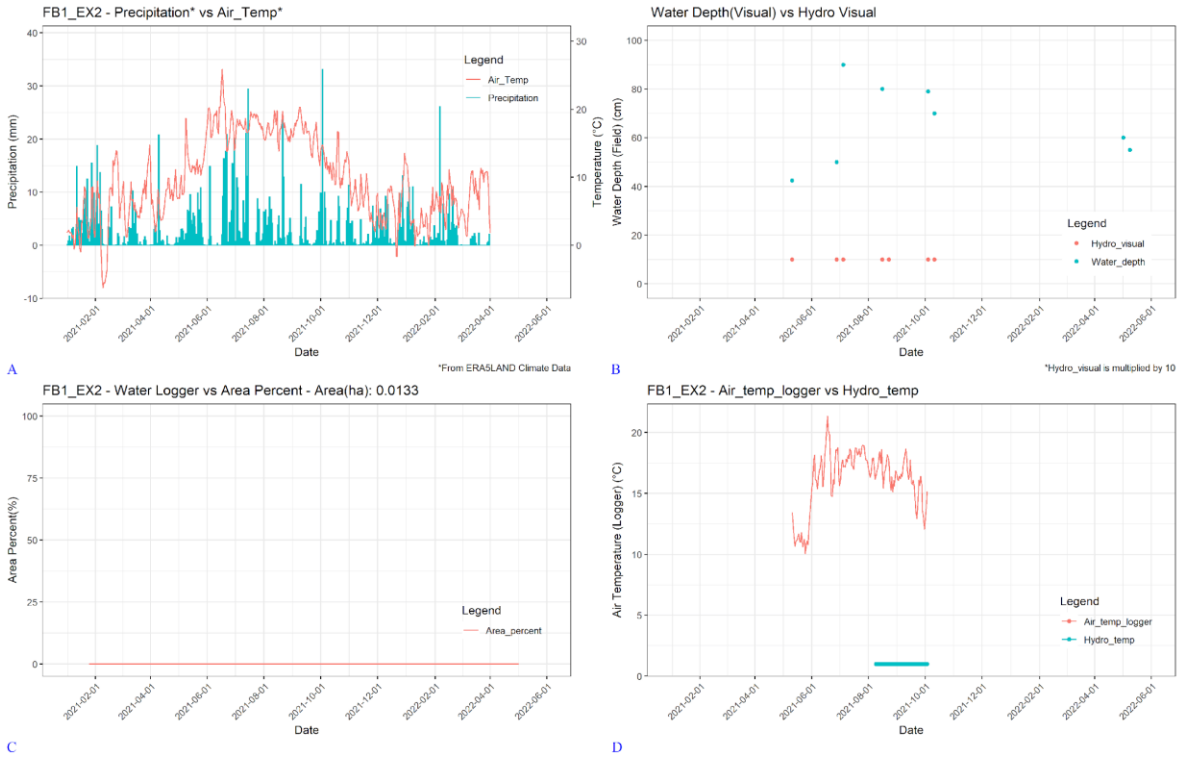
Plot 11. Pond EF1_NA1 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable



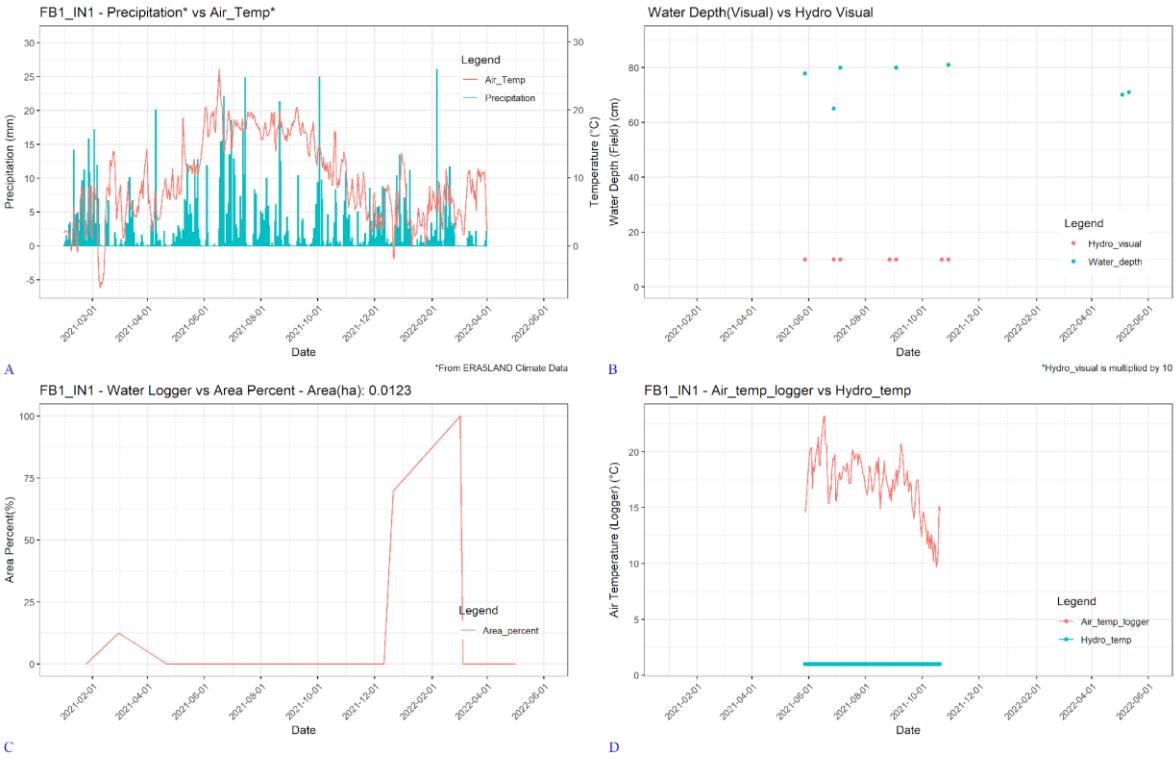
Plot 12. Pond EF1_NA2 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable



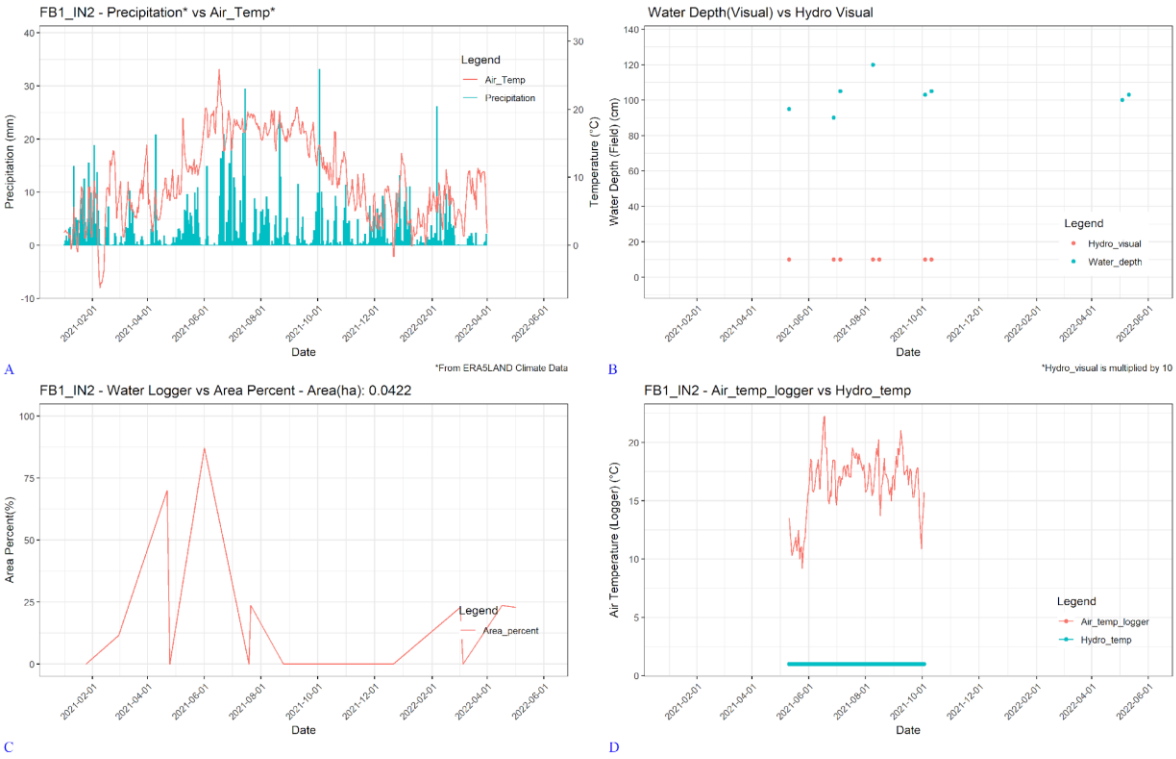
Plot 13. Pond FB1_EX1 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable



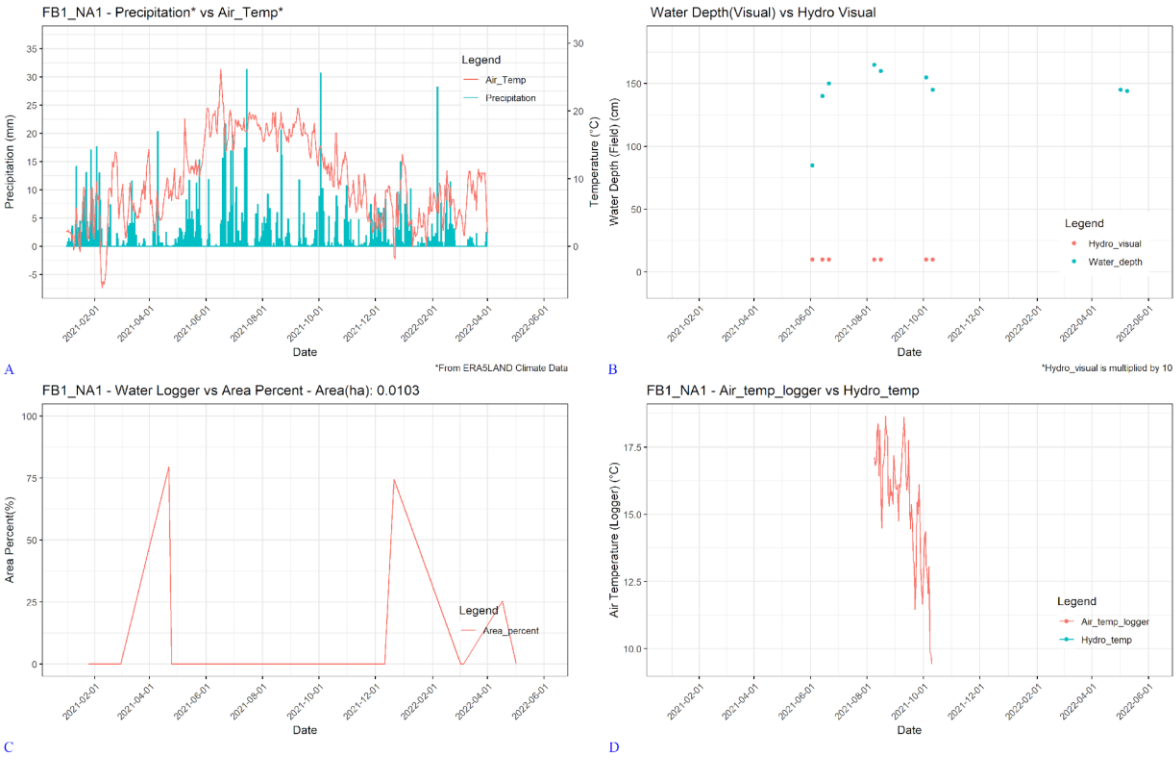
Plot 14. Pond FB1_EX2 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable



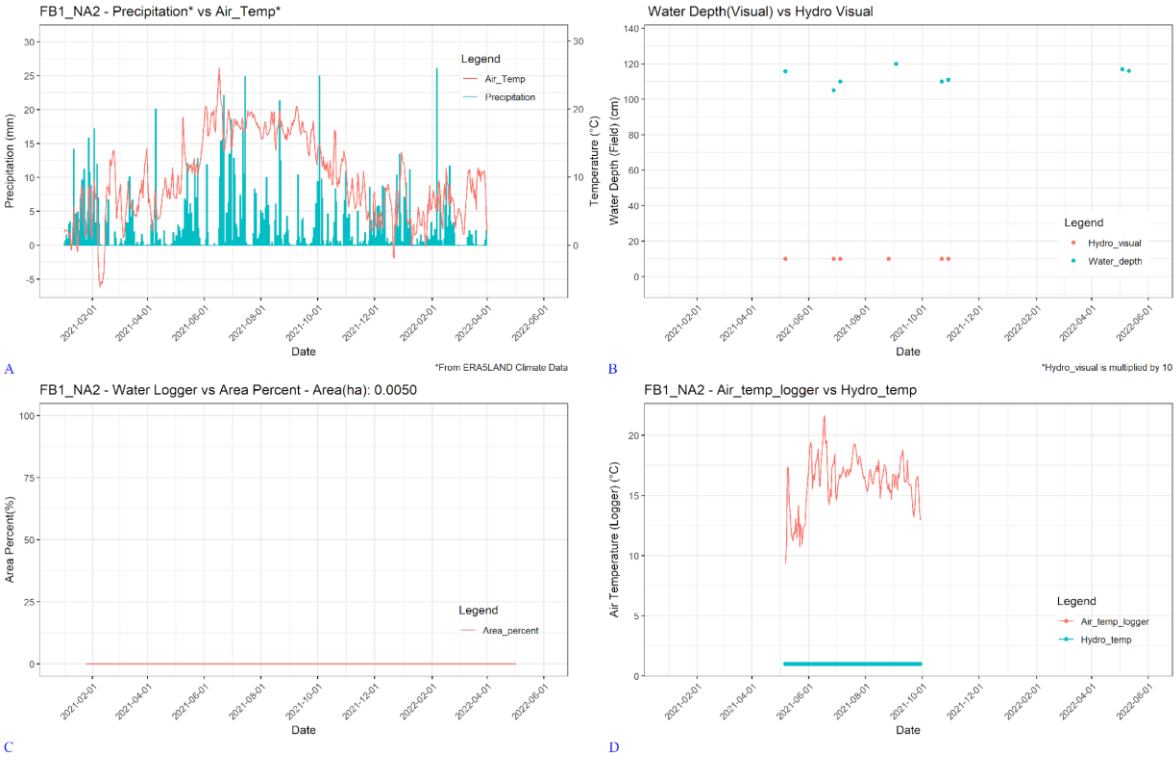
Plot 15. Pond FB1_IN1 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable.



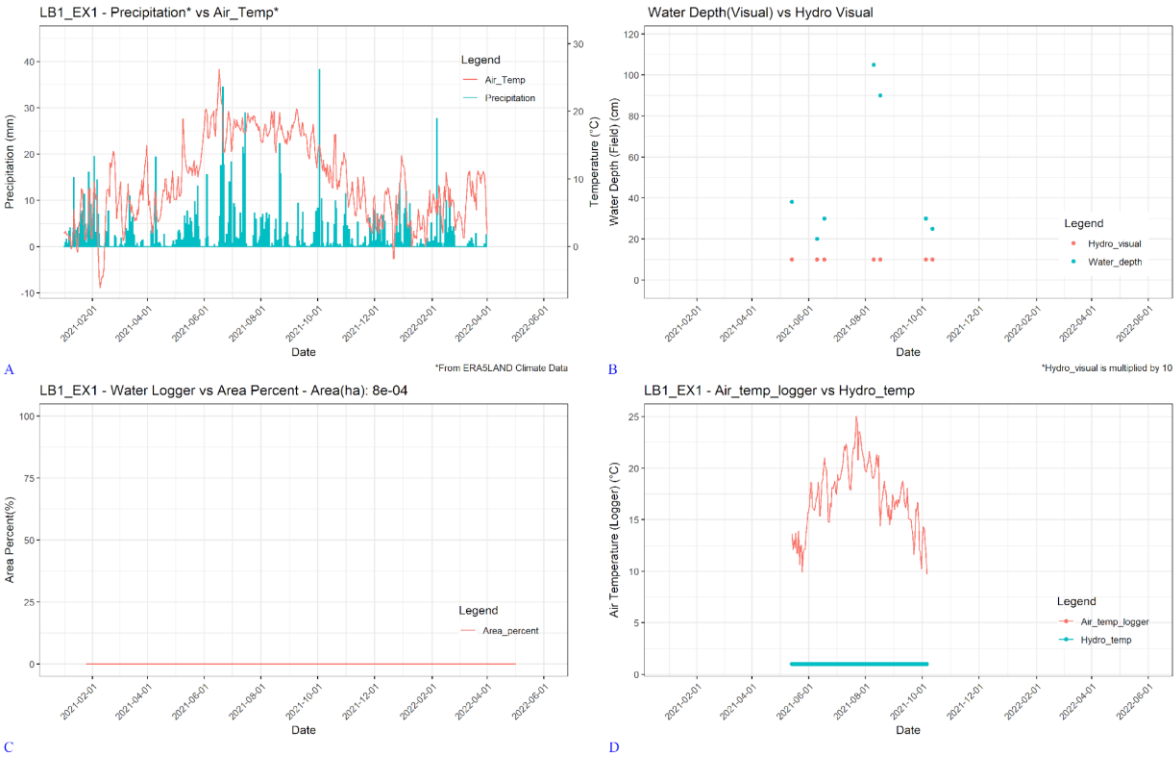
Plot 16. Pond FB1_IN2 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable



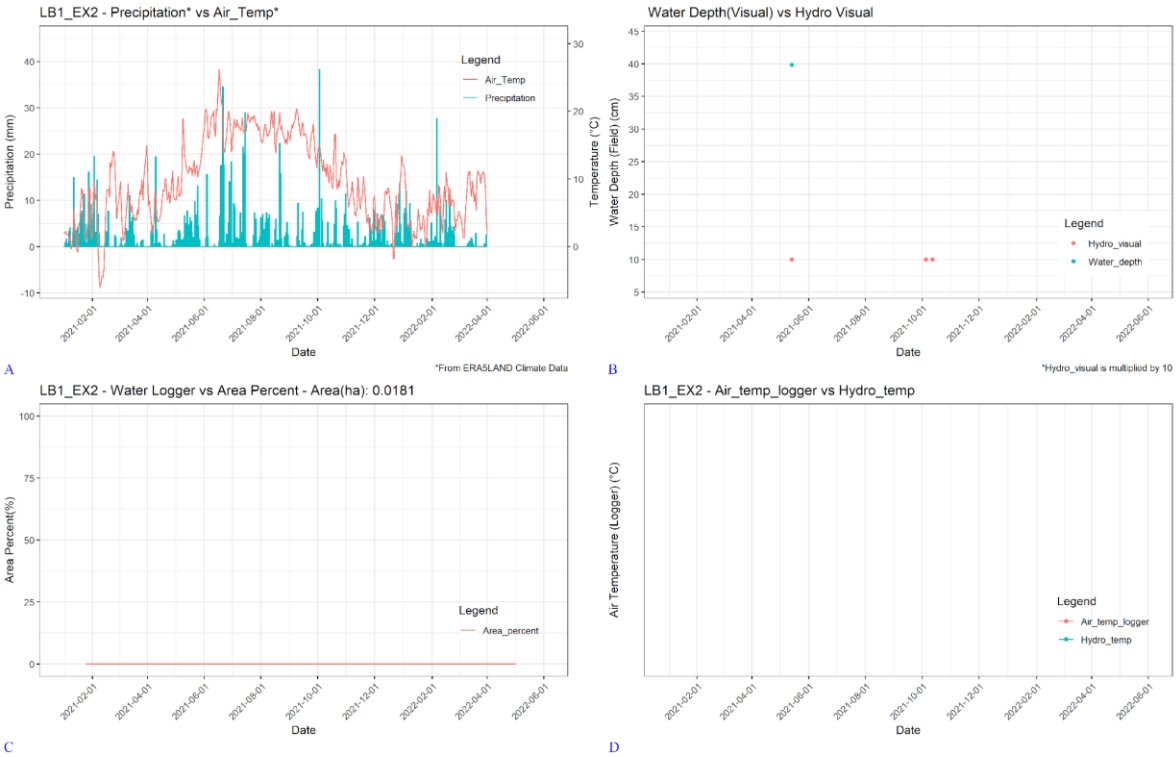
Plot 17. Pond FB1_NA1 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable



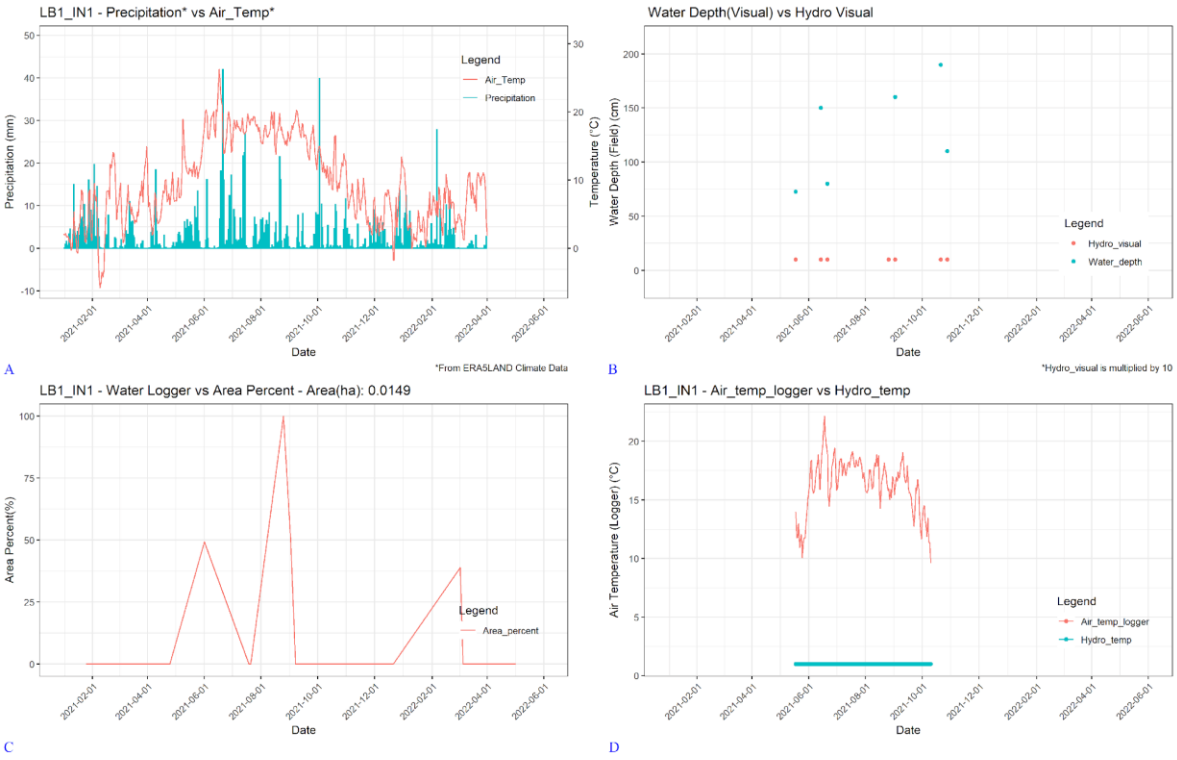
Plot 18. Pond FB1_NA2 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable



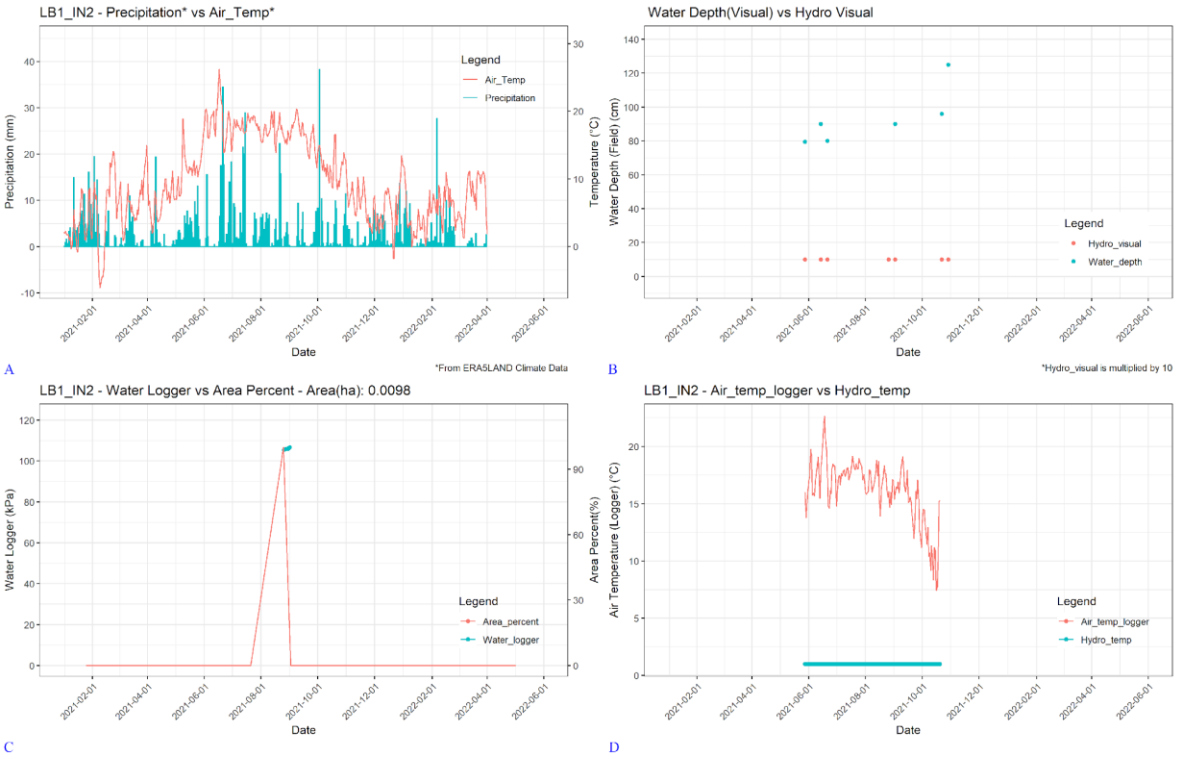
Plot 19. Pond LB1_EX1 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable



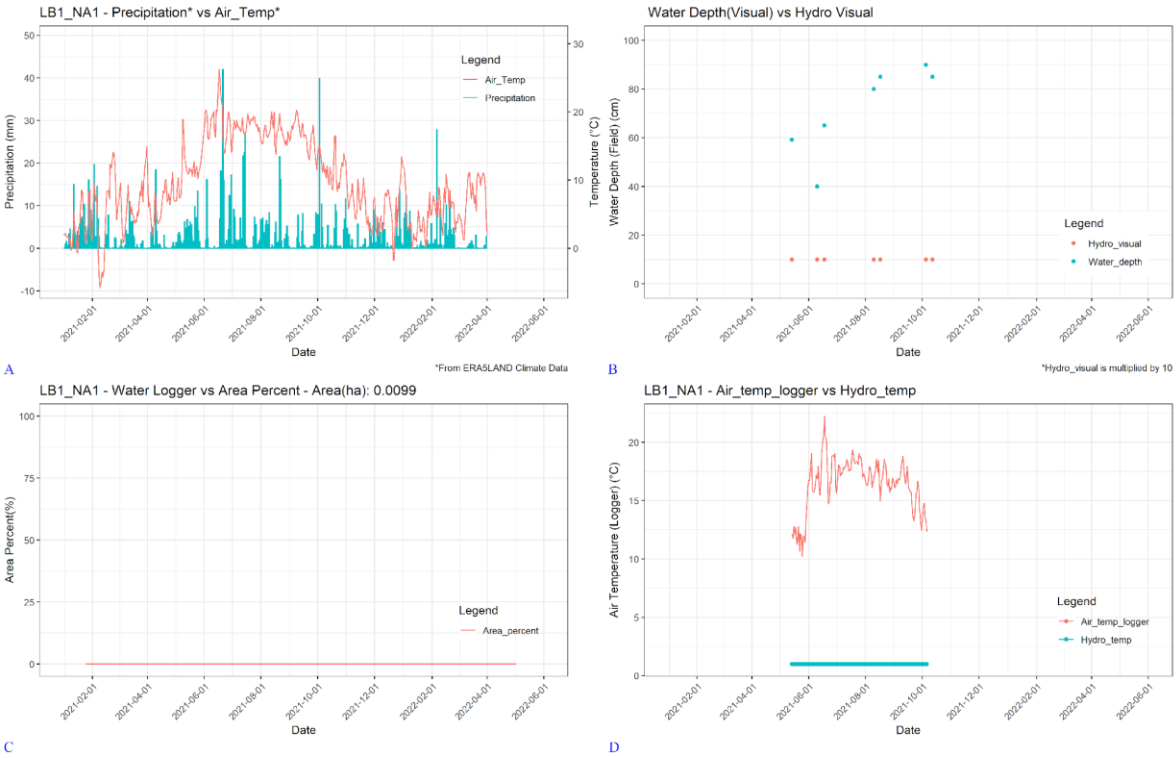
Plot 20. Pond LB1_EX2 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable



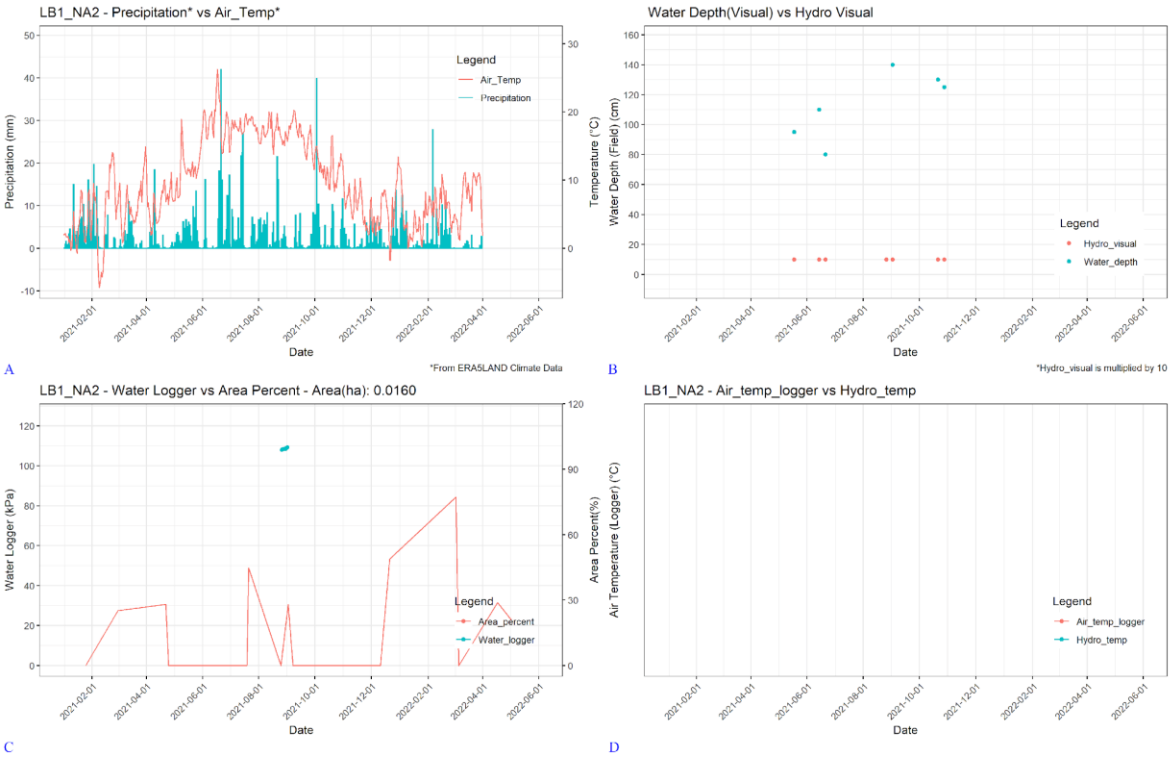
Plot 21. Pond LB1_IN1 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable



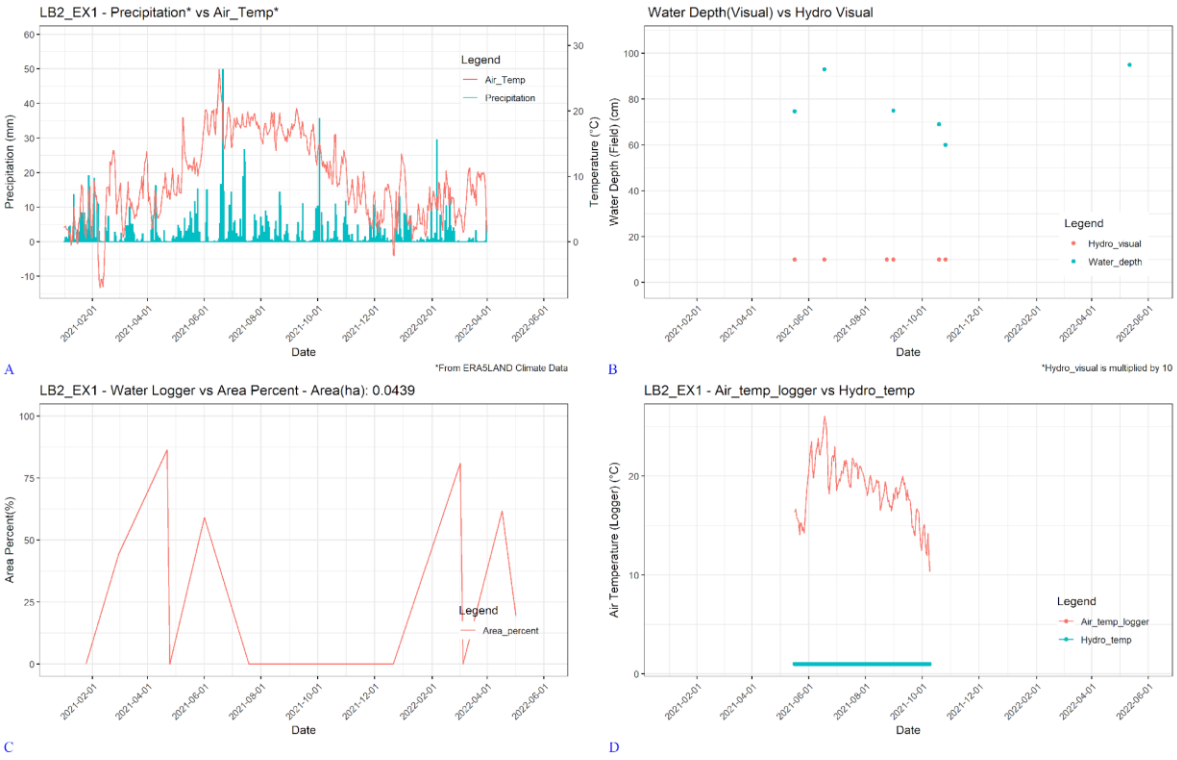
Plot 22. Pond LB1_IN2 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable



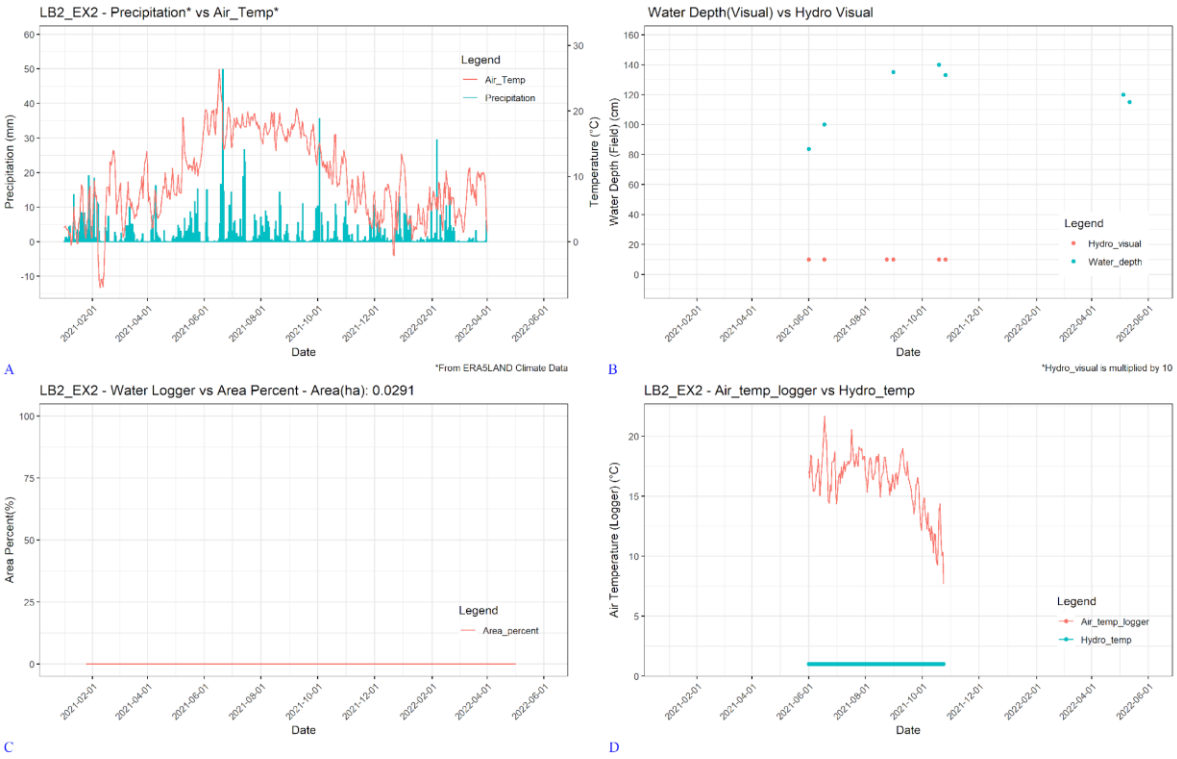
Plot 23. Pond LB1_NA1 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable



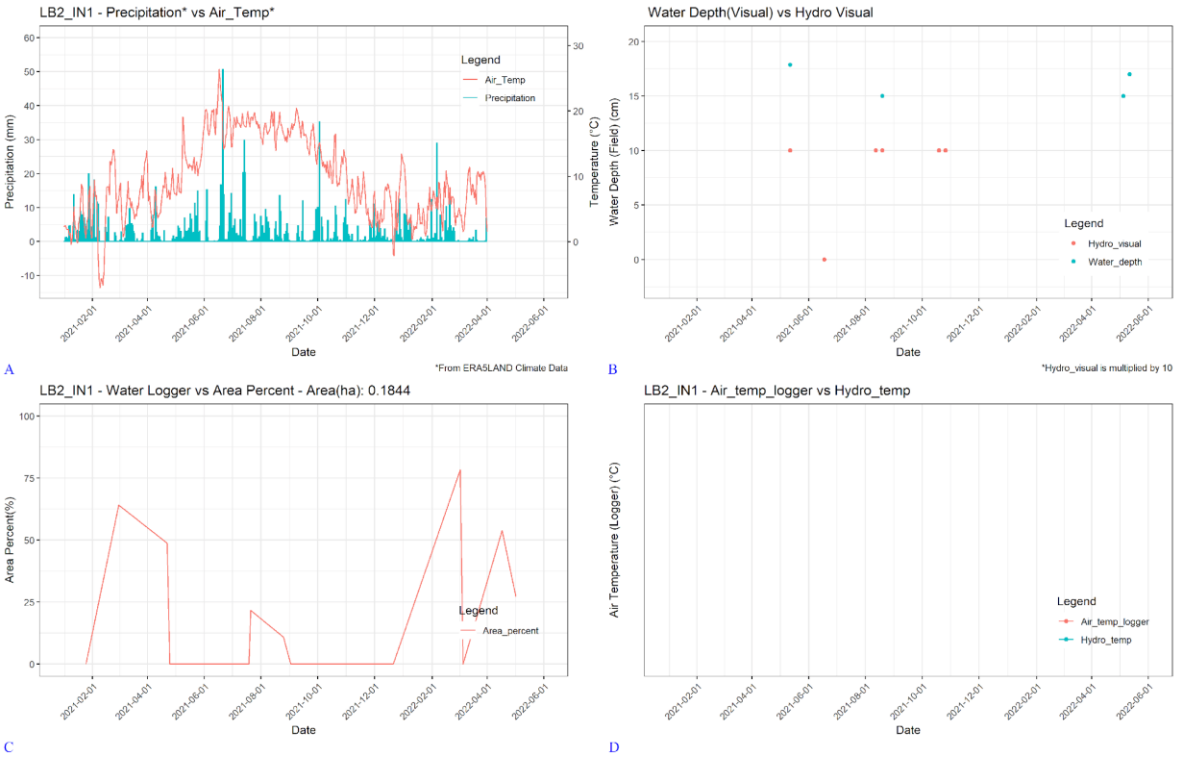
Plot 24. Pond LB1_NA2 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable



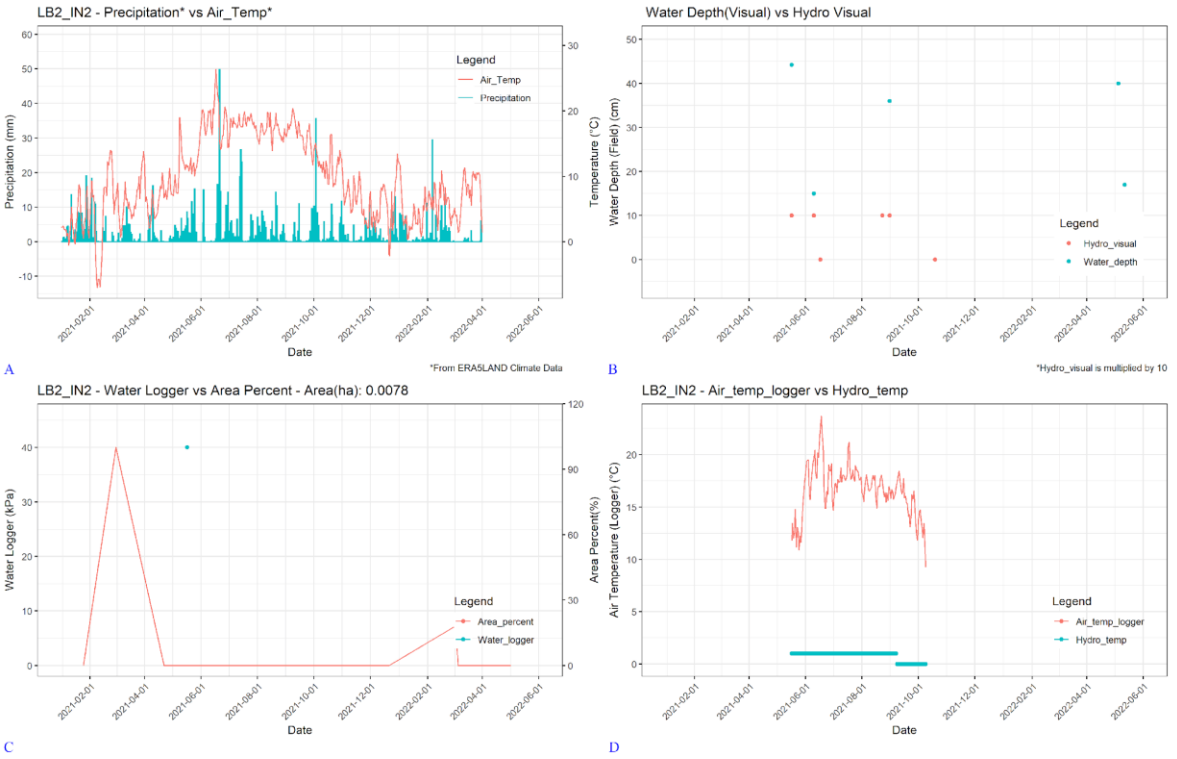
Plot 25. Pond LB2_EX1 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable



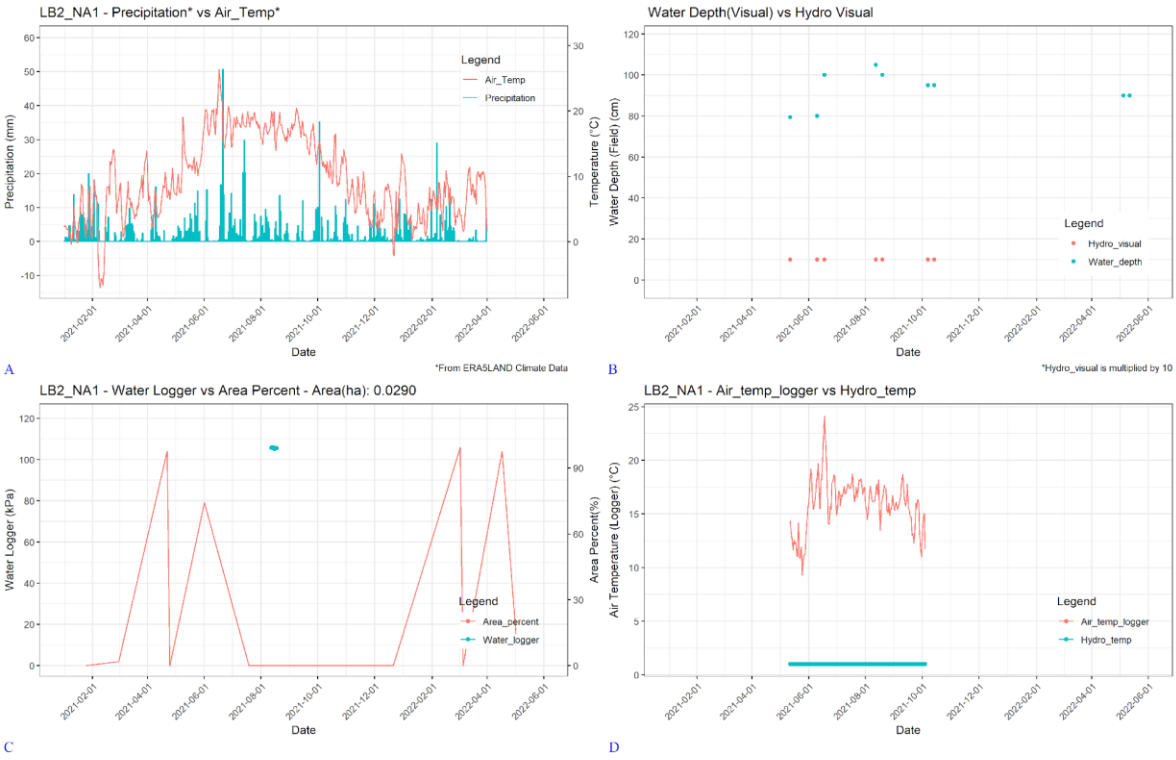
Plot 26. Pond LB2_EX2 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable



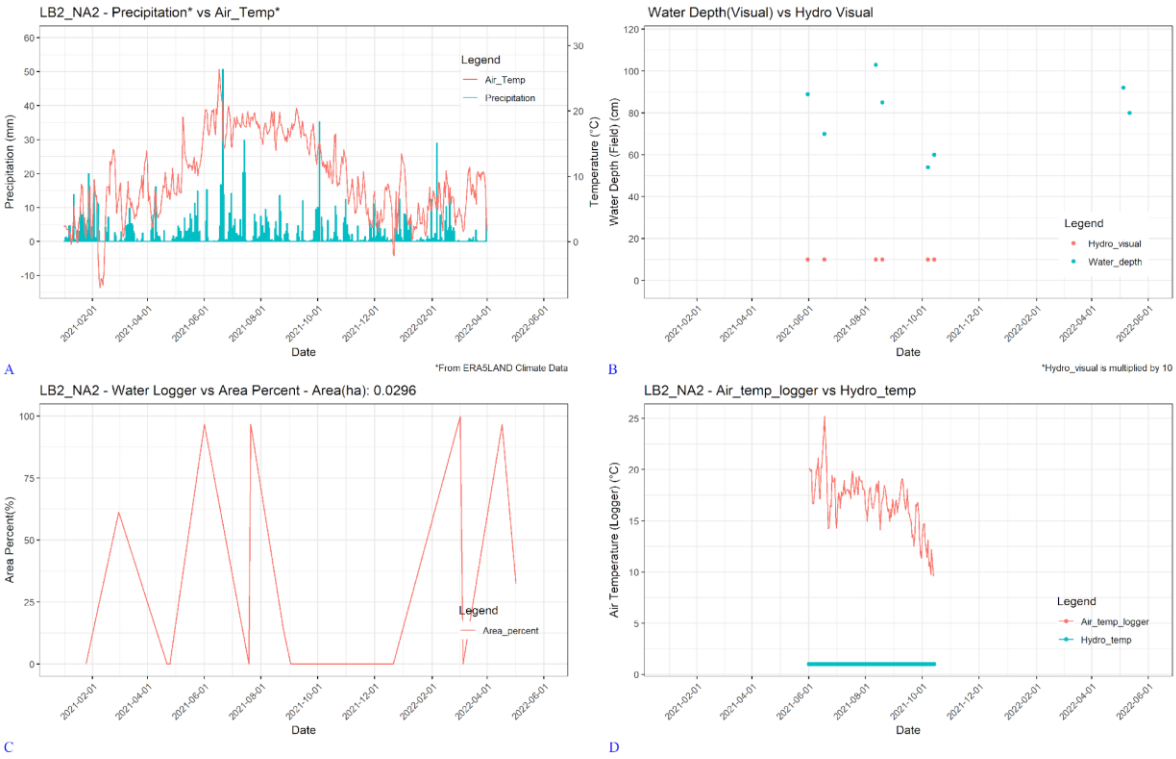
Plot 27. Pond LB2_IN1 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable.



Plot 28. Pond LB2_IN2 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable.

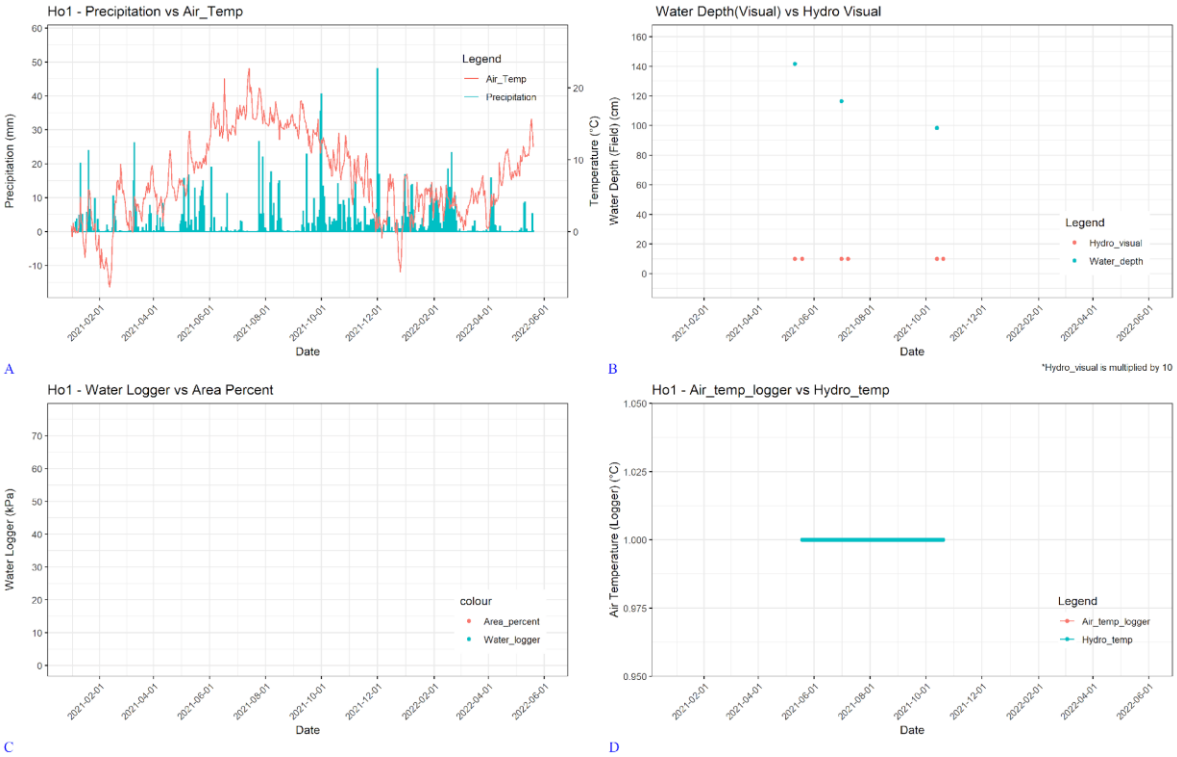


Plot 29. Pond LB2_NA1 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable.

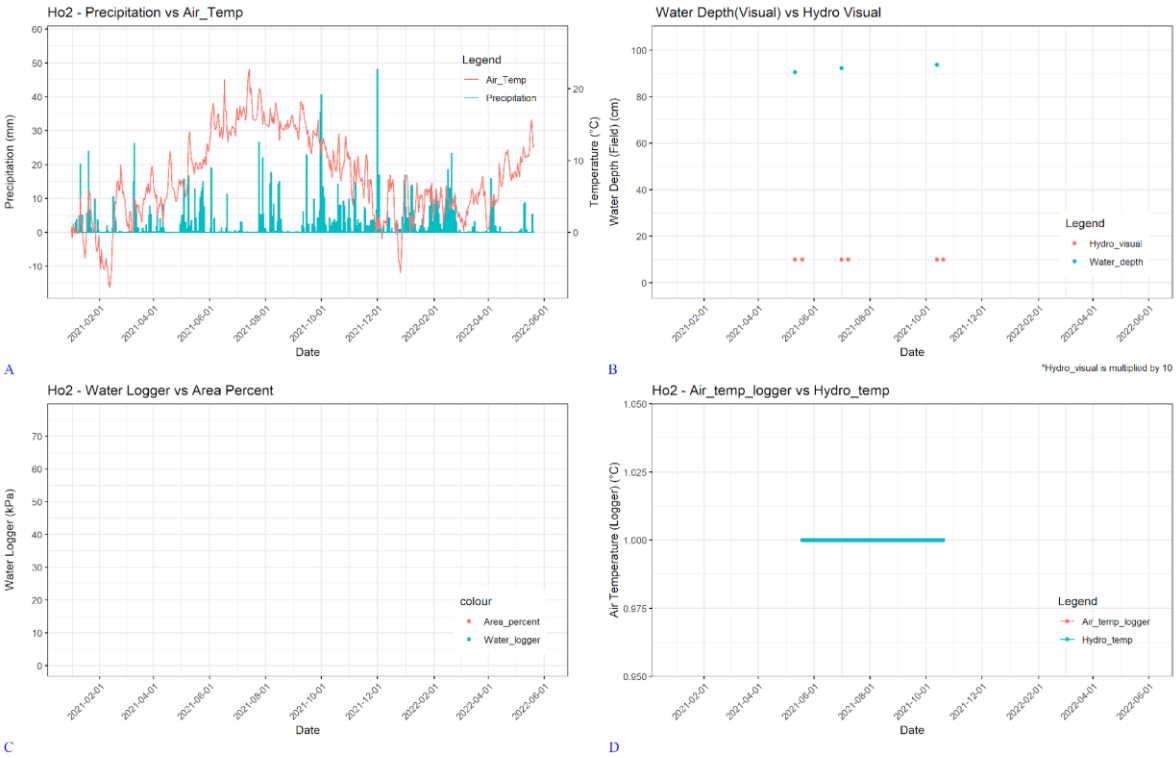


Plot 30. Pond LB2_NA2 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable.

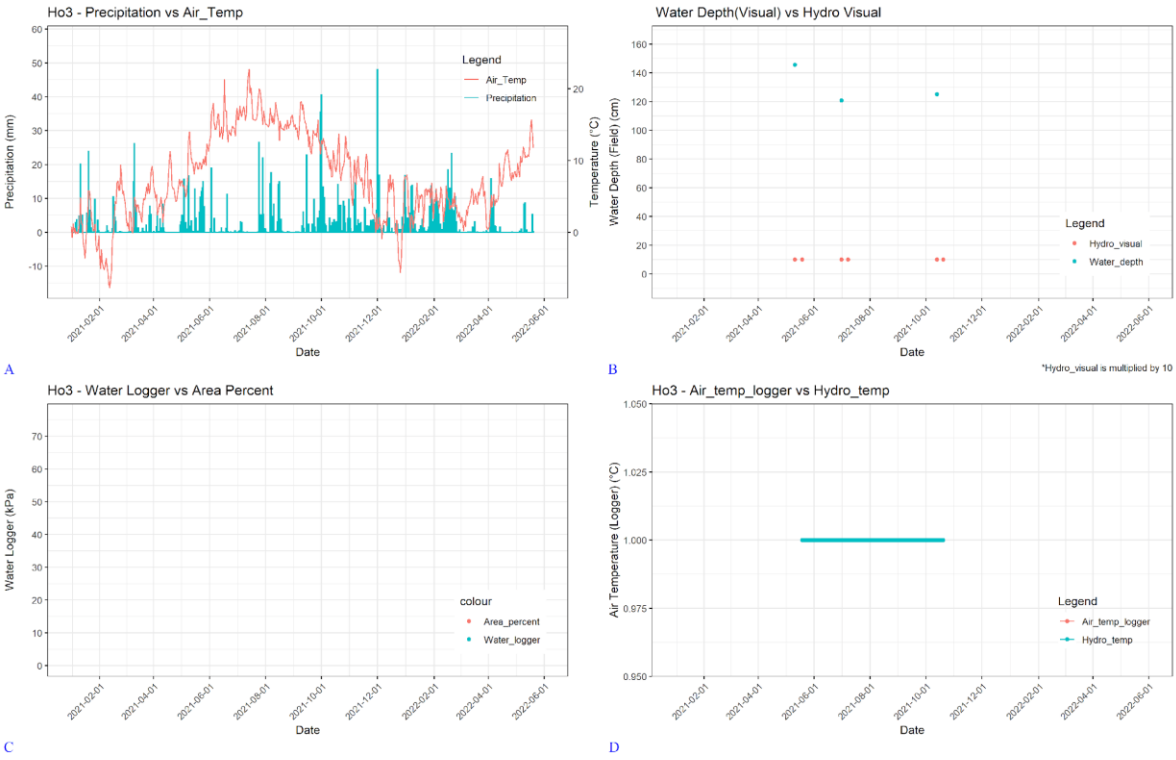
Appendix – 2 - Denmark



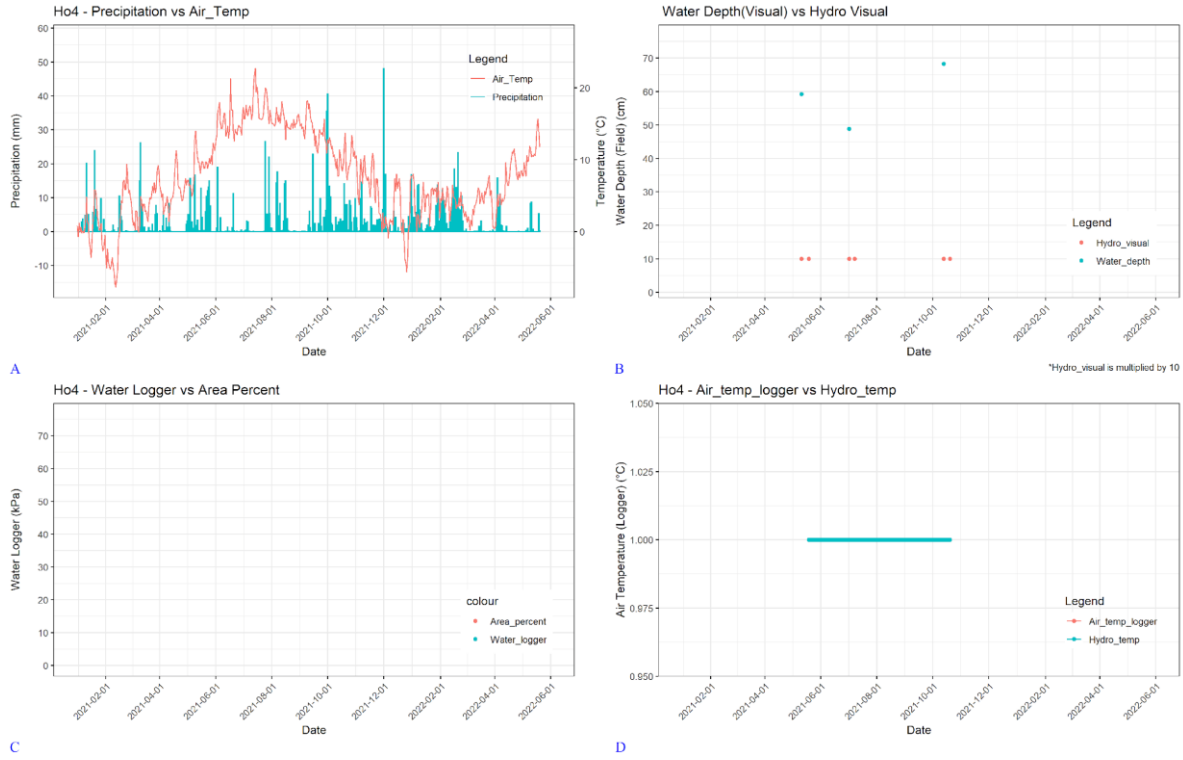
Plot 31. Pond Ho1 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable.



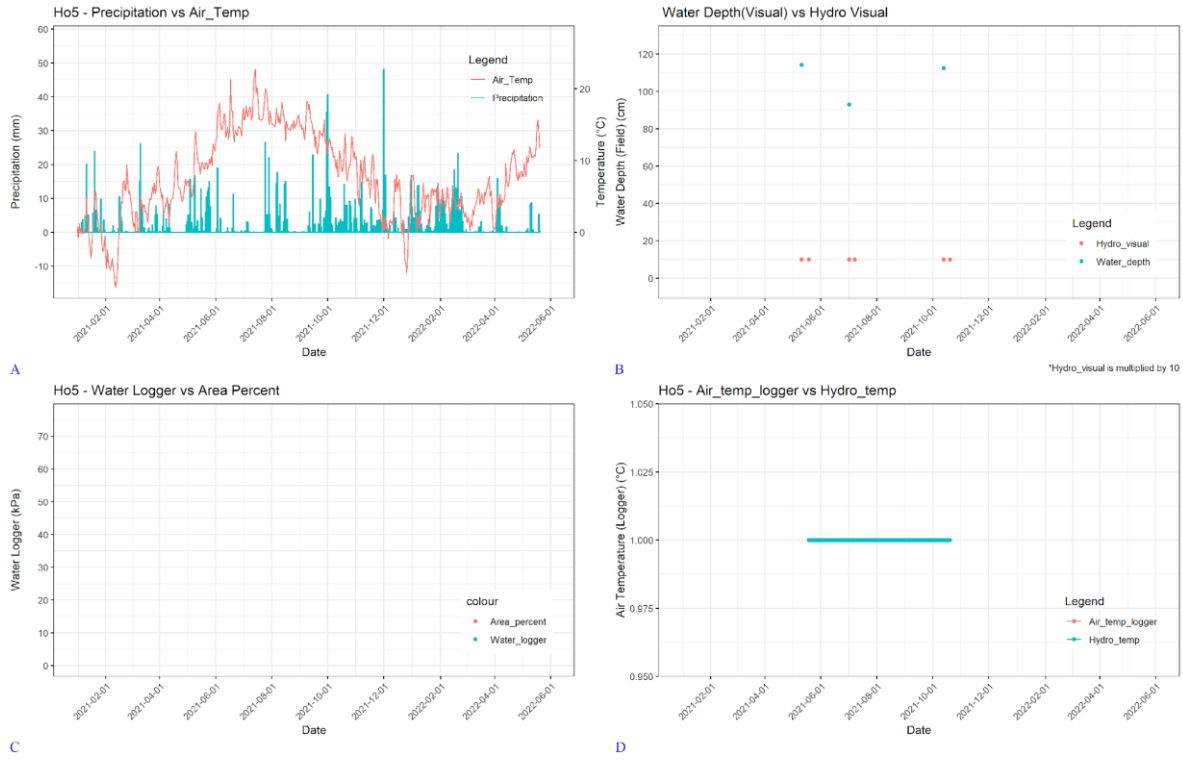
Plot 32. Pond Ho2 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable.



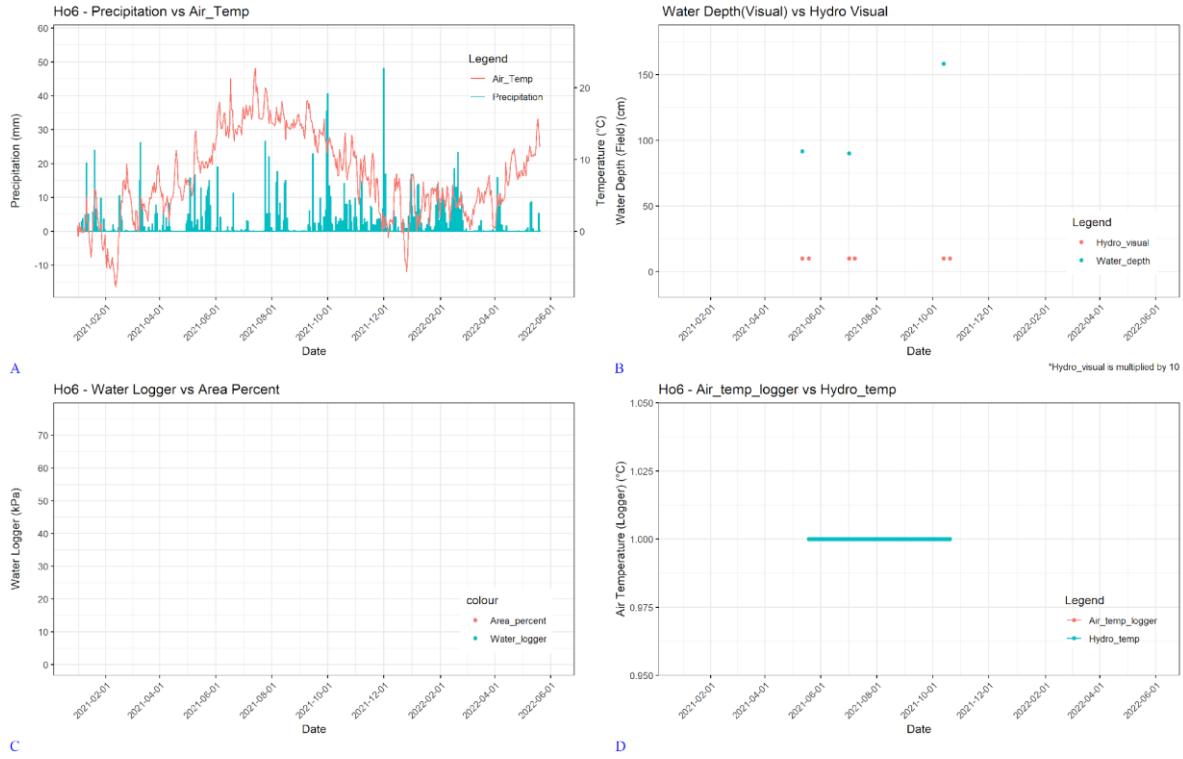
Plot 33. Pond Ho3 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable.



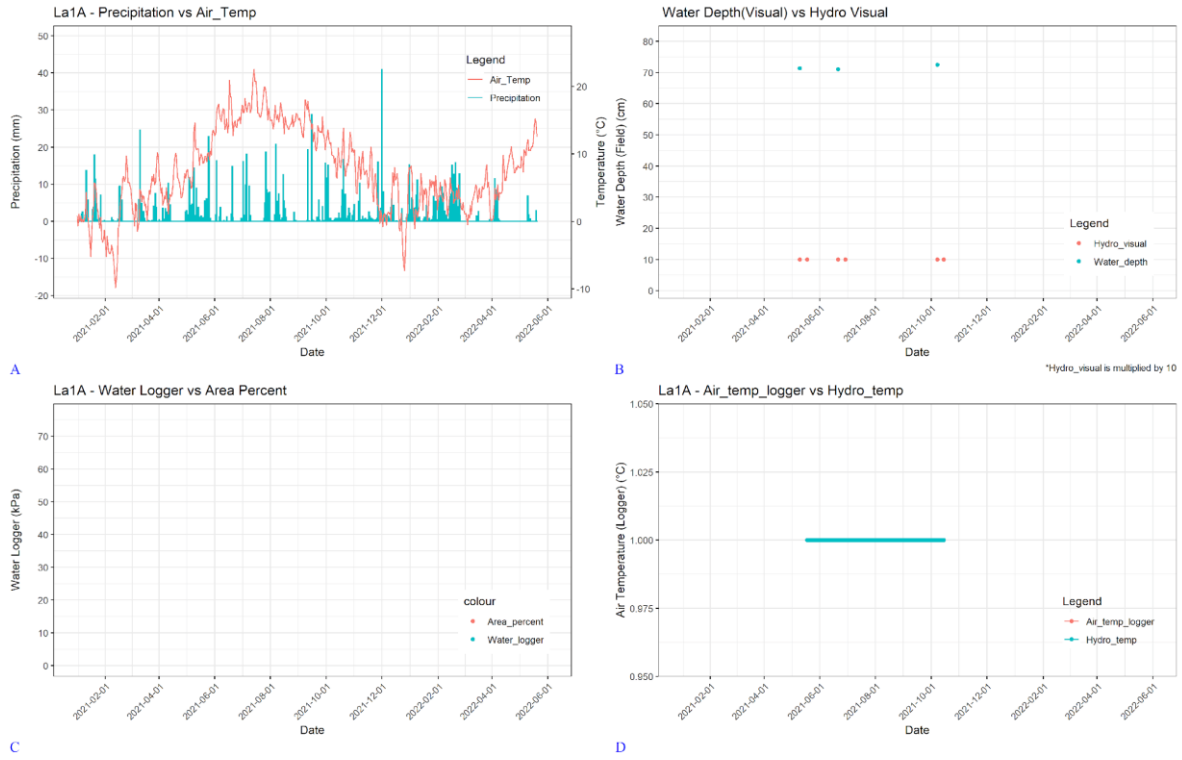
Plot 34. Pond Ho4 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable.



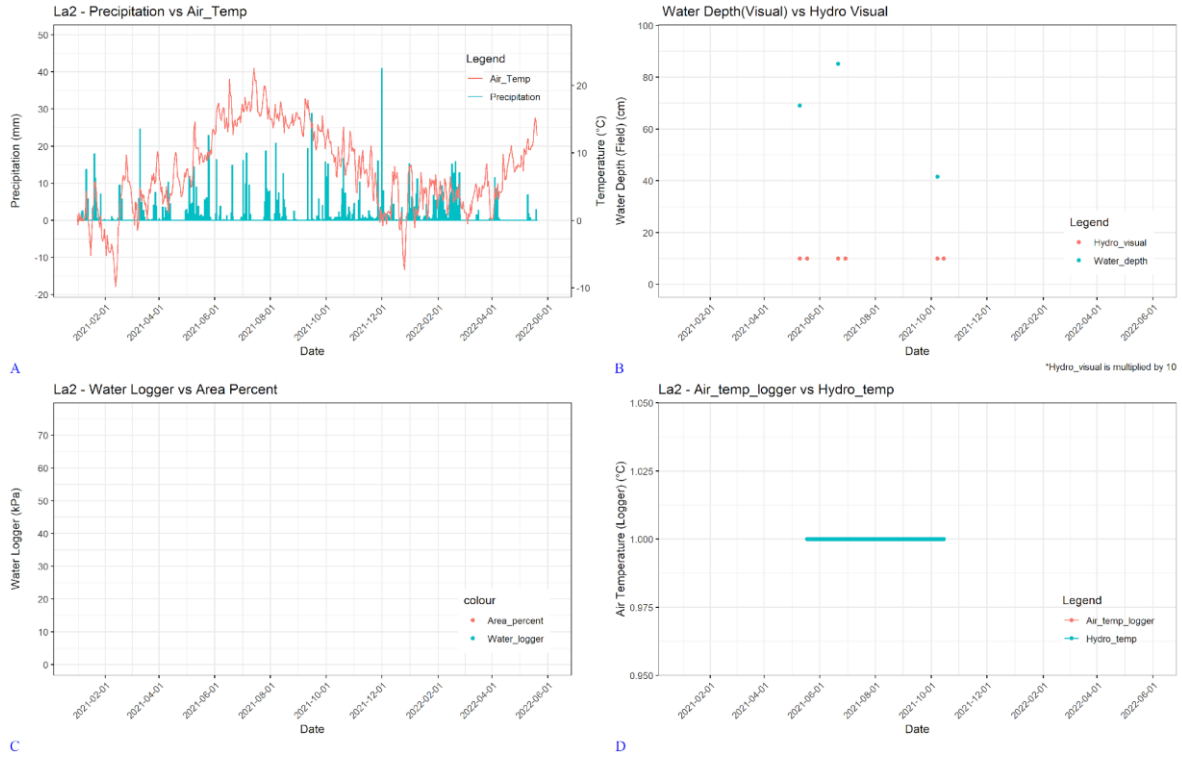
Plot 35. Pond Ho5 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable.



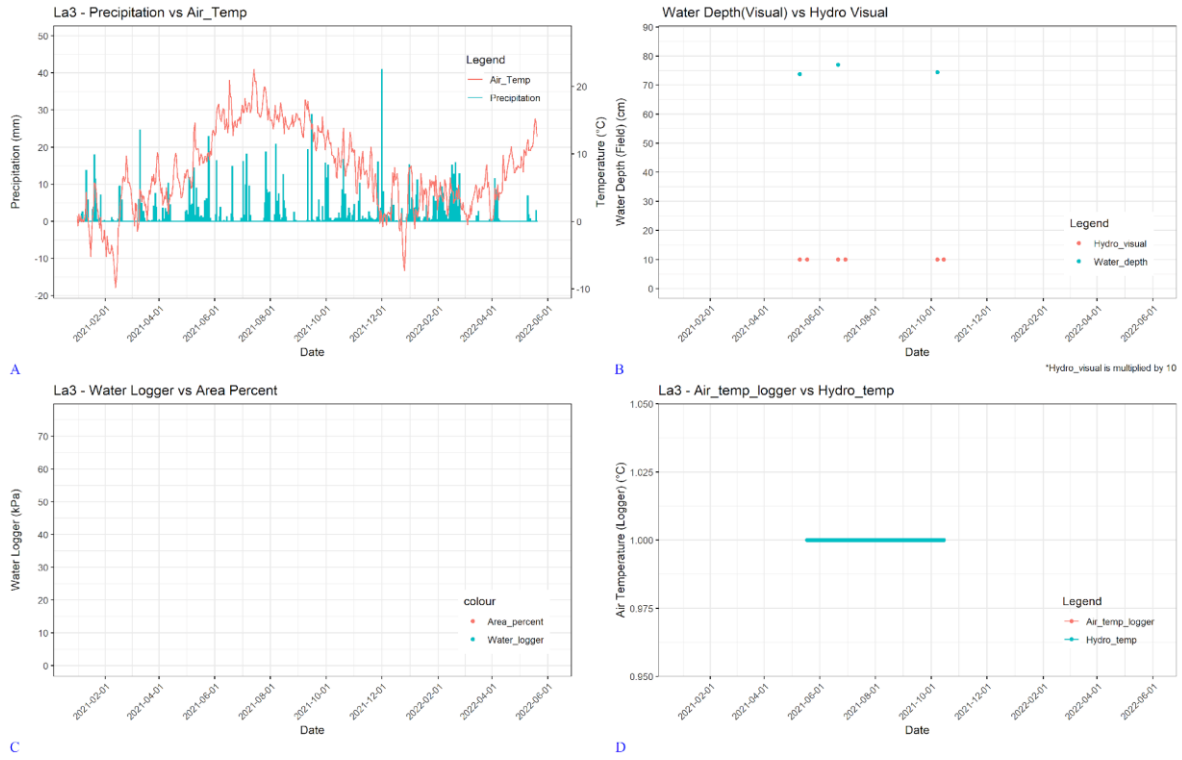
Plot 36. Pond Ho6 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable.



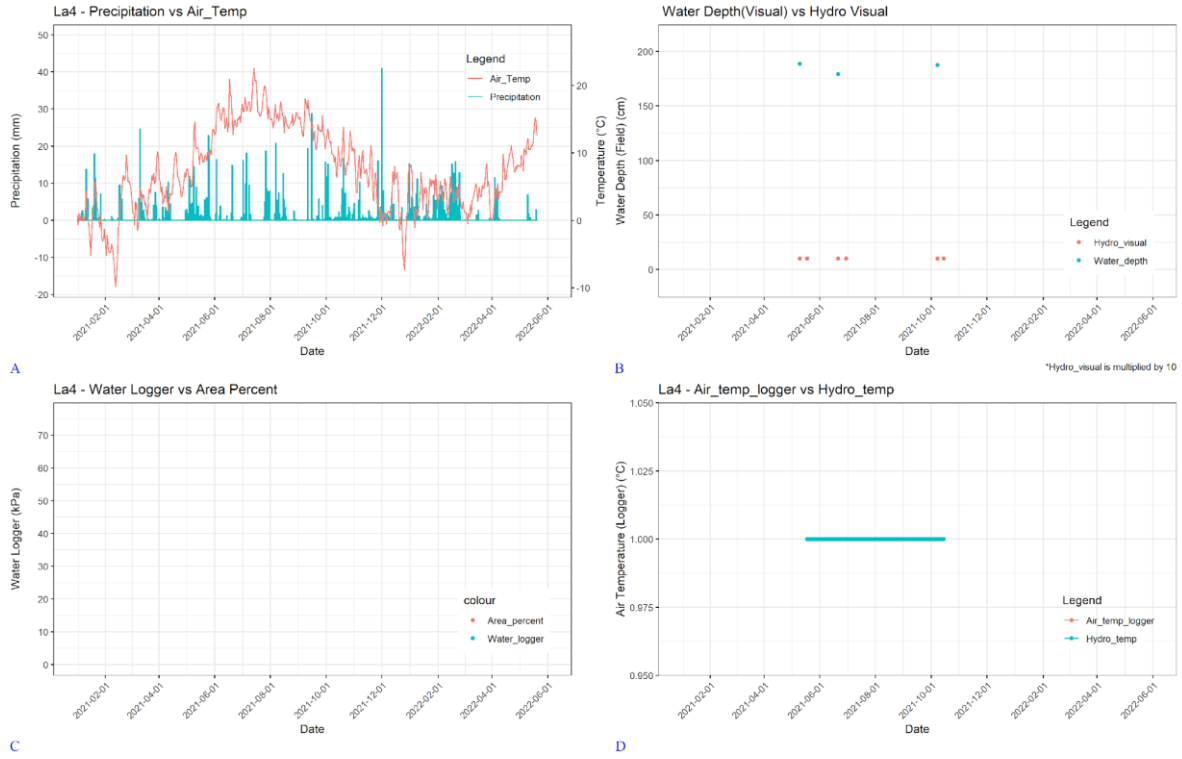
Plot 37. Pond La1A with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable.



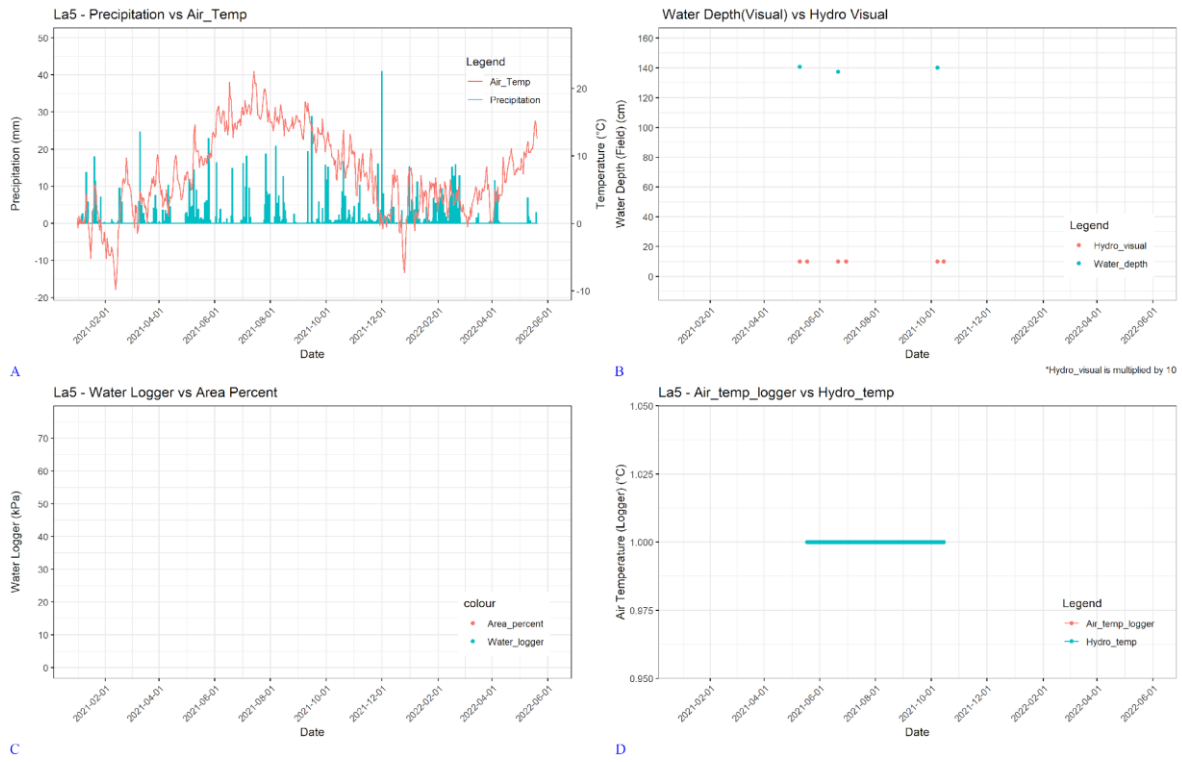
Plot 38. Pond La2 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable.



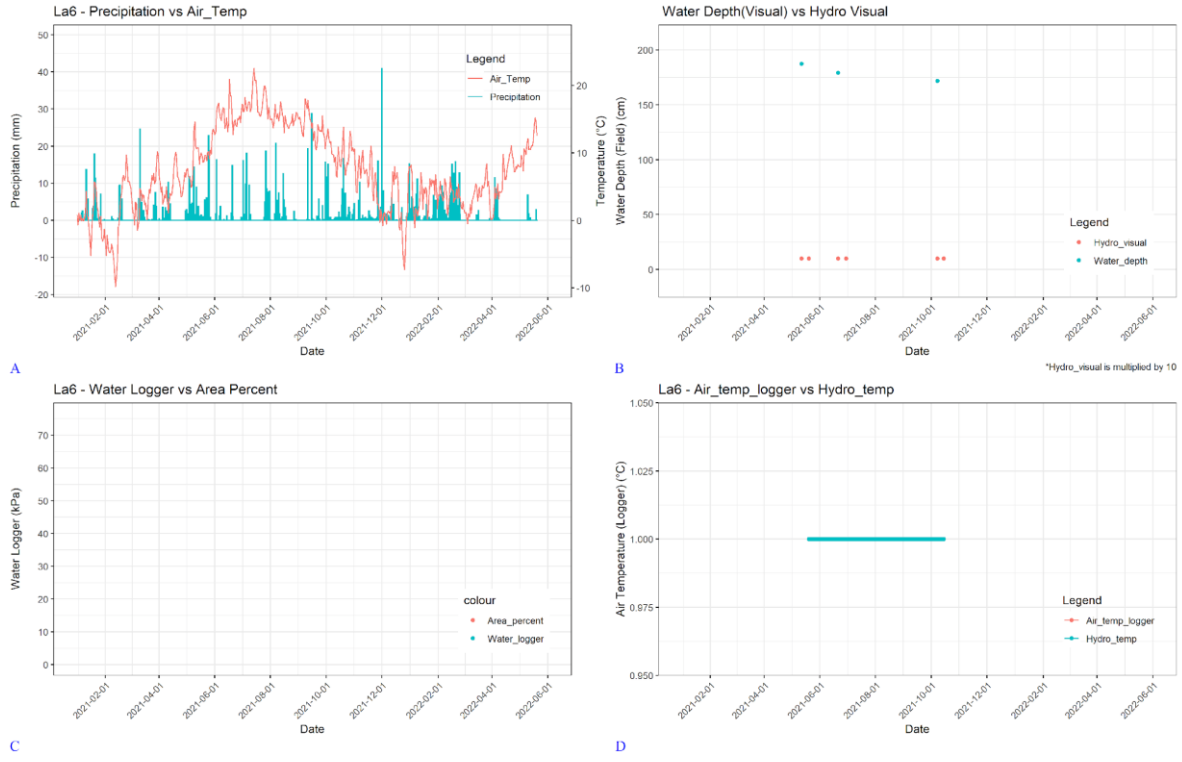
Plot 39. Pond La3 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable.



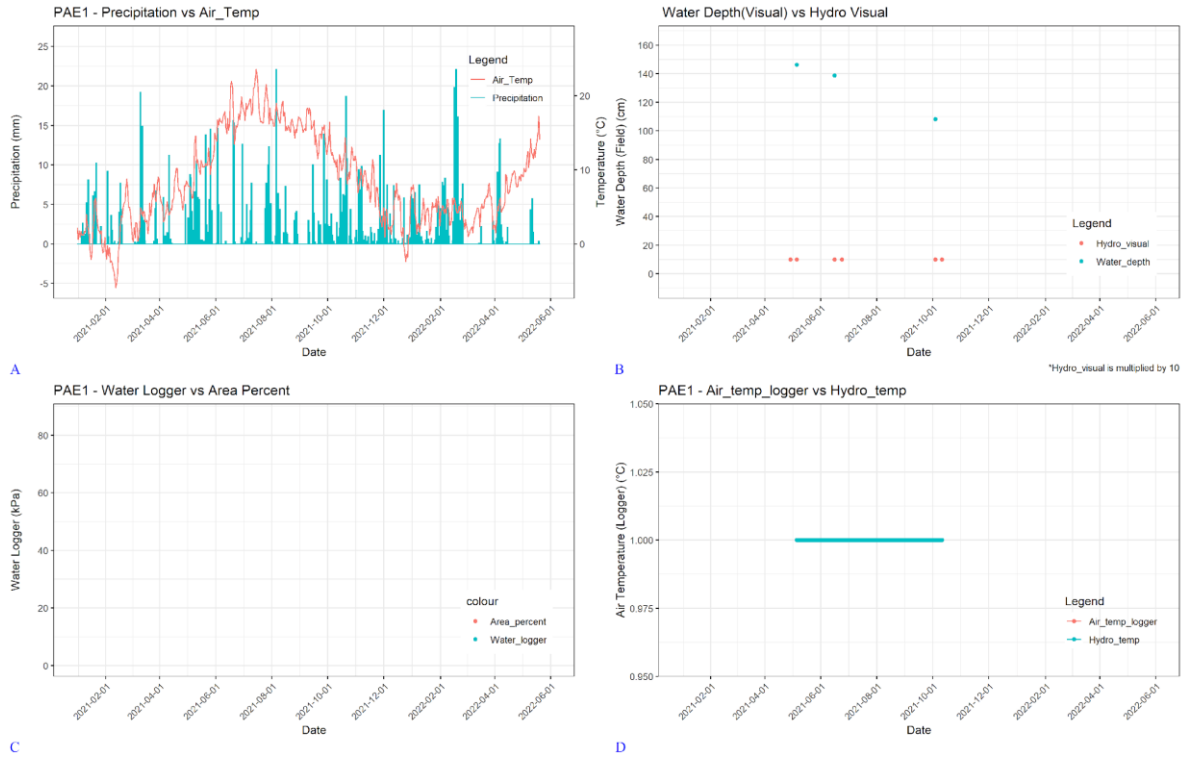
Plot 40. Pond La4 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable.



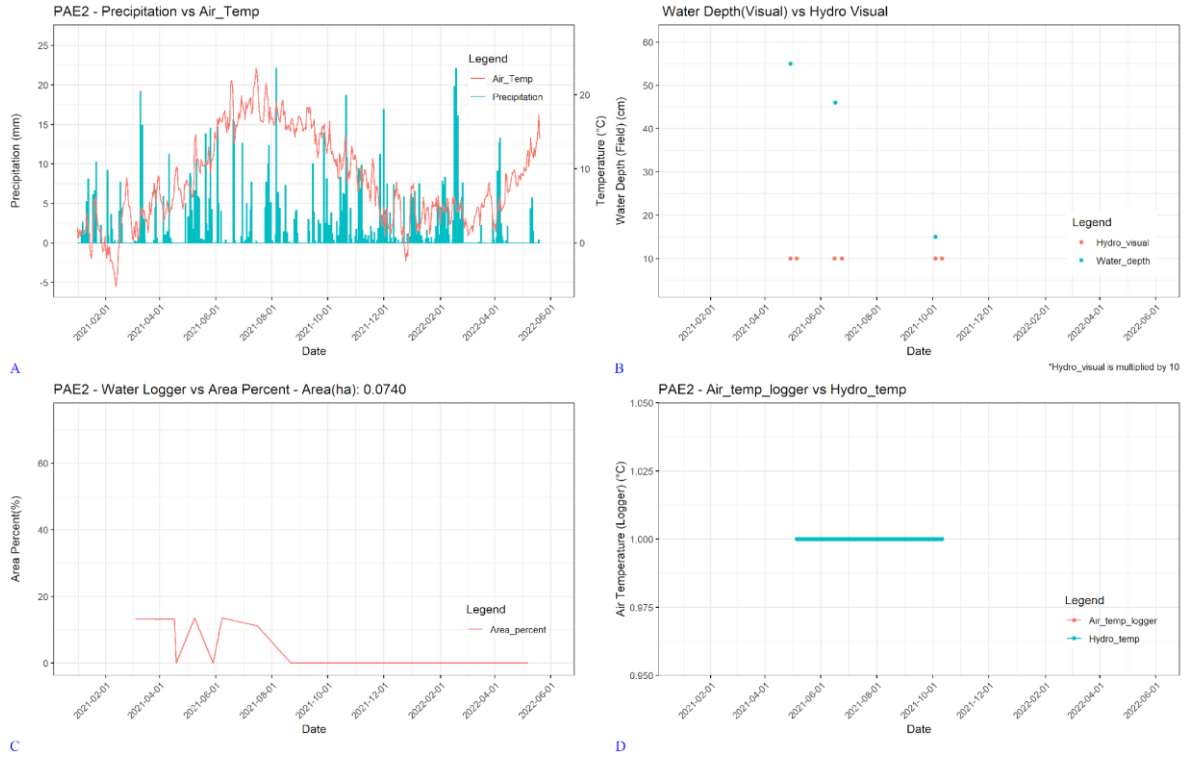
Plot 41. Pond La5 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable.



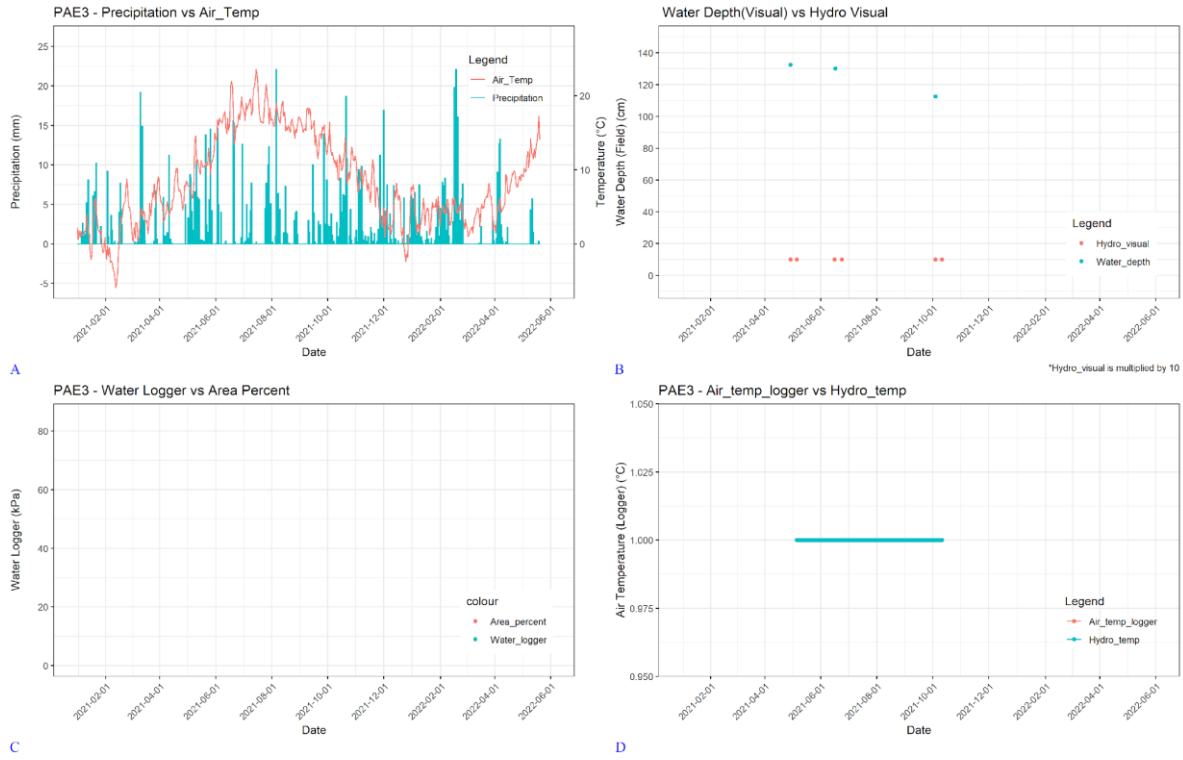
Plot 42. Pond La6 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable.



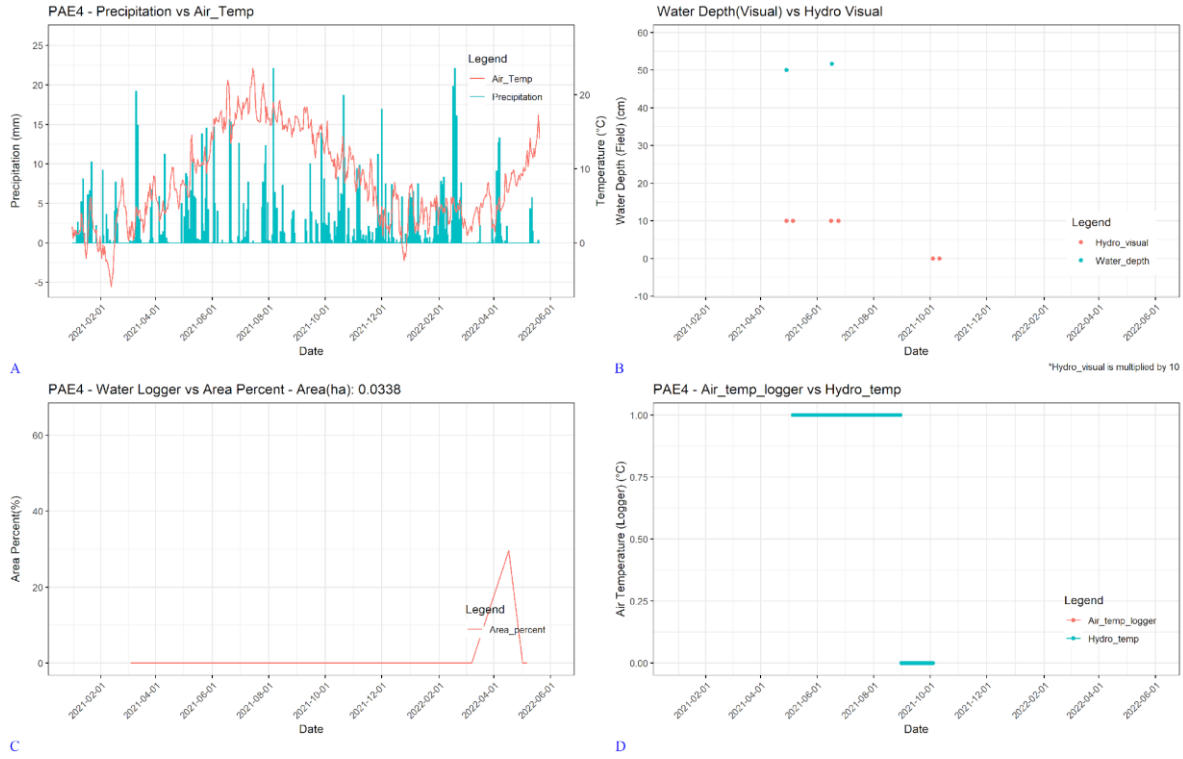
Plot 43. Pond PAE1 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable.



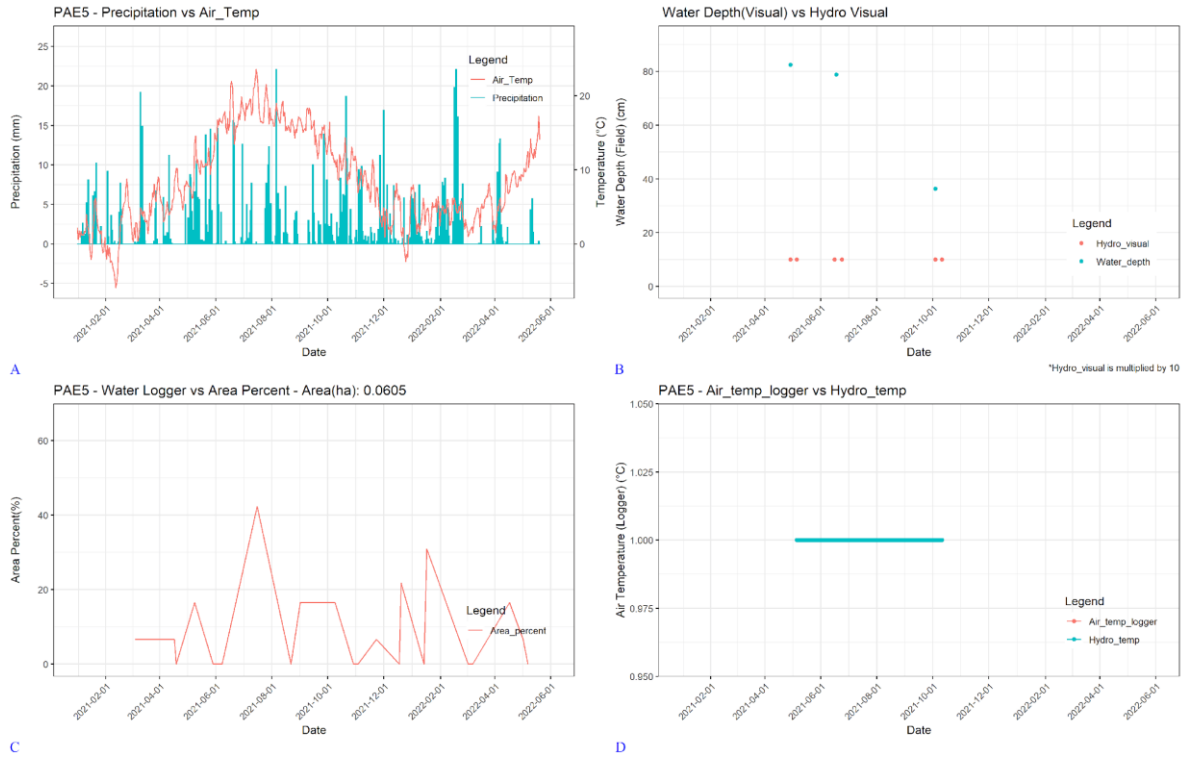
Plot 44. Pond PAE2 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable.



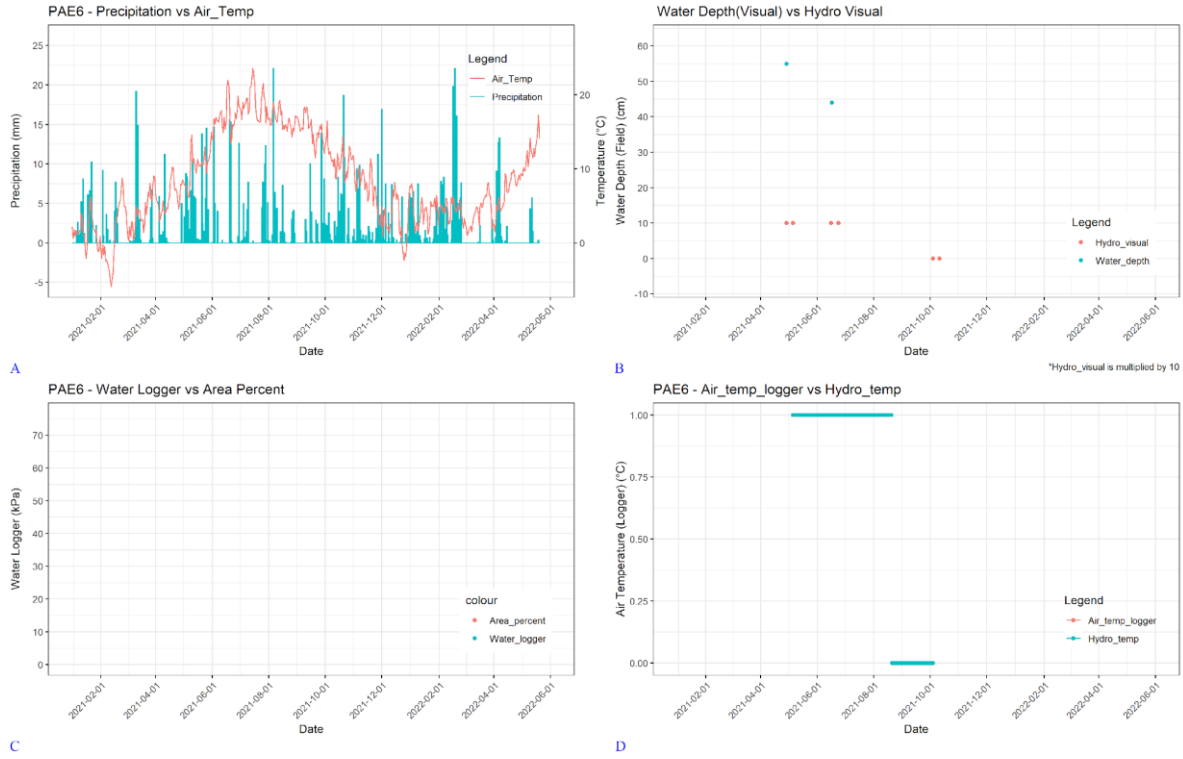
Plot 45. Pond PAE3 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable.



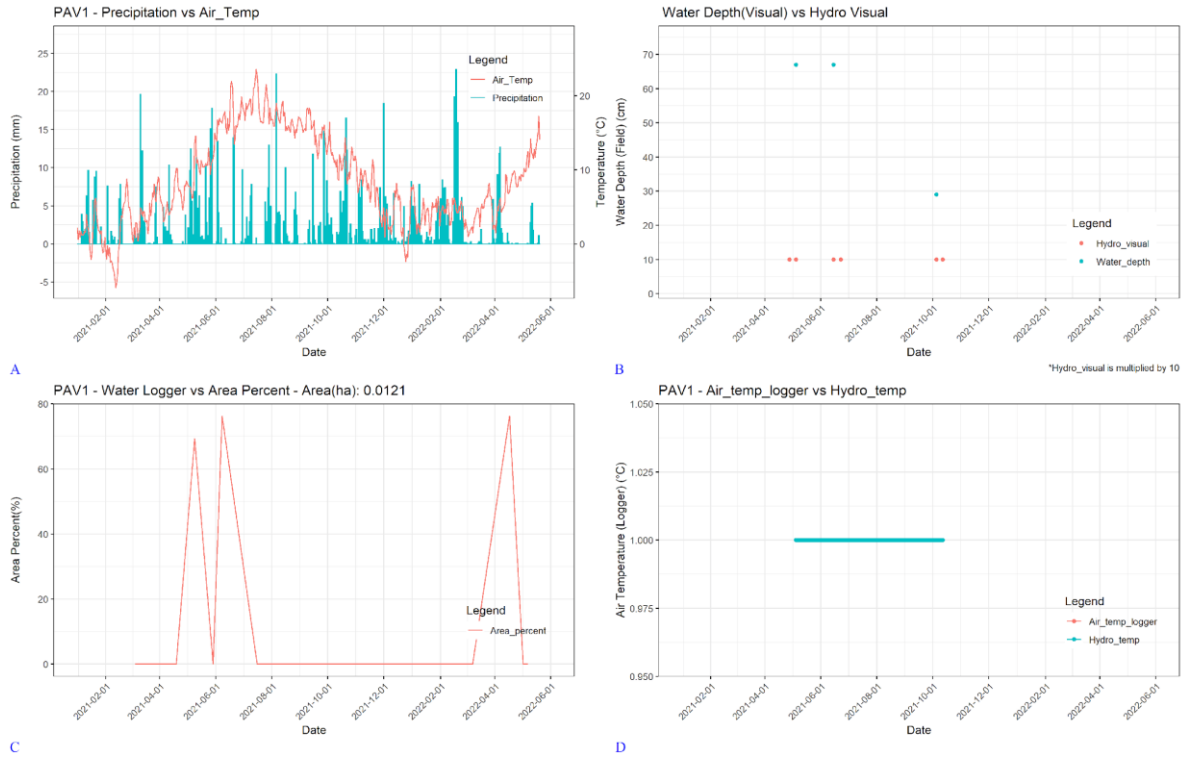
Plot 46. Pond PAE4 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable.



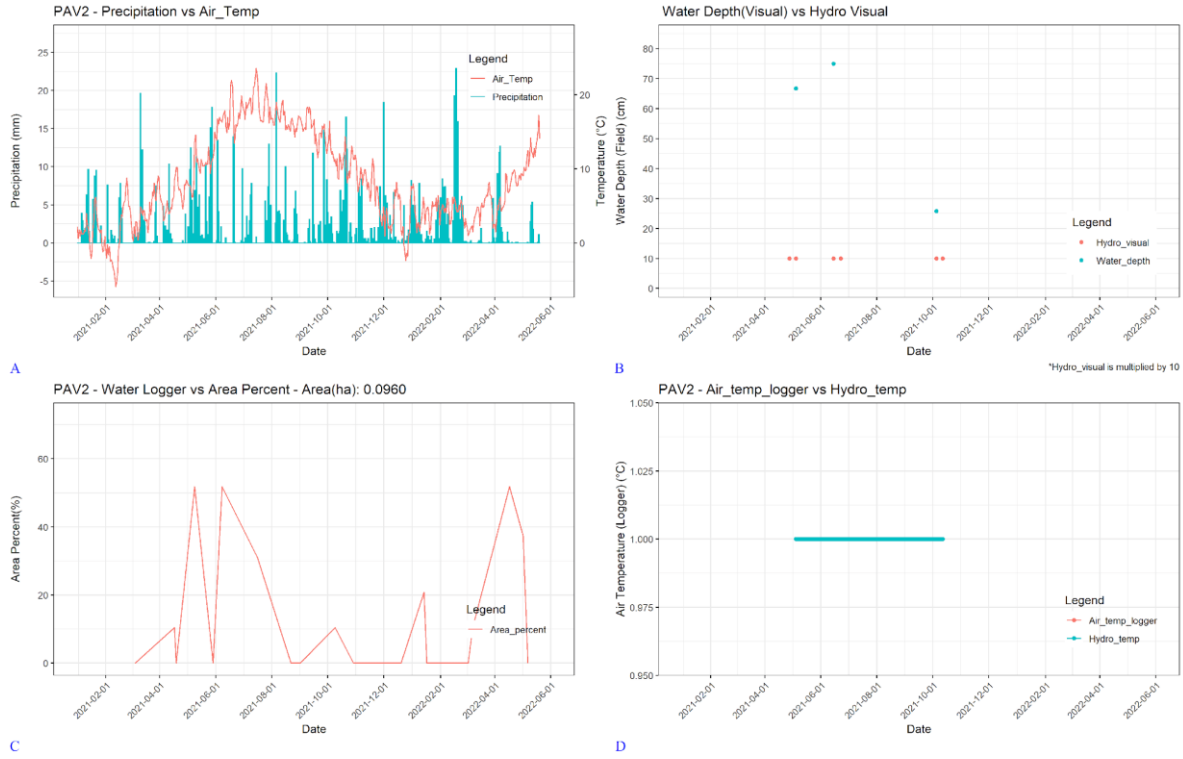
Plot 47. Pond PAE5 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable.



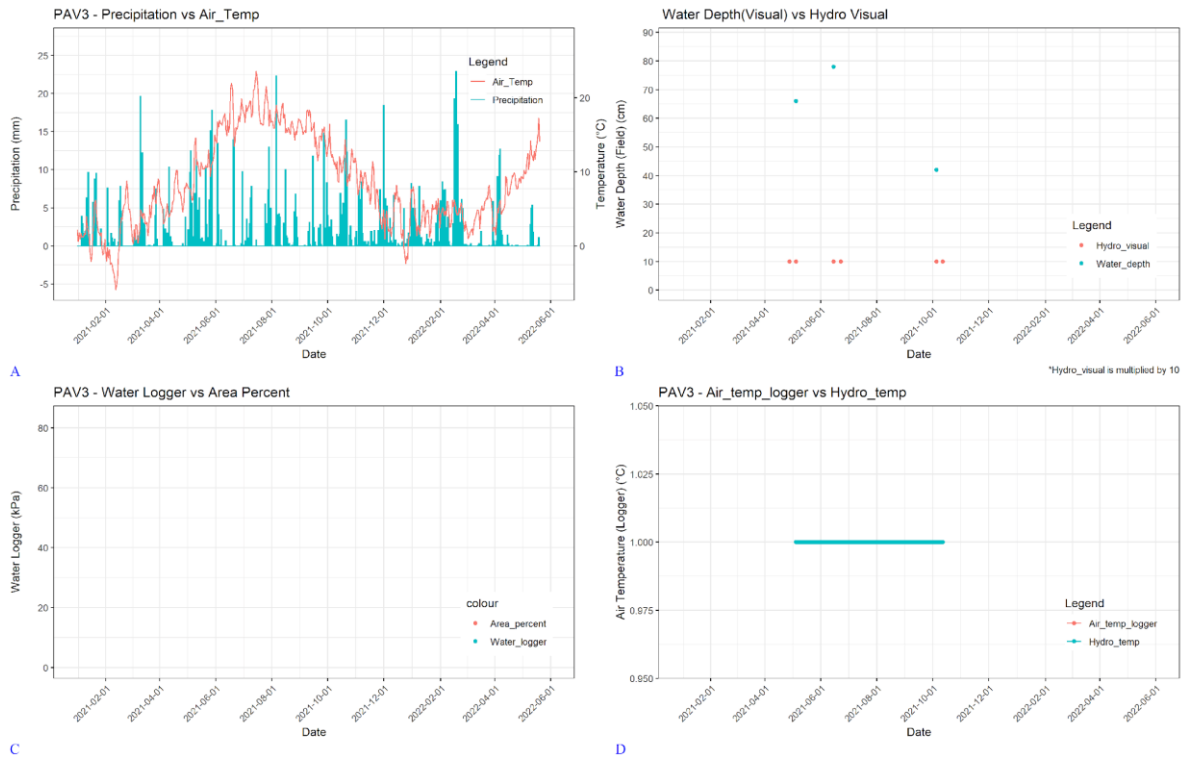
Plot 48. Pond PAE6 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable.



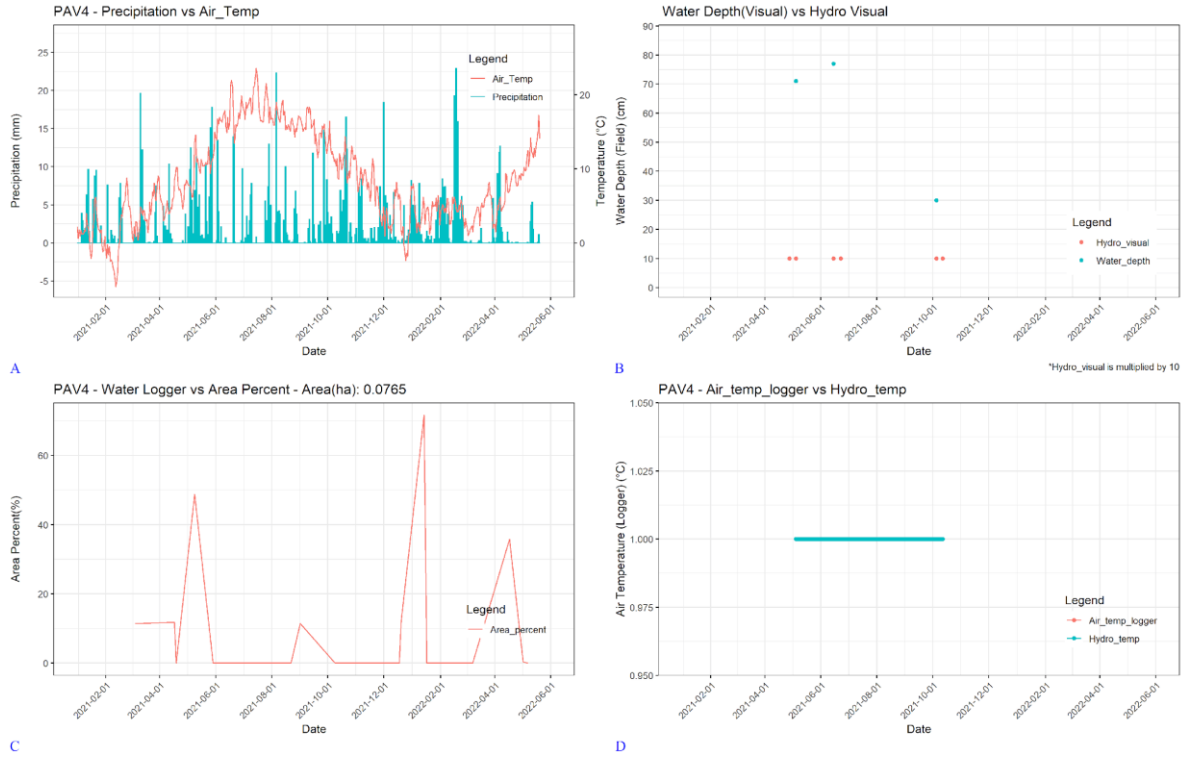
Plot 49. Pond PAV1 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable.



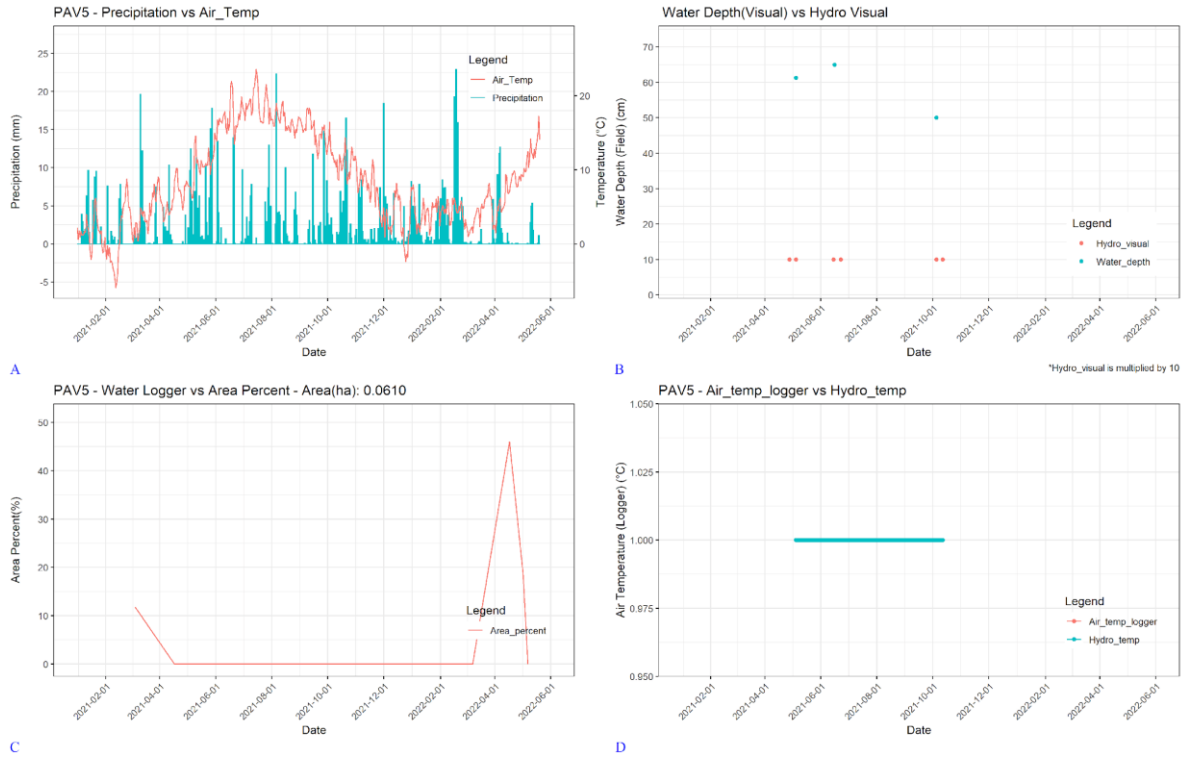
Plot 50. Pond PAV2 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable.



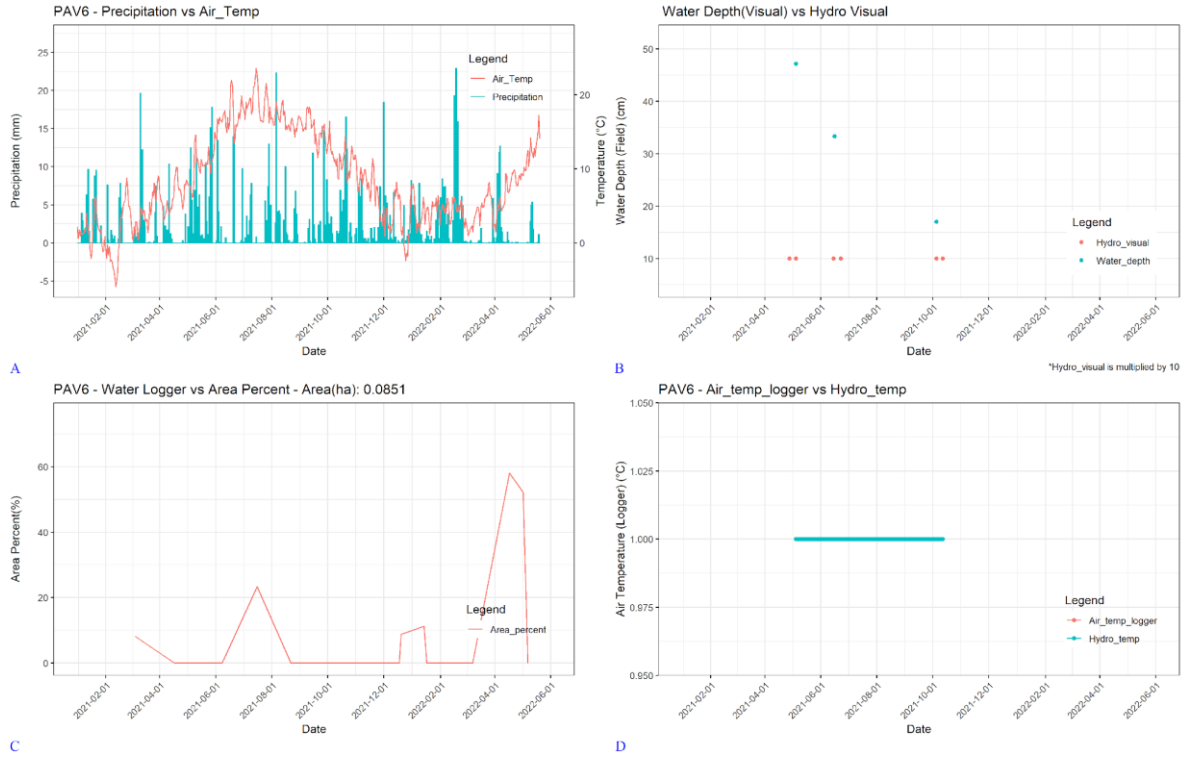
Plot 51. Pond PAV3 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable.



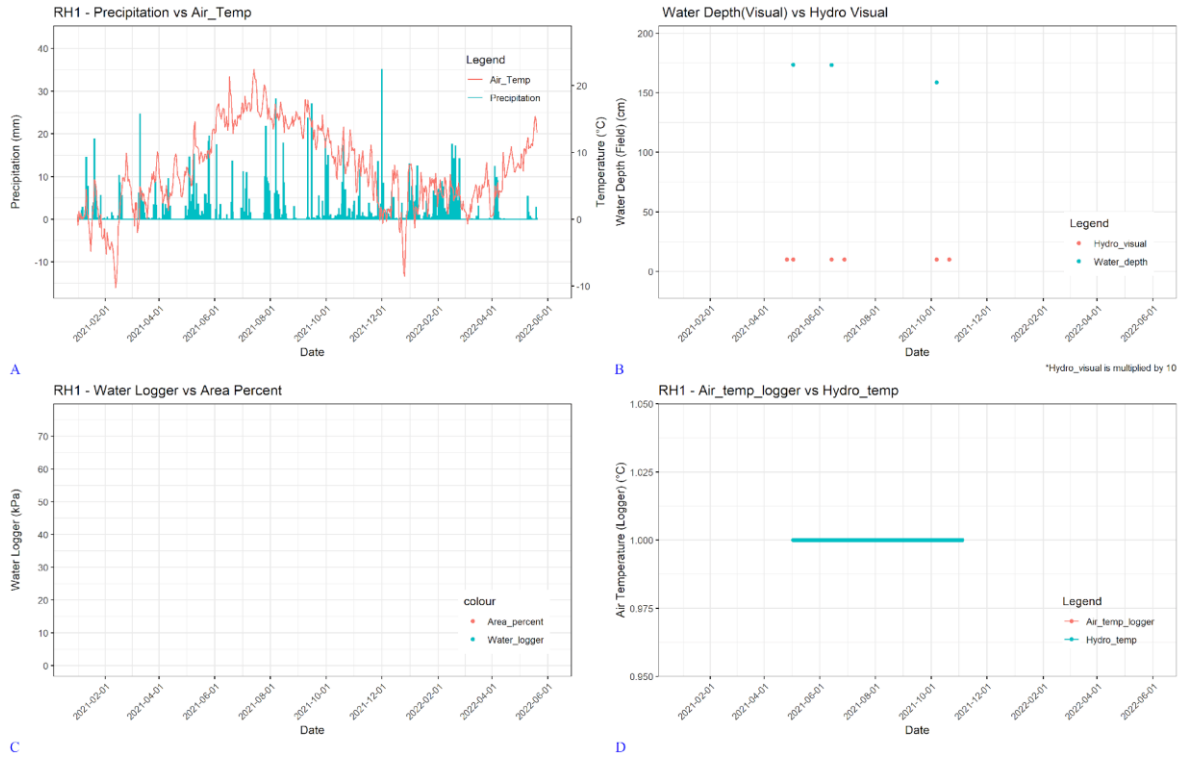
Plot 52. Pond PAV4 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable.



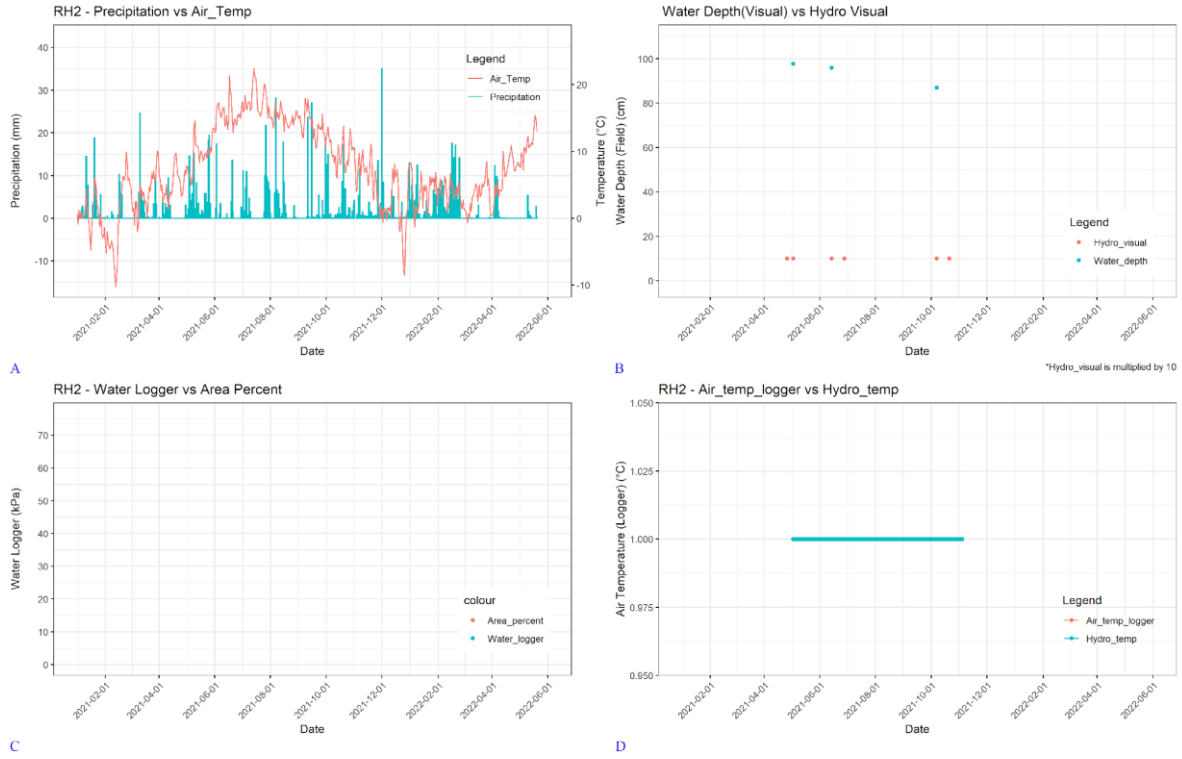
Plot 53. Pond PAV5 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable.



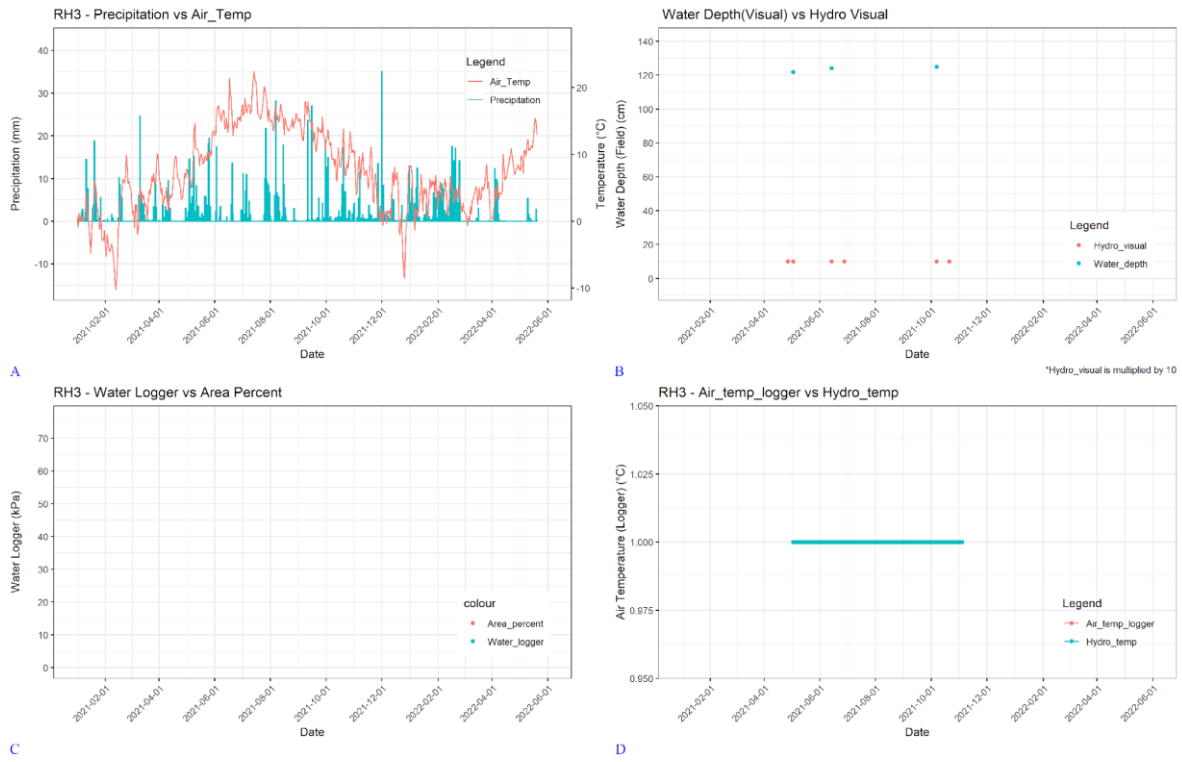
Plot 54. Pond PAV6 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable.



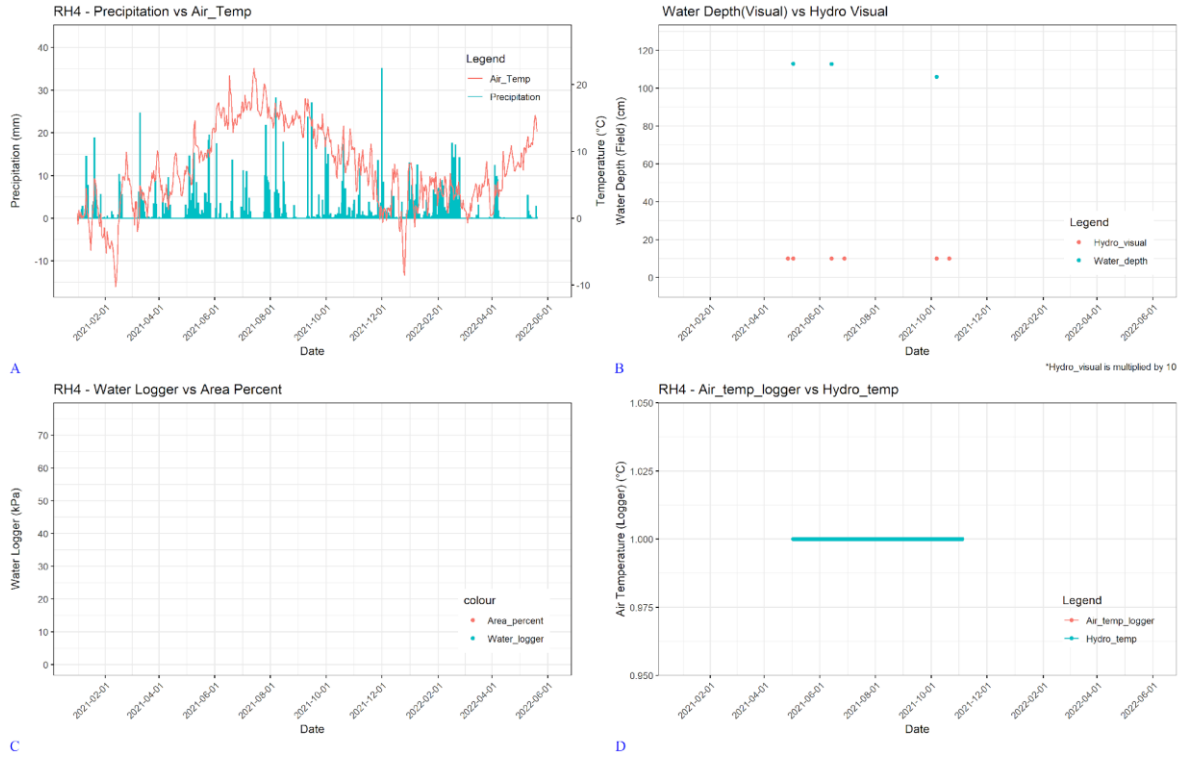
Plot 55. Pond RH1 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable.



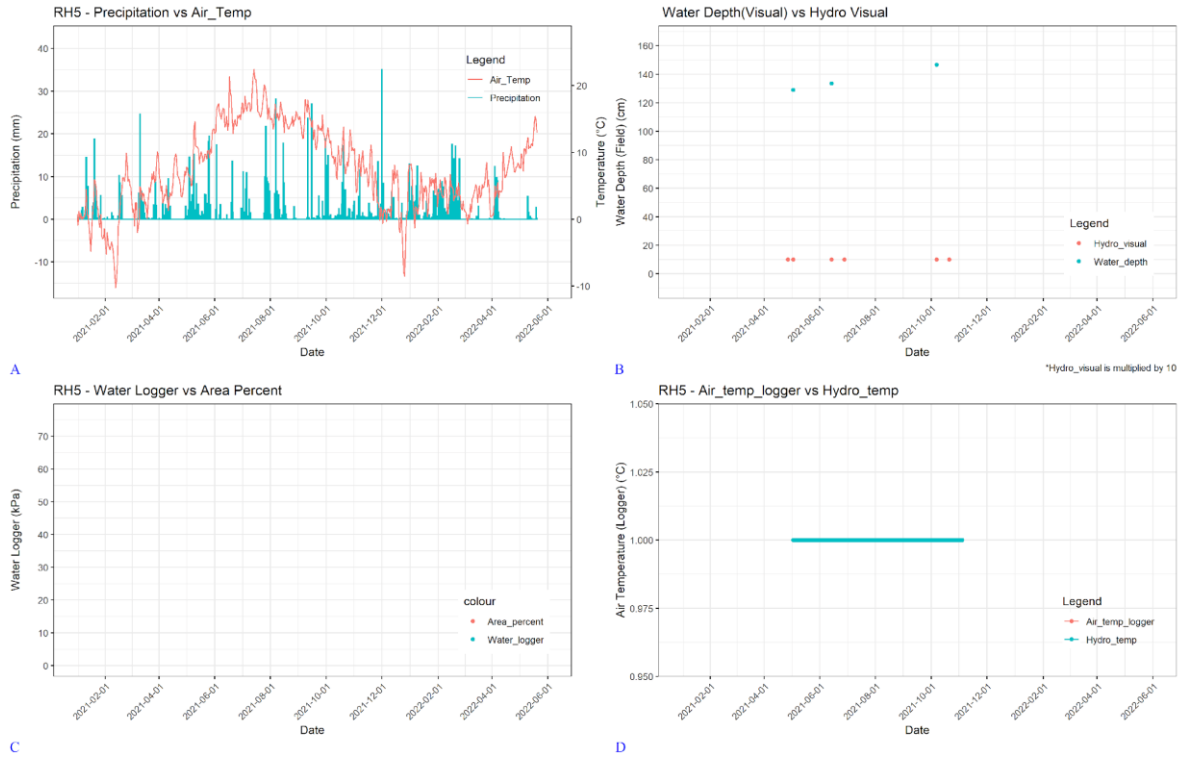
Plot 56. Pond RH2 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable.



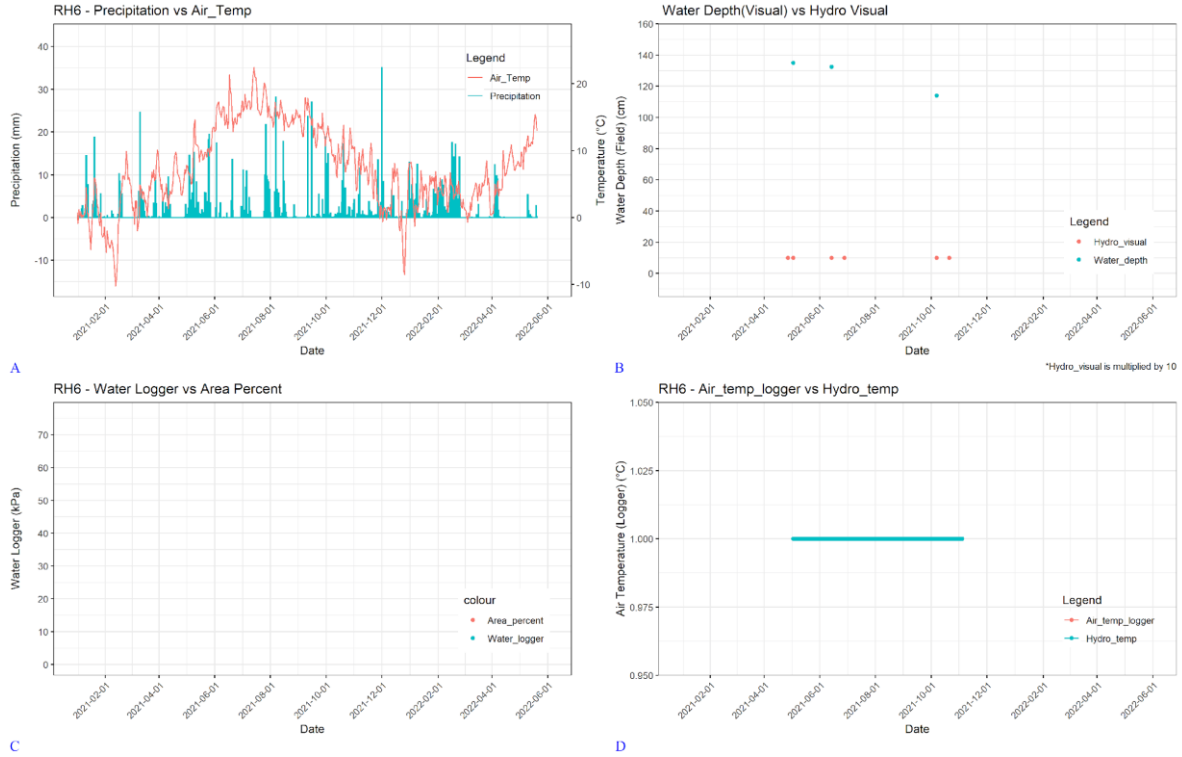
Plot 57. Pond RH3 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable.



Plot 58. Pond RH4 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable.



Plot 59. Pond RH5 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable.



Plot 60. Pond RH6 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable.

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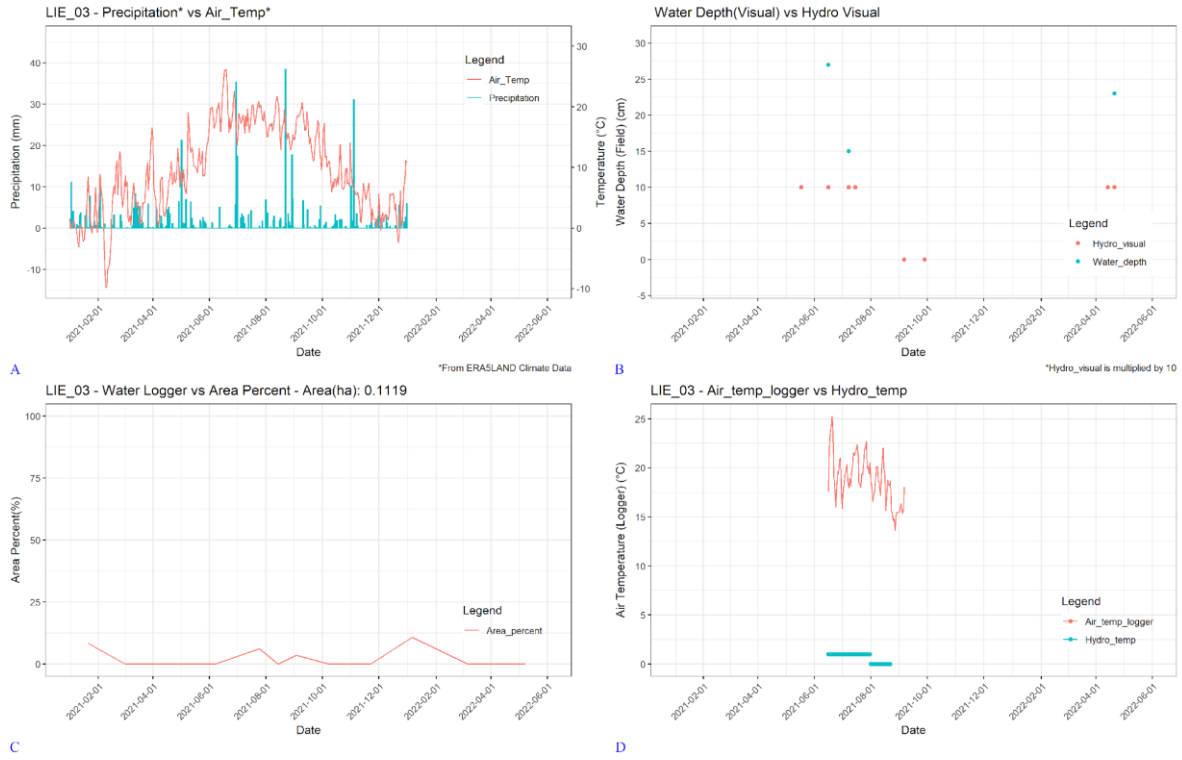
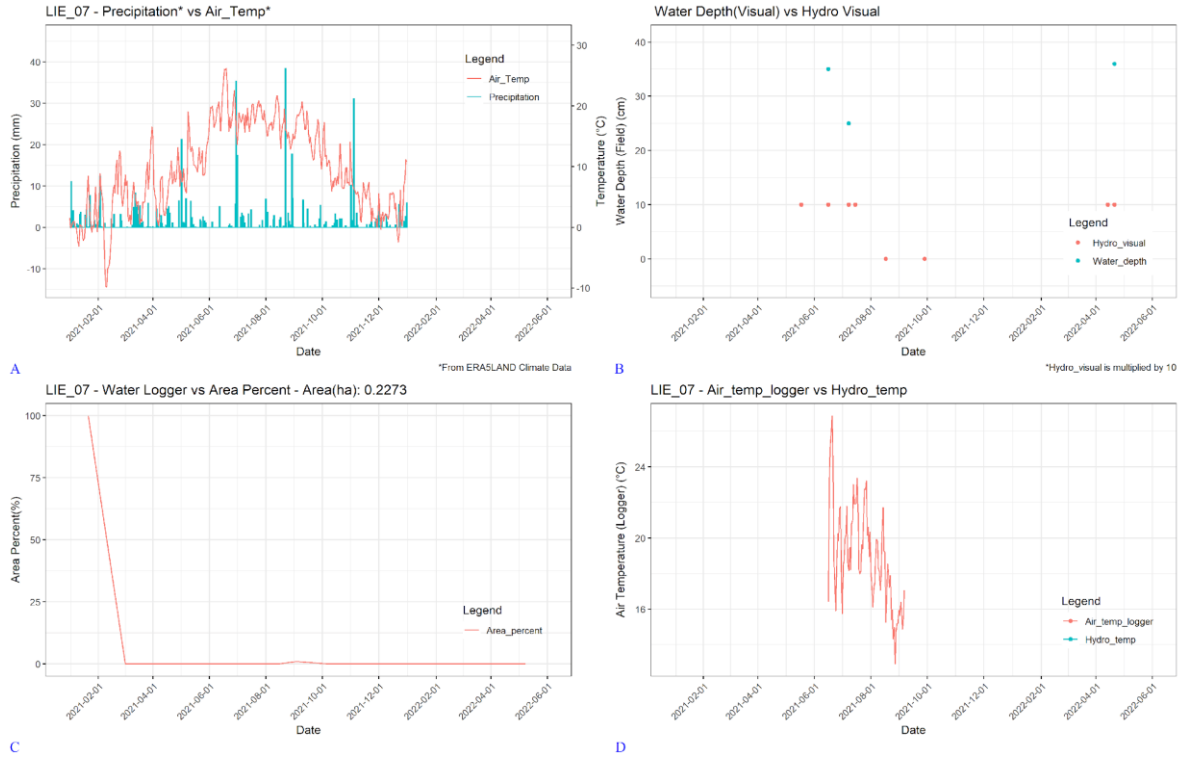
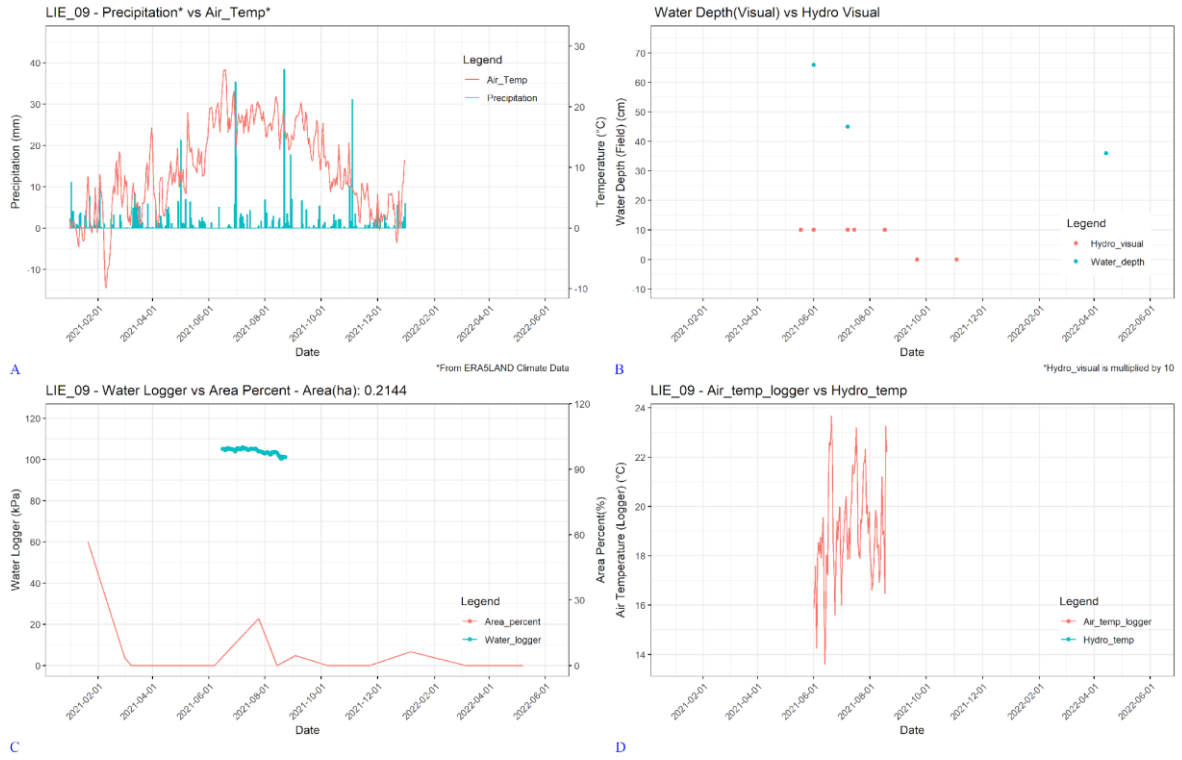


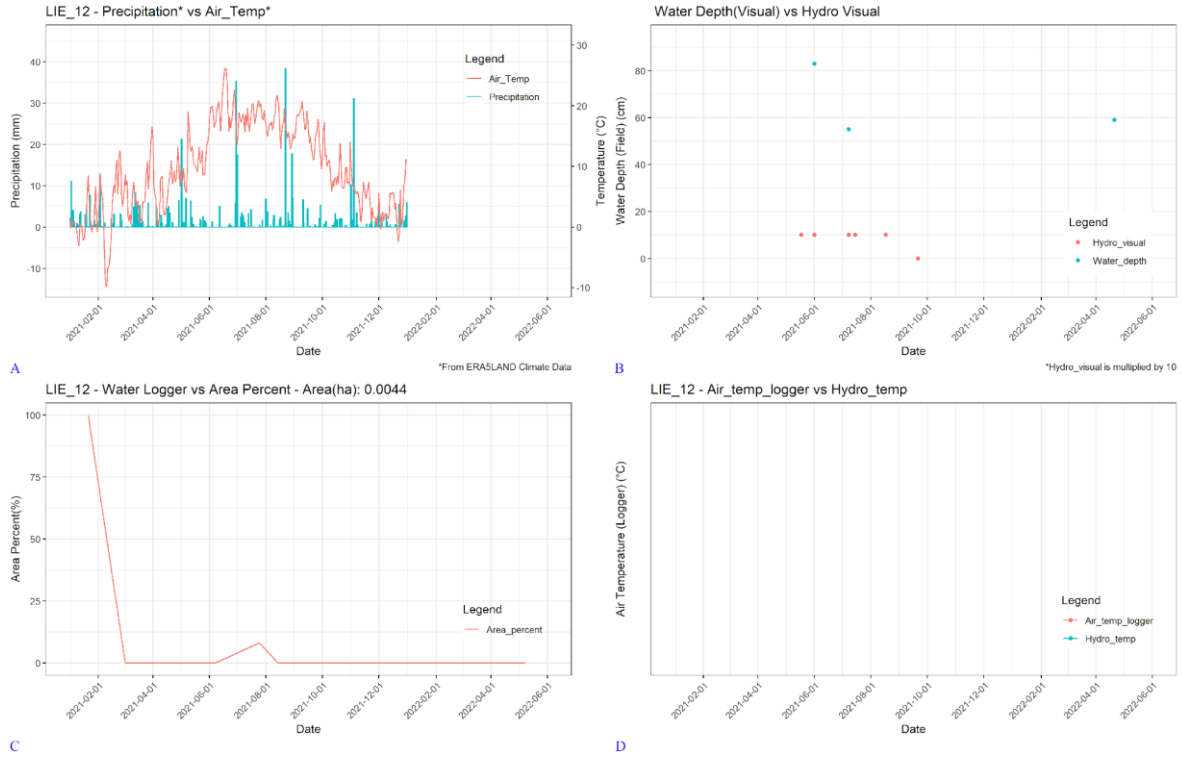
Plot 61. Pond LIE_03 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable.



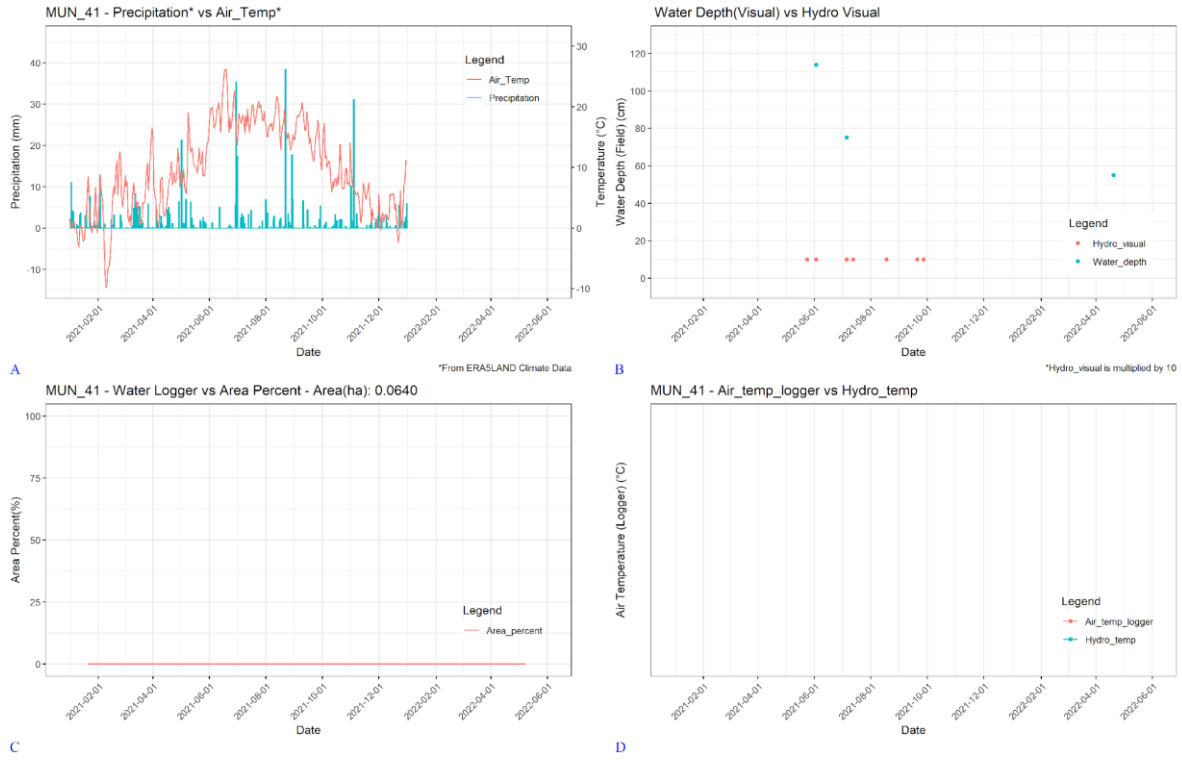
Plot 62. Pond LIE_07 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable.



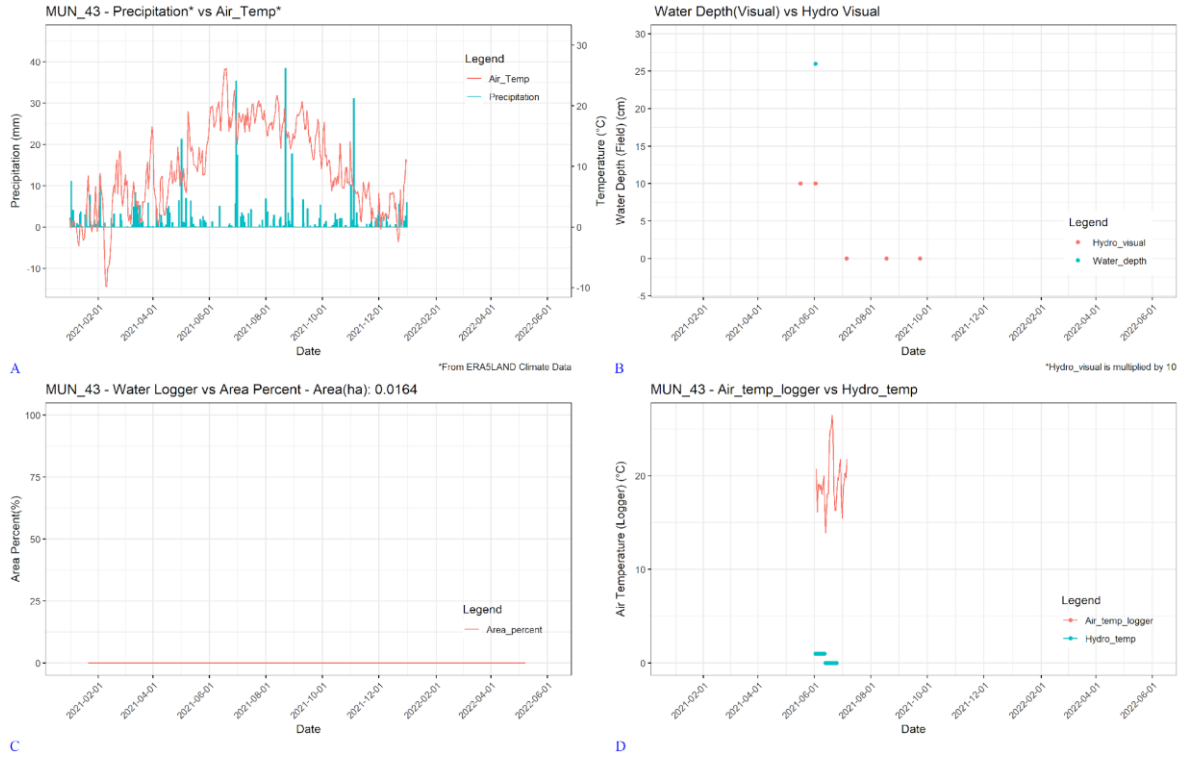
Plot 63. Pond LIE_09 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable.



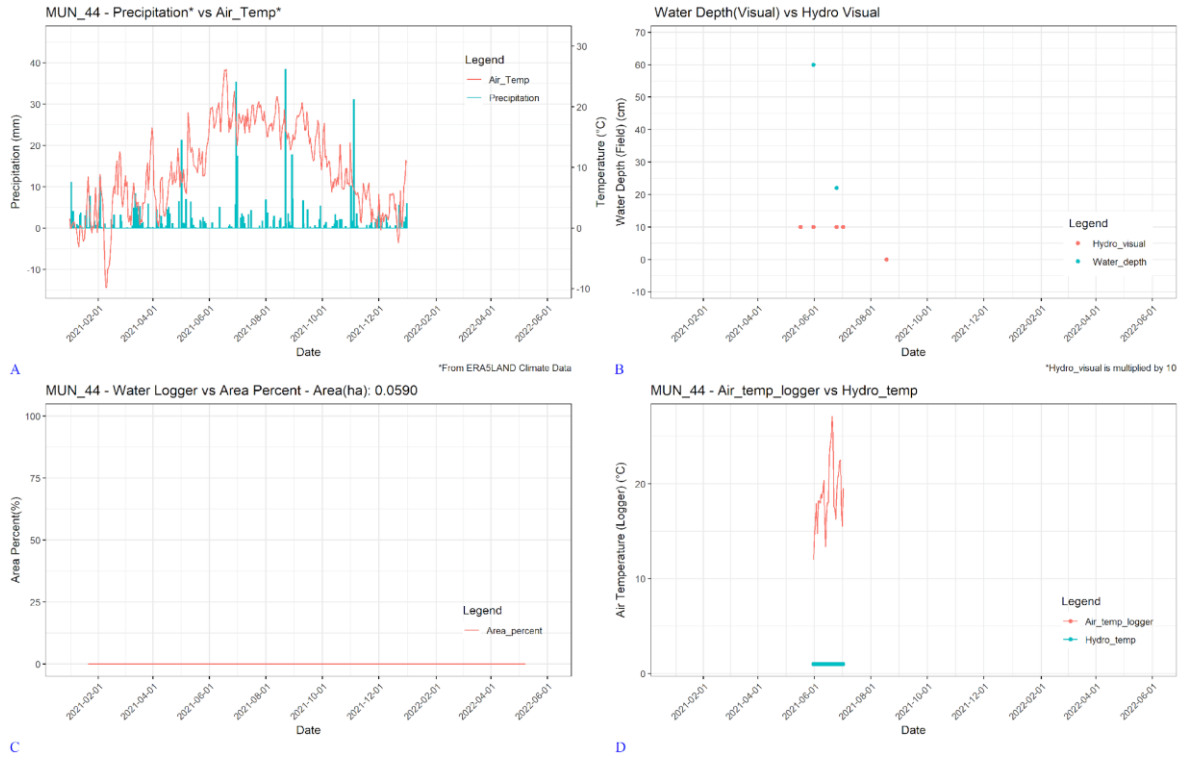
Plot 64. Pond LIE_12 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable.



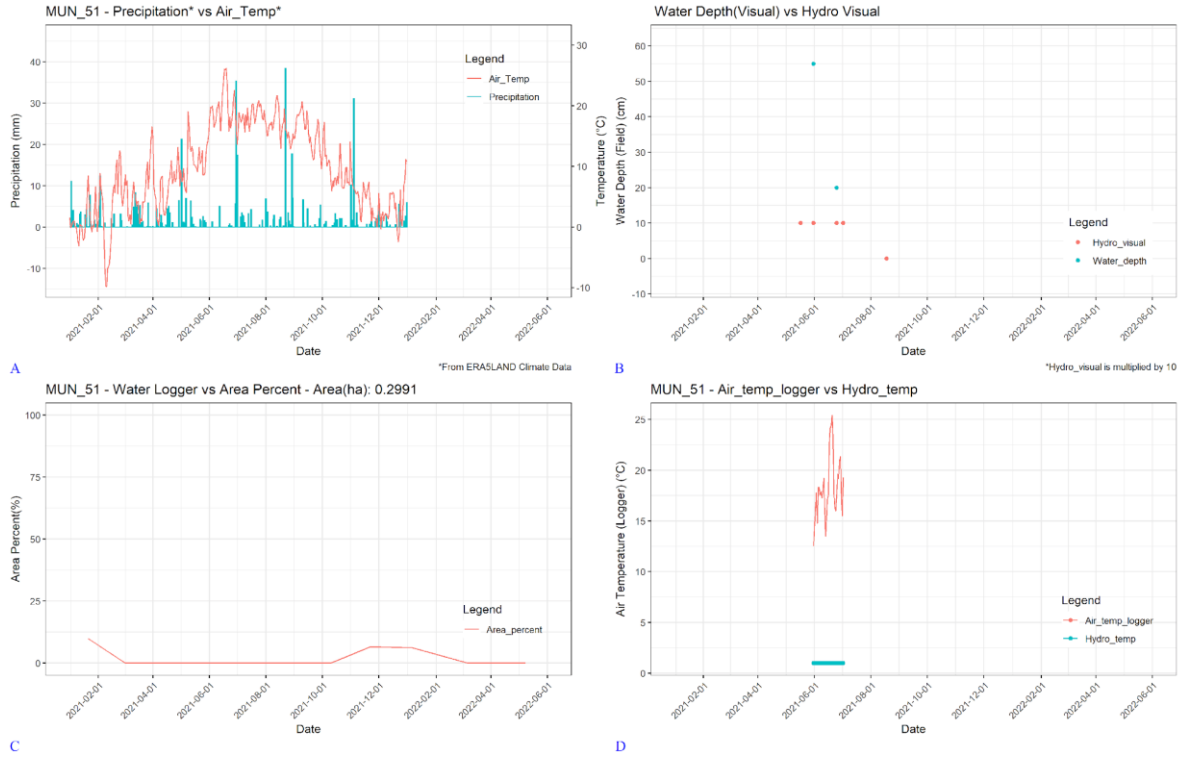
Plot 65. Pond MUN_41 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable.



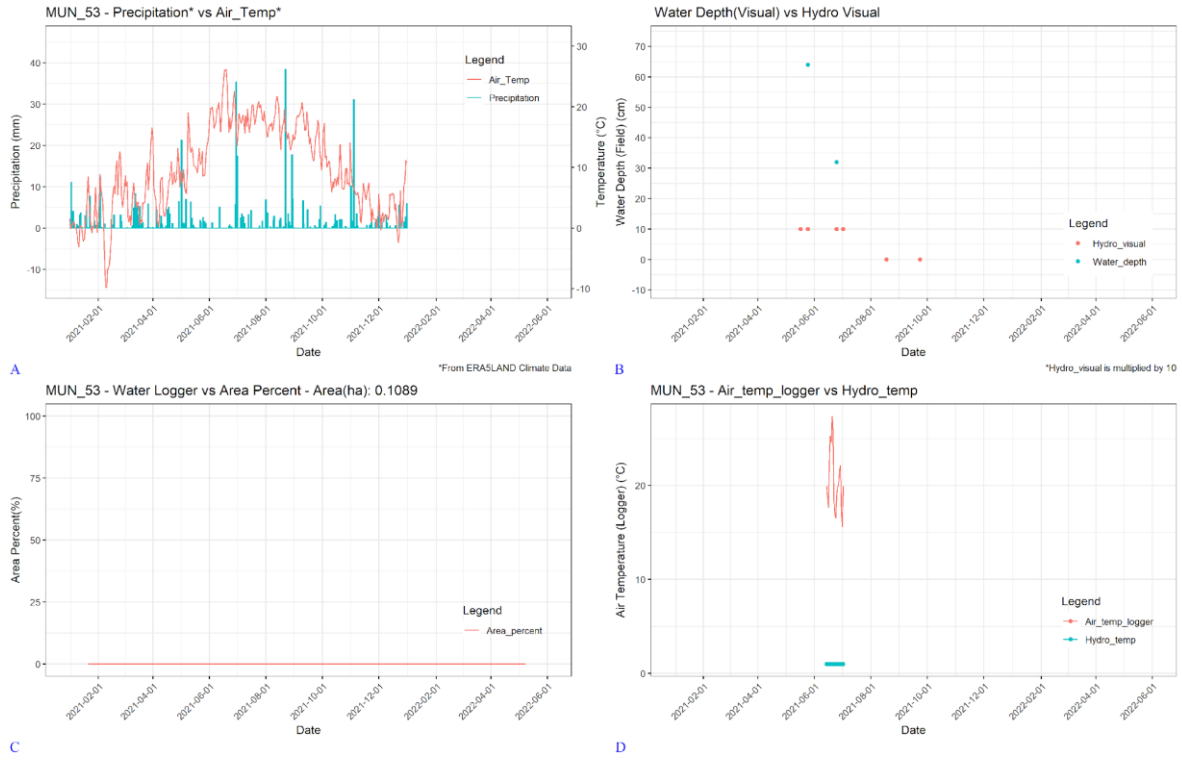
Plot 66. Pond MUN_43 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable.



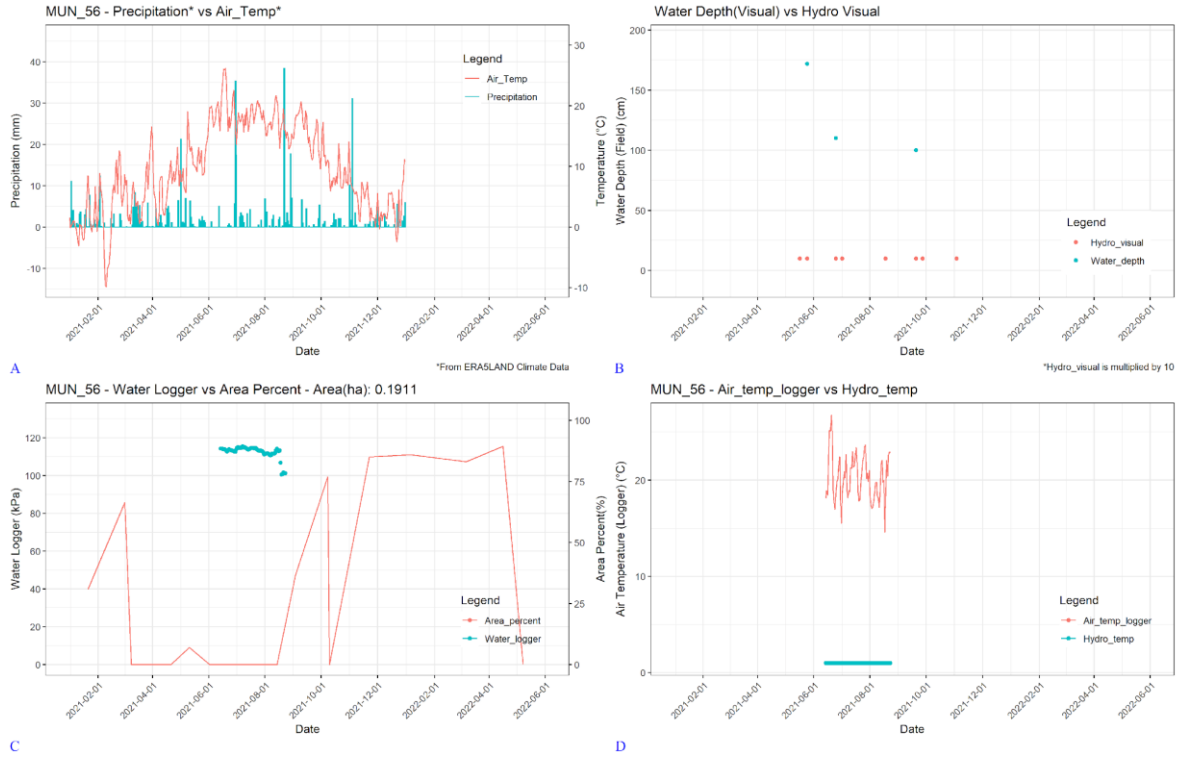
Plot 67. Pond MUN_44 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable.



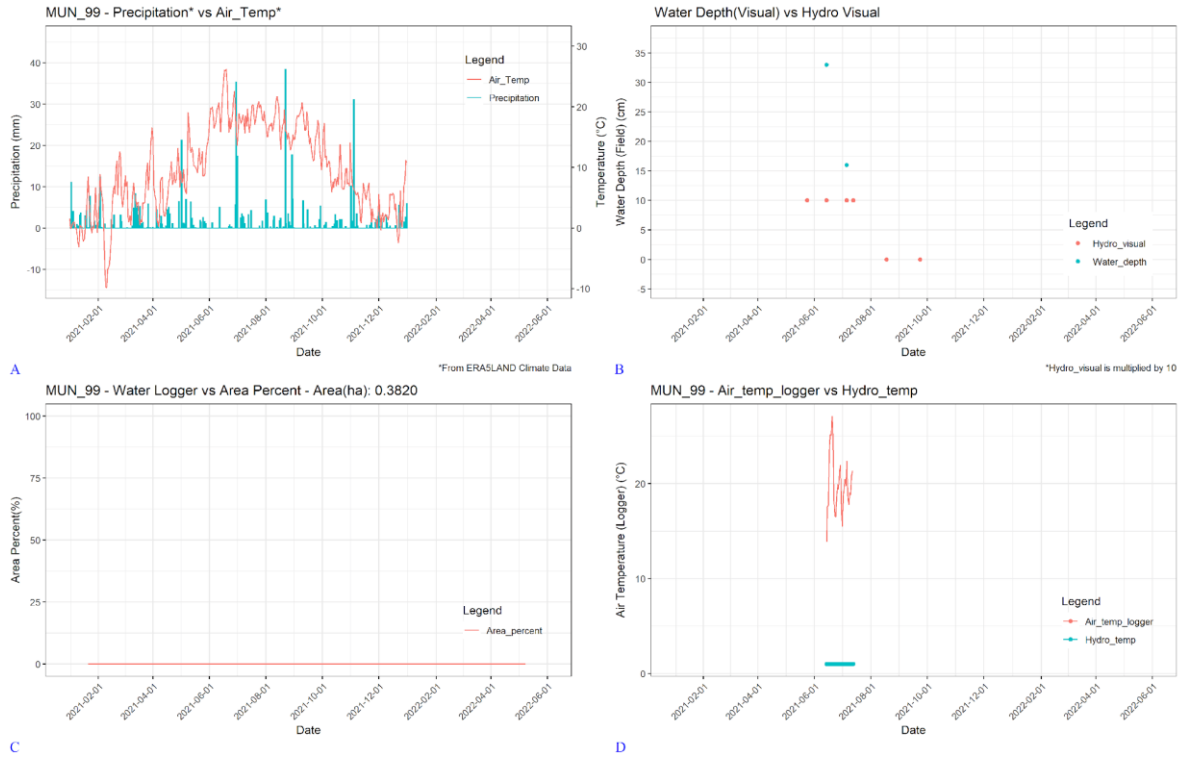
Plot 68. Pond MUN_51 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable.



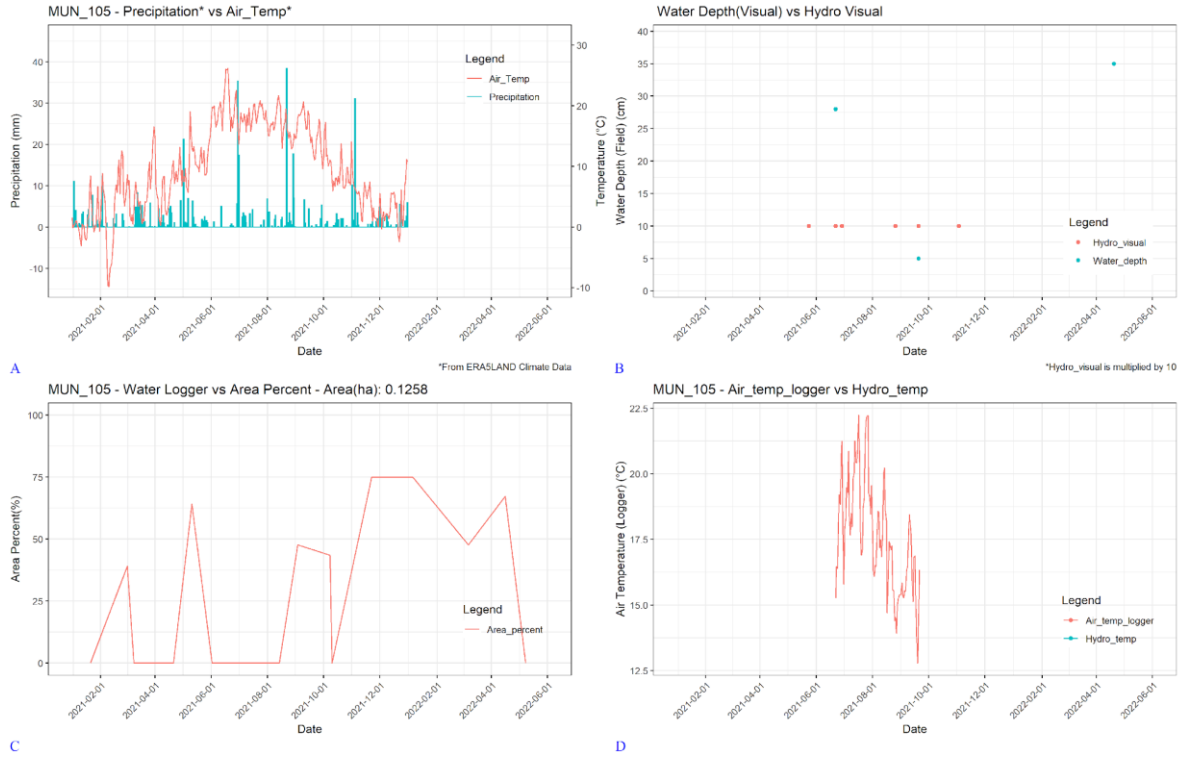
Plot 69. Pond MUN_53 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable.



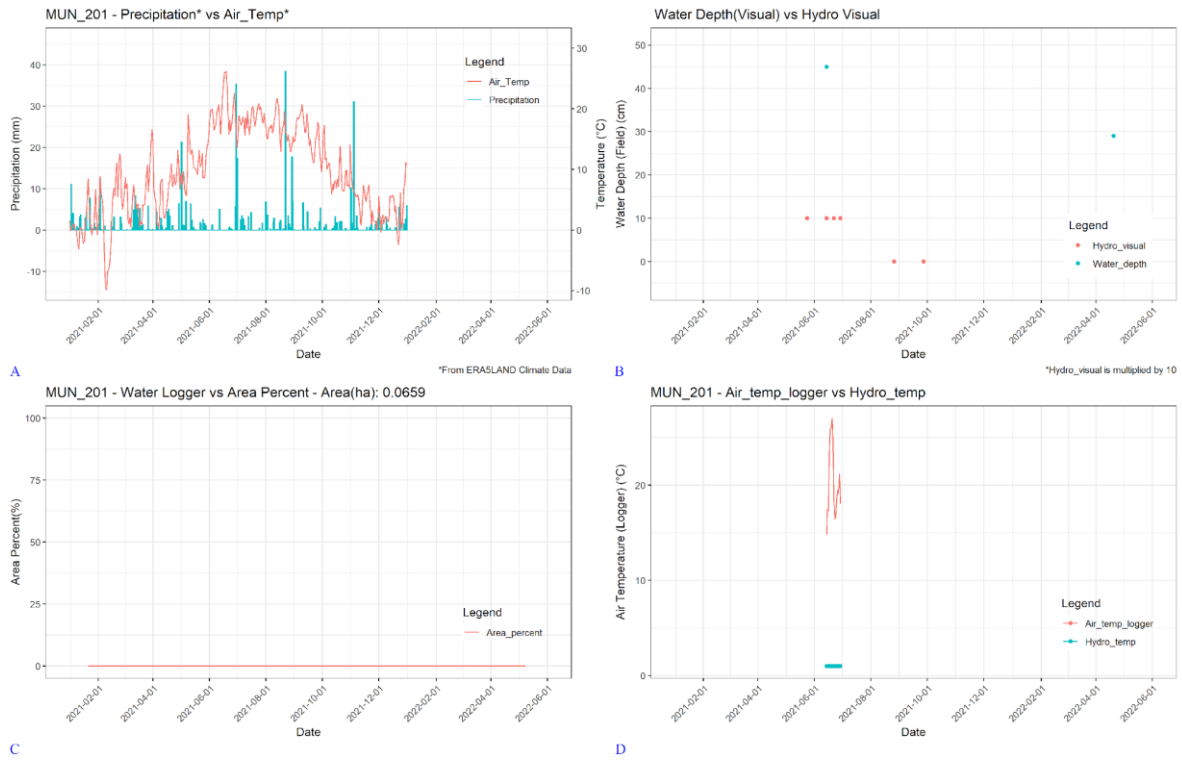
Plot 70. Pond MUN_56 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable.



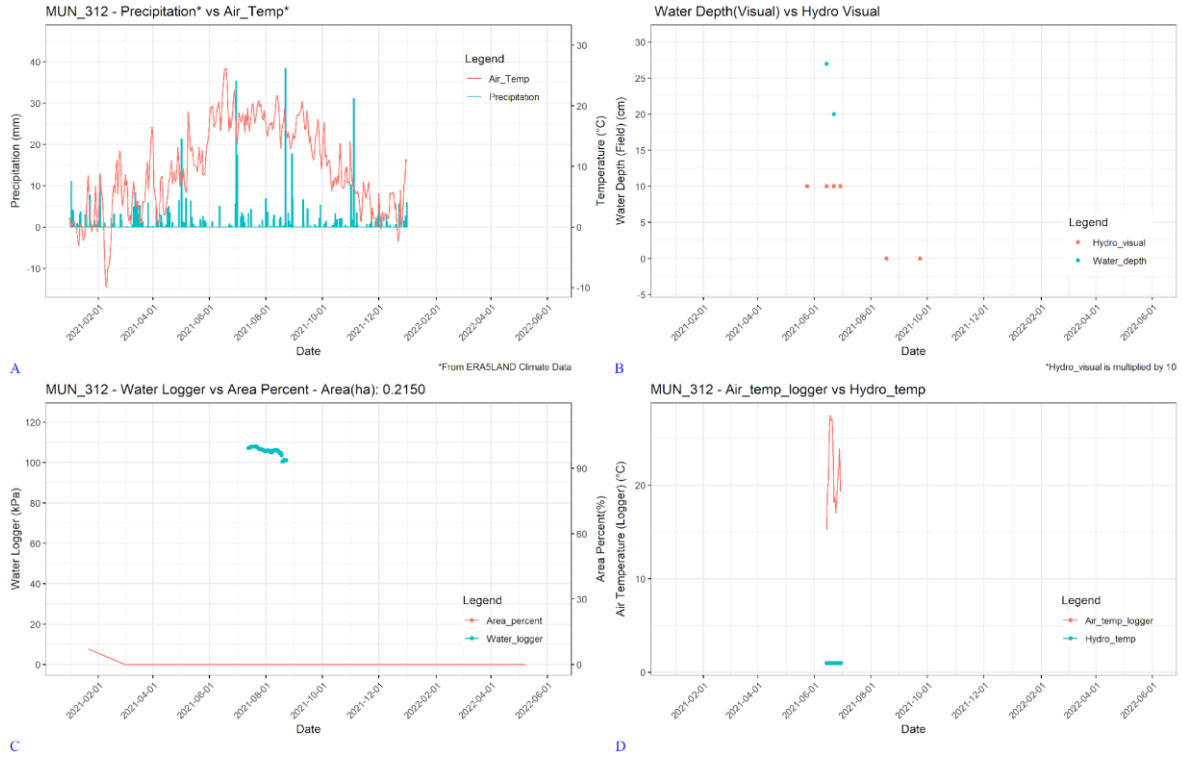
Plot 71. Pond MUN_99 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable.



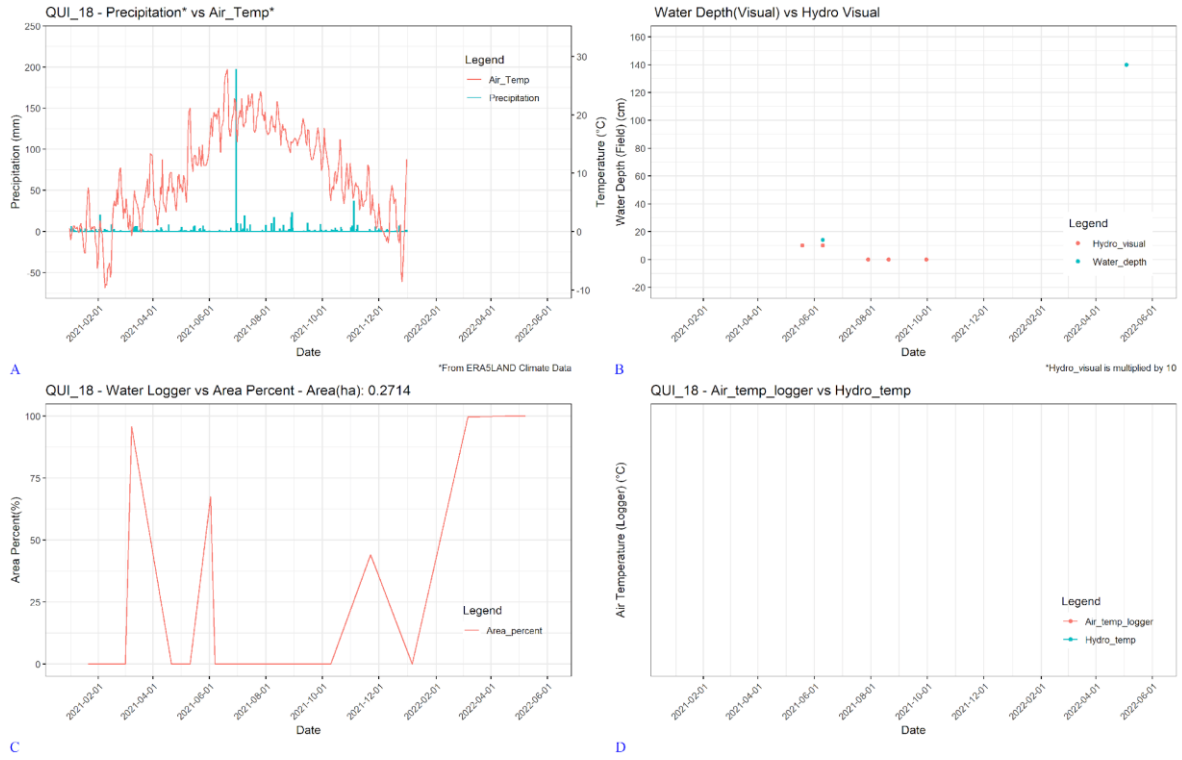
Plot 72. Pond MUN_105 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable.



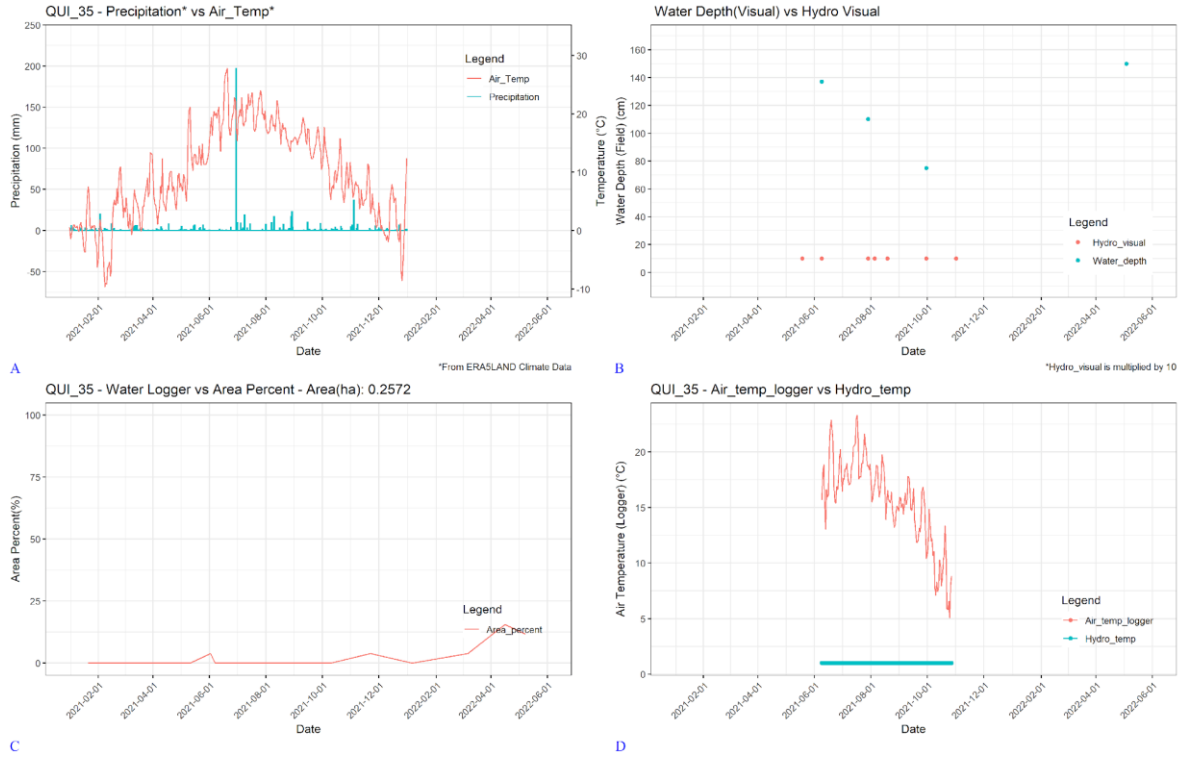
Plot 73. Pond MUN_201 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable.



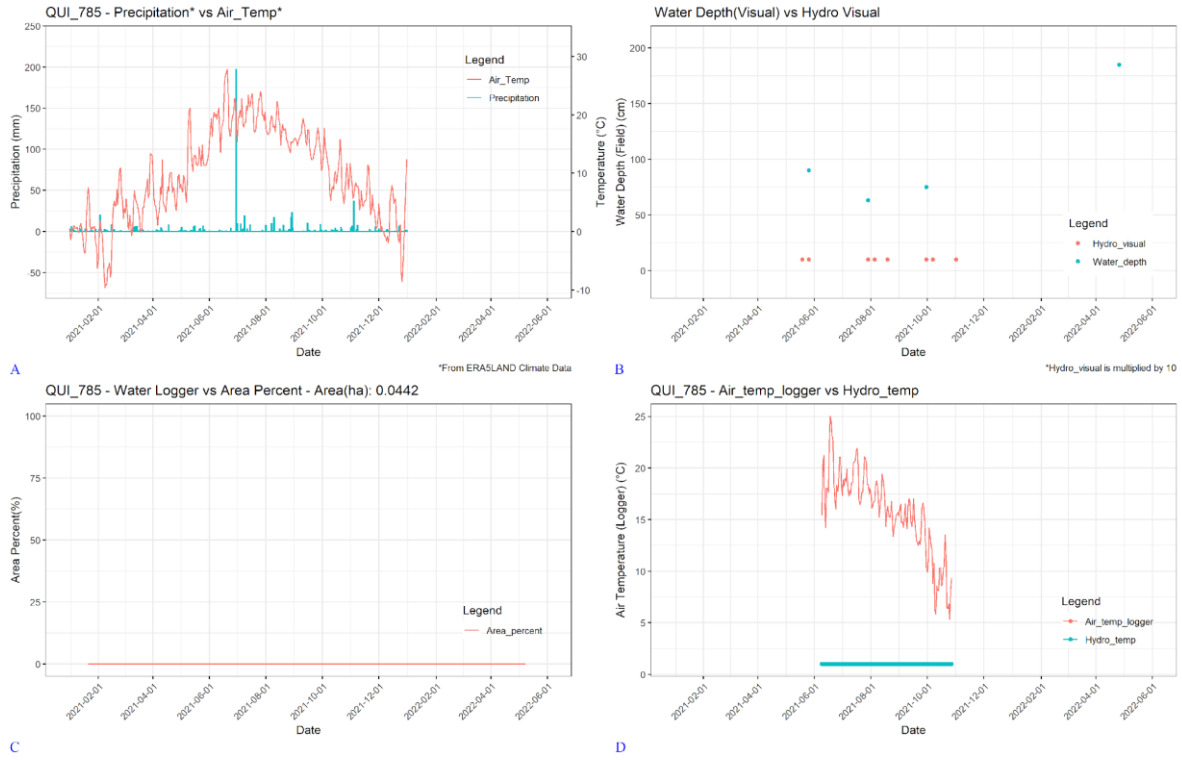
Plot 74. Pond MUN_312 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable.



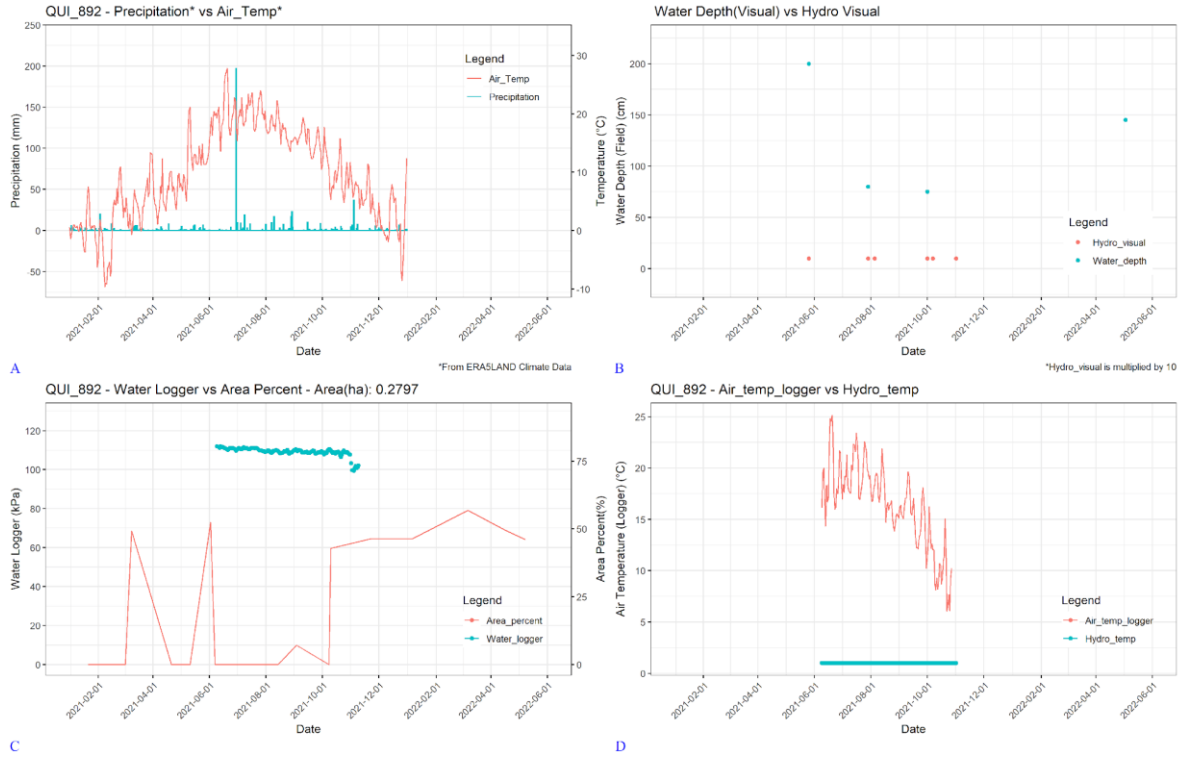
Plot 75. Pond QUI_18 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable.



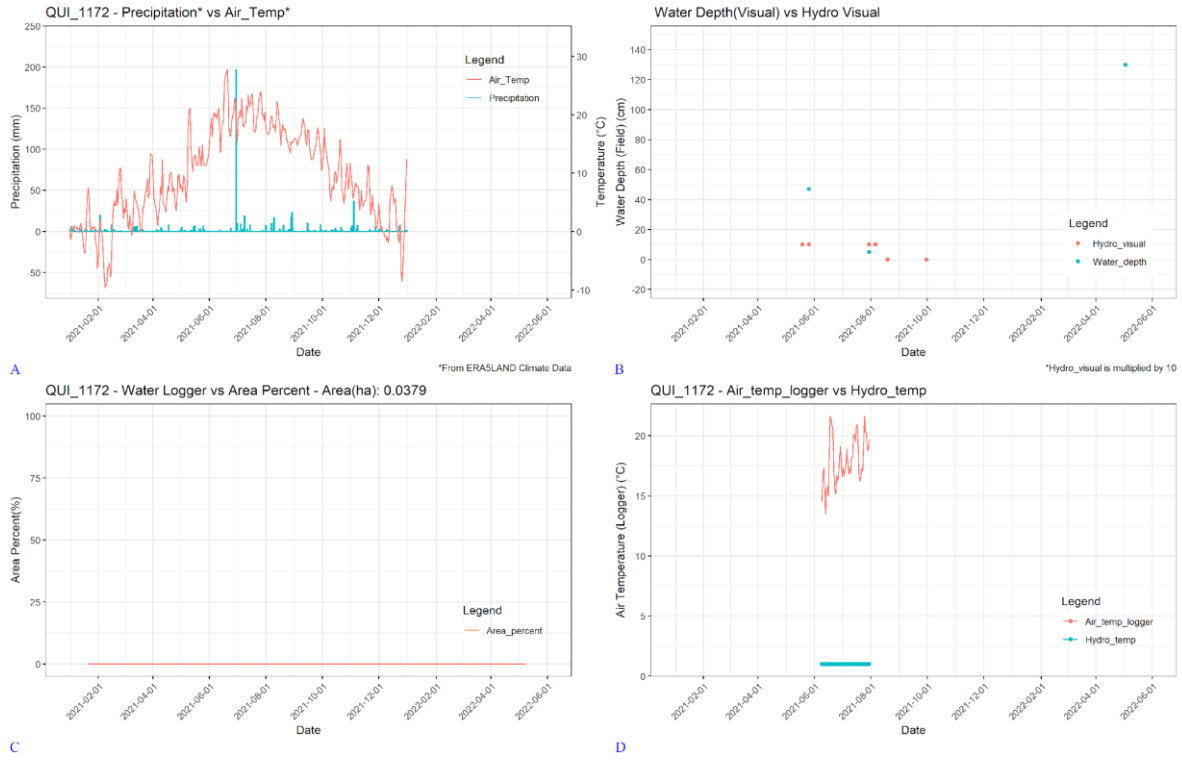
Plot 76. Pond QUI_35 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable.



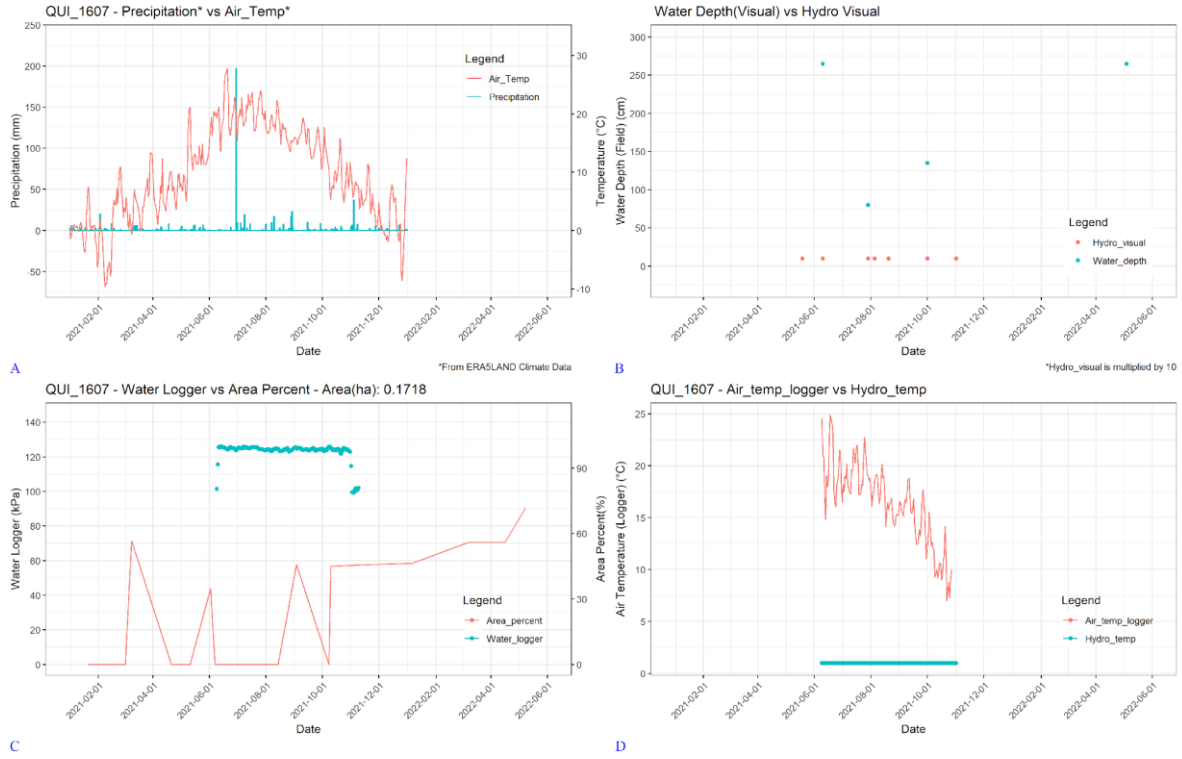
Plot 77. Pond QUI_785 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable.



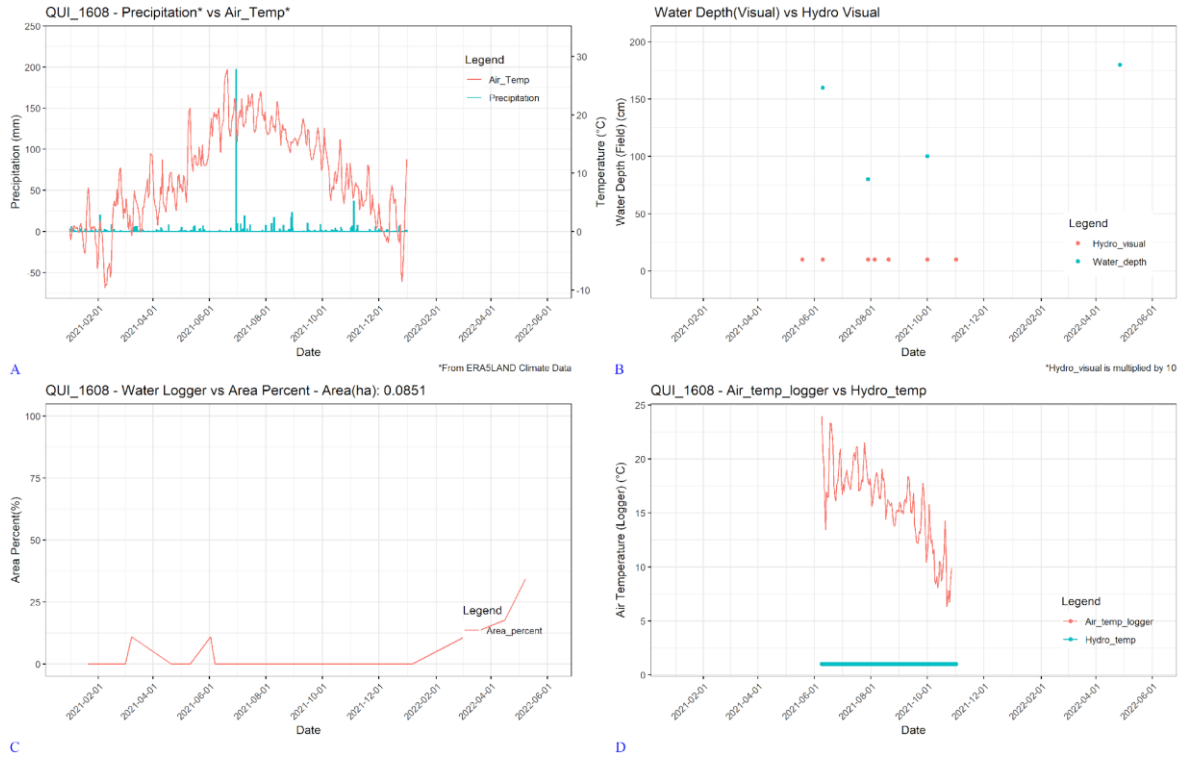
Plot 78. Pond QUI_892 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable.



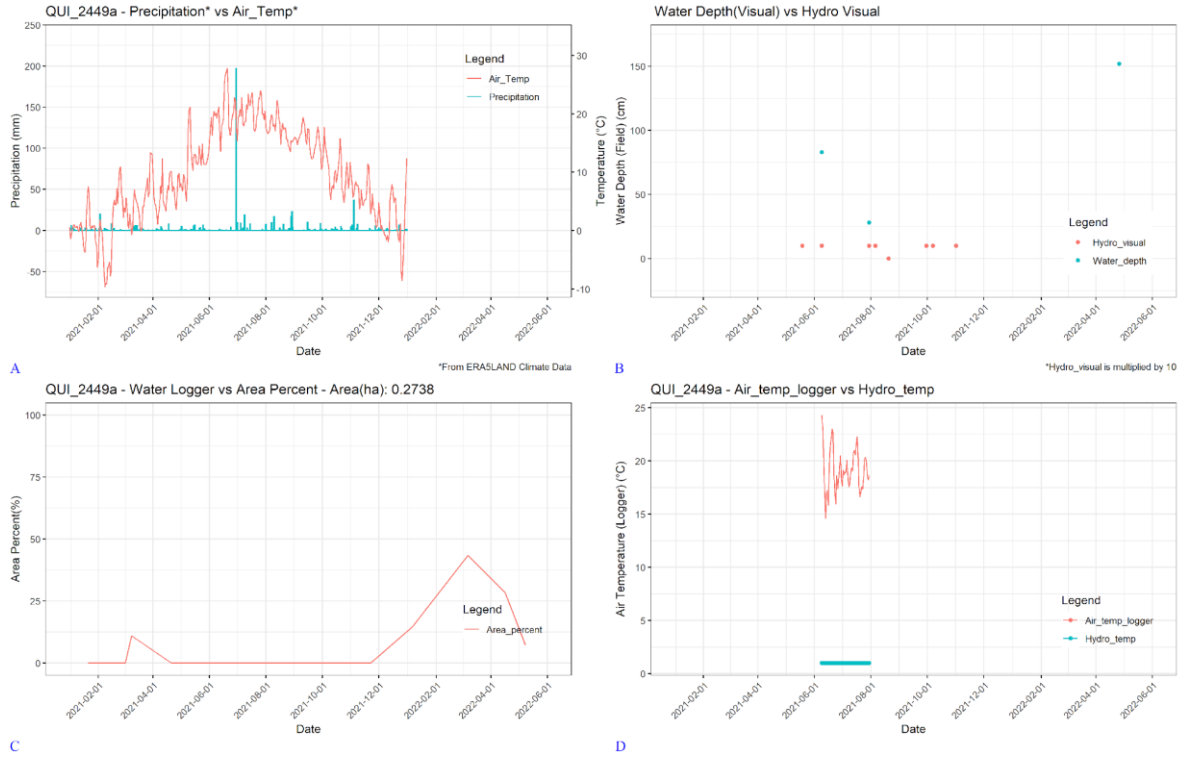
Plot 79. Pond QUI_1172 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable.



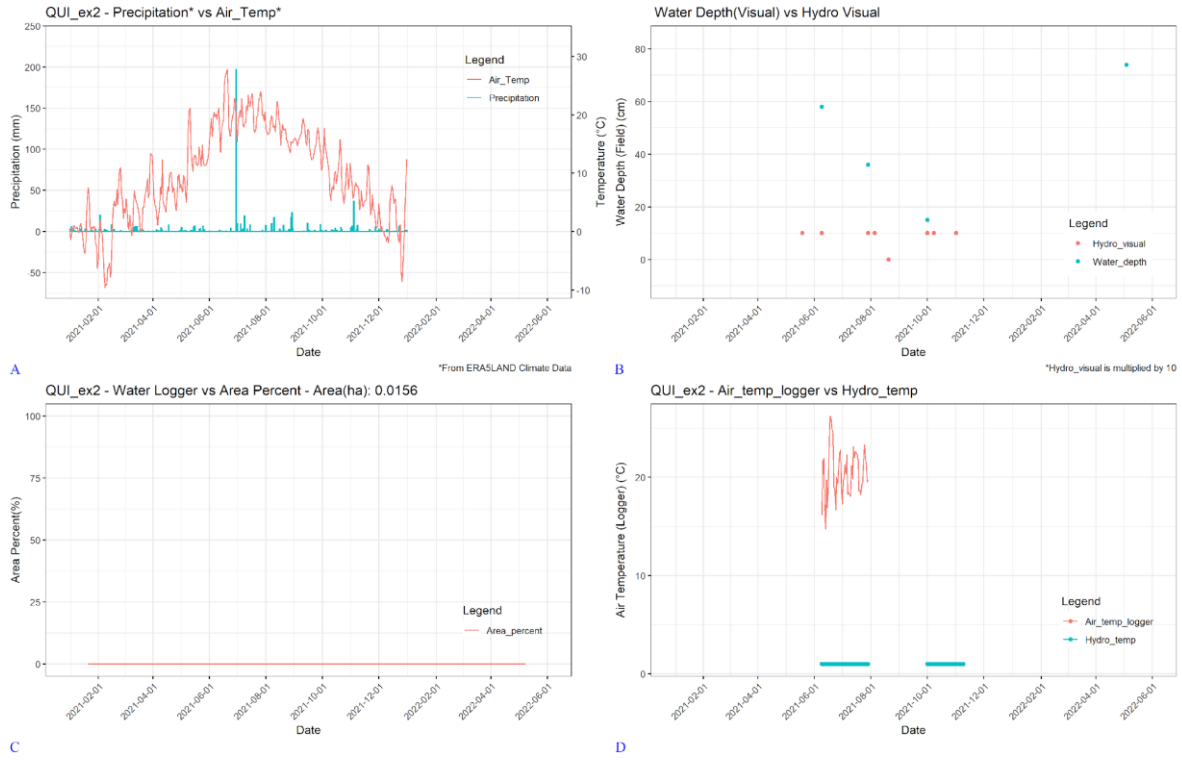
Plot 80. Pond QUI_1607 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable.



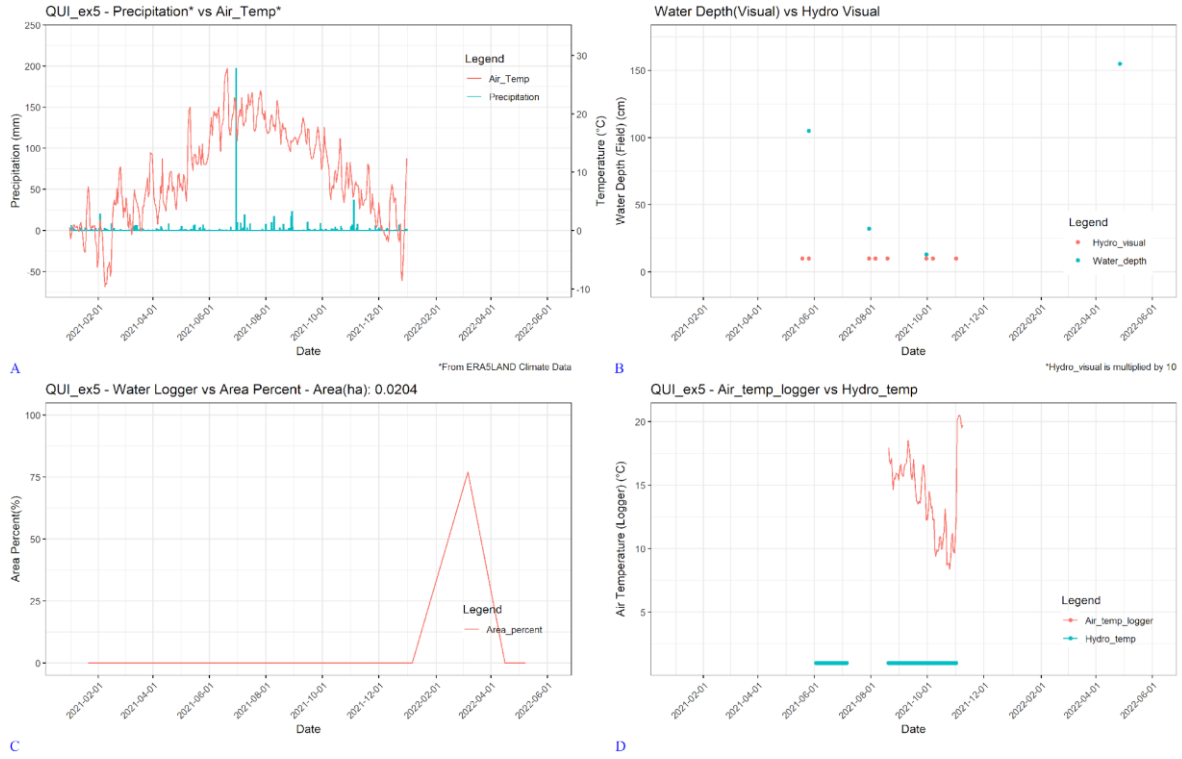
Plot 81. Pond QUI_1608 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable.



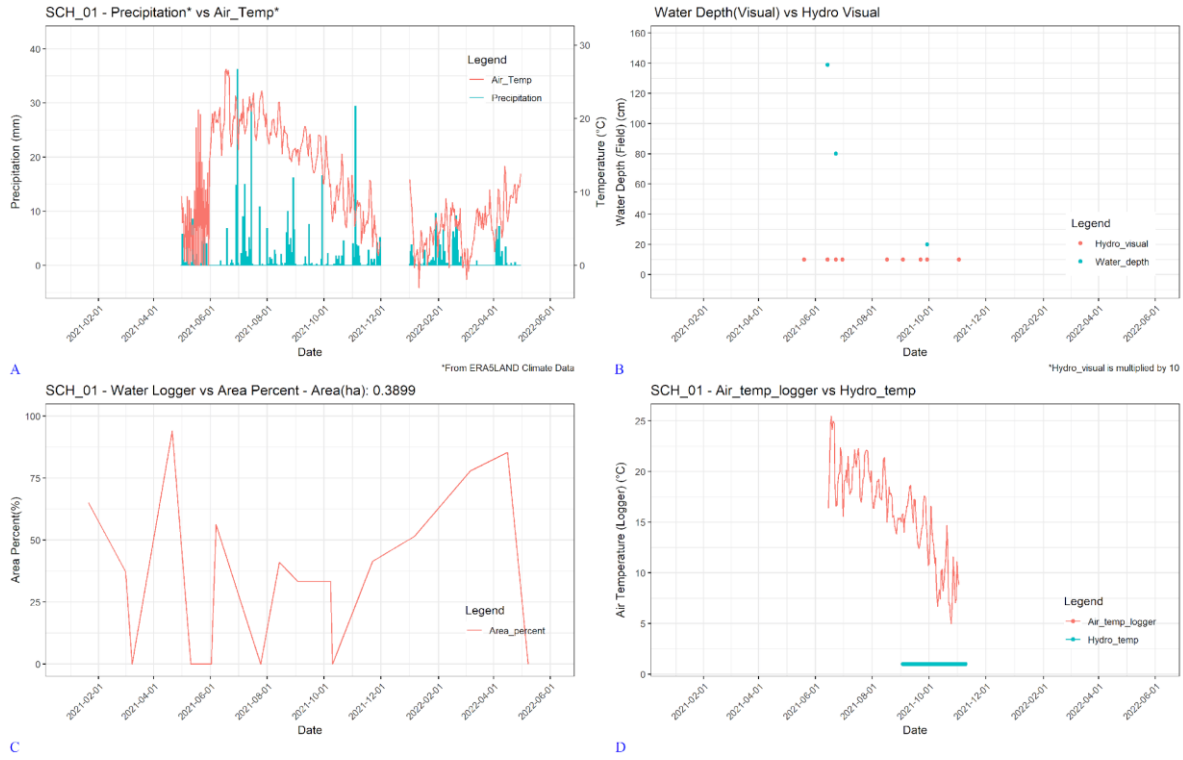
Plot 82. Pond QUI_2449a with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable.



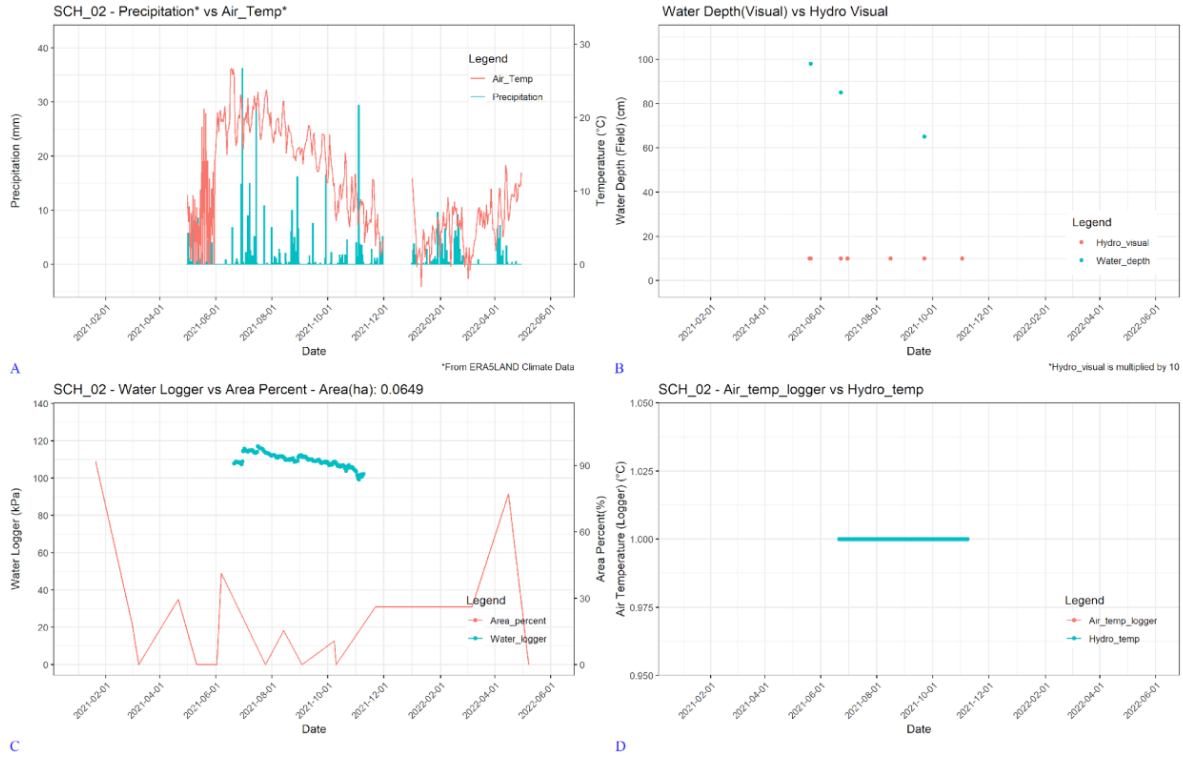
Plot 83. Pond QUI_ex2 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable.



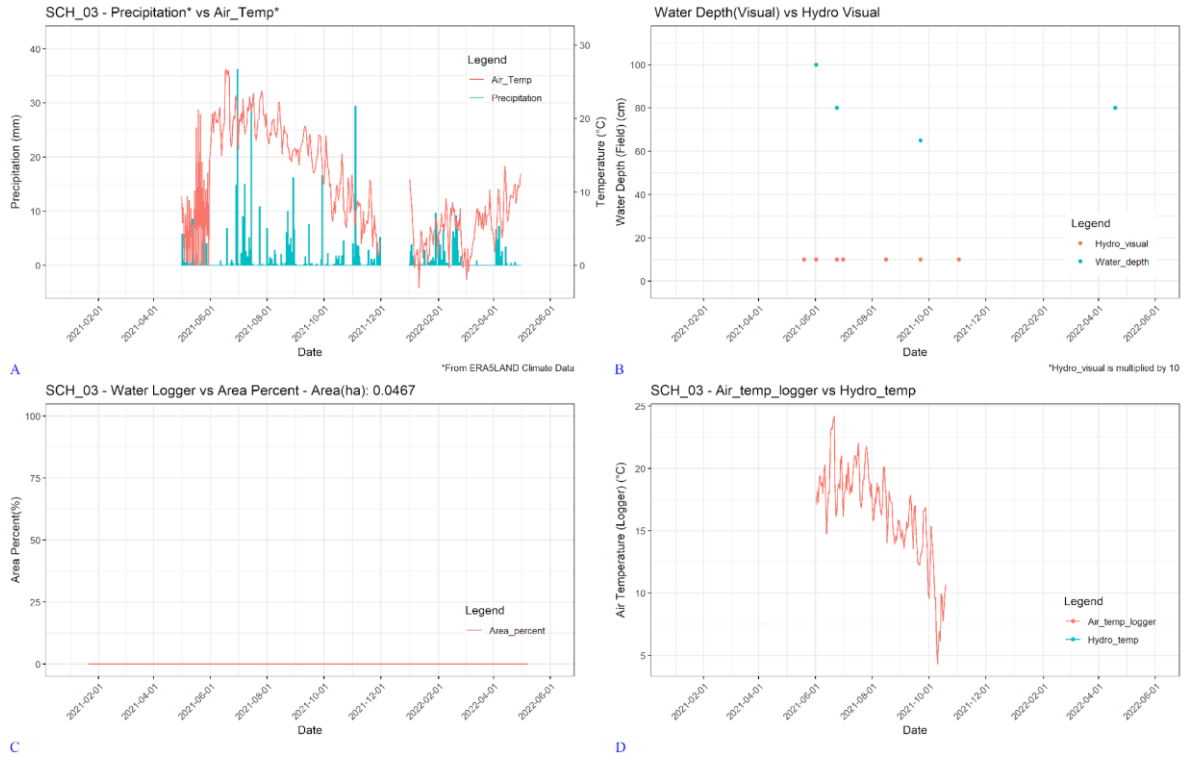
Plot 84. Pond QUI_ex5 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable.



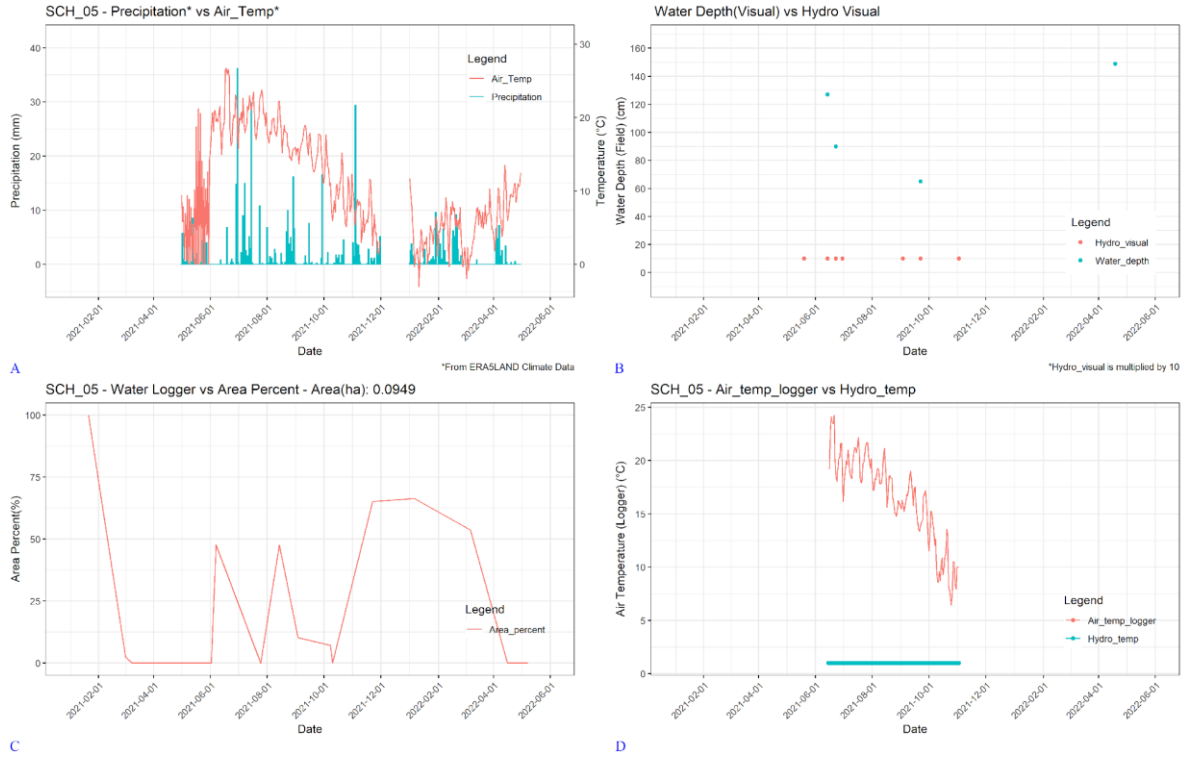
Plot 85. Pond SCH_01 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable.



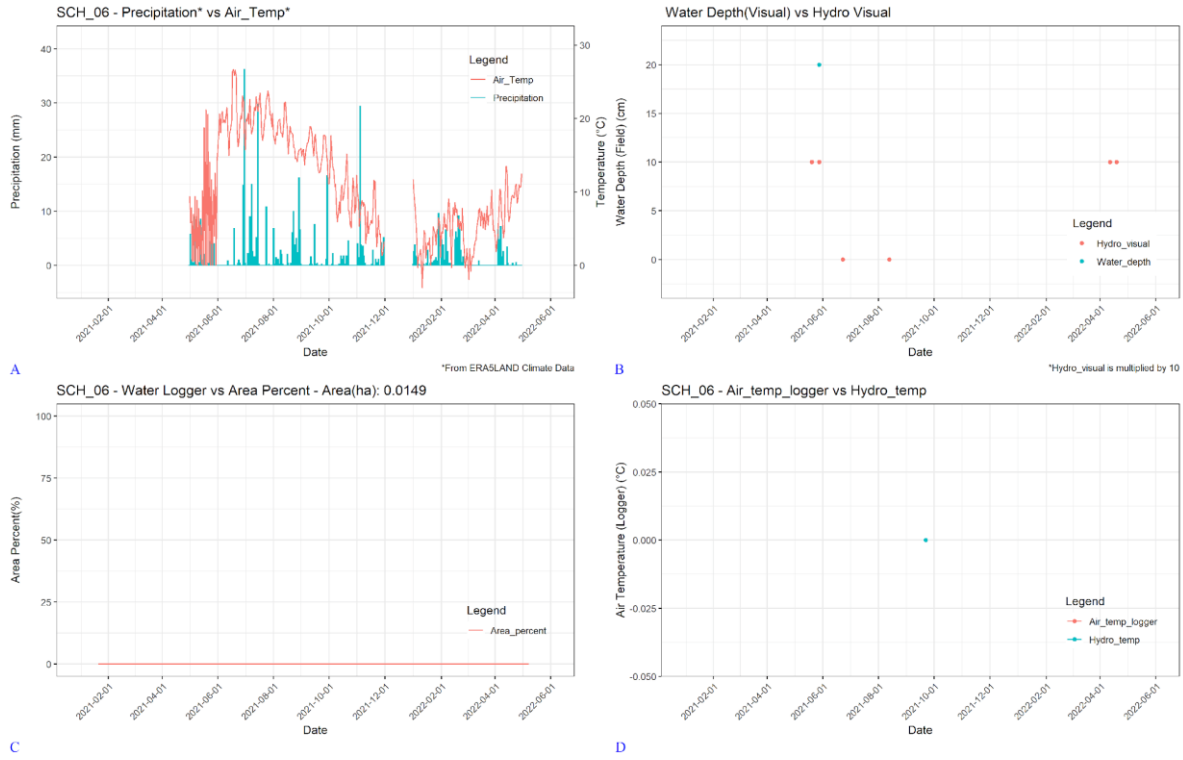
Plot 86. Pond SCH_02 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable.



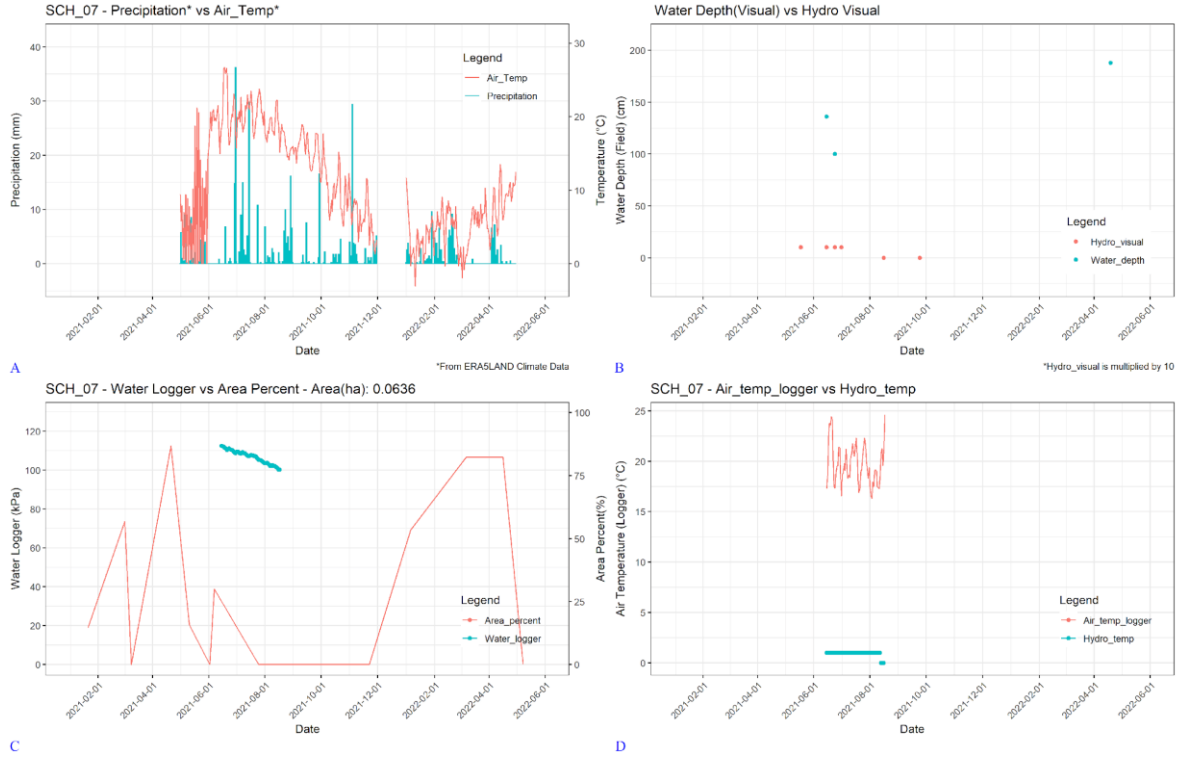
Plot 87. Pond SCH_03 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable.



Plot 88. Pond SCH_05 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable.

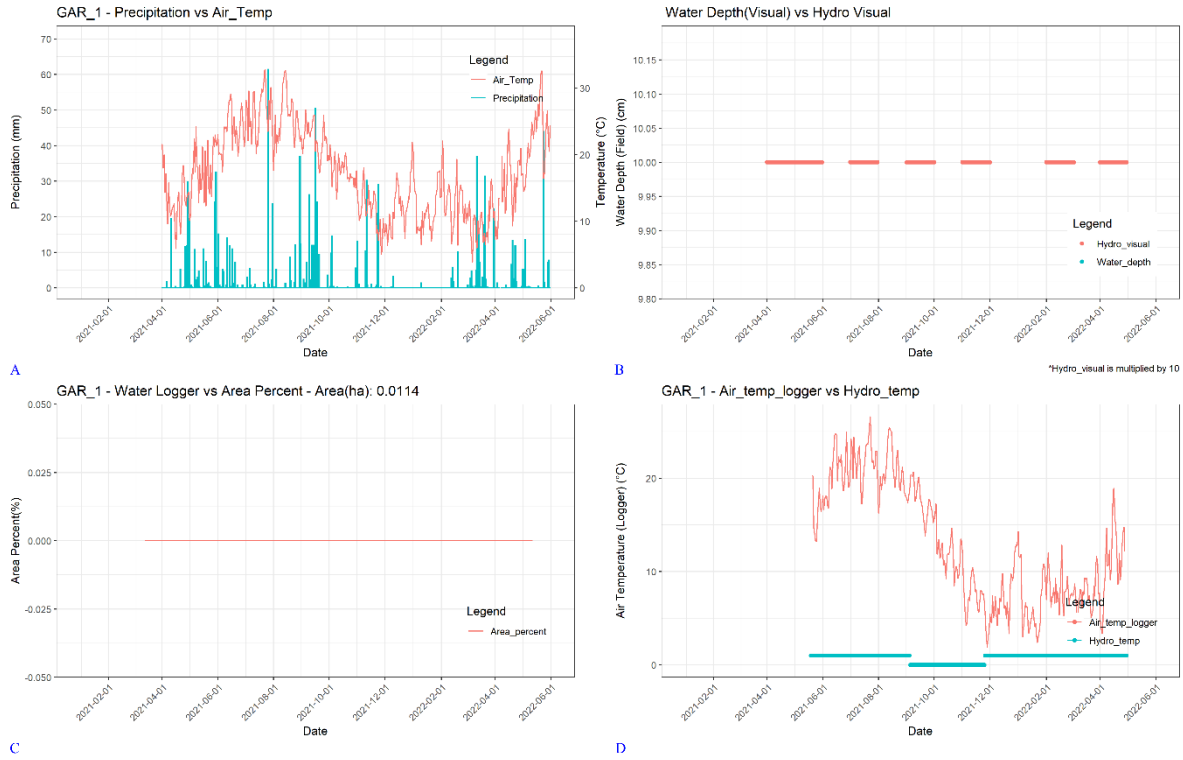


Plot 89. Pond SCH_06 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable.

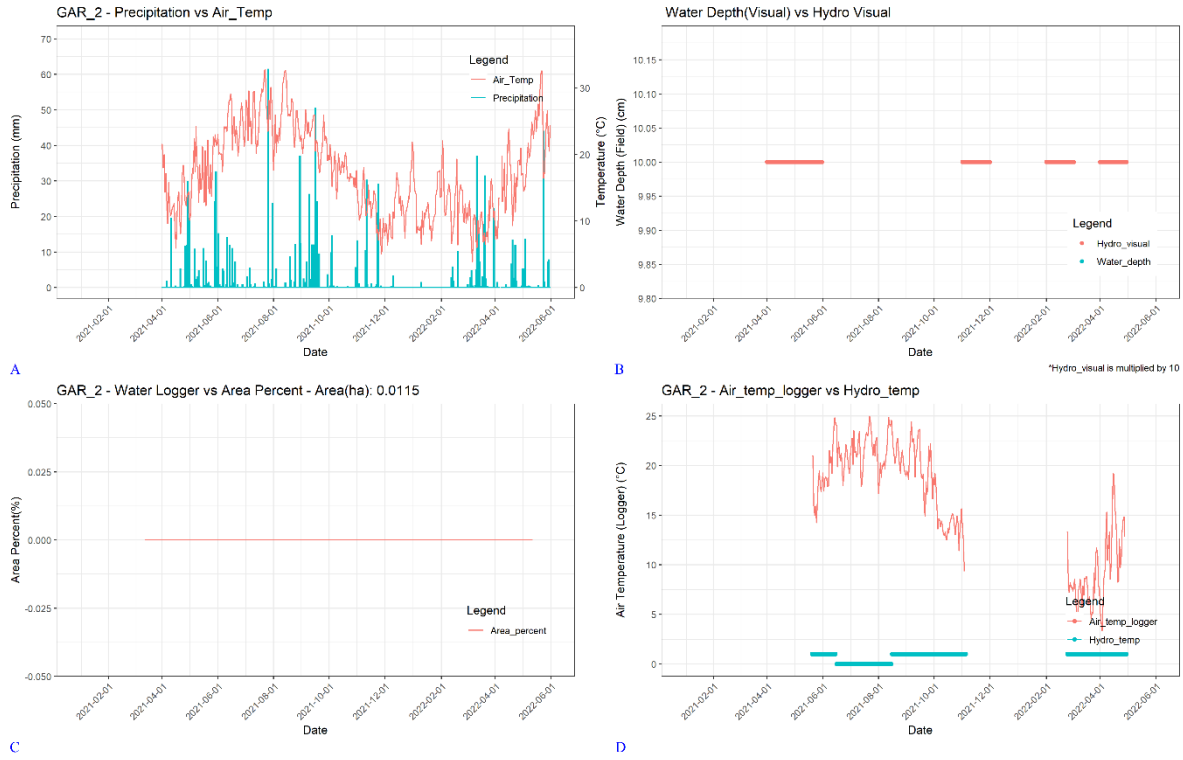


Plot 90. Pond SCH_07 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable.

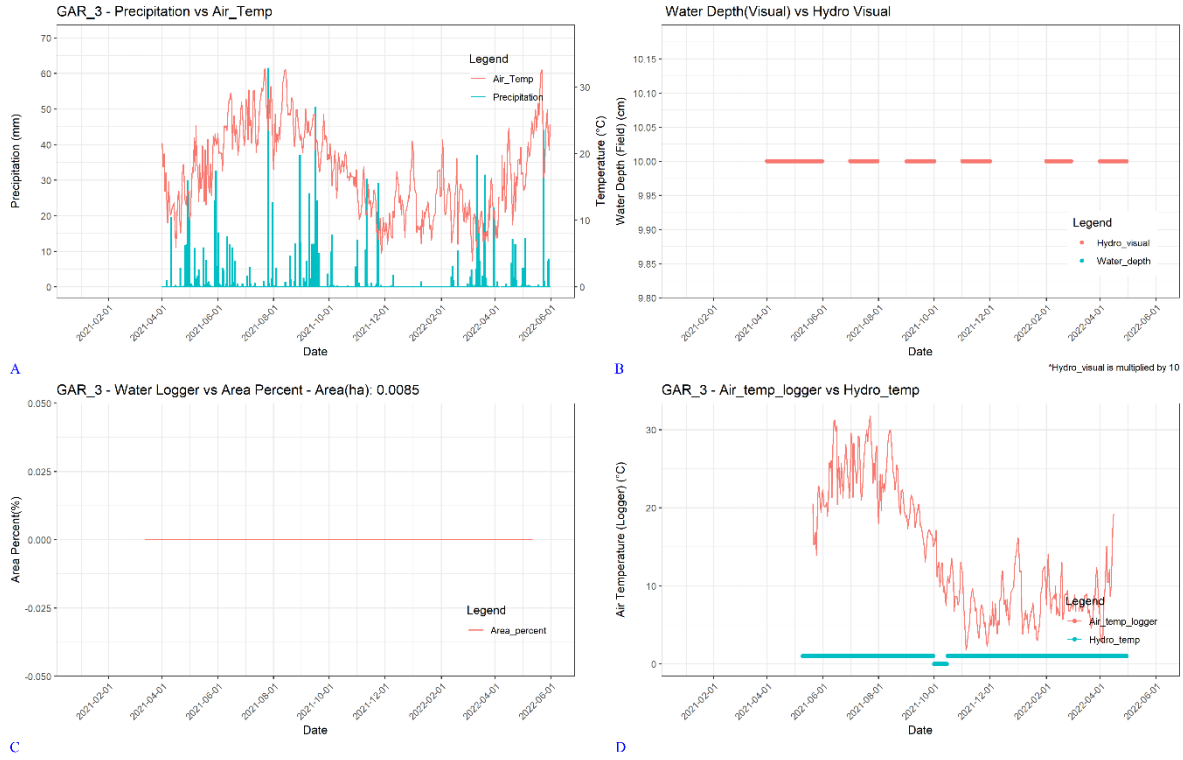
Appendix – 4 - Spain



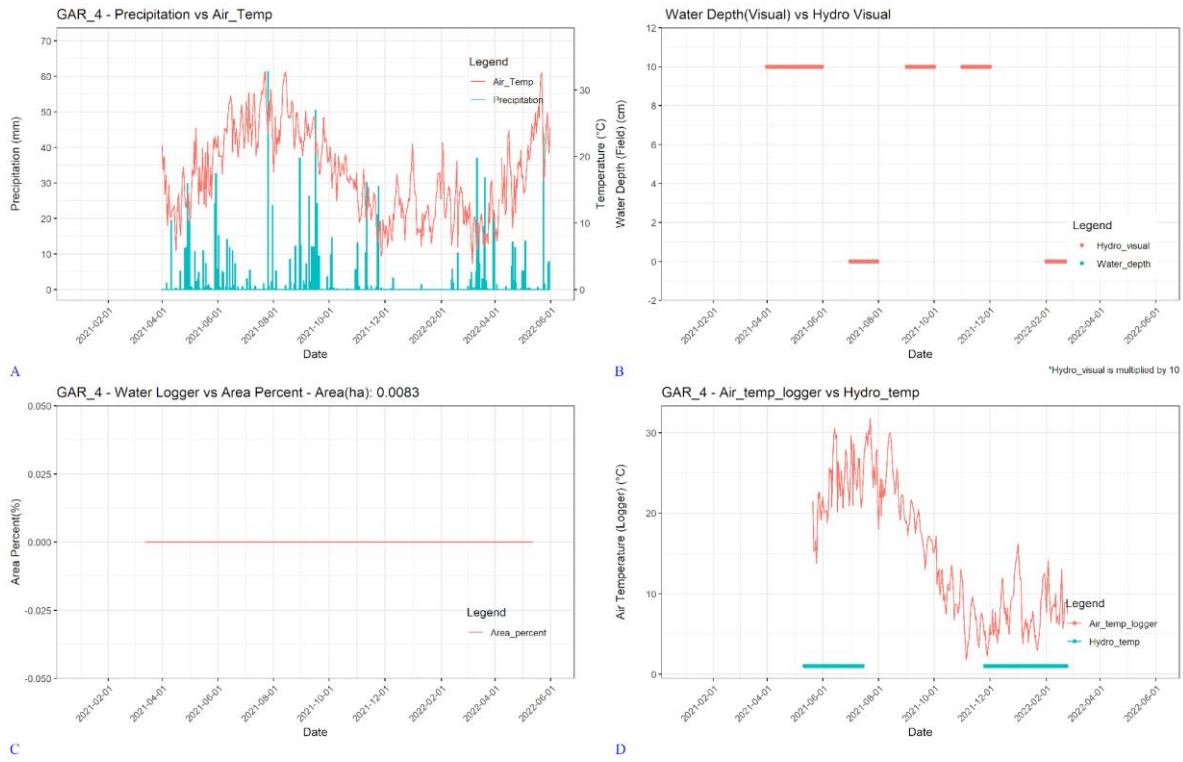
Plot 91. Pond GAR_1 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable.



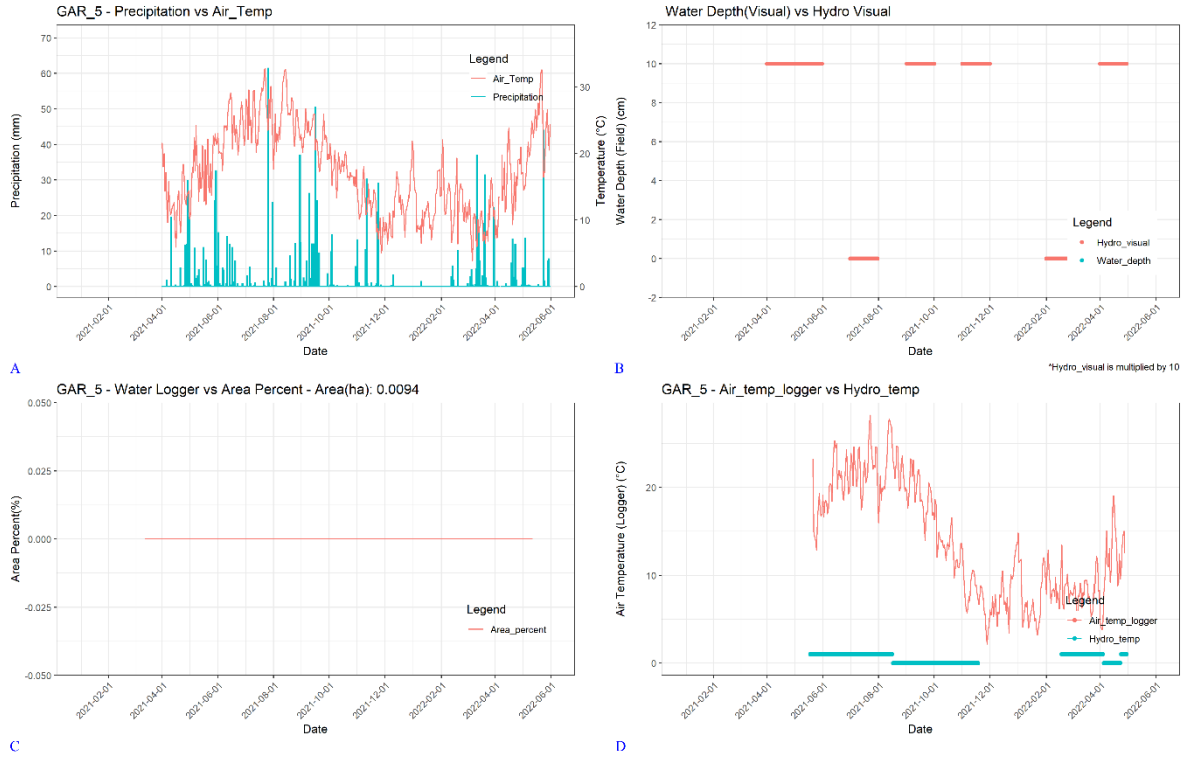
Plot 92. Pond GAR_2 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable.



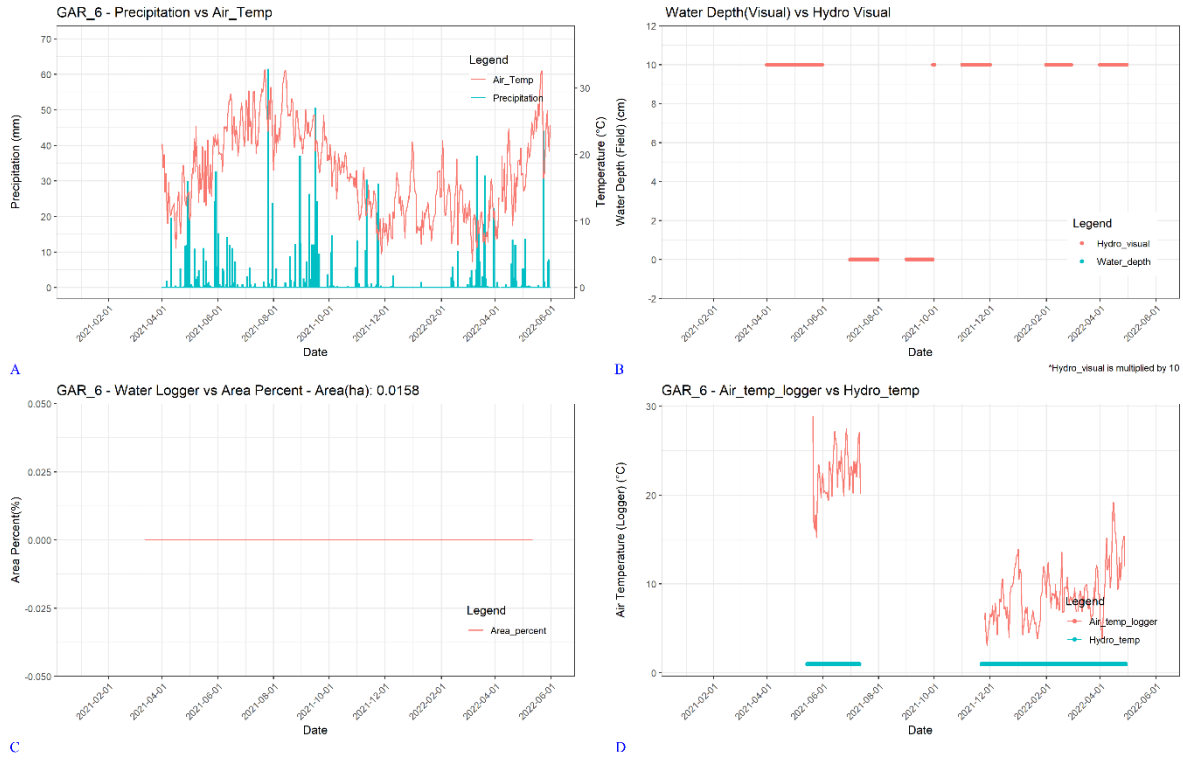
Plot 93. Pond GAR_3 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable.



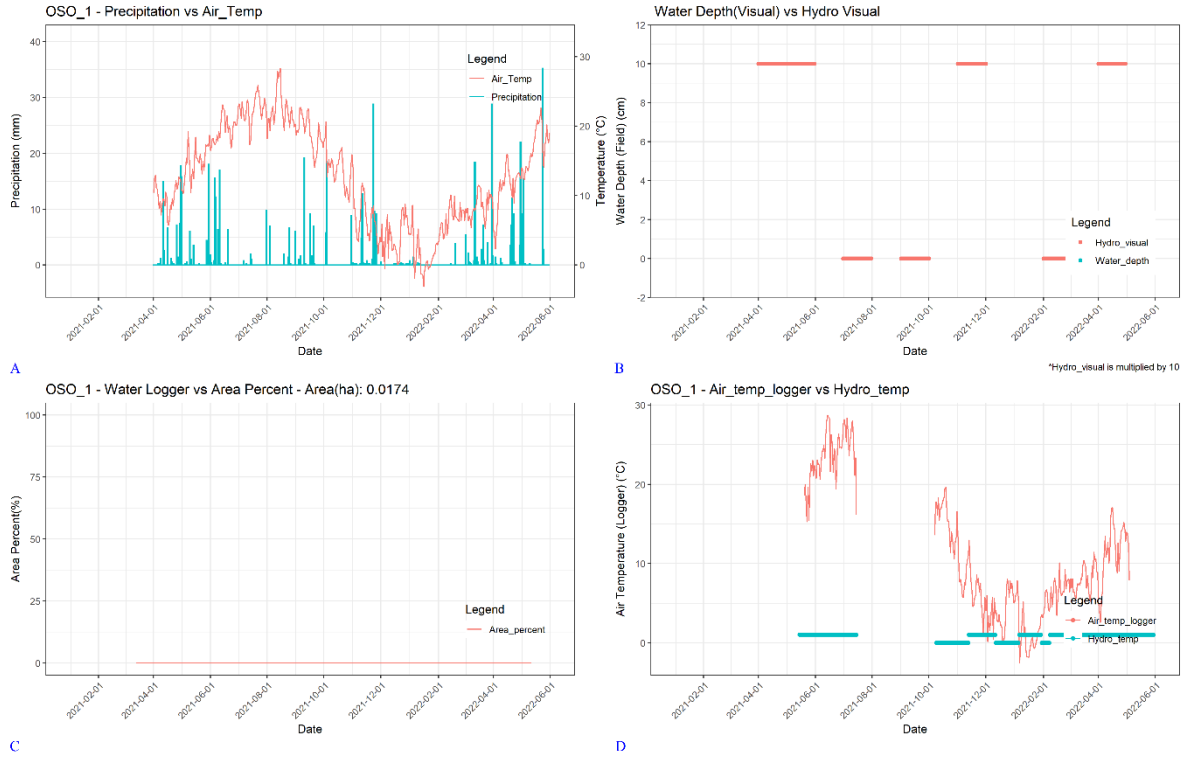
Plot 94. Pond GAR_4 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable.



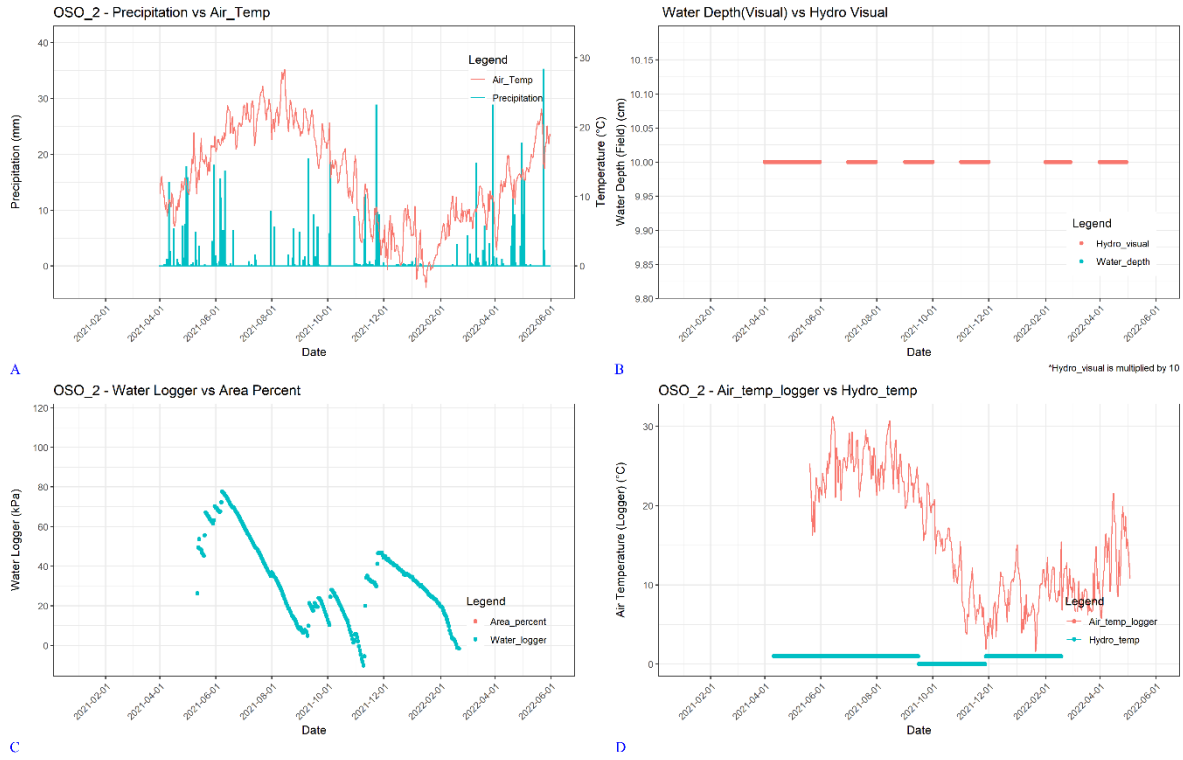
Plot 95. Pond GAR_5 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable.



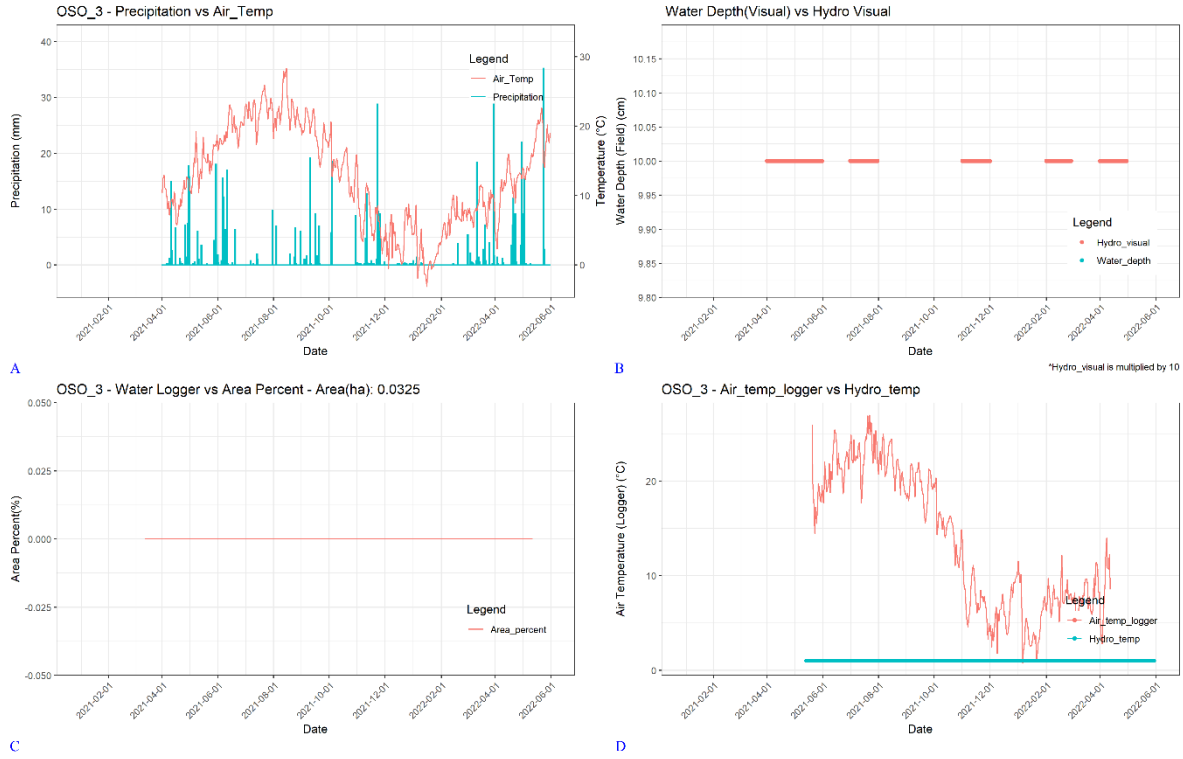
Plot 96. Pond GAR_6 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable.



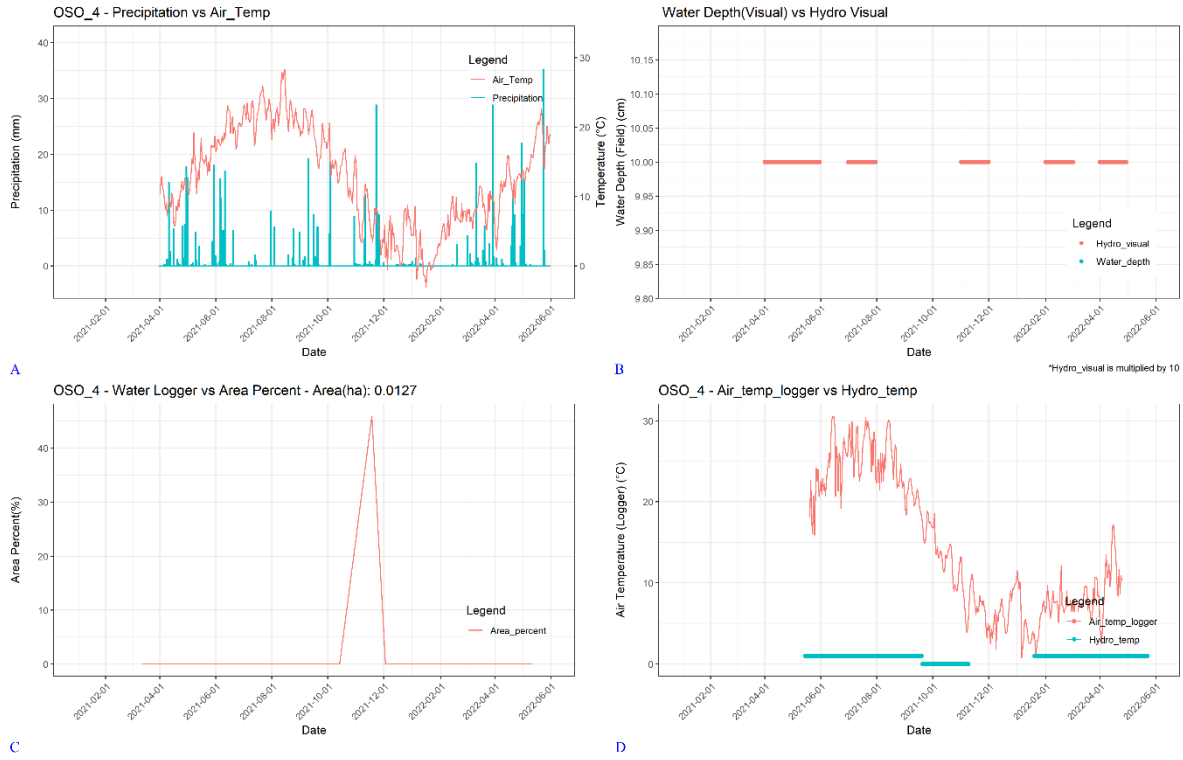
Plot 97. Pond OSO_1 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable.



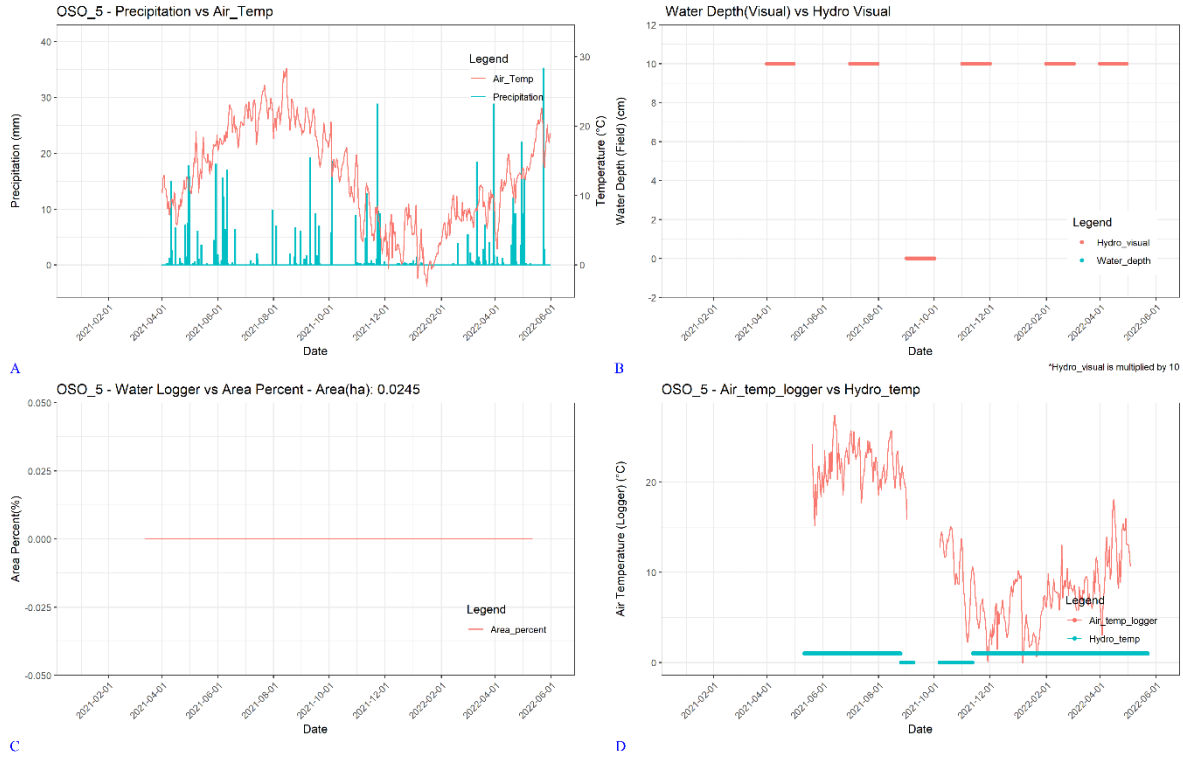
Plot 98. Pond OSO_2 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable.



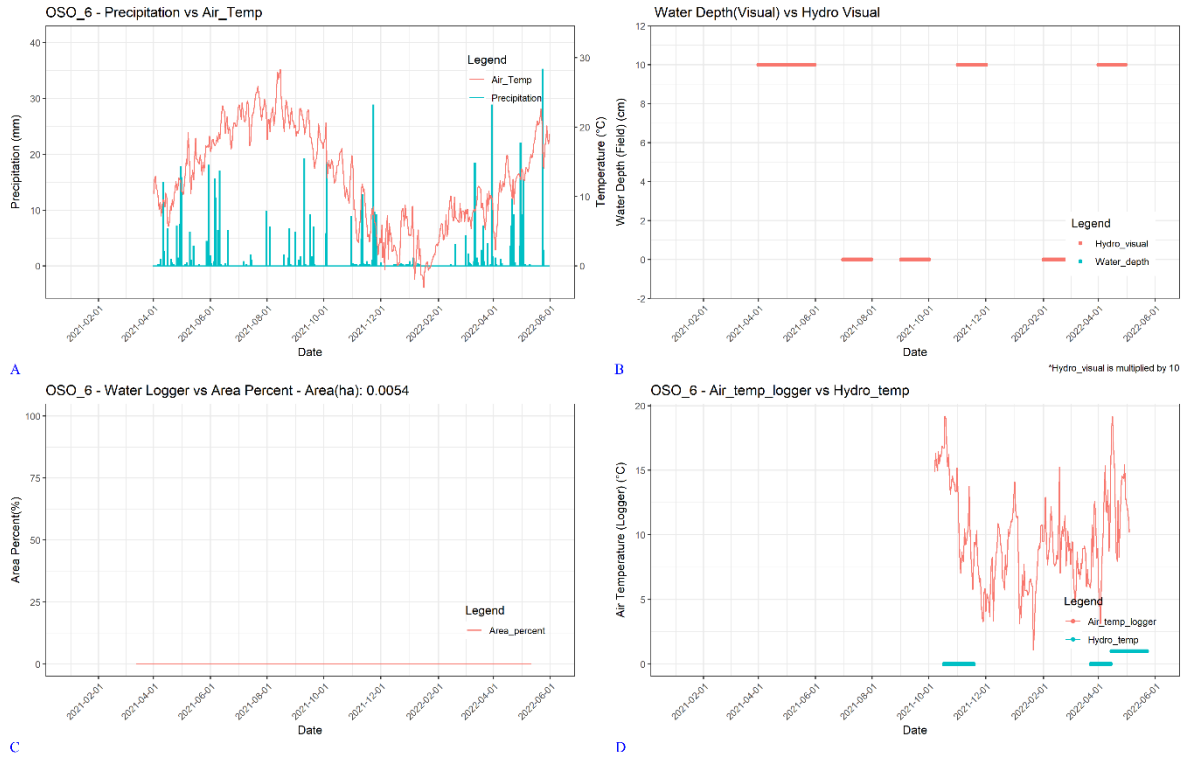
Plot 99. Pond OSO_3 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable.



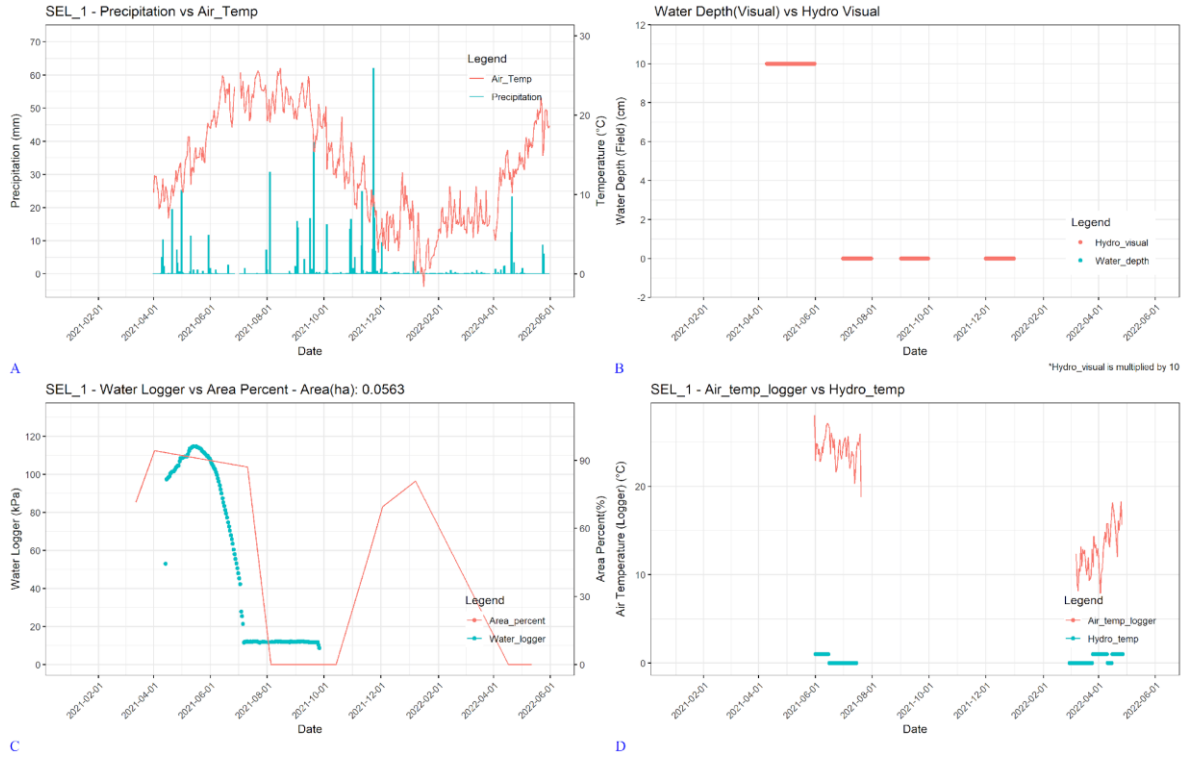
Plot 100. Pond OSO_4 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable.



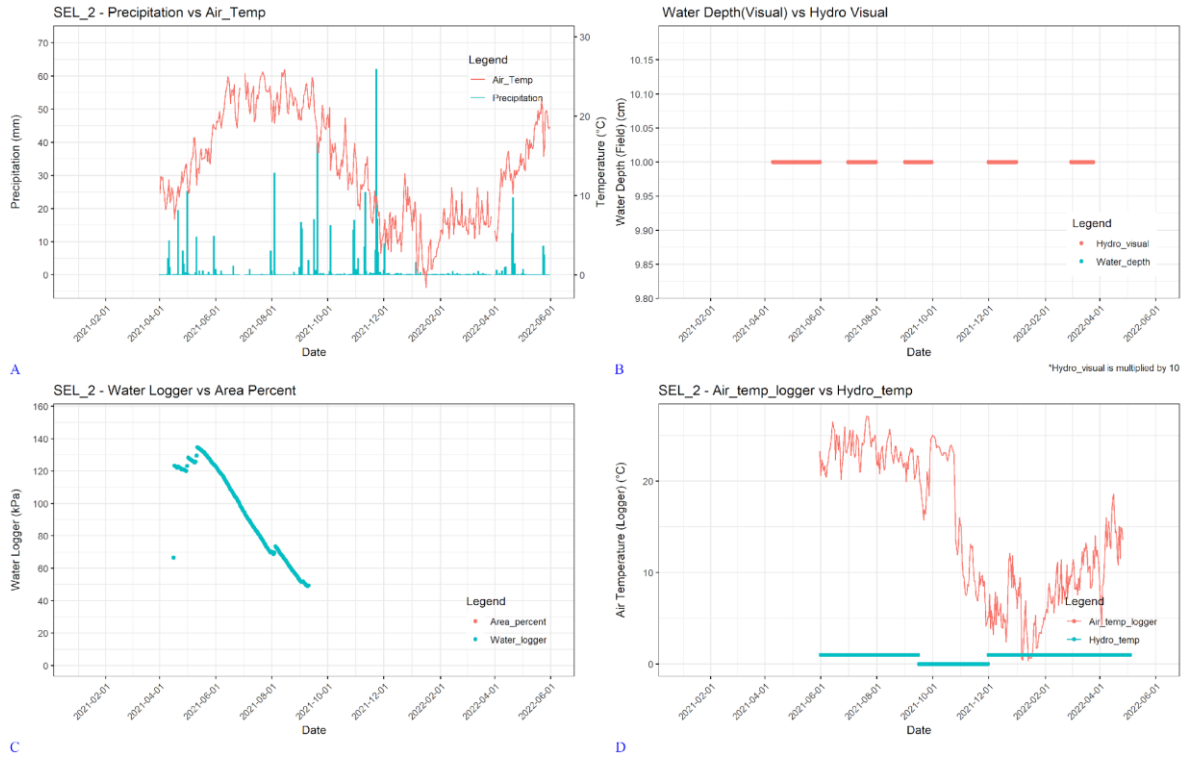
Plot 101. Pond OSO_5 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable.



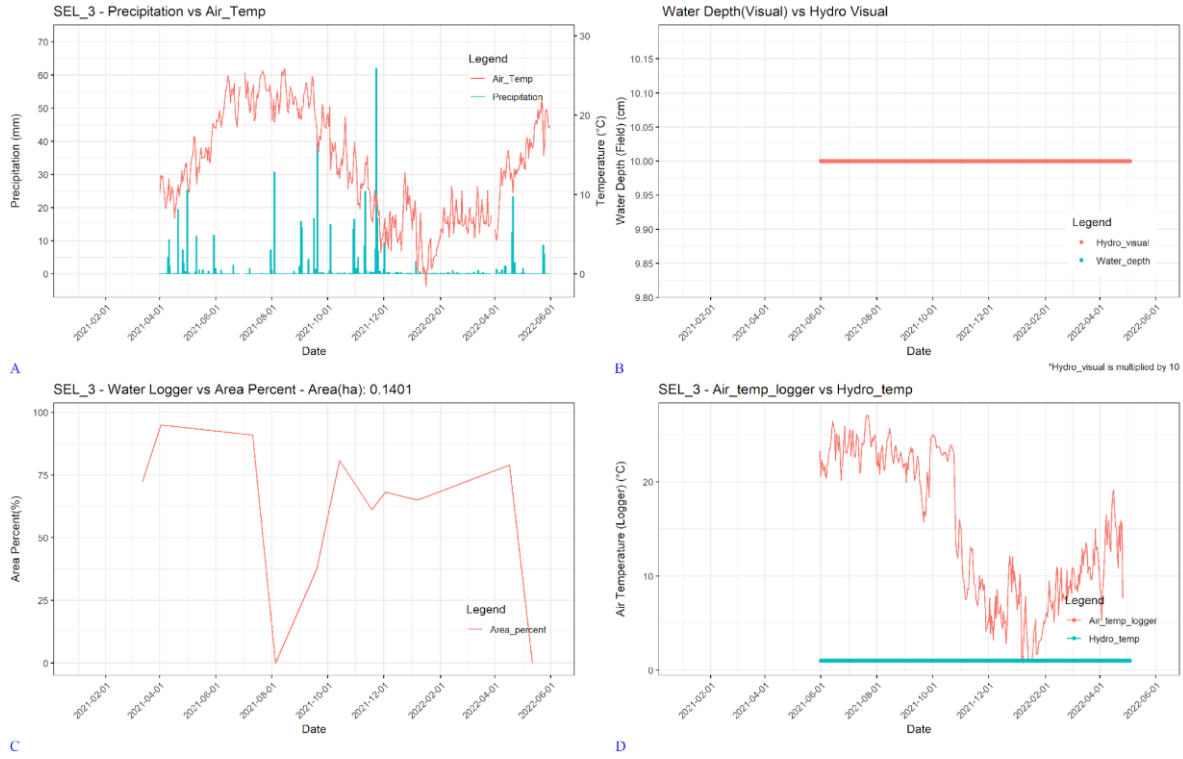
Plot 102. Pond OSO_6 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable.



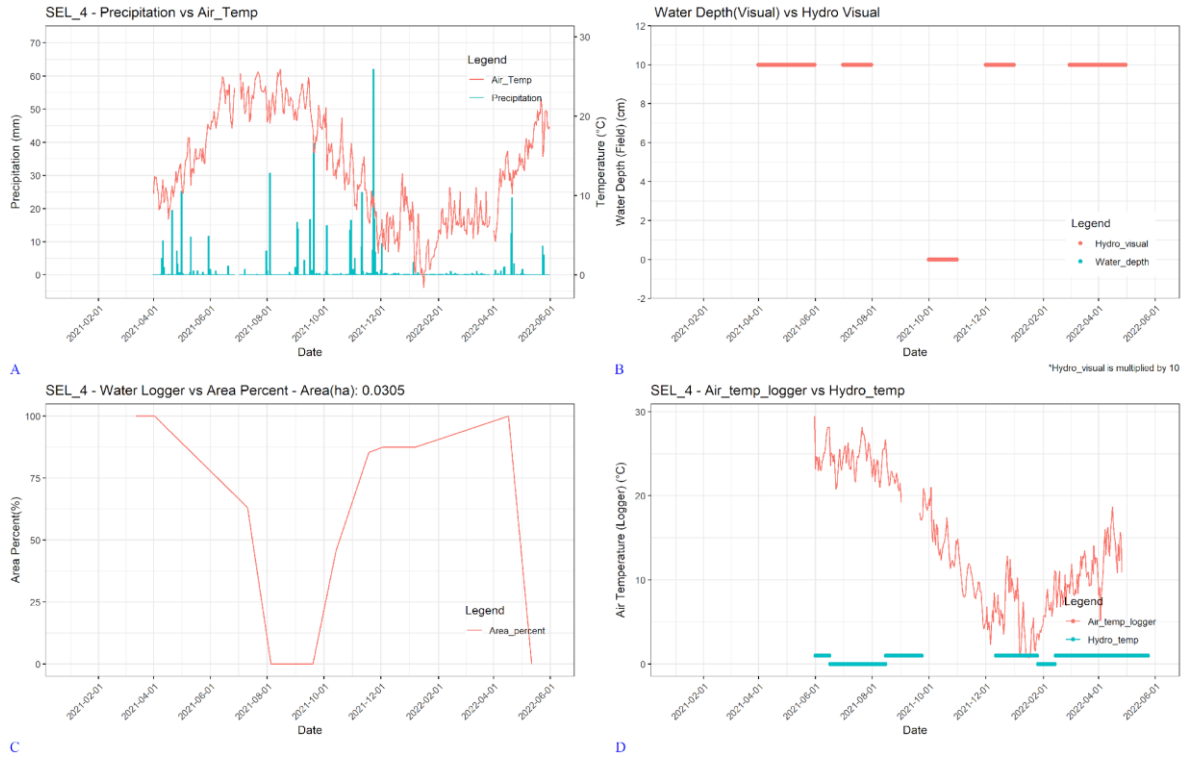
Plot 103. Pond SEL_1 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable.



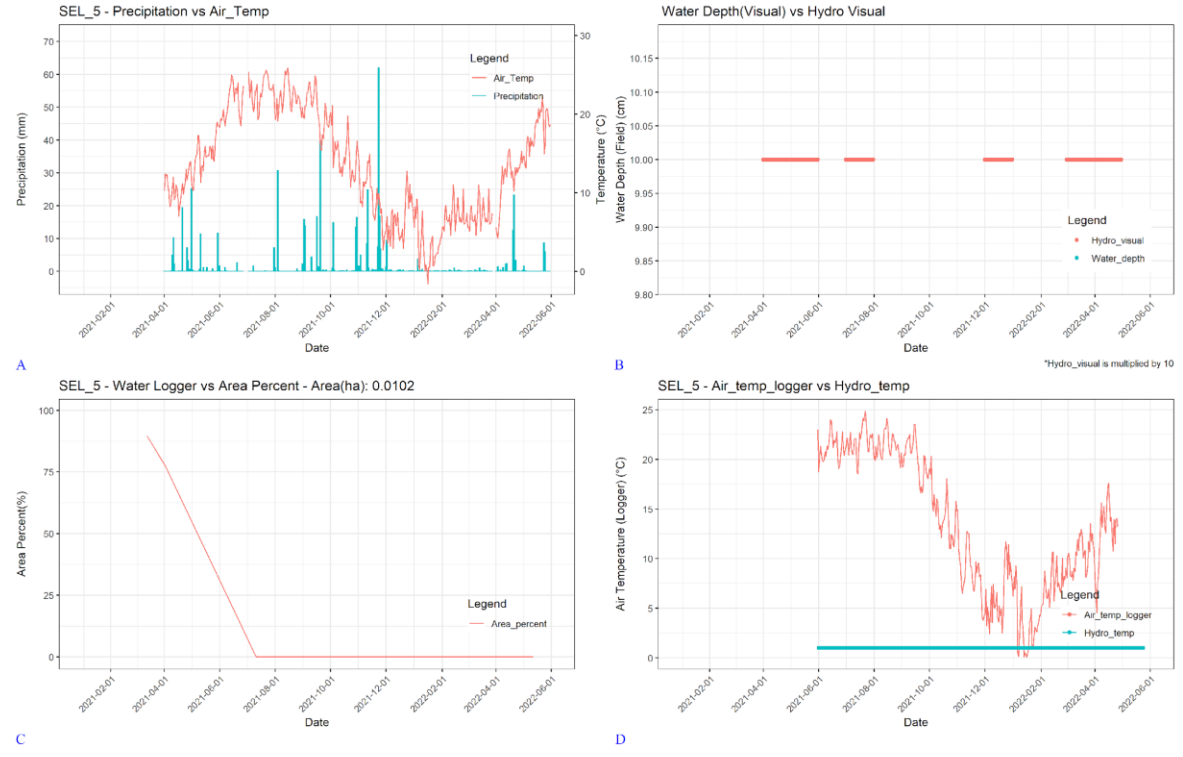
Plot 104. Pond SEL_2 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable.



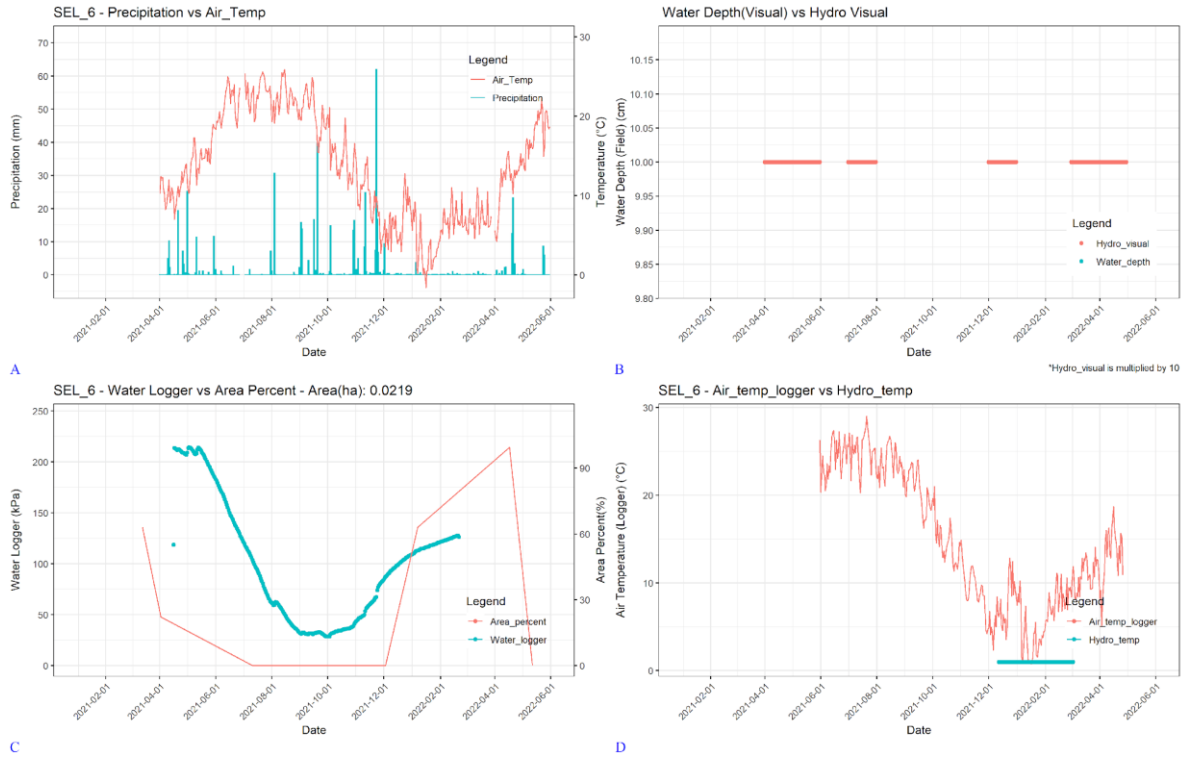
Plot 105. Pond SEL_3 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable.



Plot 106. Pond SEL_4 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable.

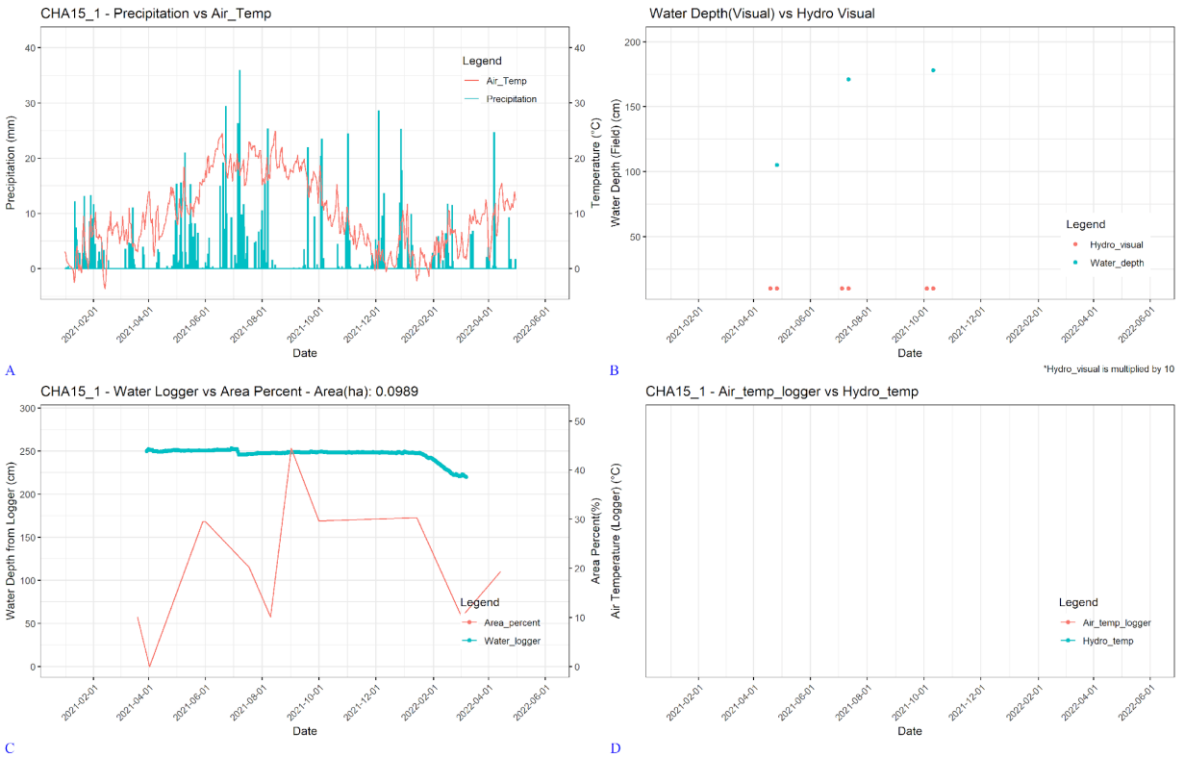


Plot 107. Pond SEL_5 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable

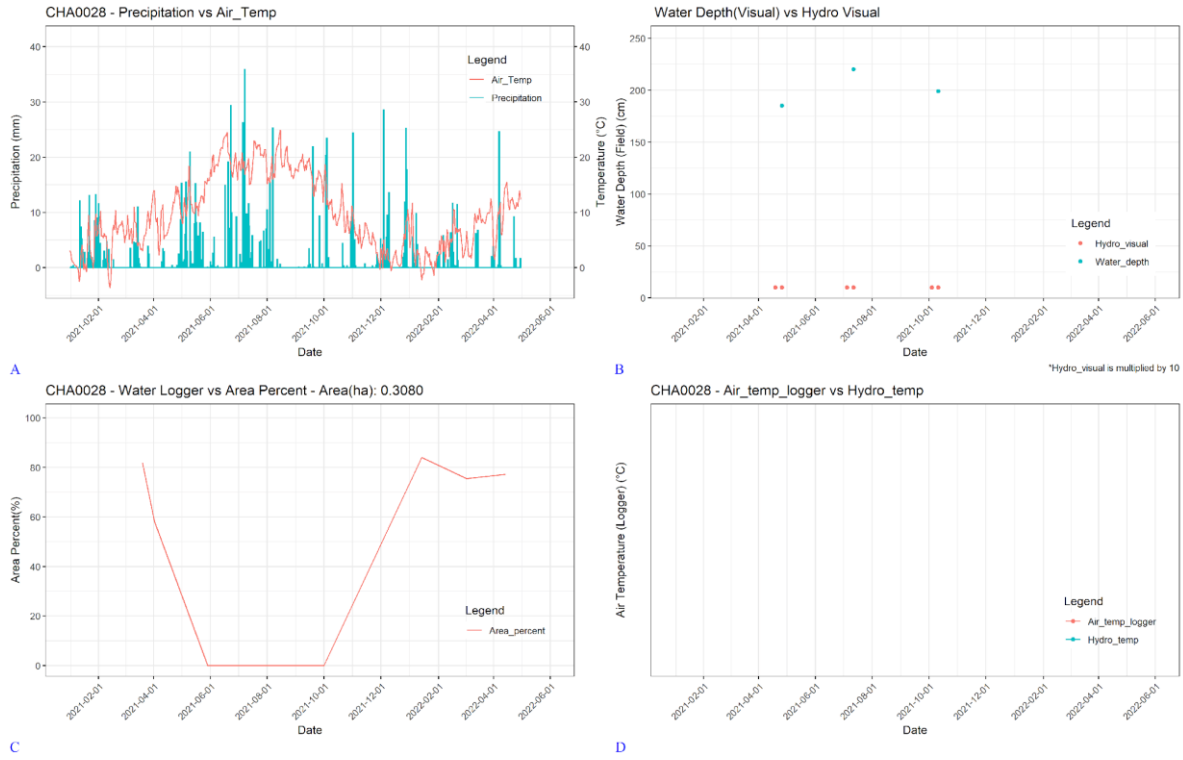


Plot 108. Pond SEL_6 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable

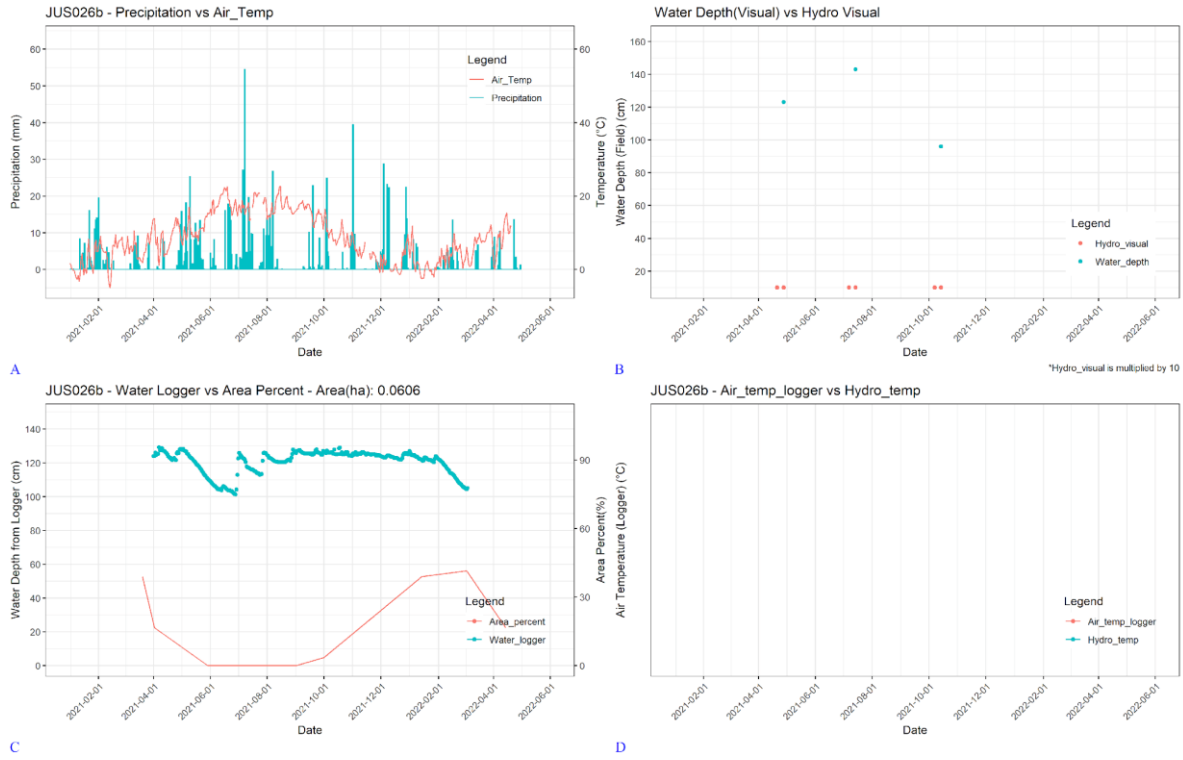
Appendix – 5 - Switzerland



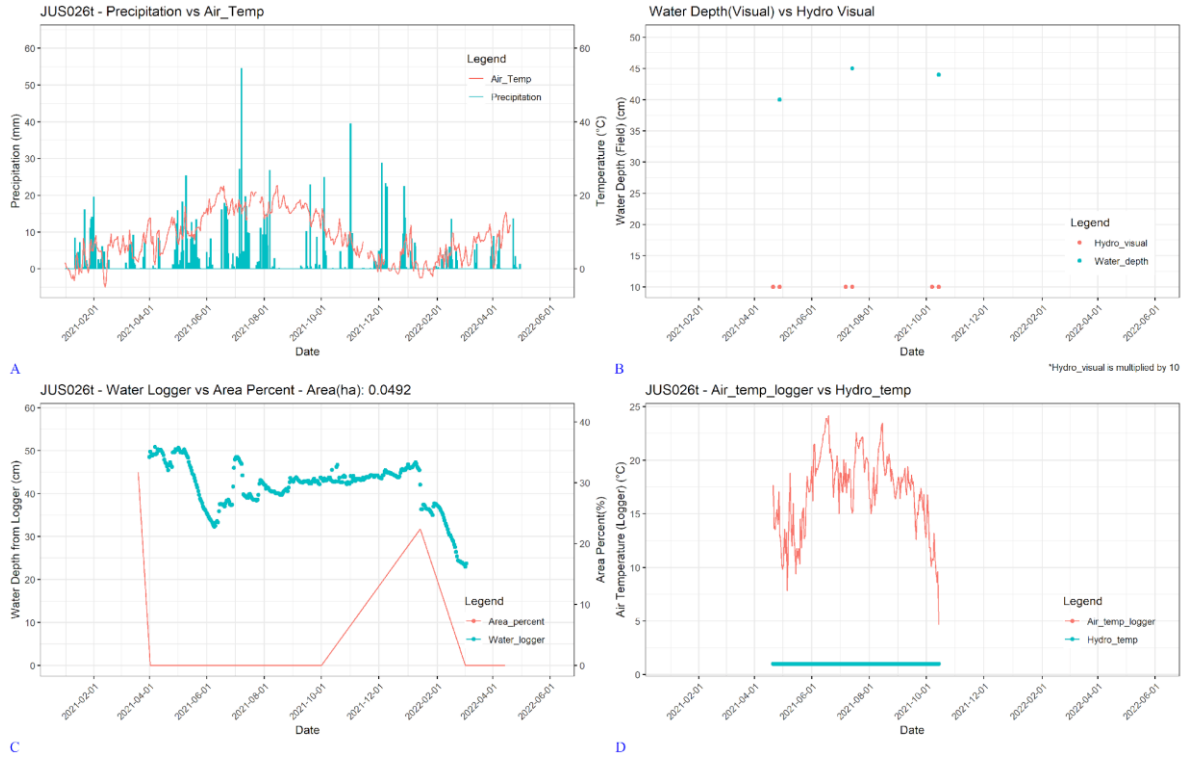
Plot 109. Pond CHA15_1 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable



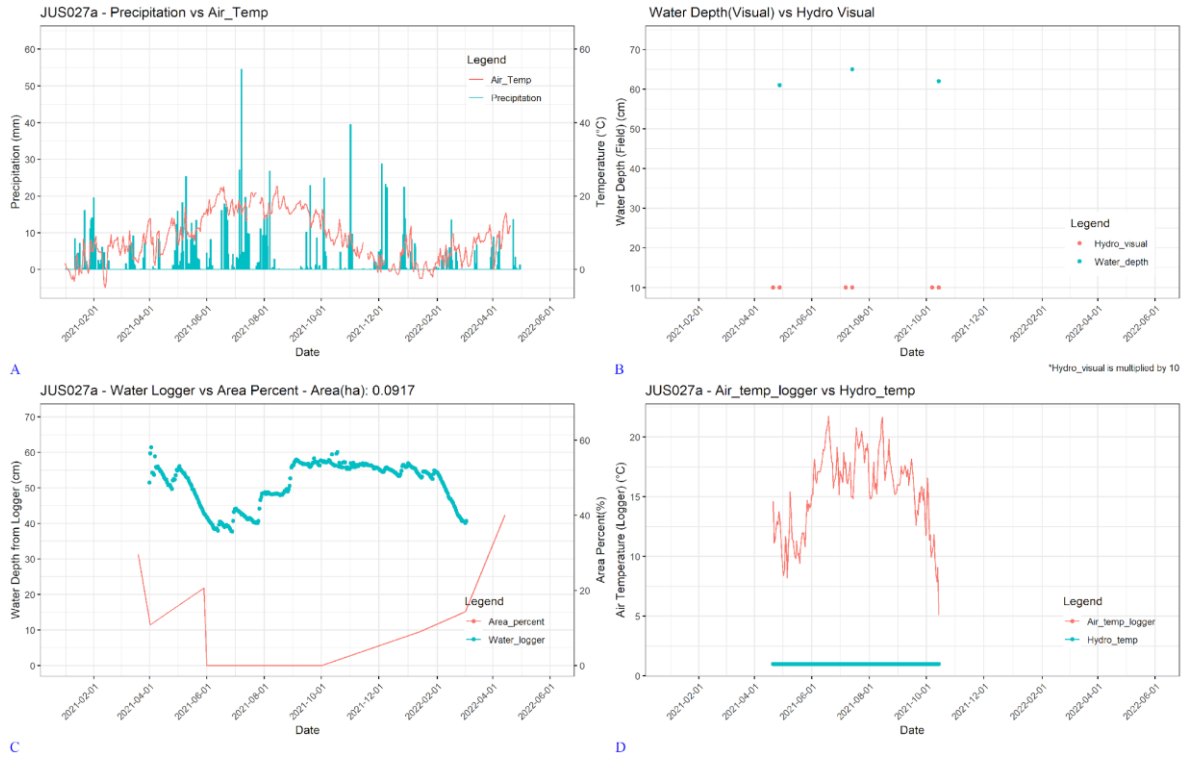
Plot 110. Pond CHA0028 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable



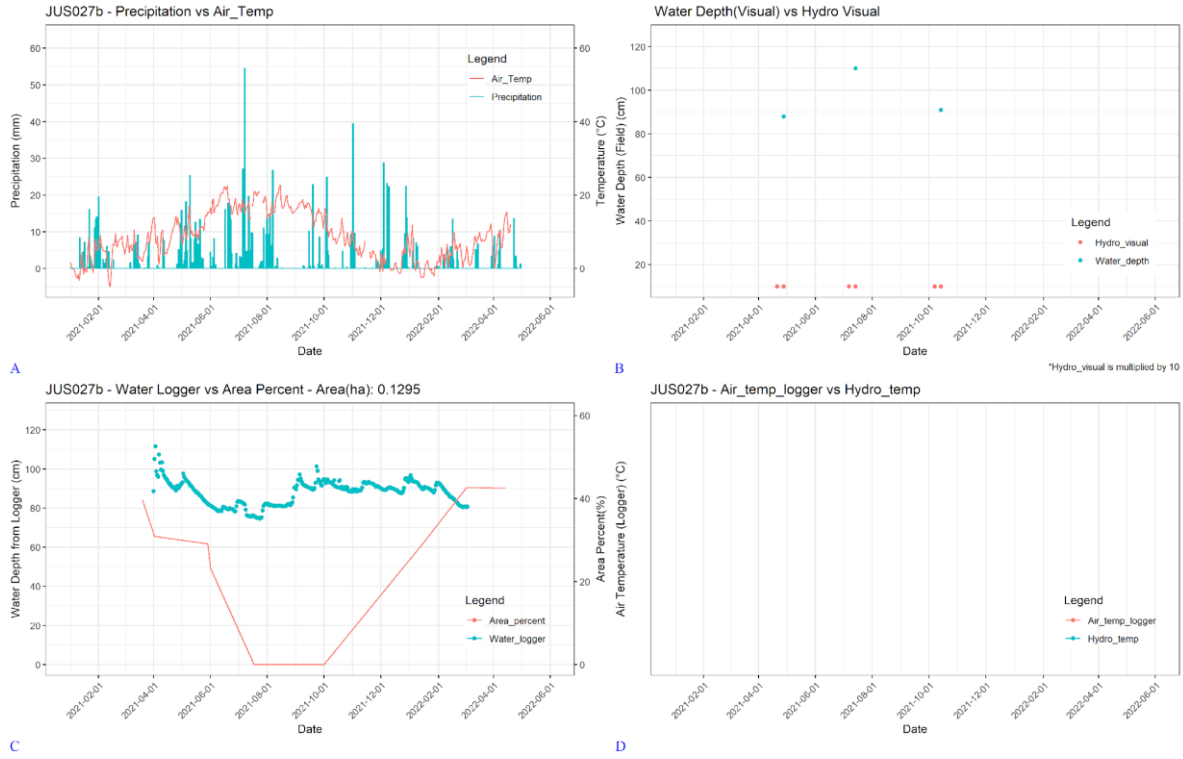
Plot 111. Pond JUS026b with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable



Plot 112. Pond JUS026t with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable

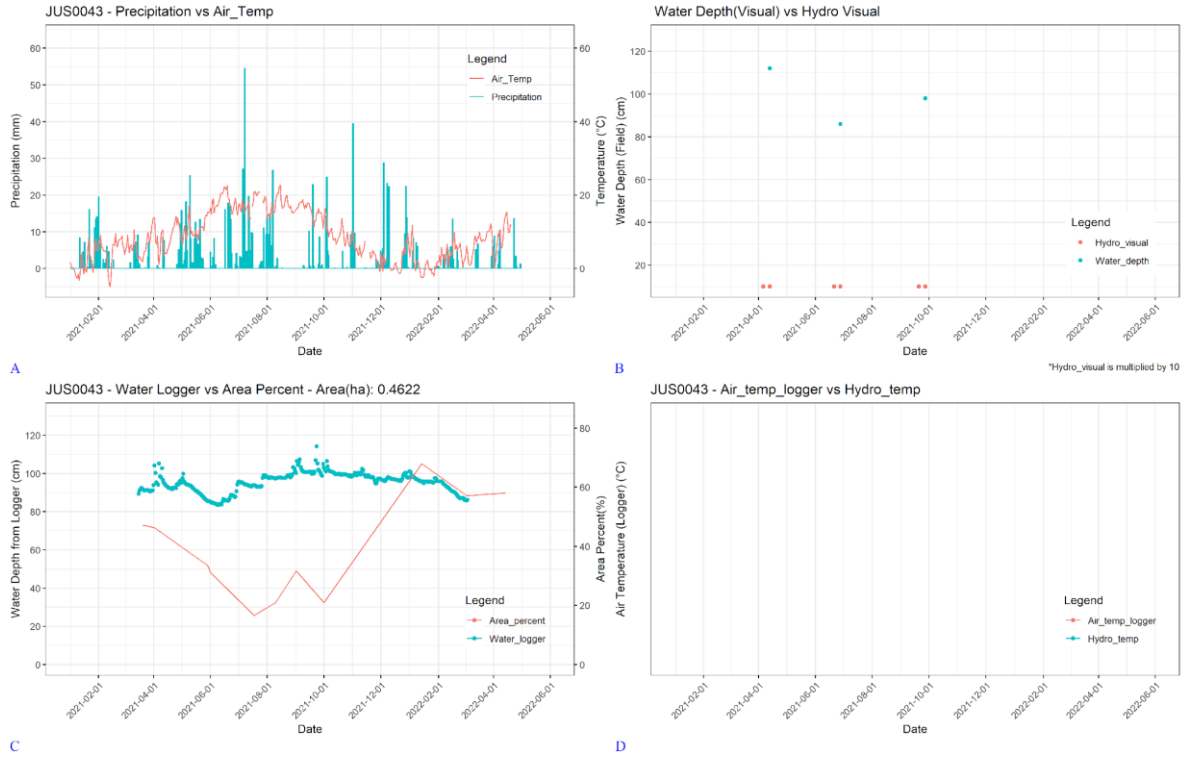


Plot 113. Pond JUS027a with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable

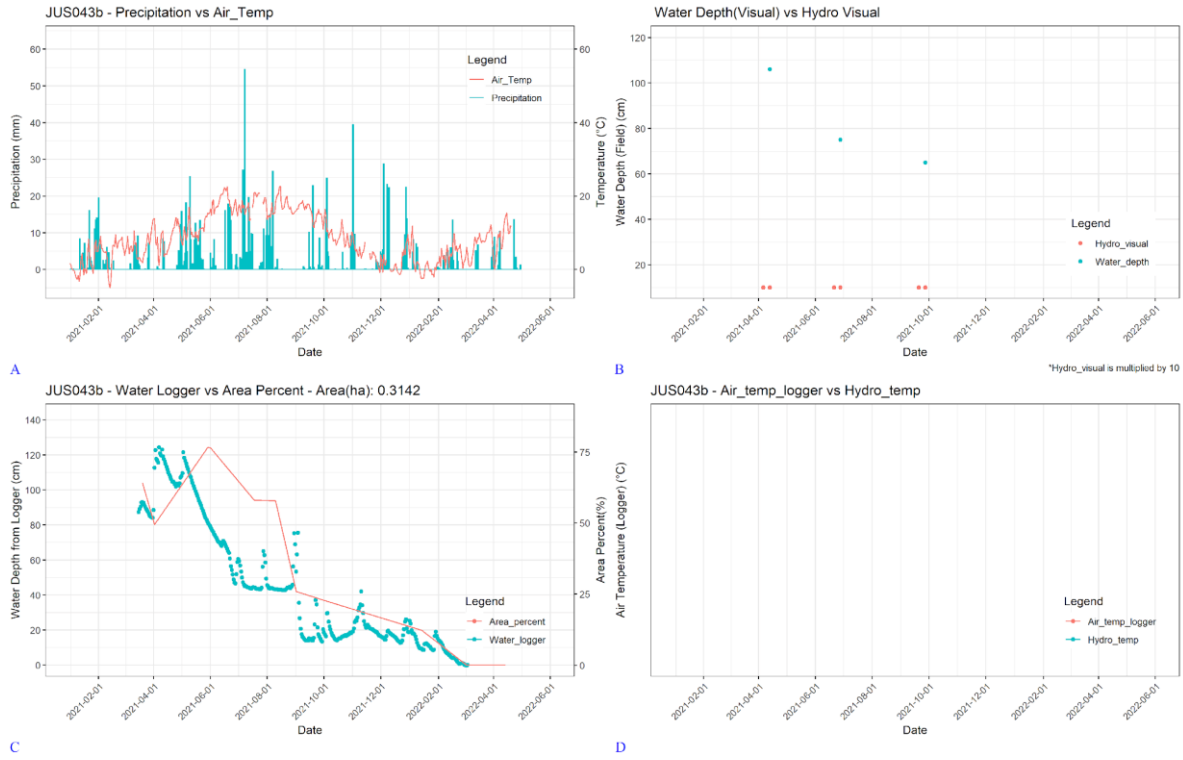


Plot 114. Pond JUS027b with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable

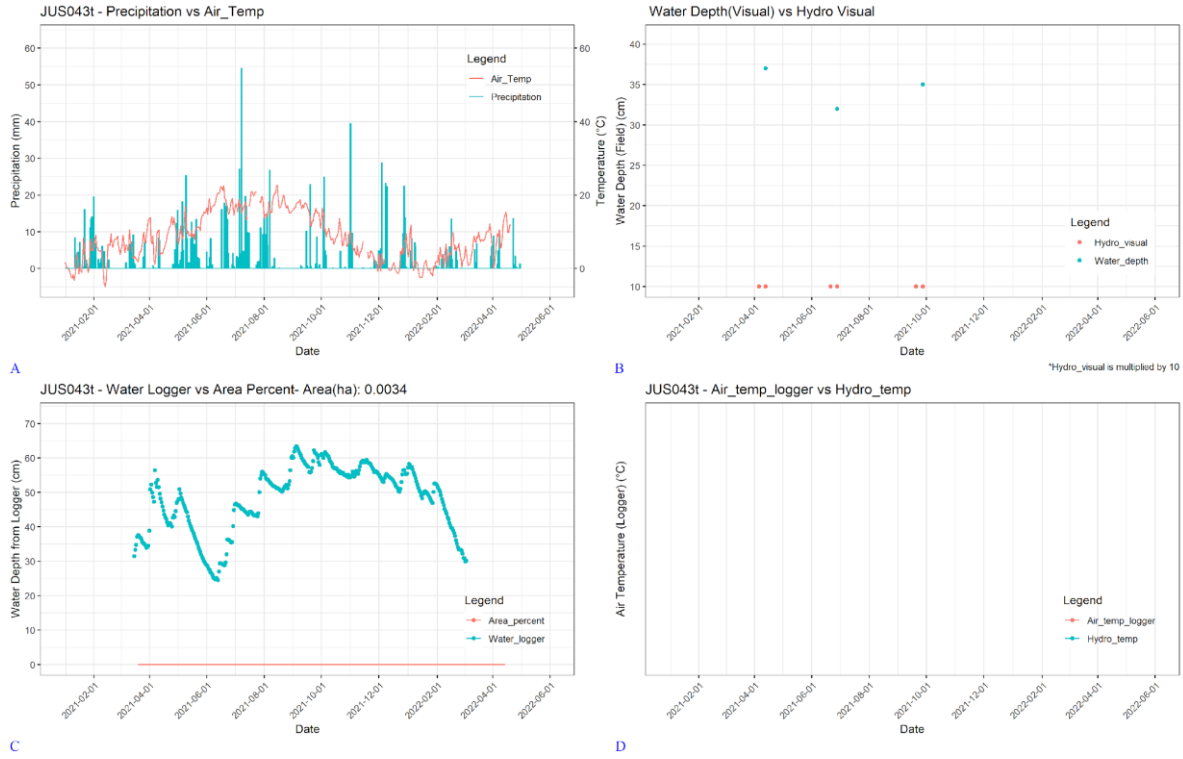
Plot 115. Pond JUS027c with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable



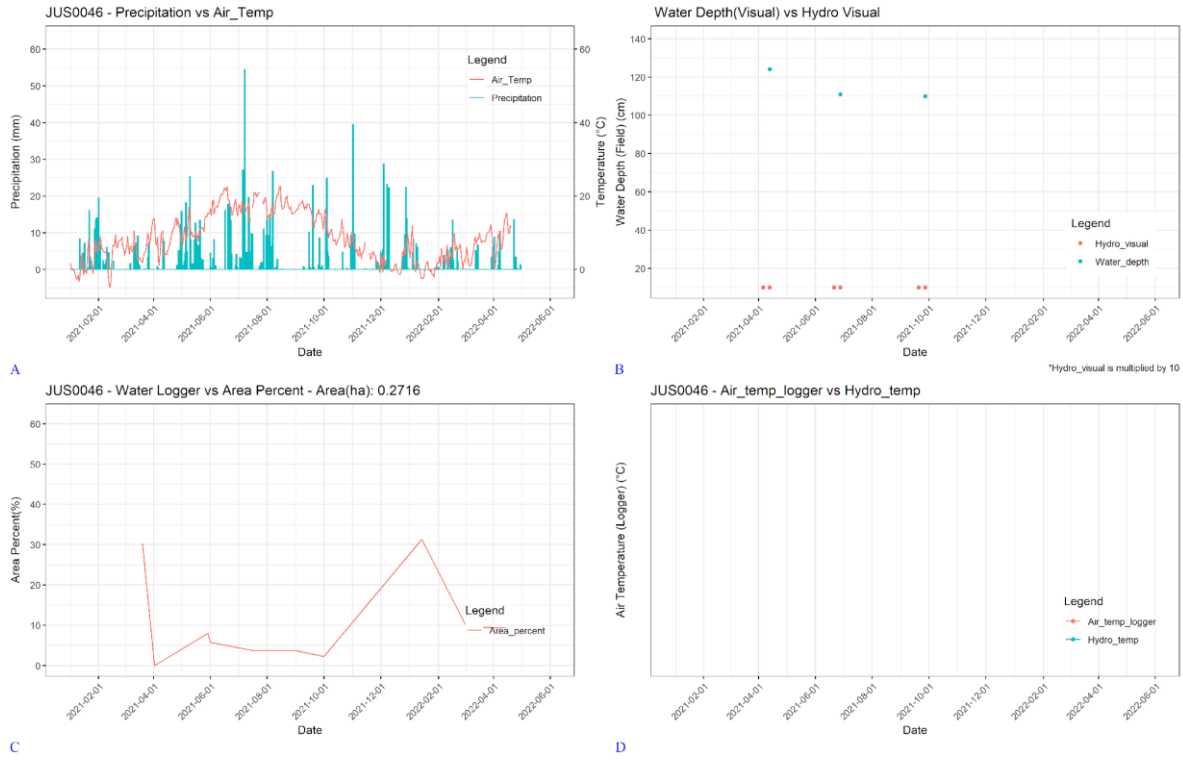
Plot 116. Pond JUS0043 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable



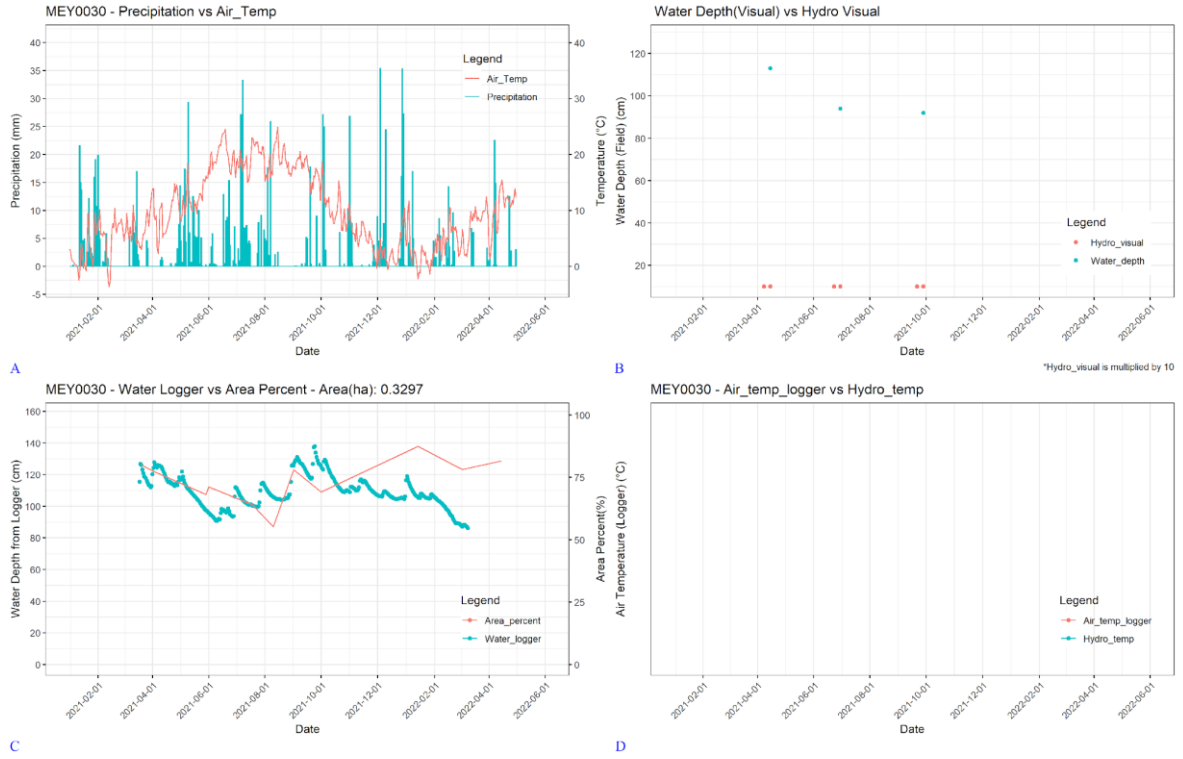
Plot 117. Pond JUS043b with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable



Plot 118. Pond JUS043t with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable

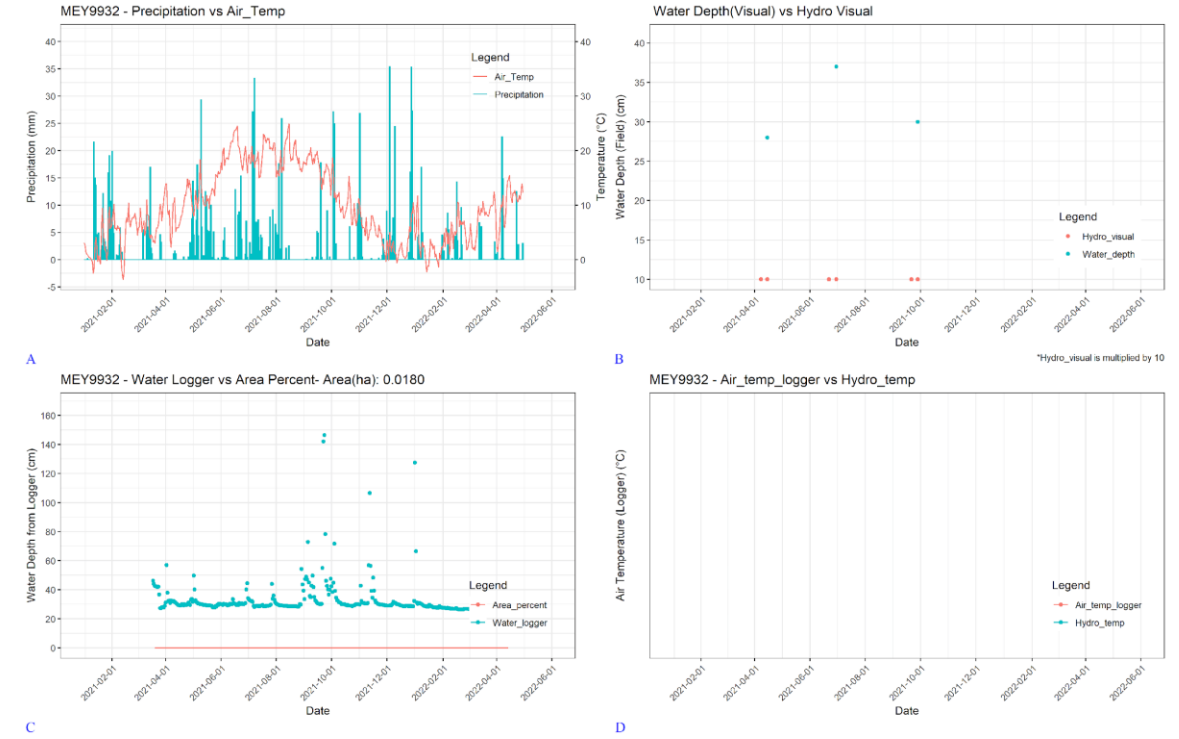


Plot 119. Pond JUS0046 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable



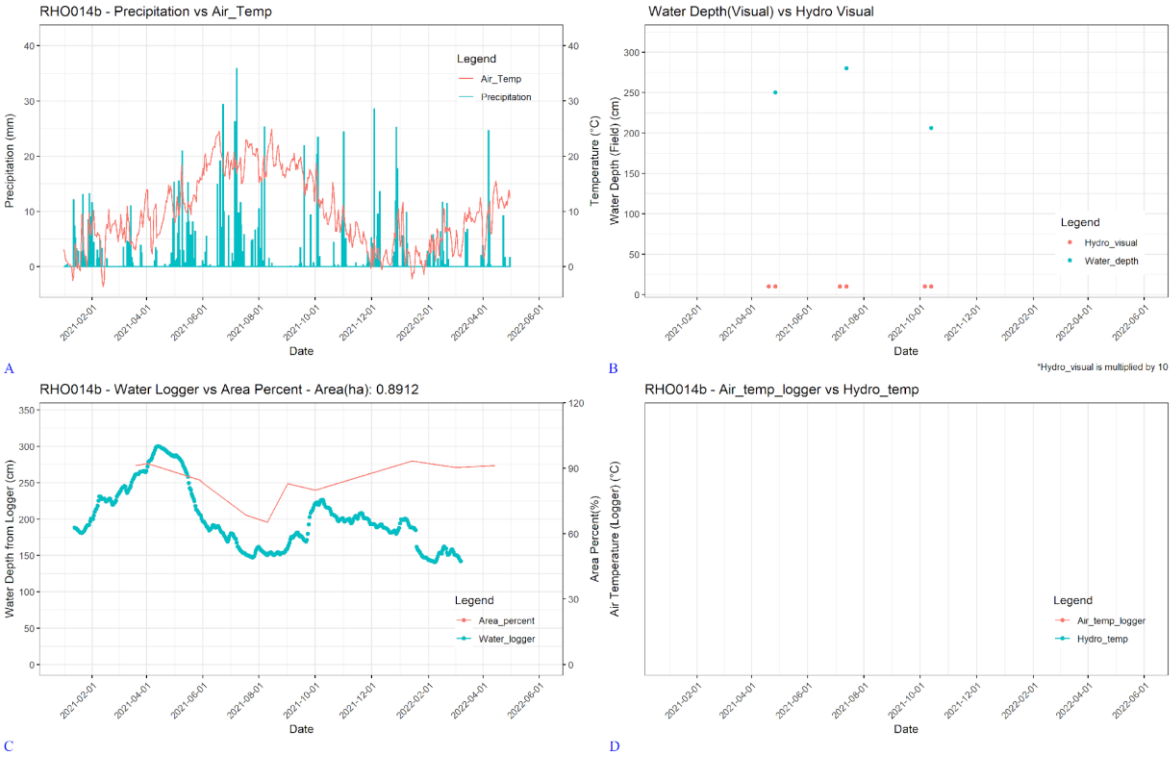
Plot 120. Pond MEY0030 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable

Plot 121. Pond MEY9931 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable.

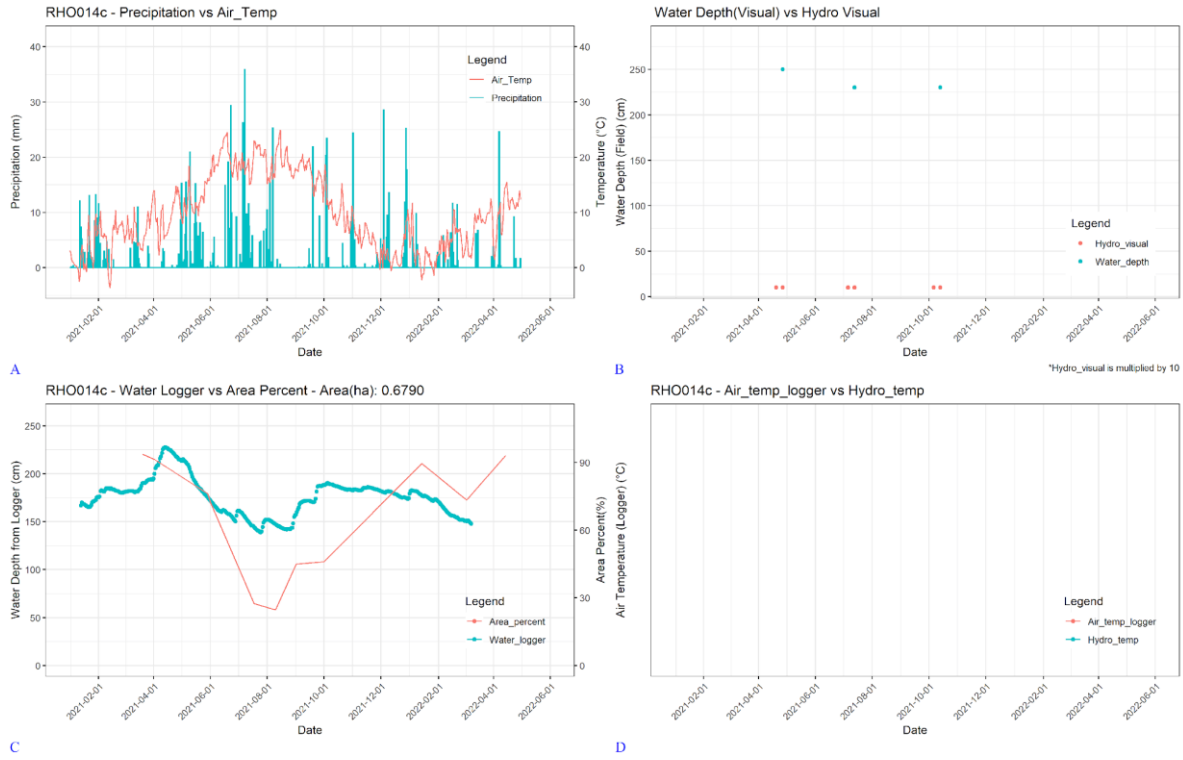


Plot 122. Pond MEY9932 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable.

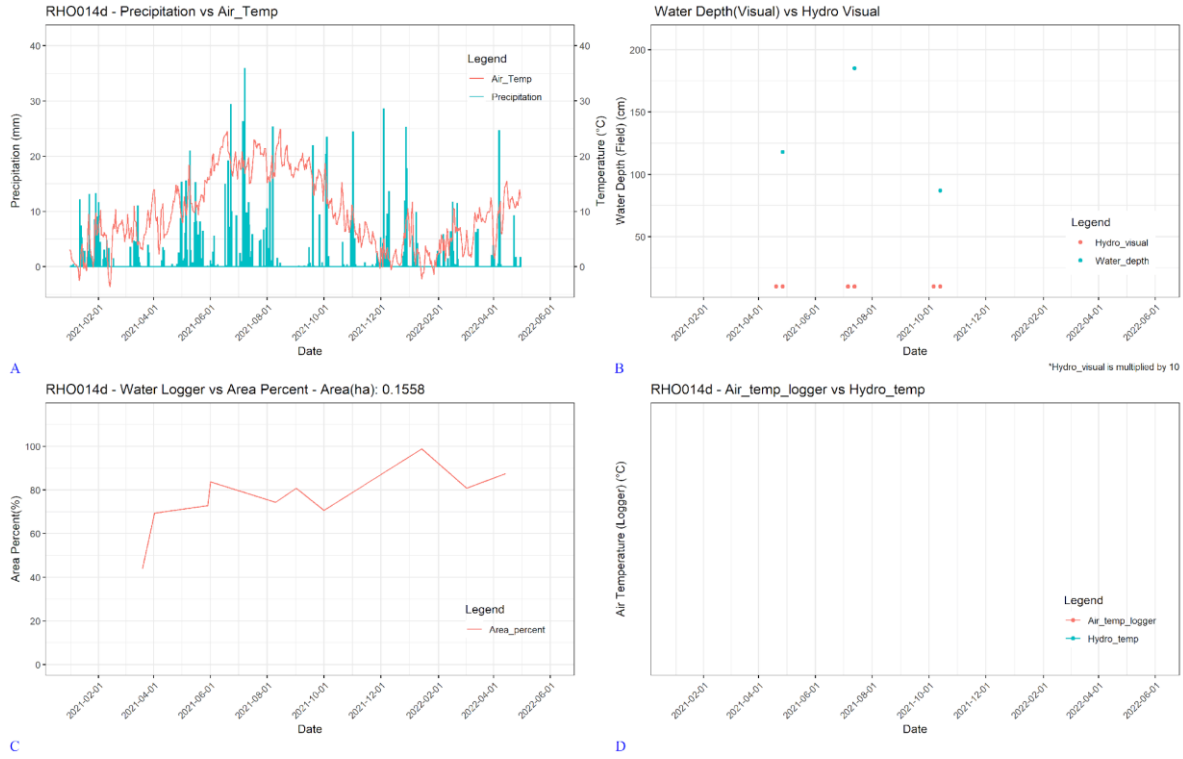
Plot 123. Pond RHO011c with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable



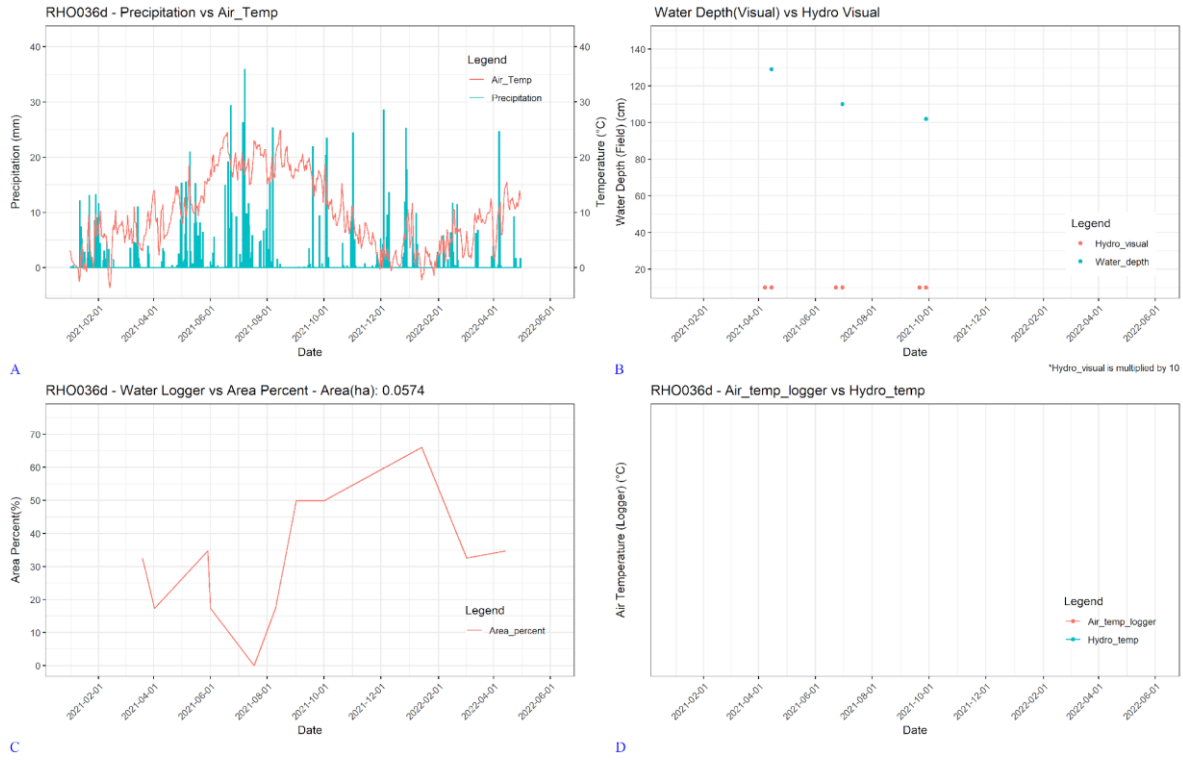
Plot 124. Pond RHO014b with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable



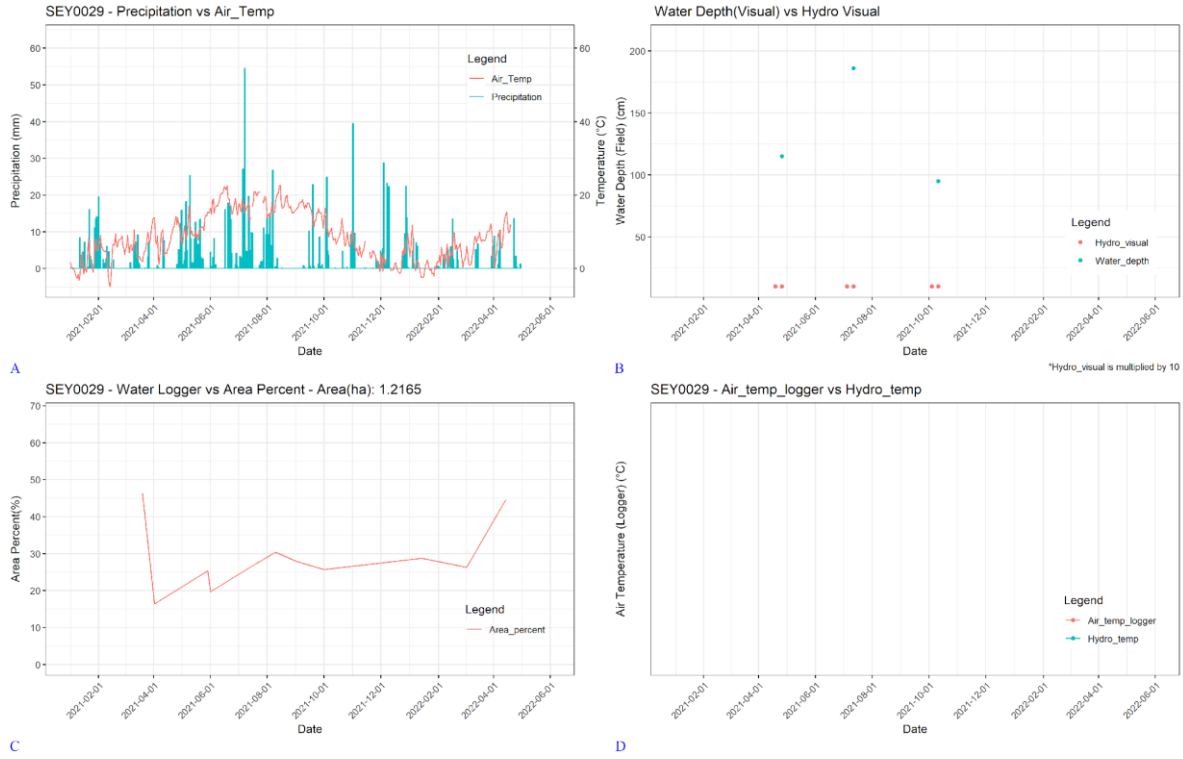
Plot 125. Pond RHO014c with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable



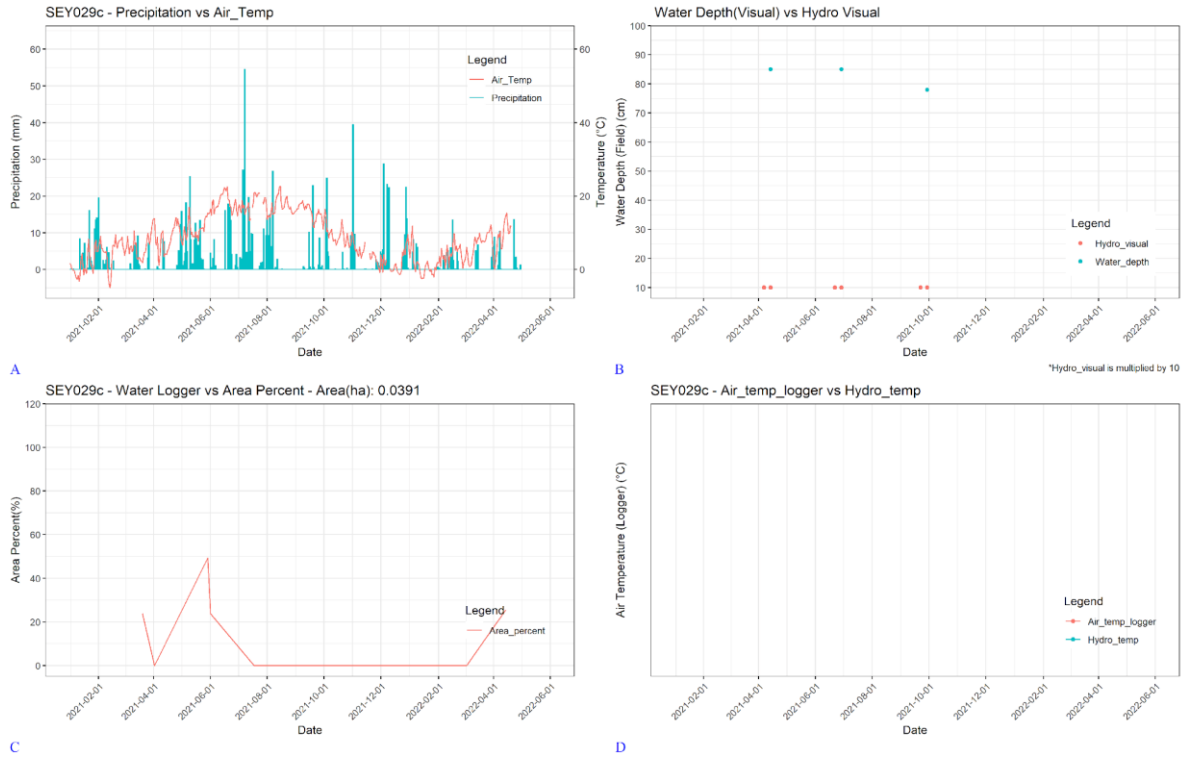
Plot 126. Pond RHO014d with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable



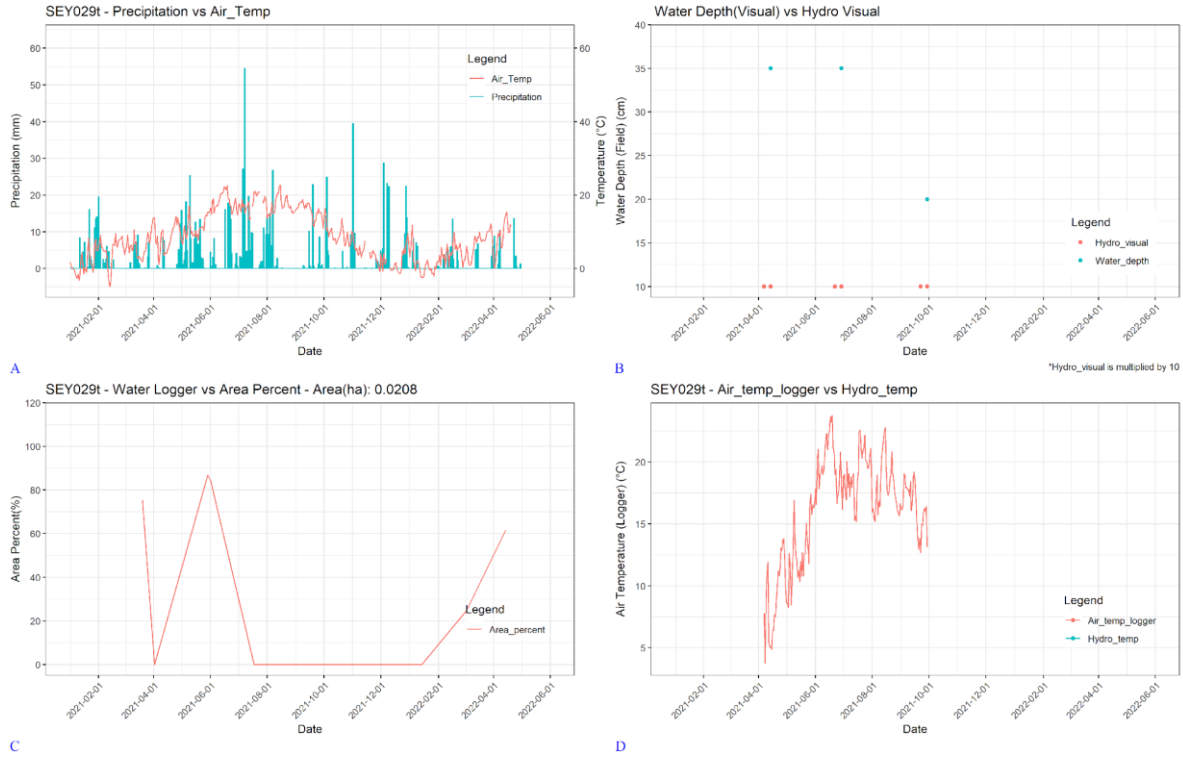
Plot 127. Pond RHO036d with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable



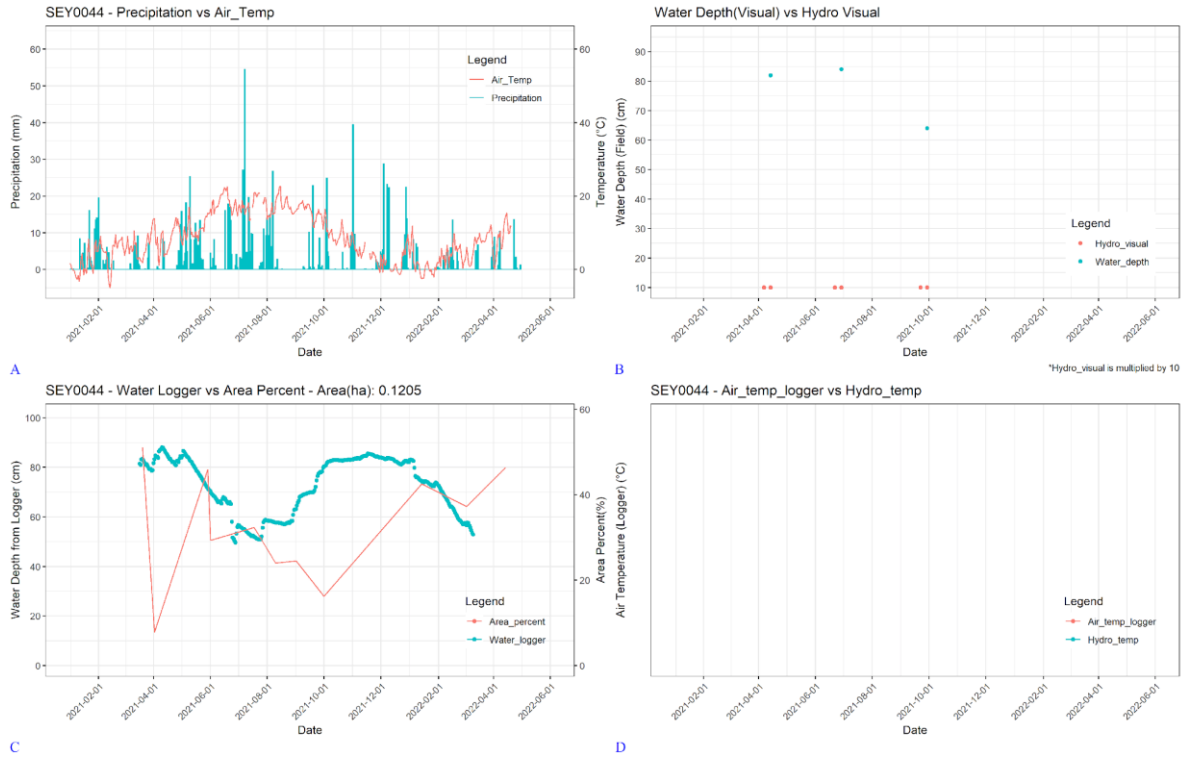
Plot 128. Pond SEY0029 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable



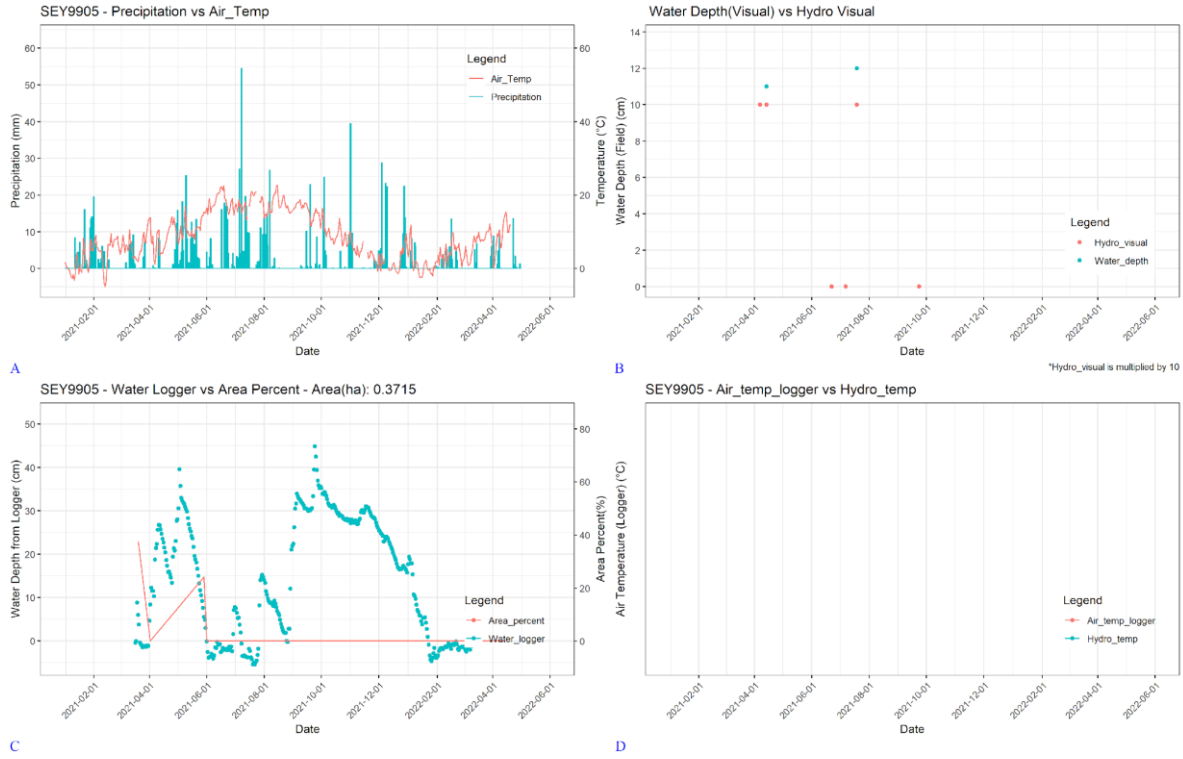
Plot 129. Pond SEY029c with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable



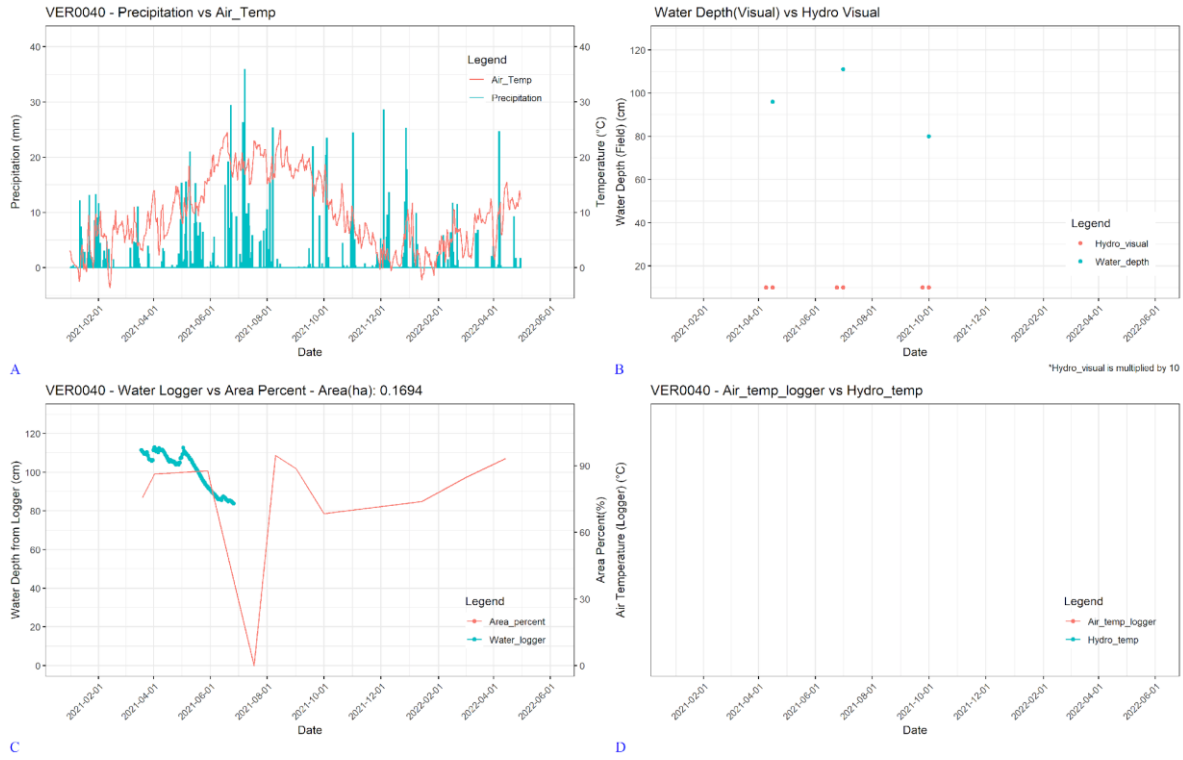
Plot 130. Pond SEY029t with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable



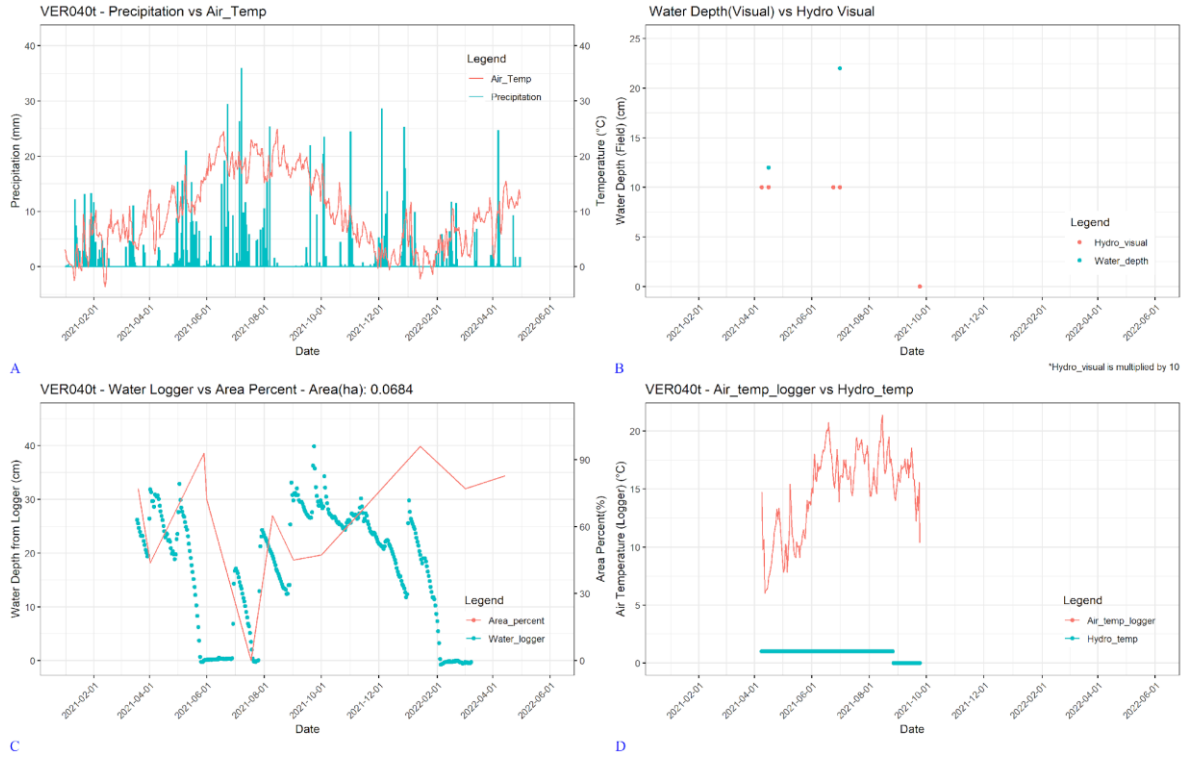
Plot 131. Pond SEY0044 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable



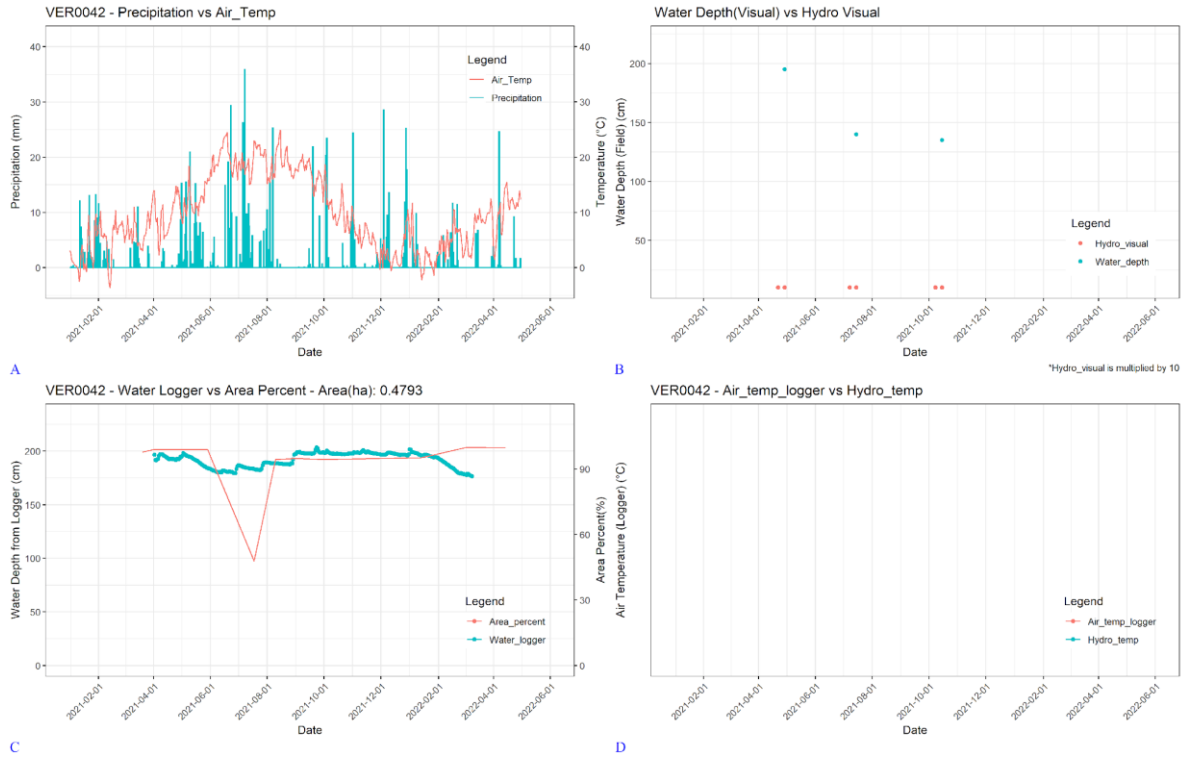
Plot 132. Pond SEY9905 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable



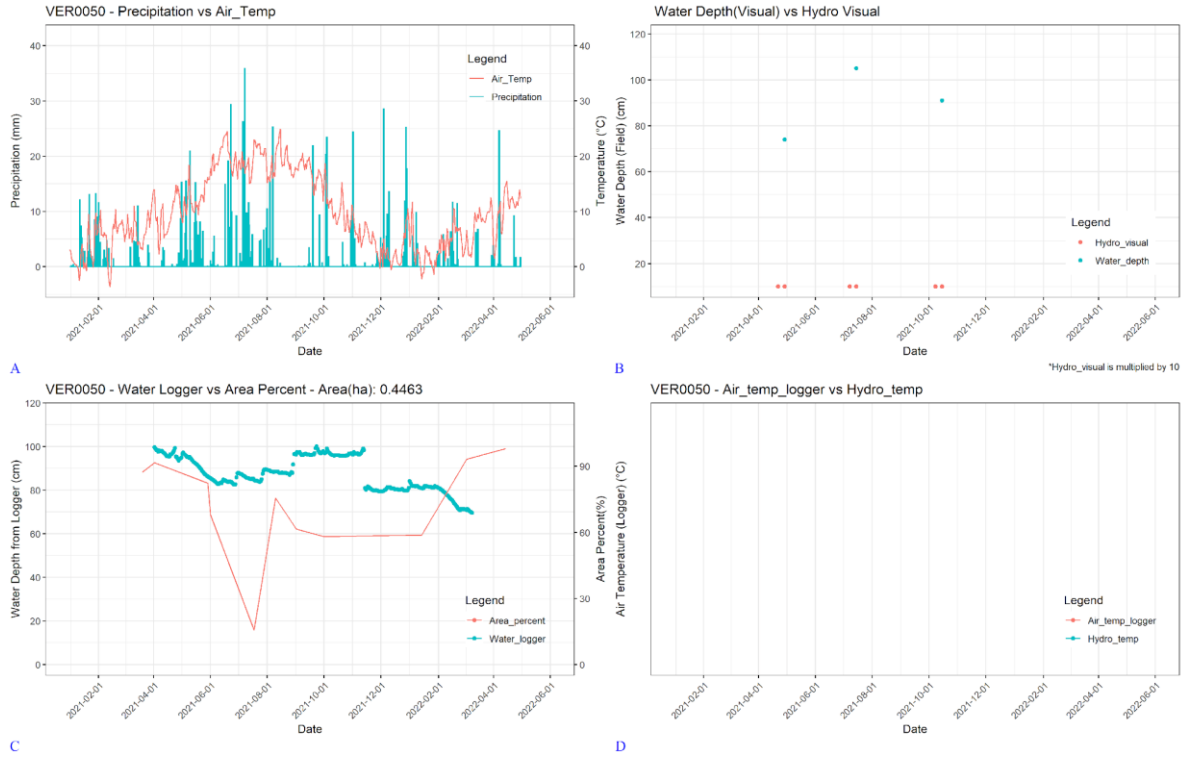
Plot 133. Pond VER0040 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable



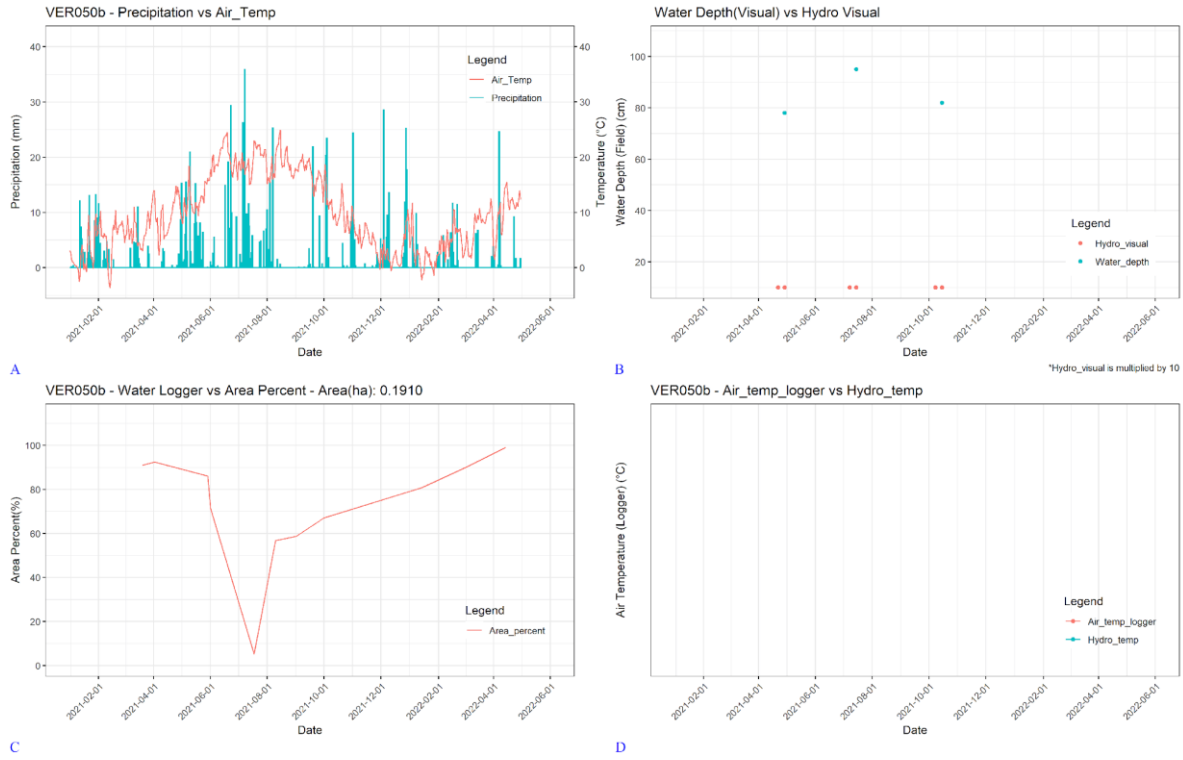
Plot 134. Pond VER040t with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable



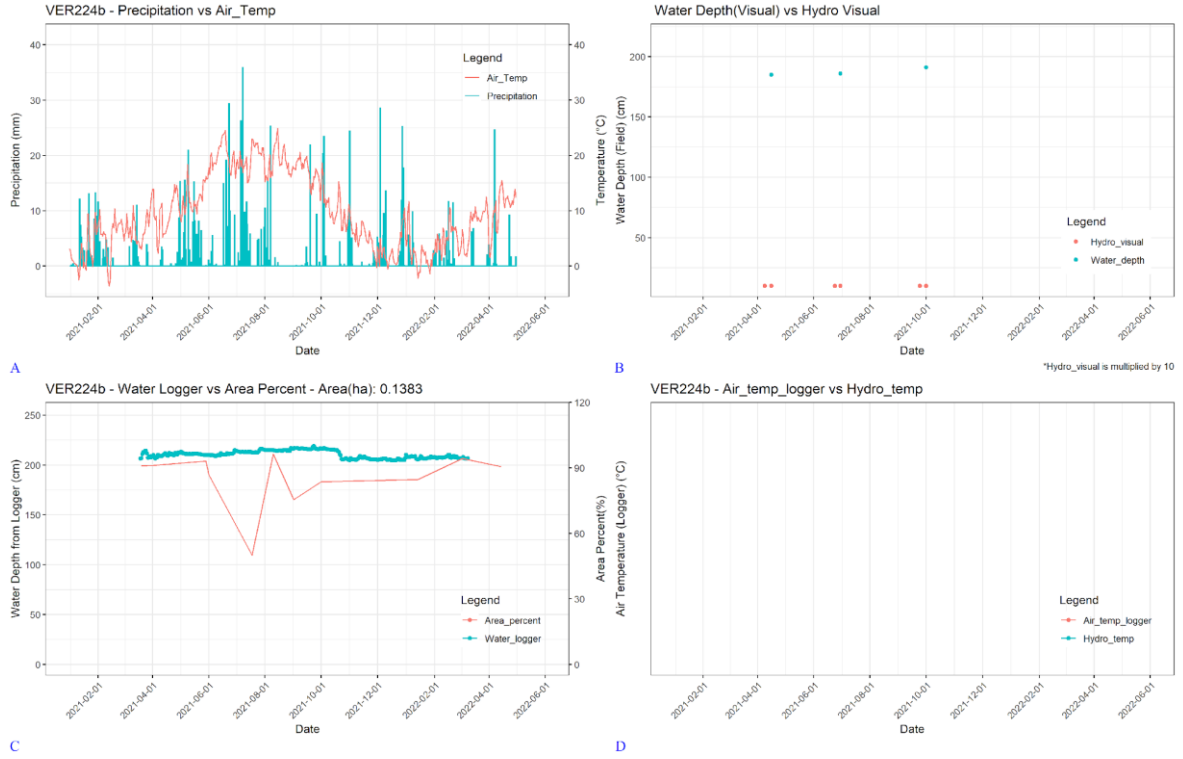
Plot 135. Pond VER0042 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable



Plot 136. Pond VER0050 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable

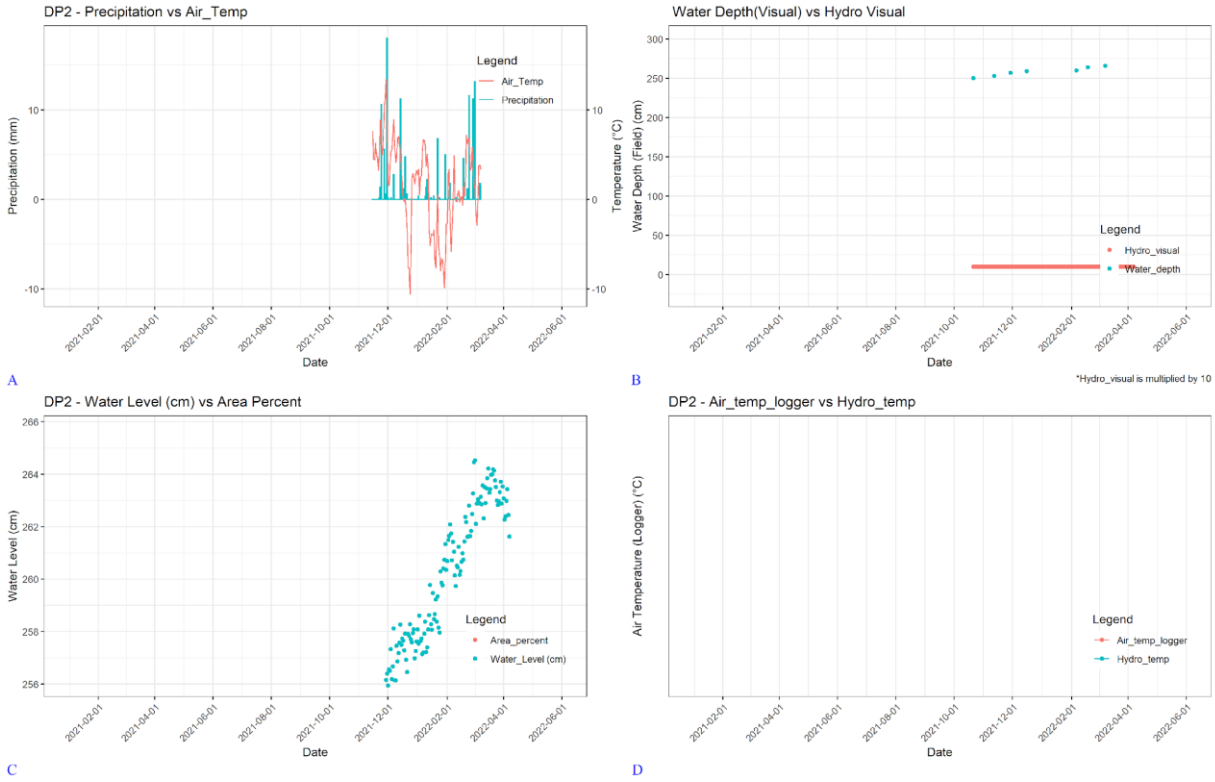


Plot 137. Pond VER050b with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable

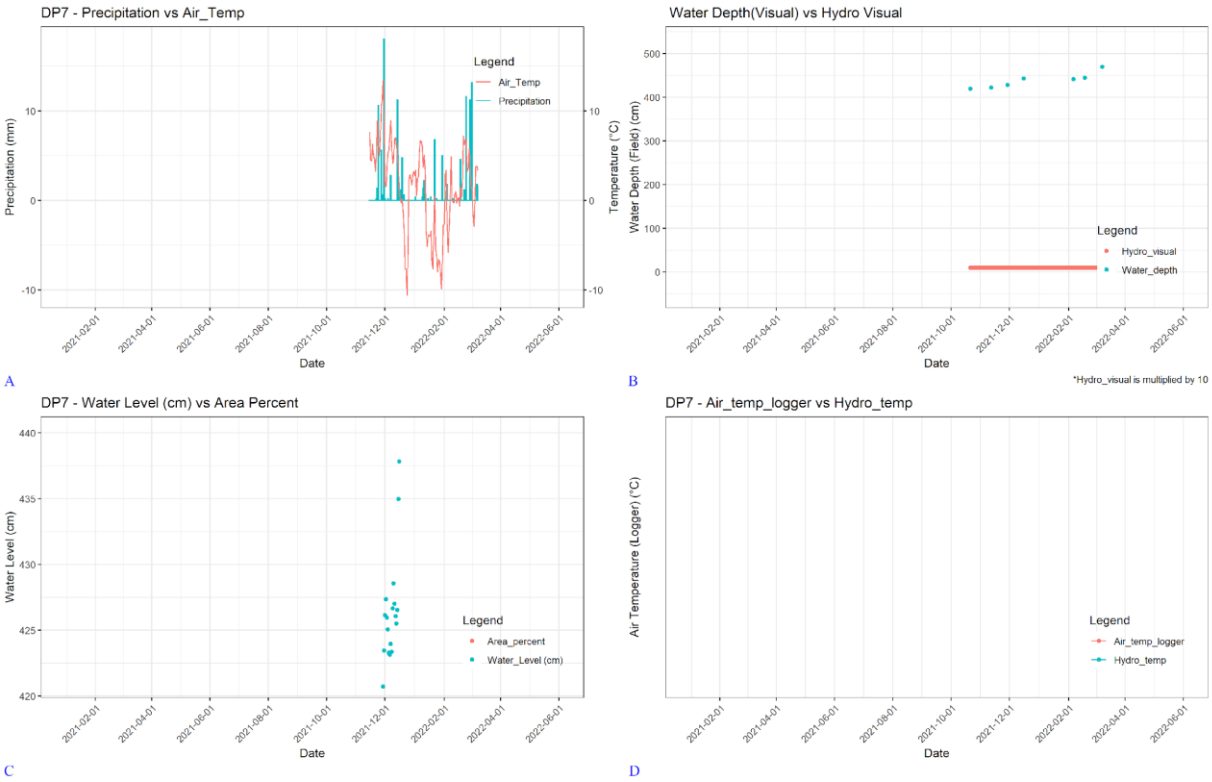


Plot 138. Pond VER224b with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable

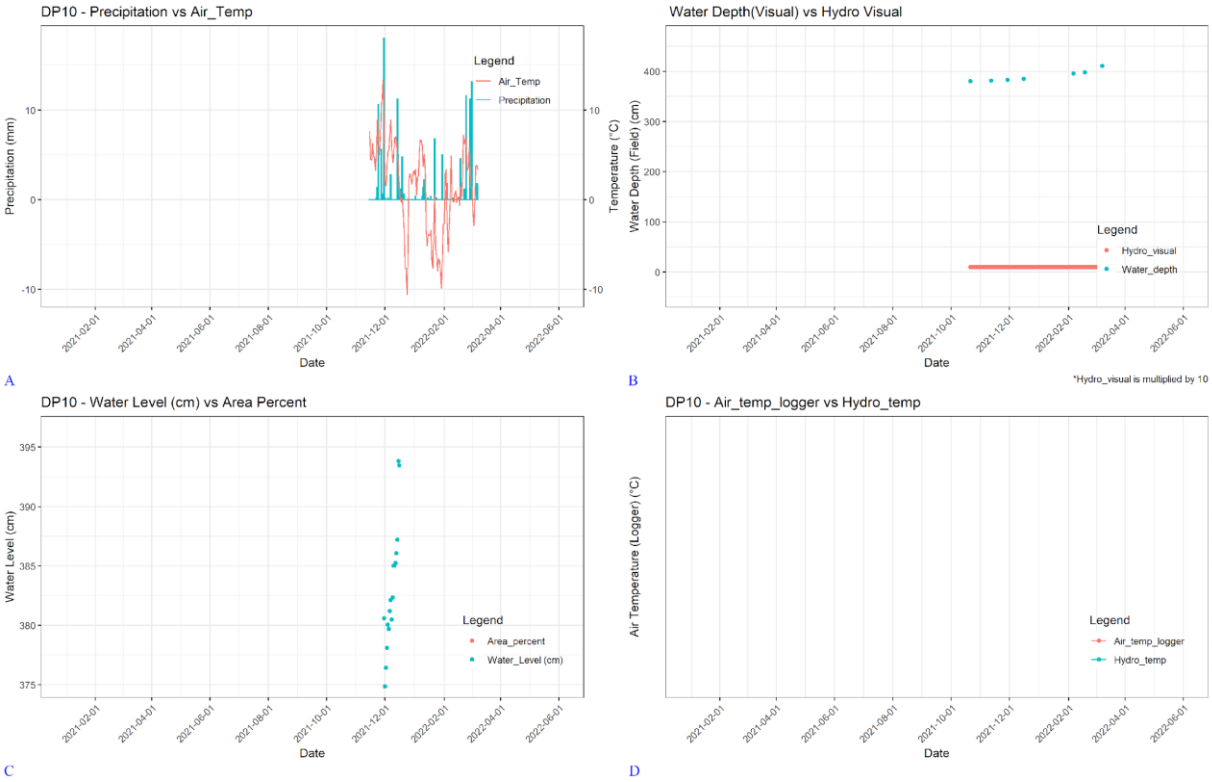
Appendix – 6 - Turkey



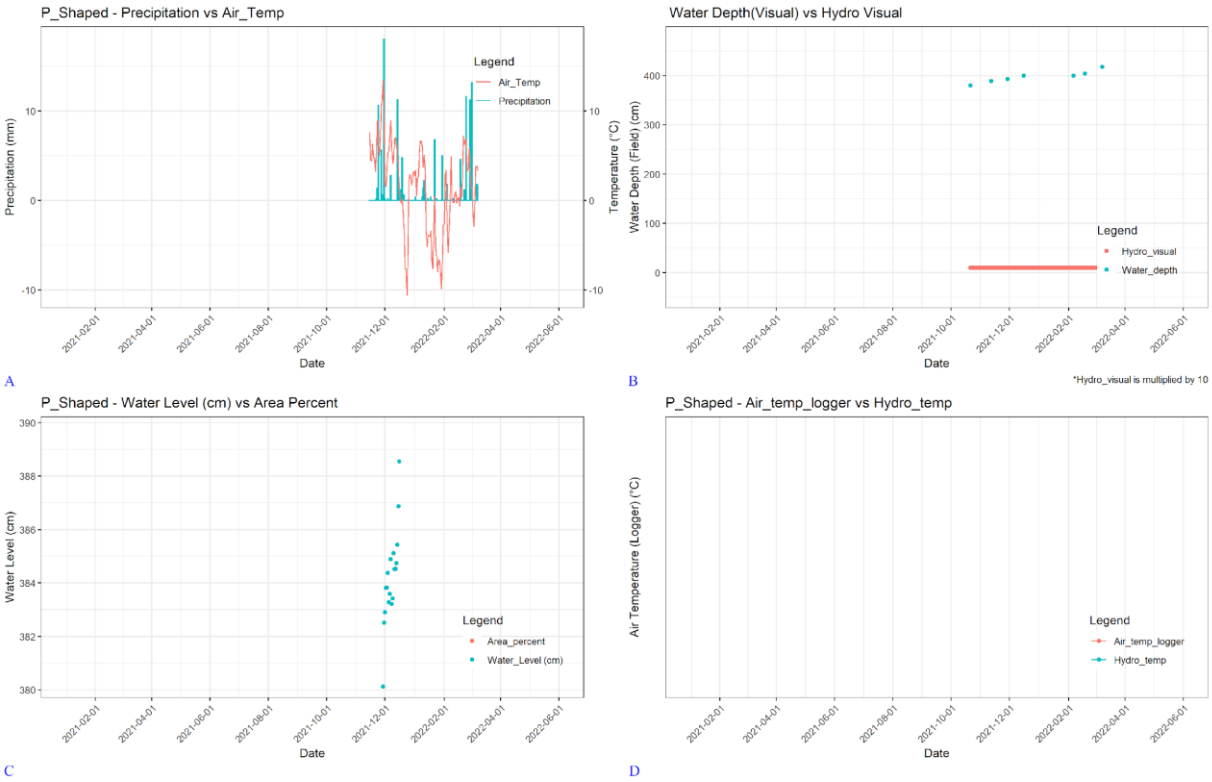
Plot 139. Pond DP2 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable



Plot 140. Pond DP7 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable.

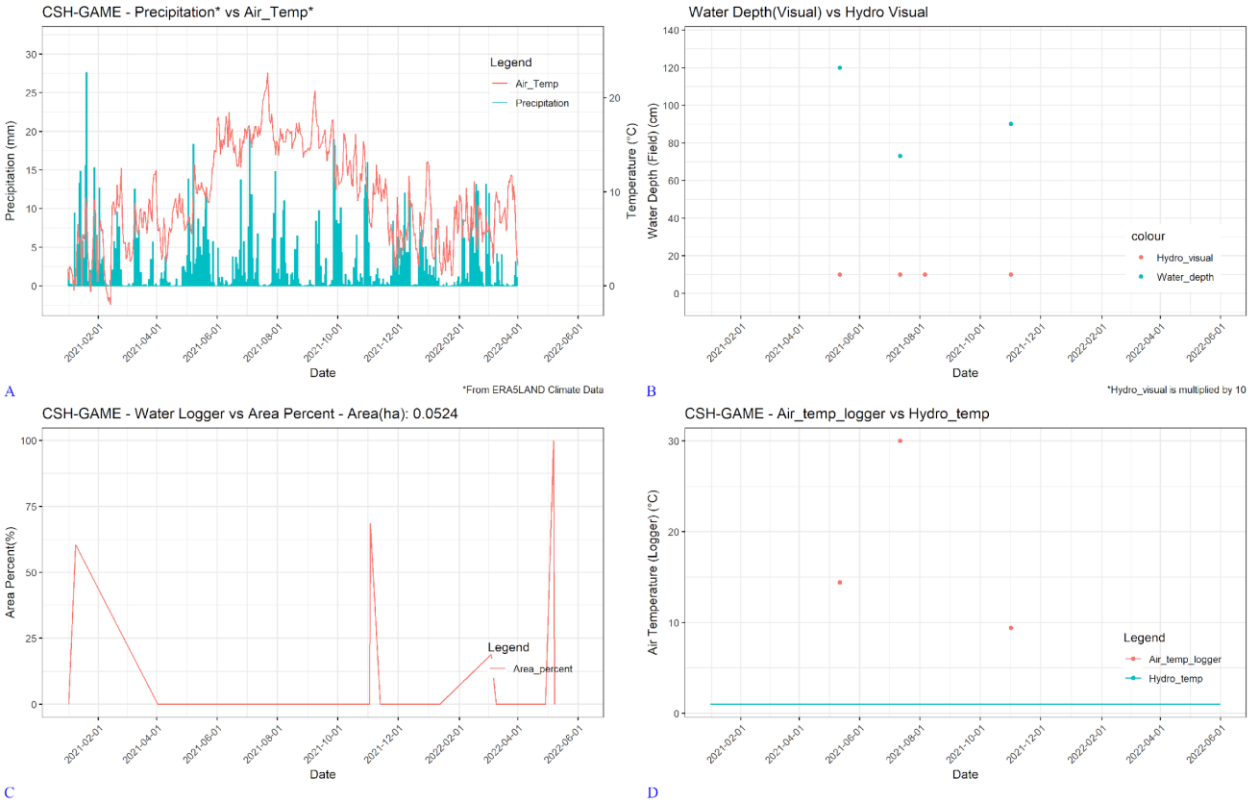


Plot 141. Pond DP10 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable

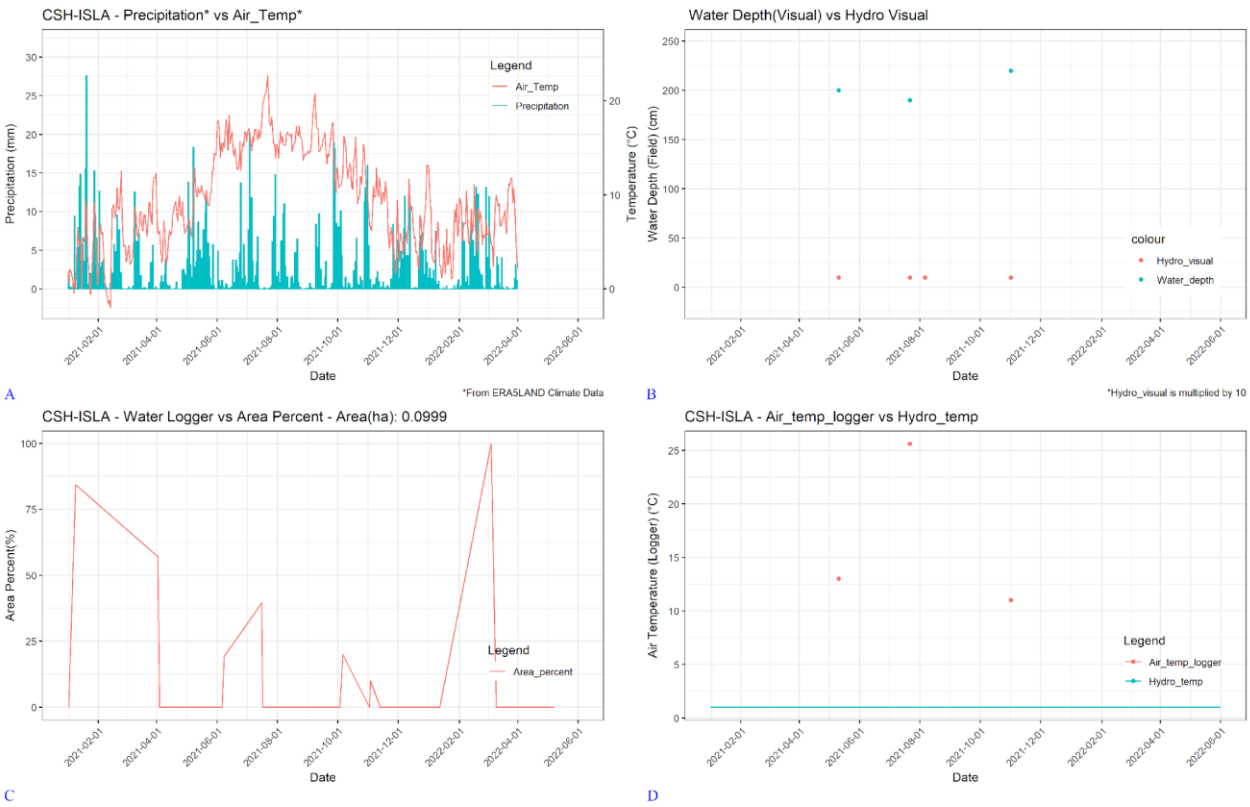


Plot 142. Pond P_Shaped with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable

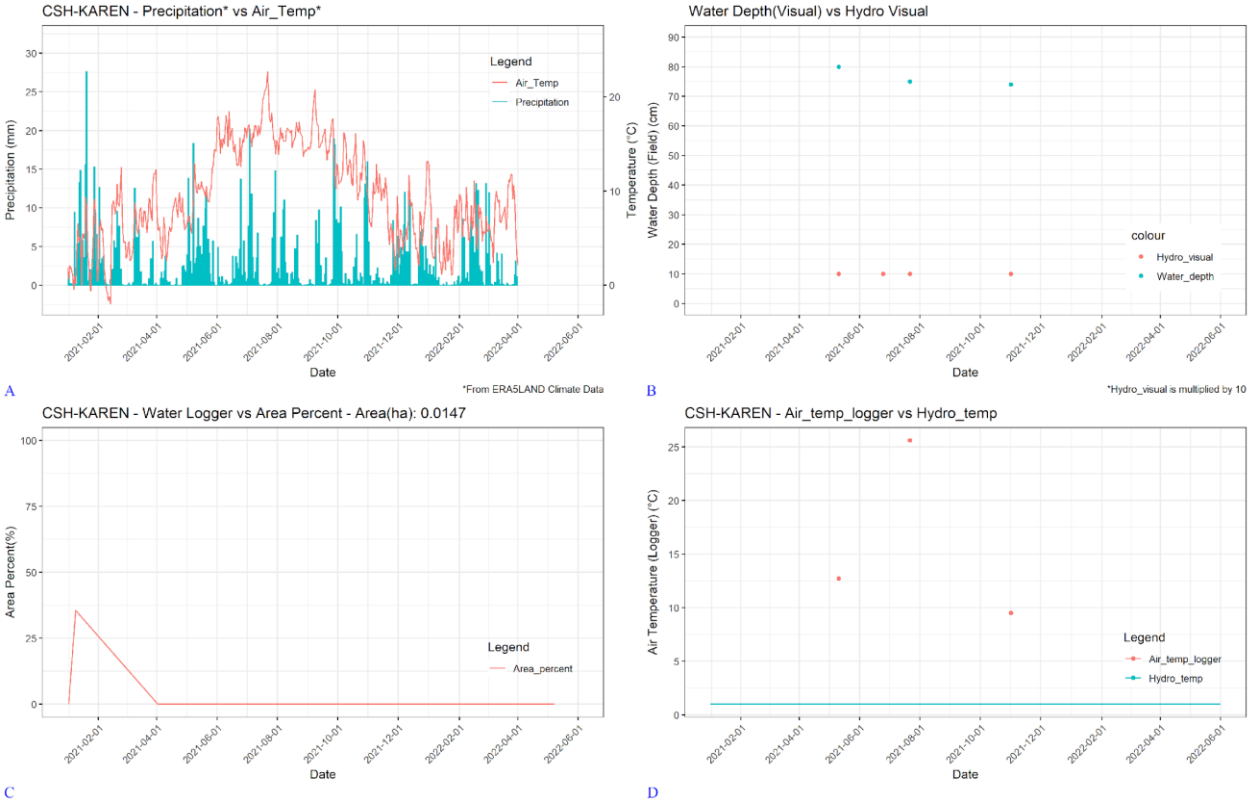
Appendix – 7 – United Kingdom



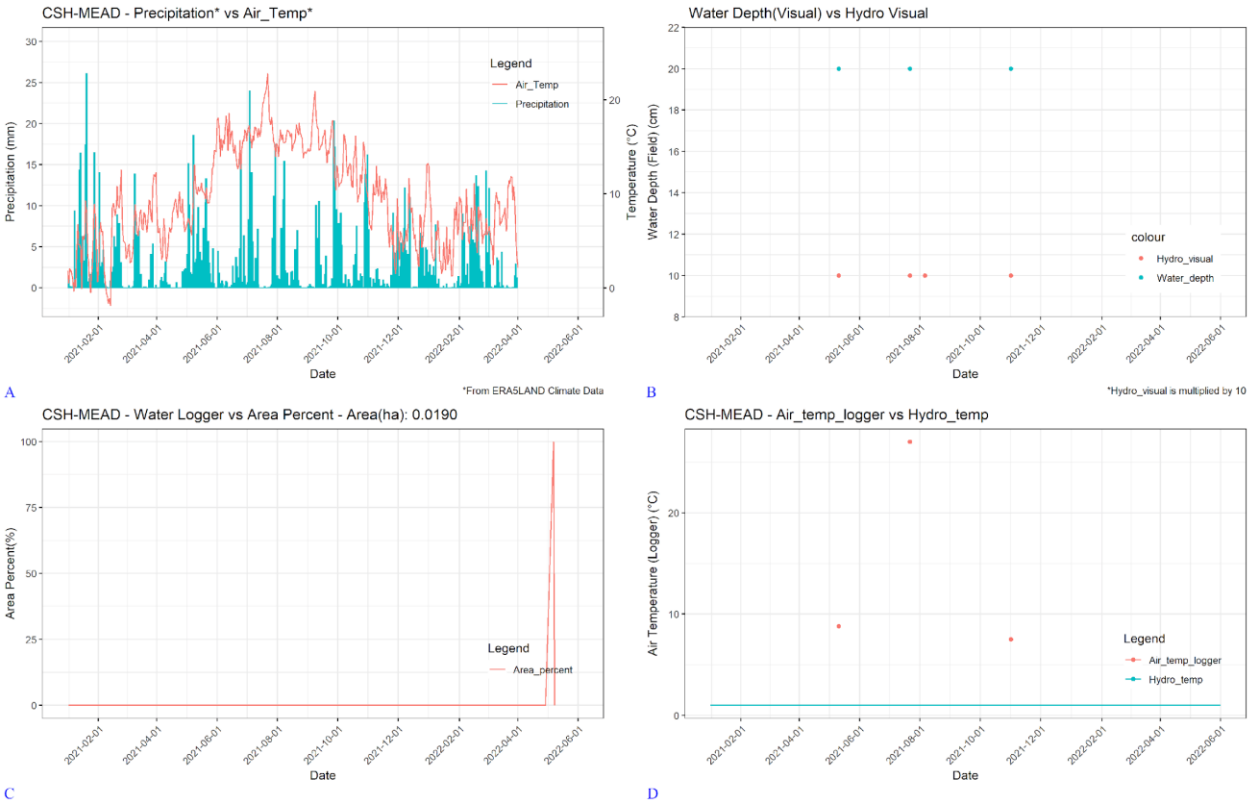
Plot 143. Pond CSH-GAME with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable



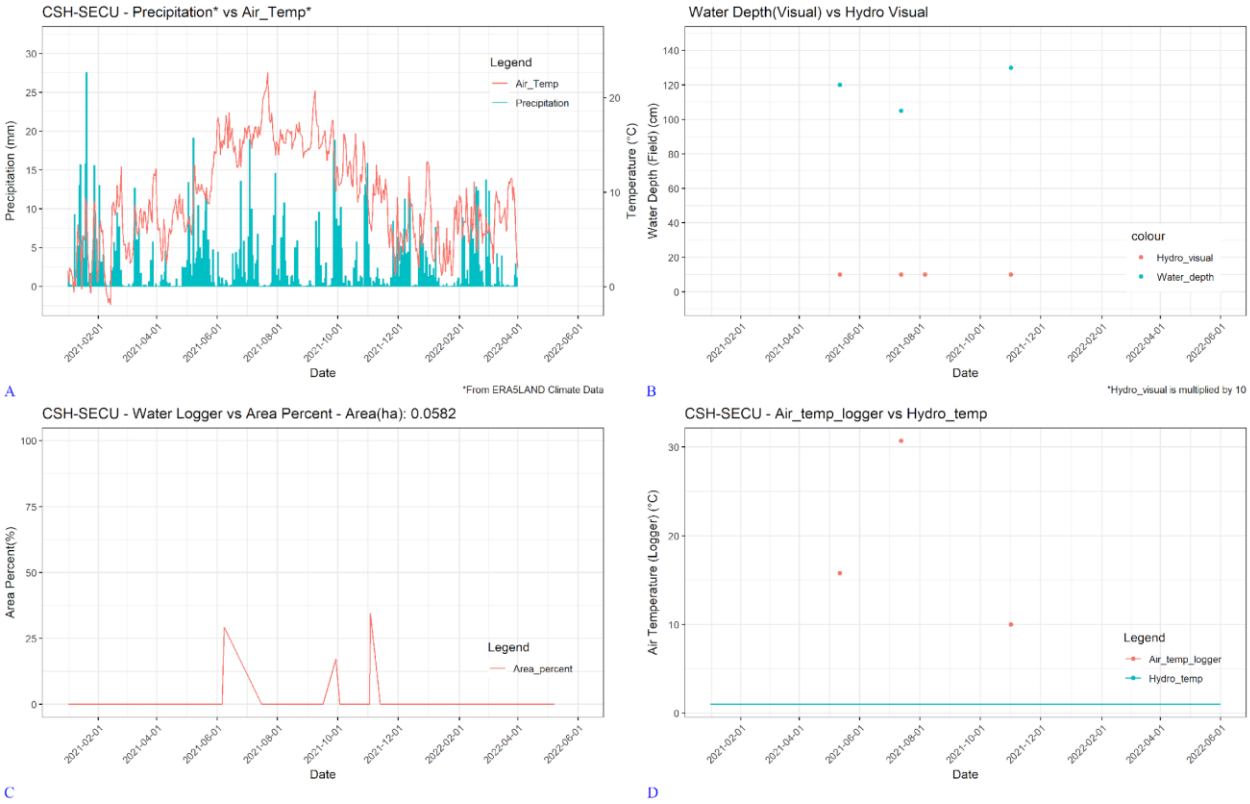
Plot 144. Pond CSH-ISLA with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable



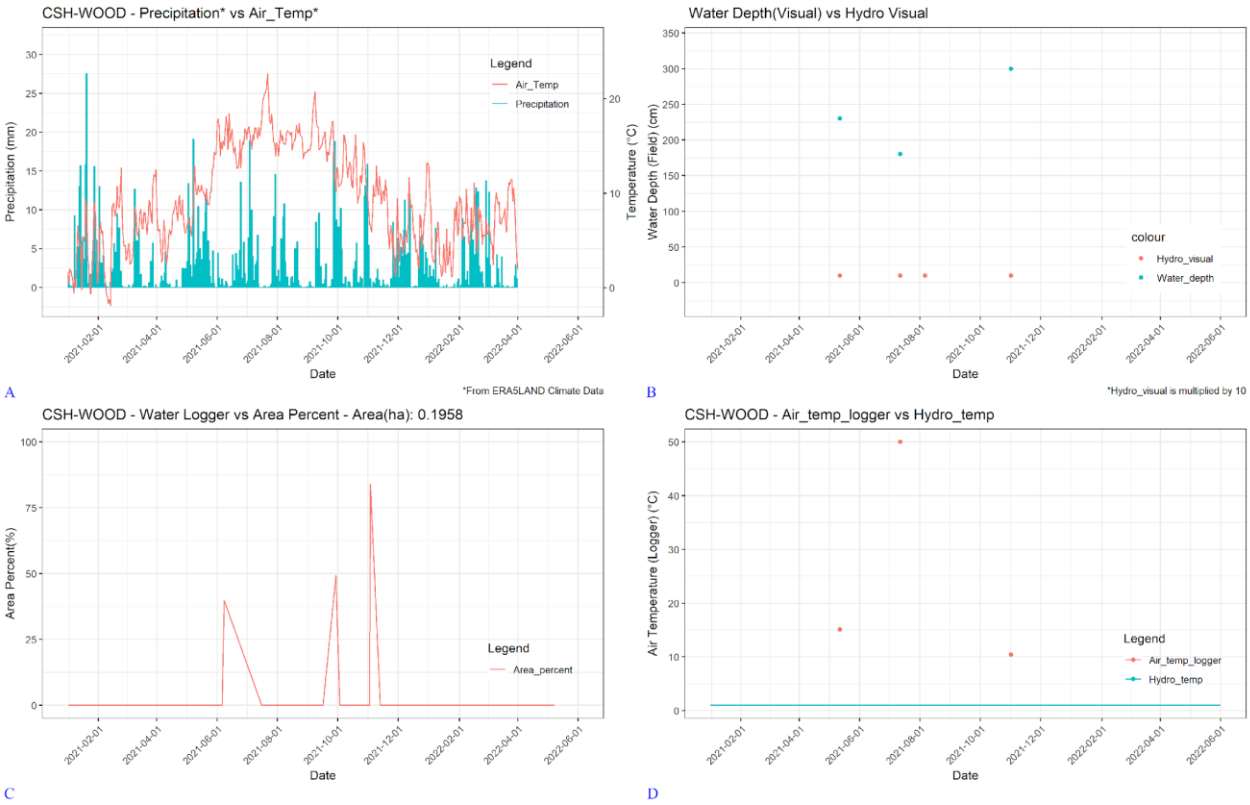
Plot 145. Pond CSH-KAREN with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable



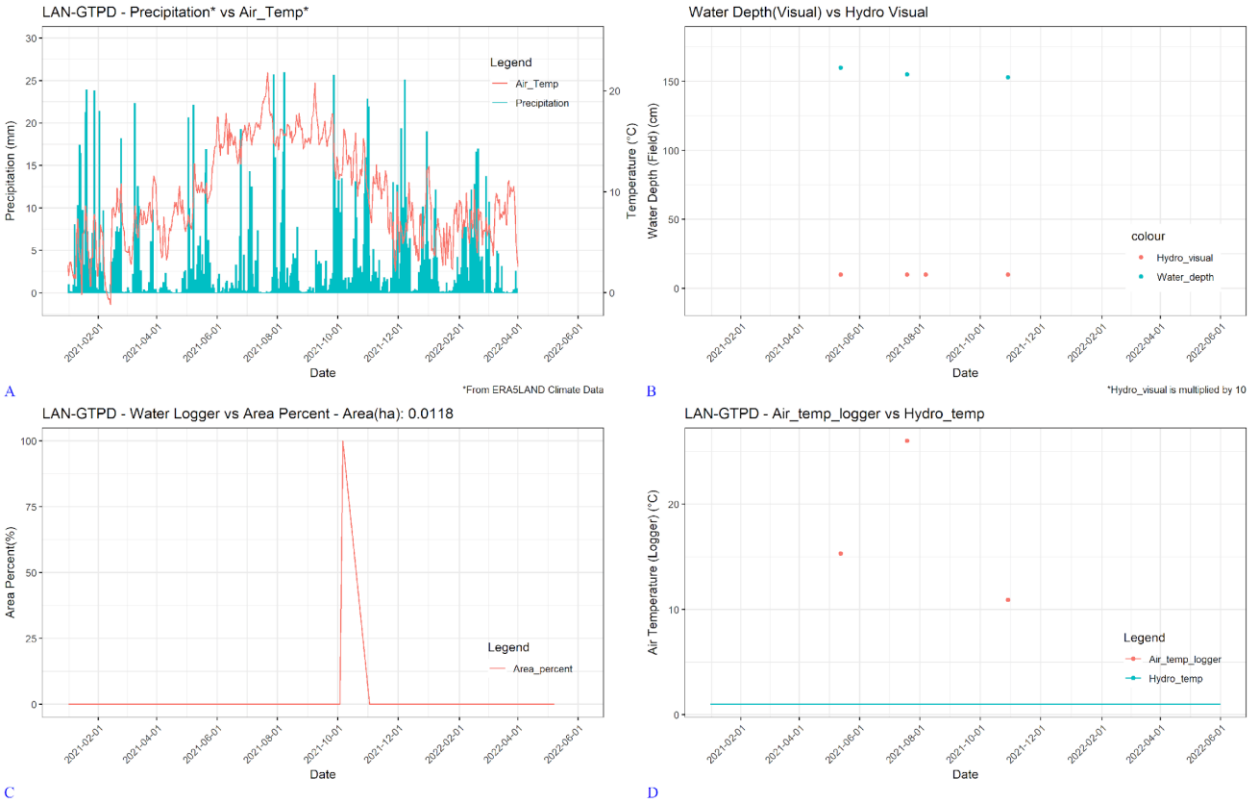
Plot 146. Pond CSH-MEAD with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable



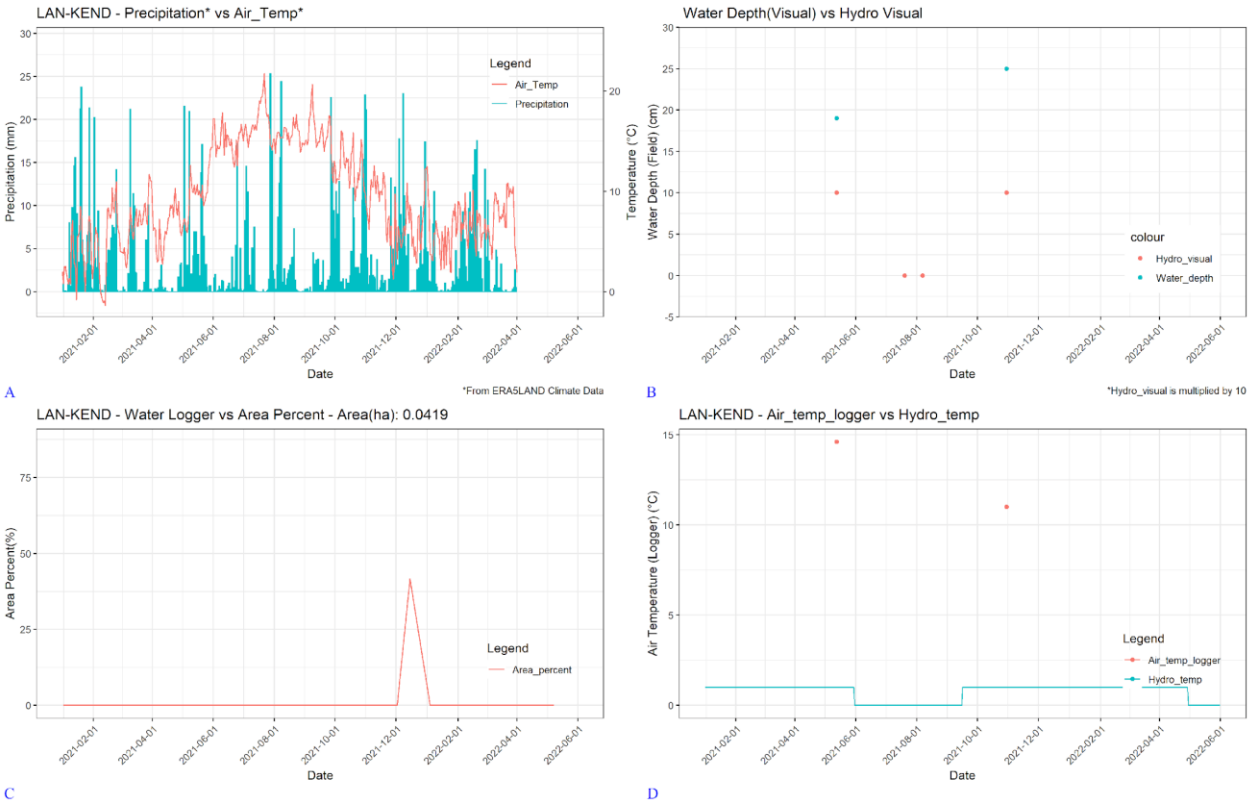
Plot 147. Pond CSH-SECU with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable



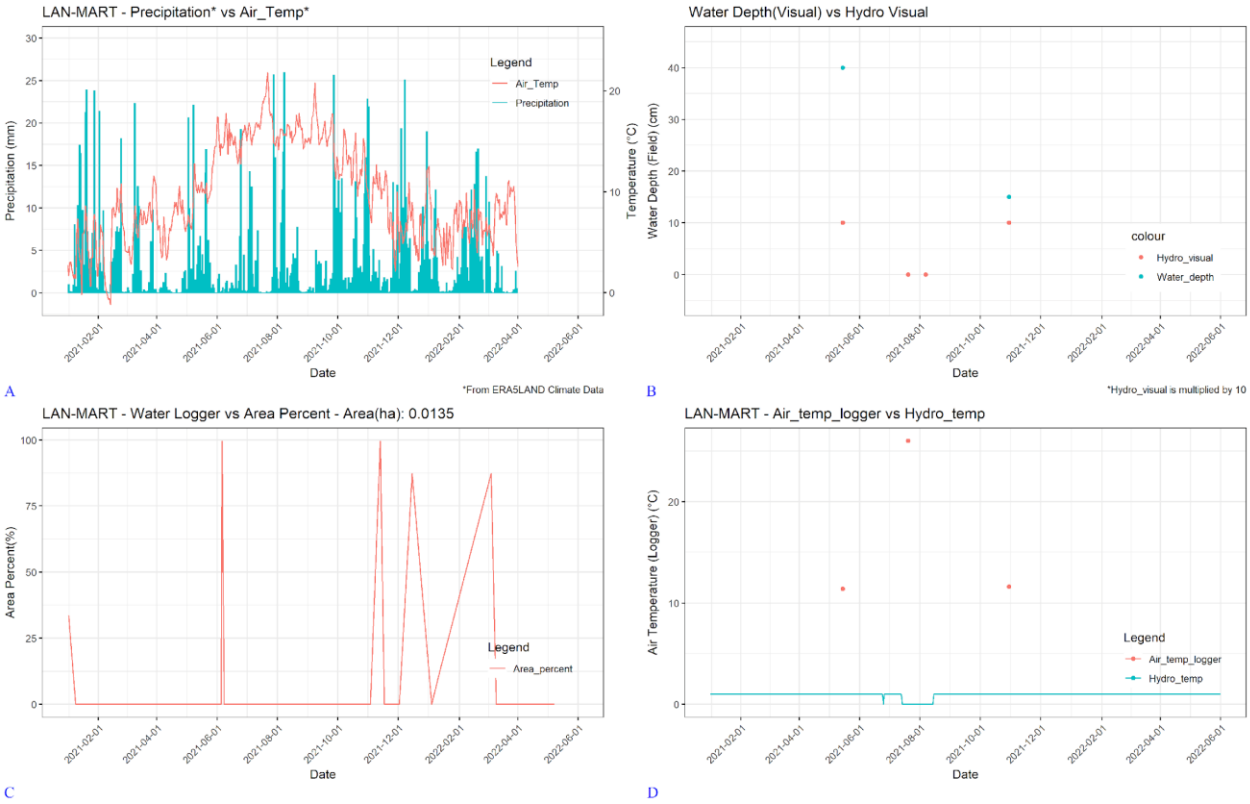
Plot 148. Pond CSH-WOOD with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable



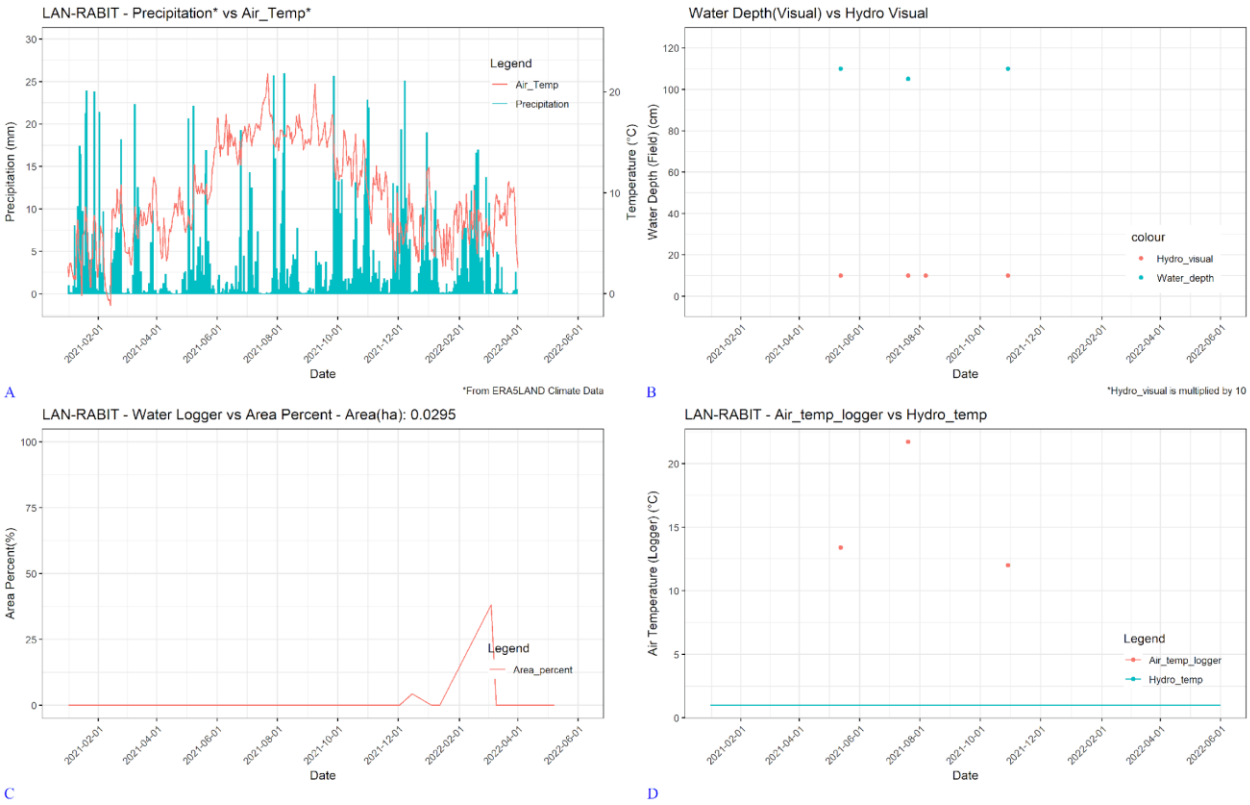
Plot 149. Pond LAN-GTPD with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable



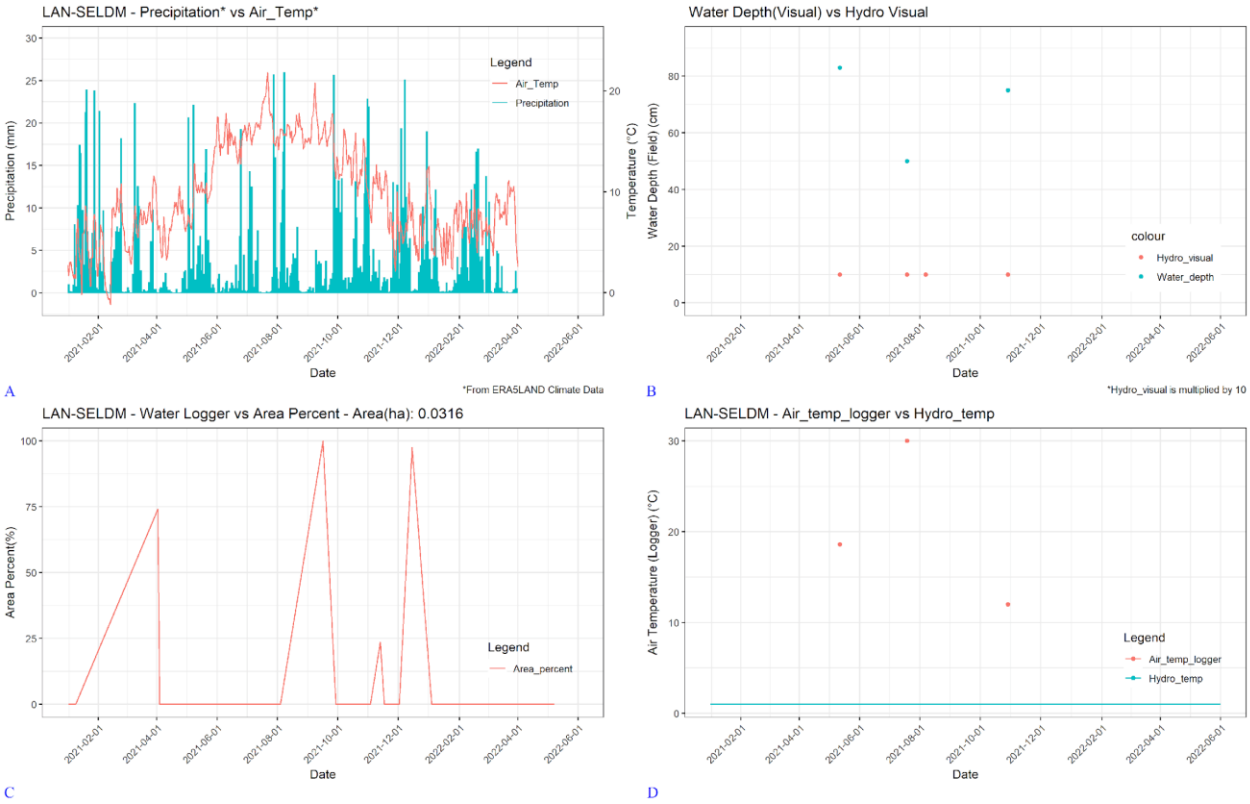
Plot 150. Pond LAN-KEND with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable



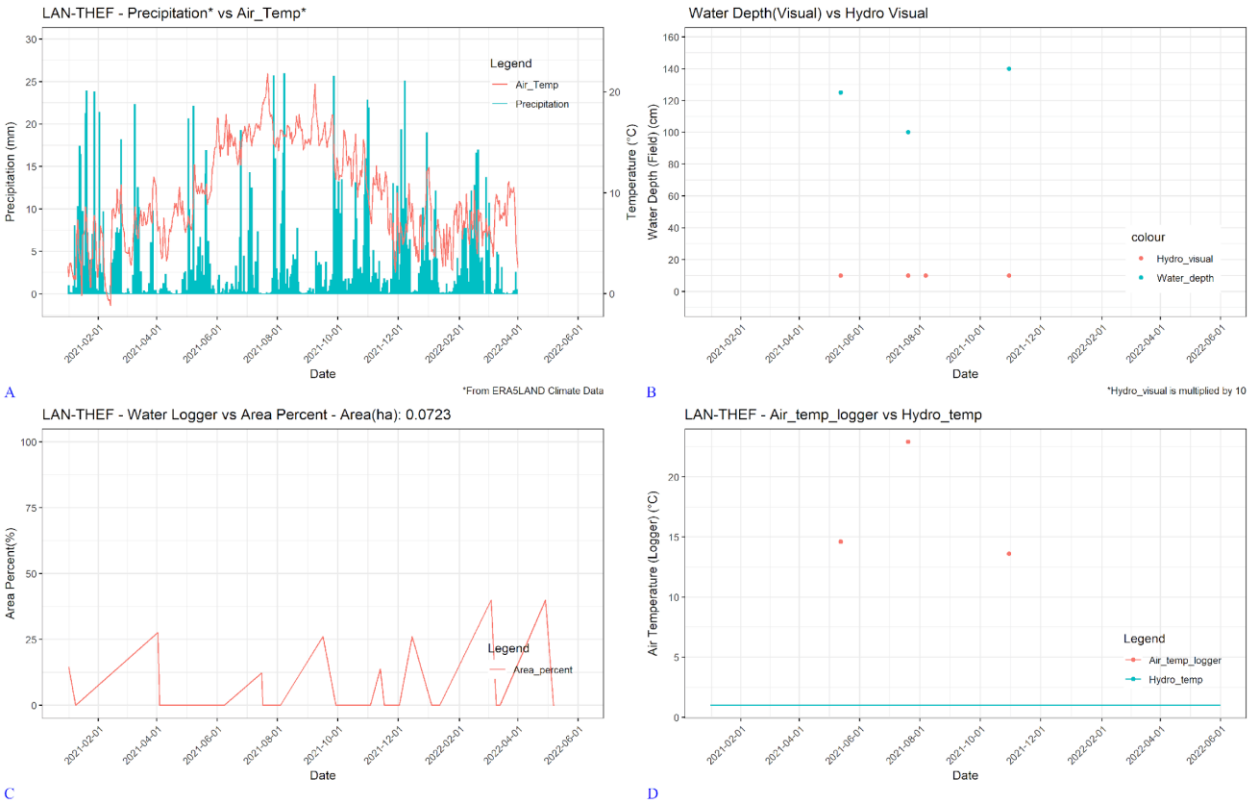
Plot 151. Pond LAN-MART with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable



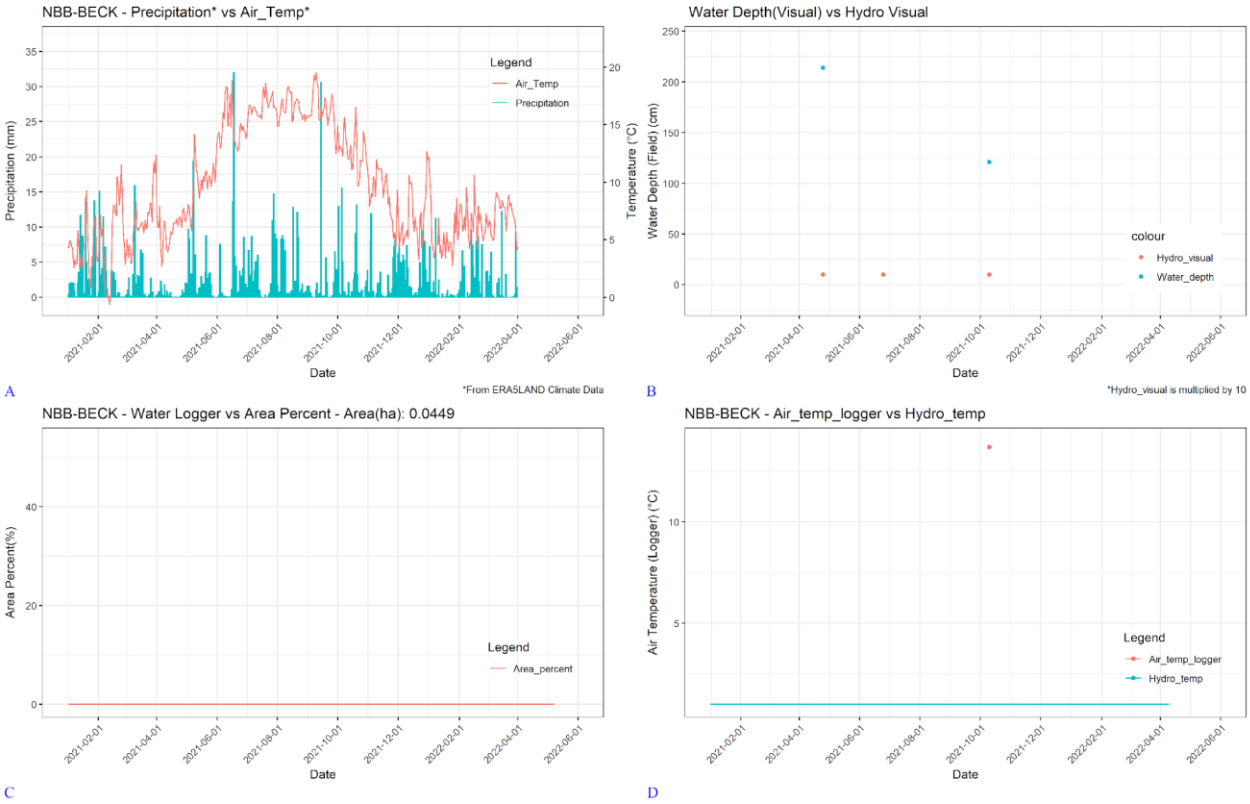
Plot 152. Pond LAN-RABIT with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable



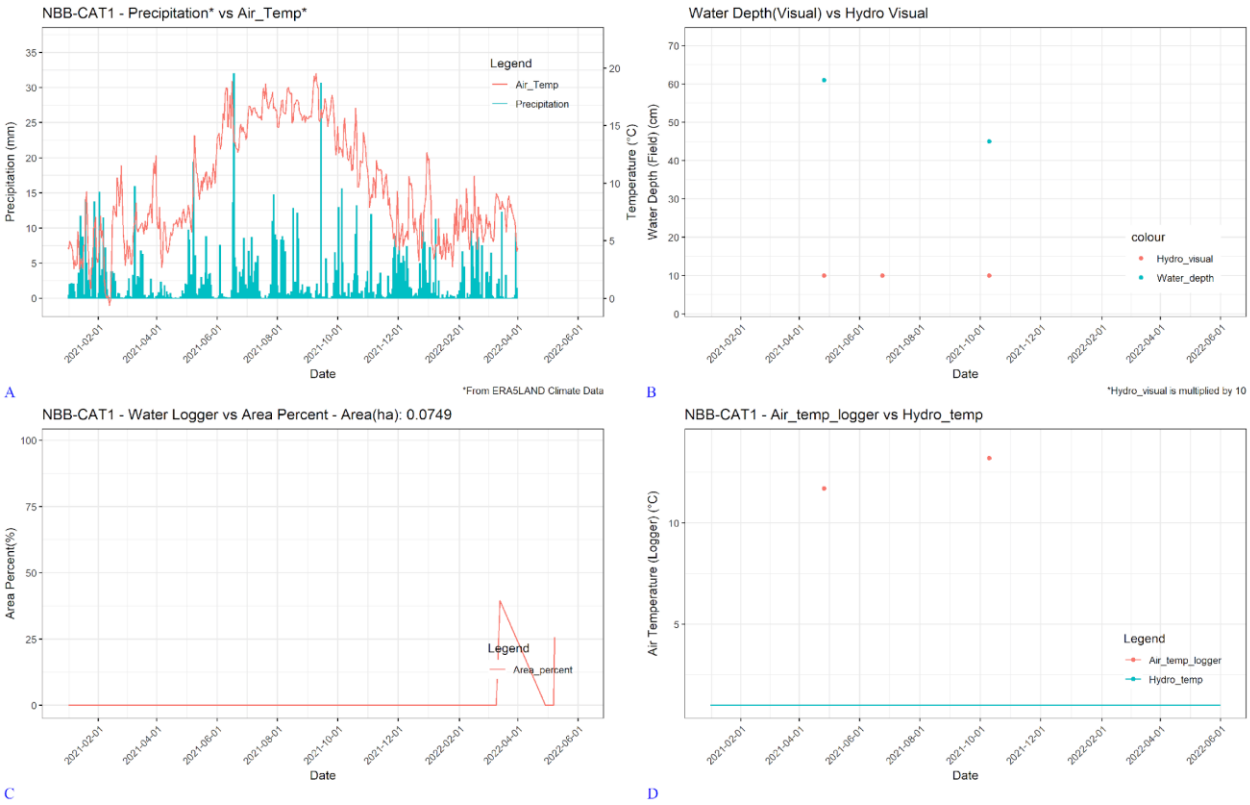
Plot 153. Pond LAN-SELDM with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable



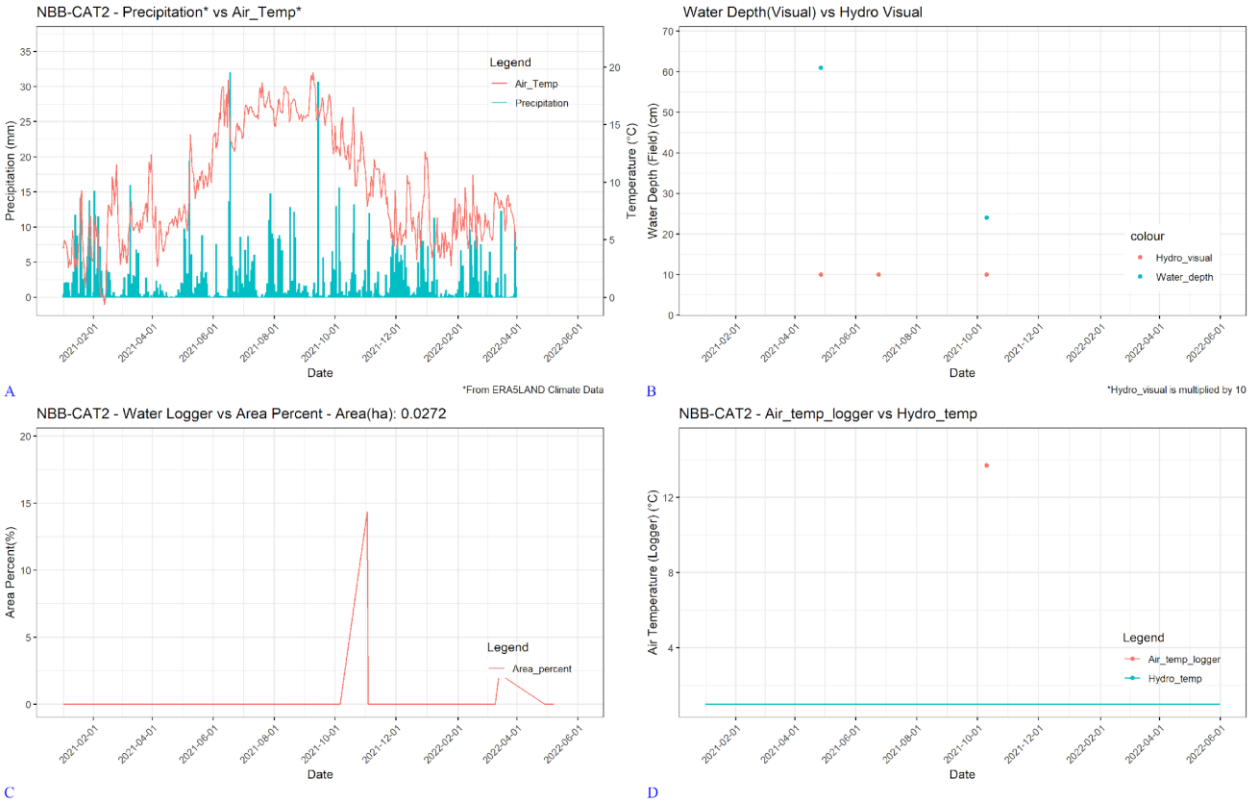
Plot 154. Pond LAN-THEF with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable



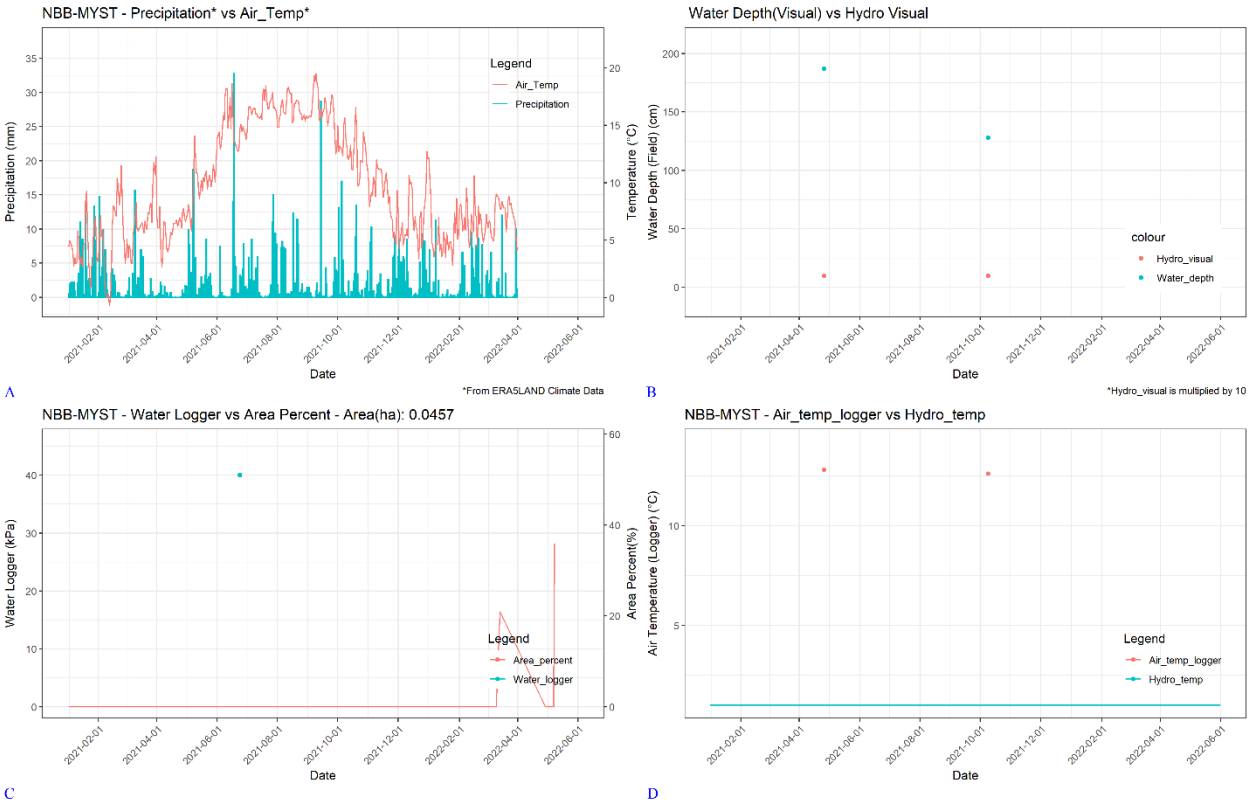
Plot 155. Pond NBB-BECK with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable



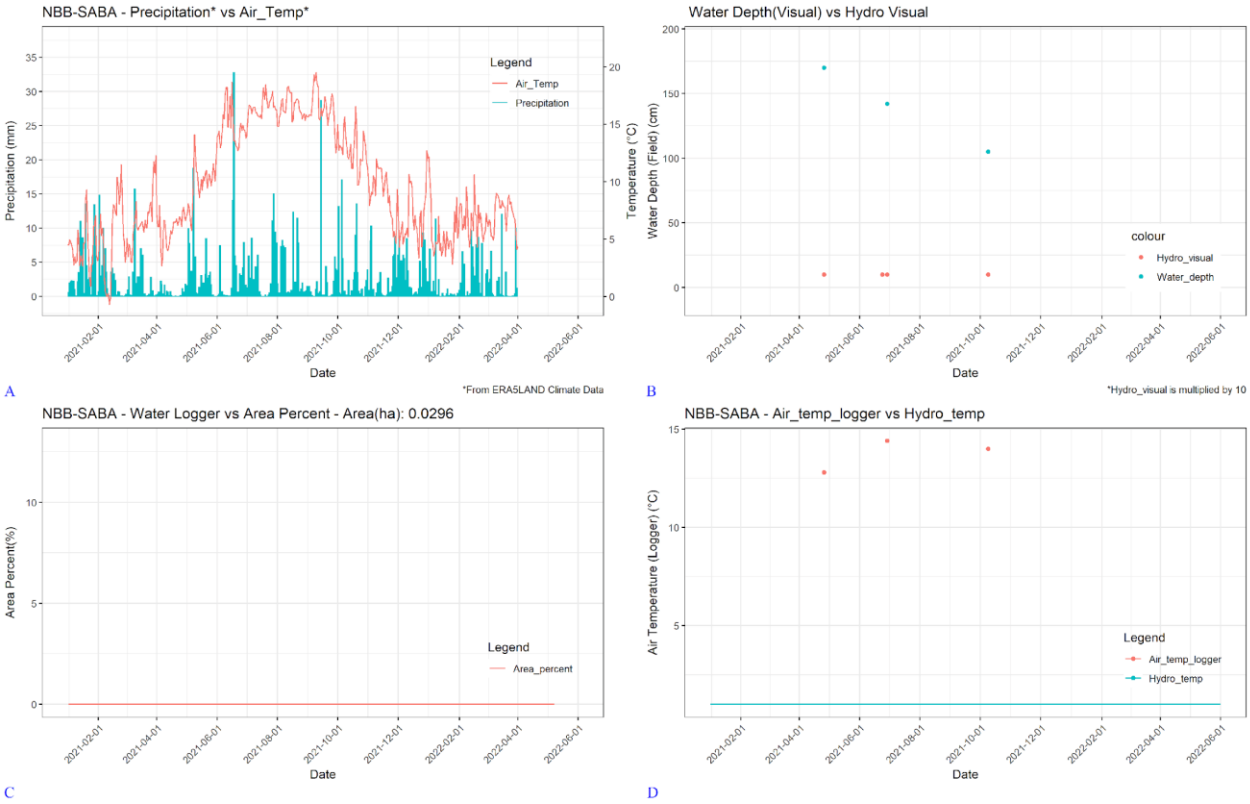
Plot 156. Pond NBB-CAT1 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable



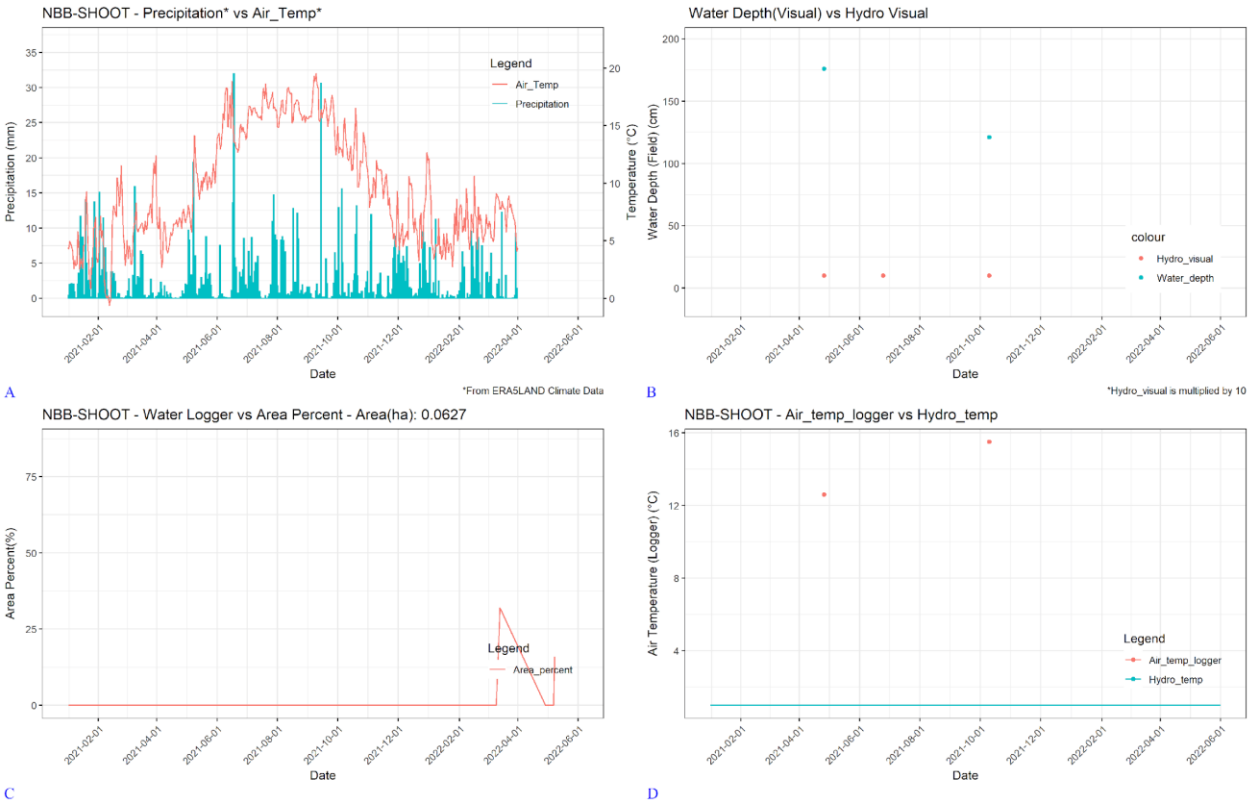
Plot 157. Pond NBB-CAT2 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable



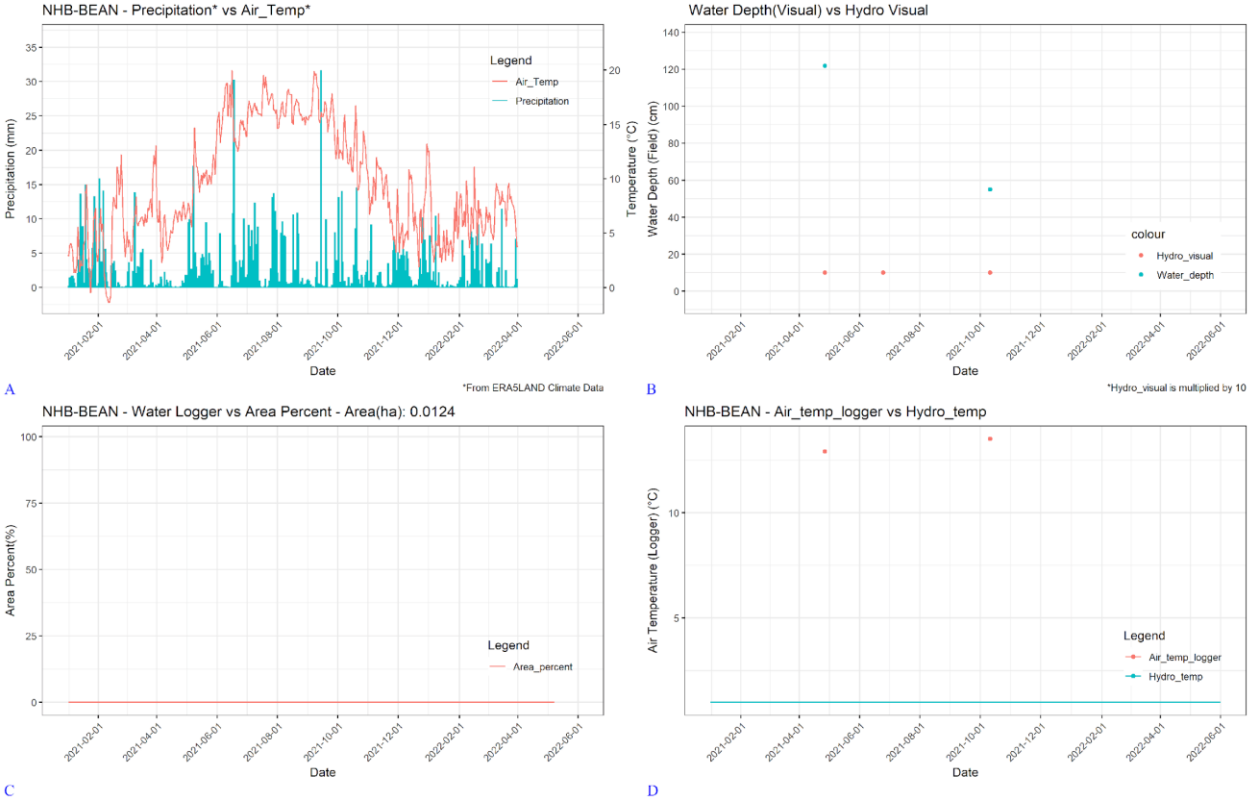
Plot 158. Pond NBB-MYST with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable



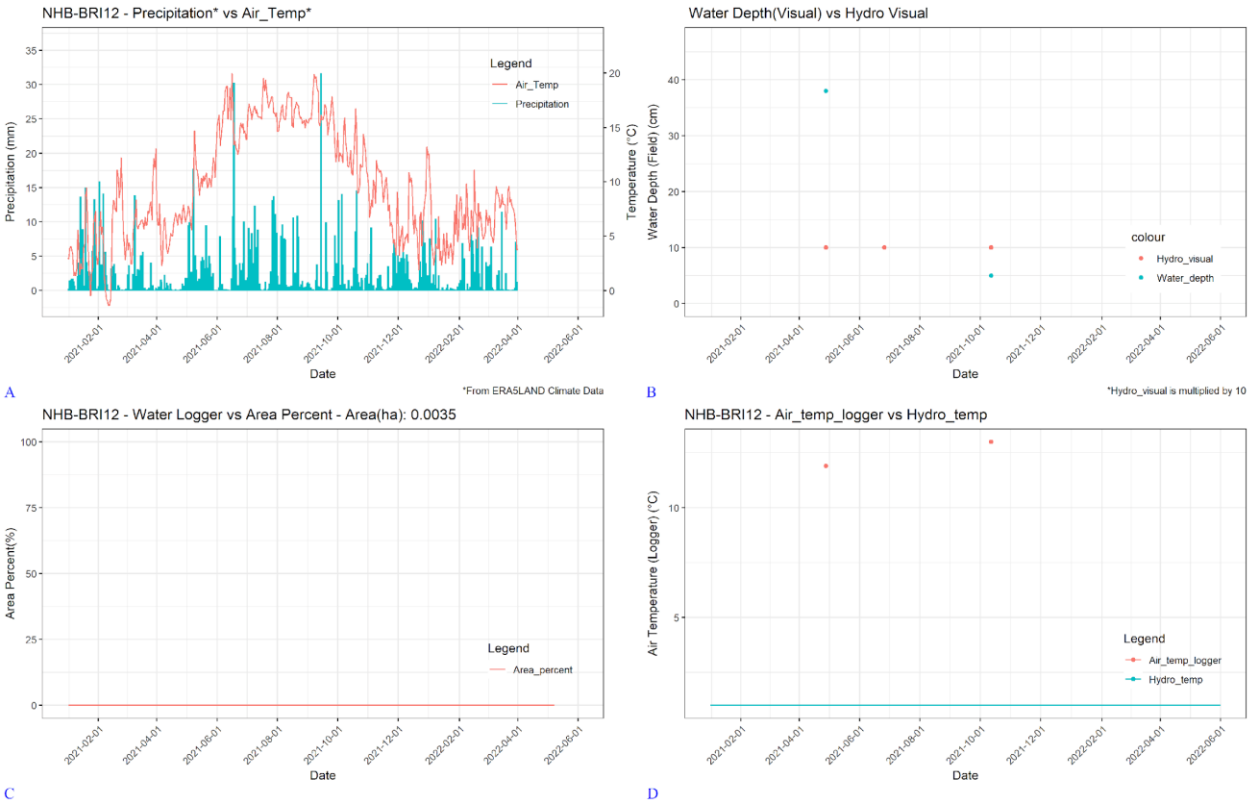
Plot 159. Pond NBB-SABA with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable



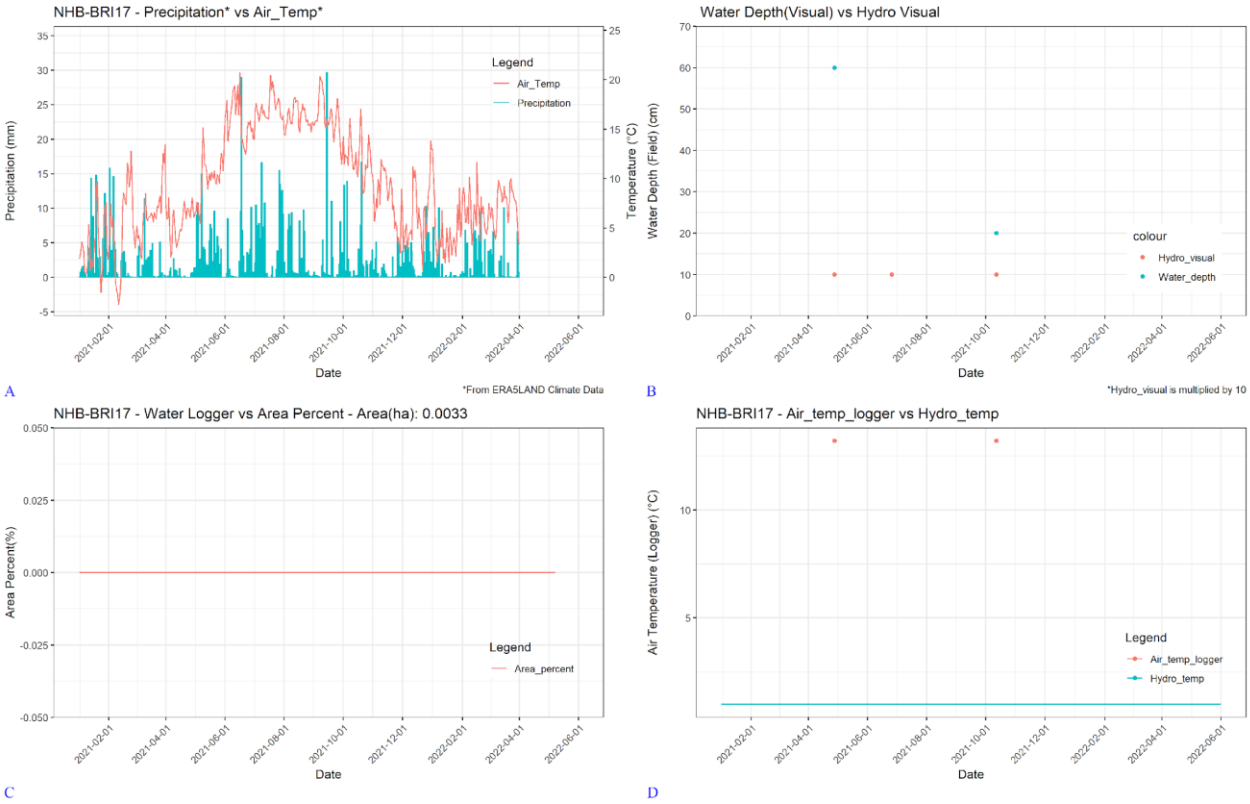
Plot 160. Pond NBB-SHOOT with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable



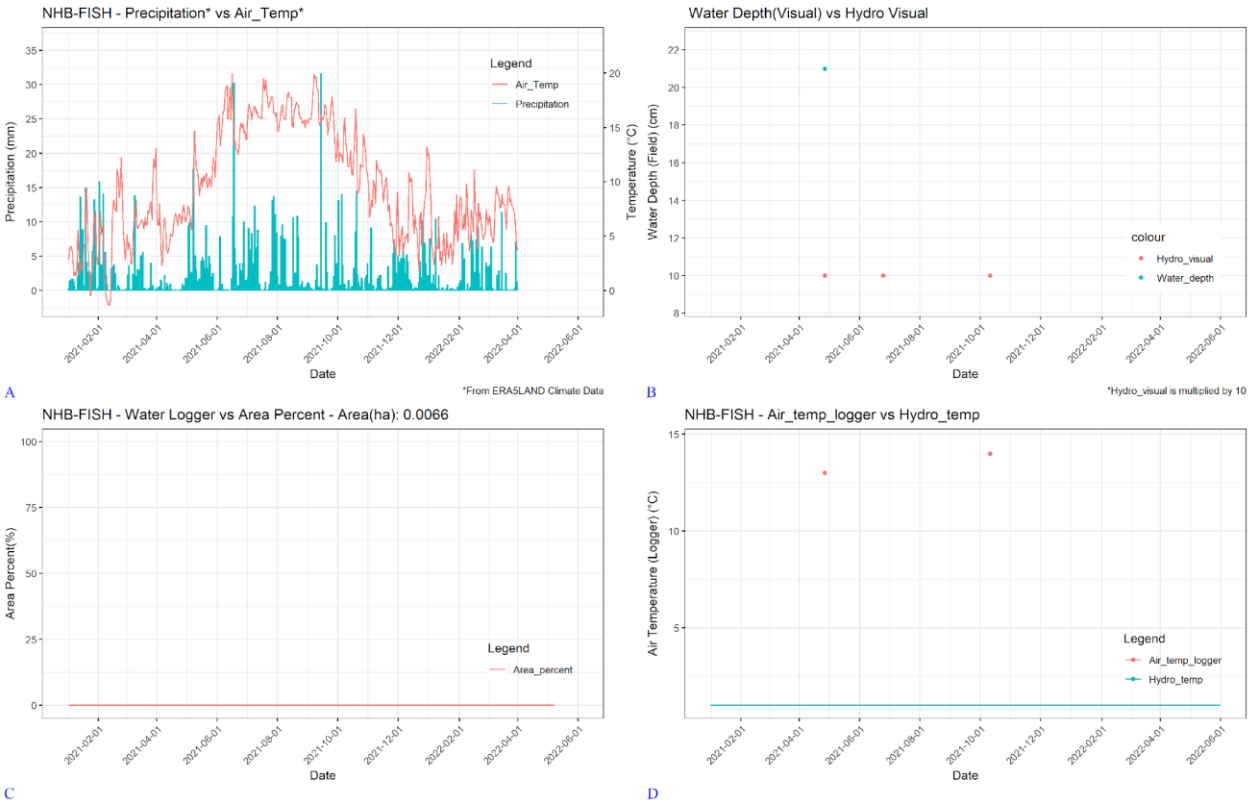
Plot 161. Pond NHB-BEAN with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable



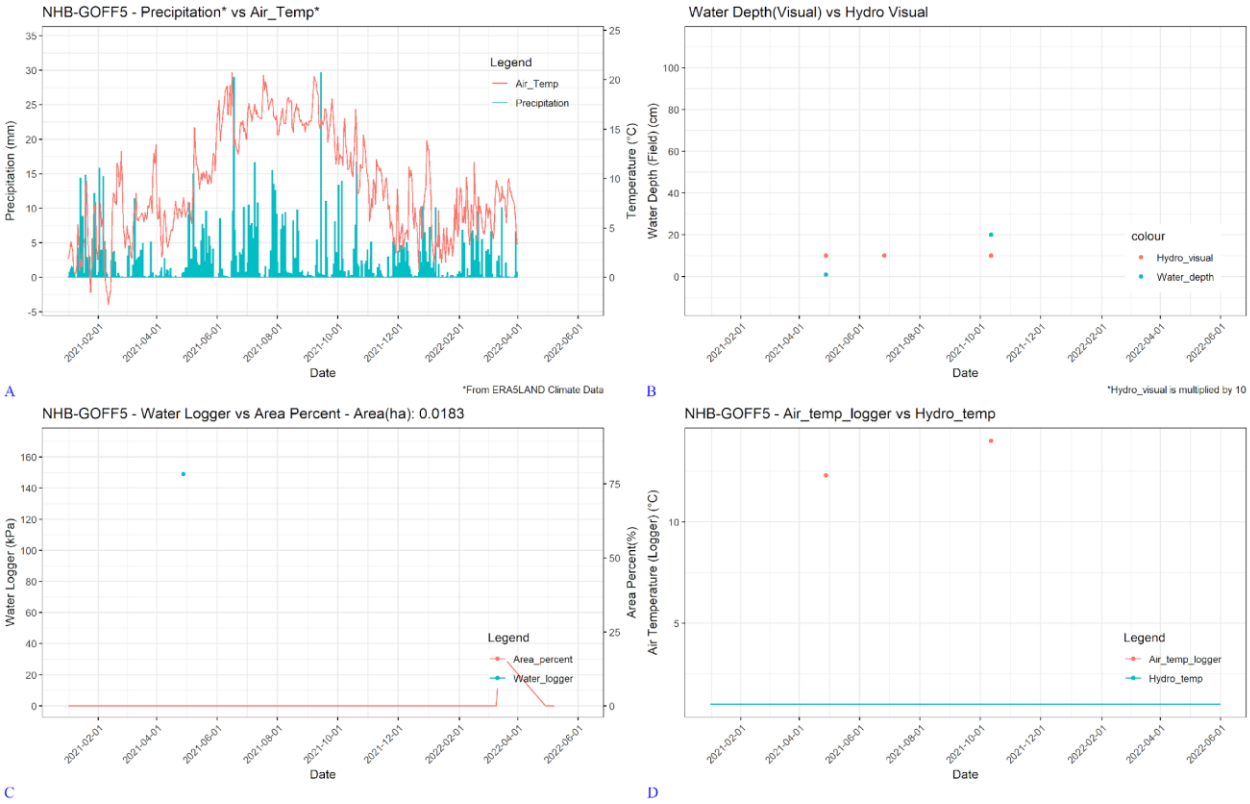
Plot 162. Pond NHB-BRI12 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable



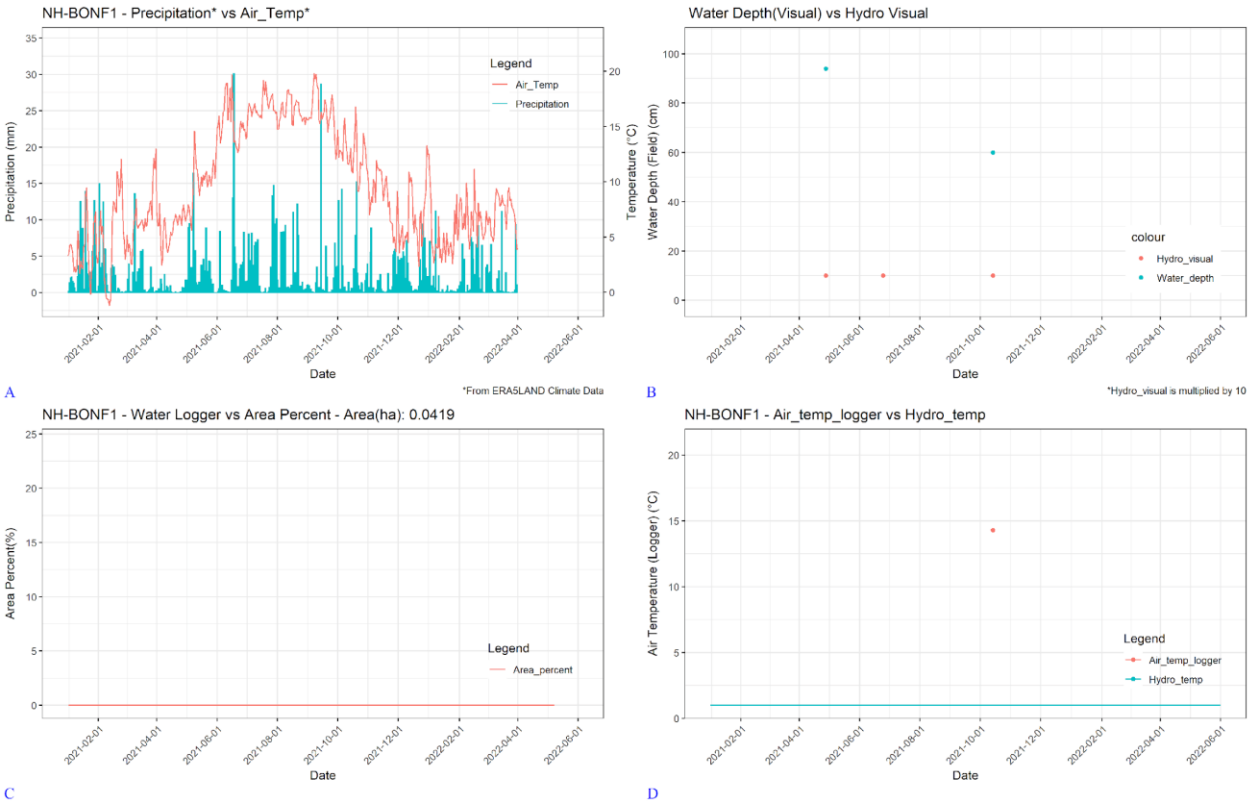
Plot 163. Pond NHB-BRI17 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable



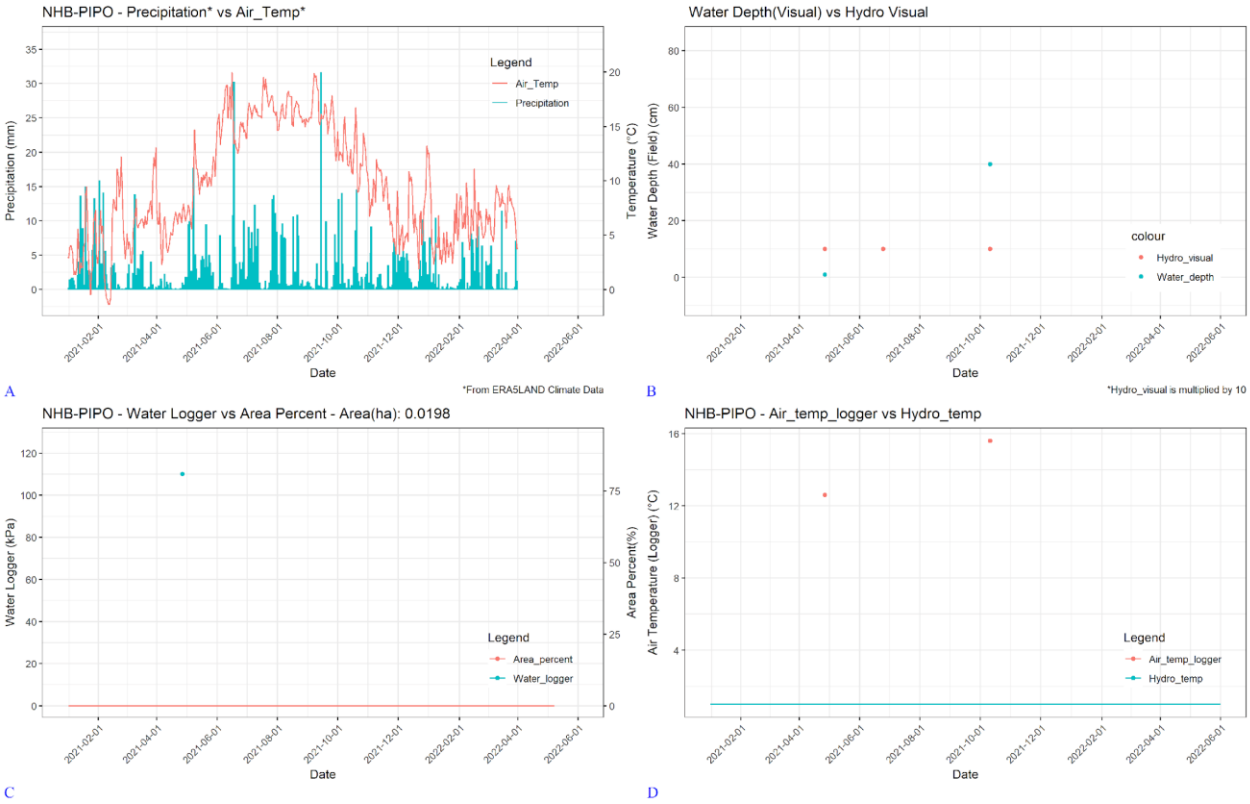
Plot 164. Pond NHB-FISH with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable



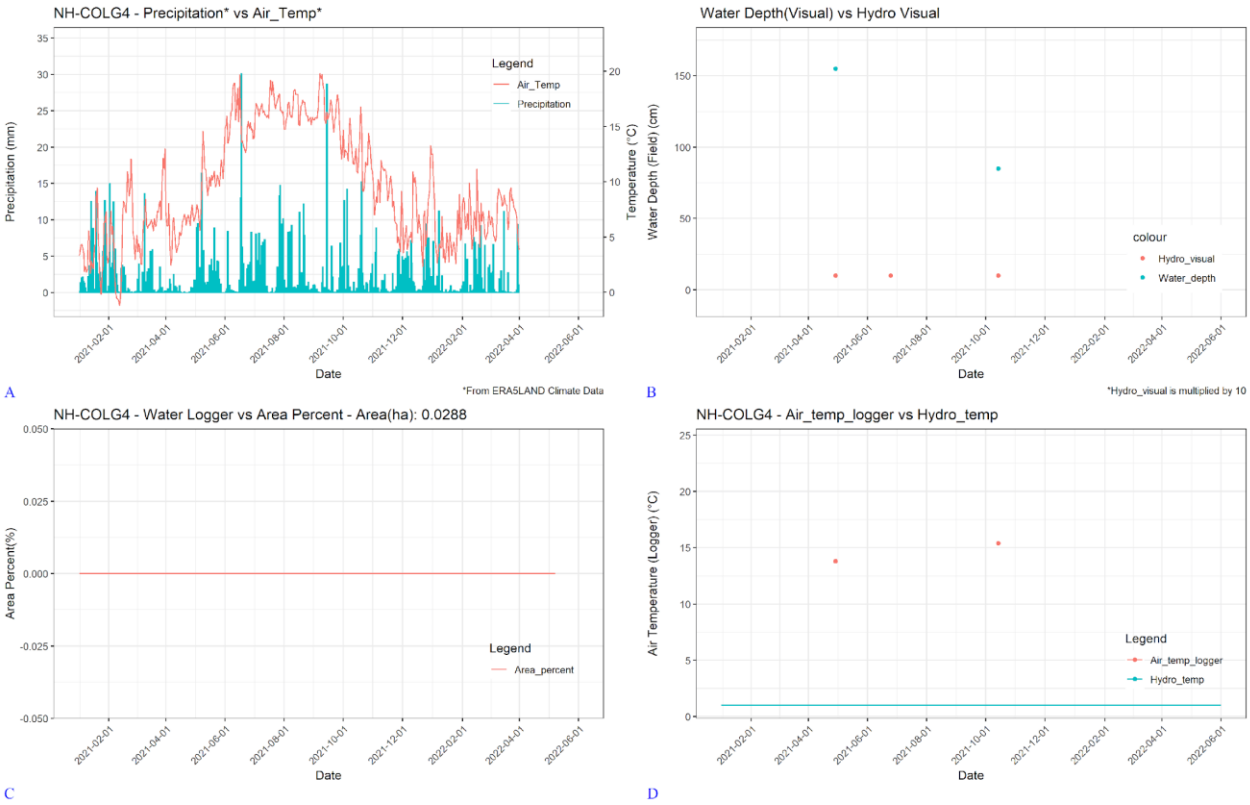
Plot 165. Pond NHB-GOFF5 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable



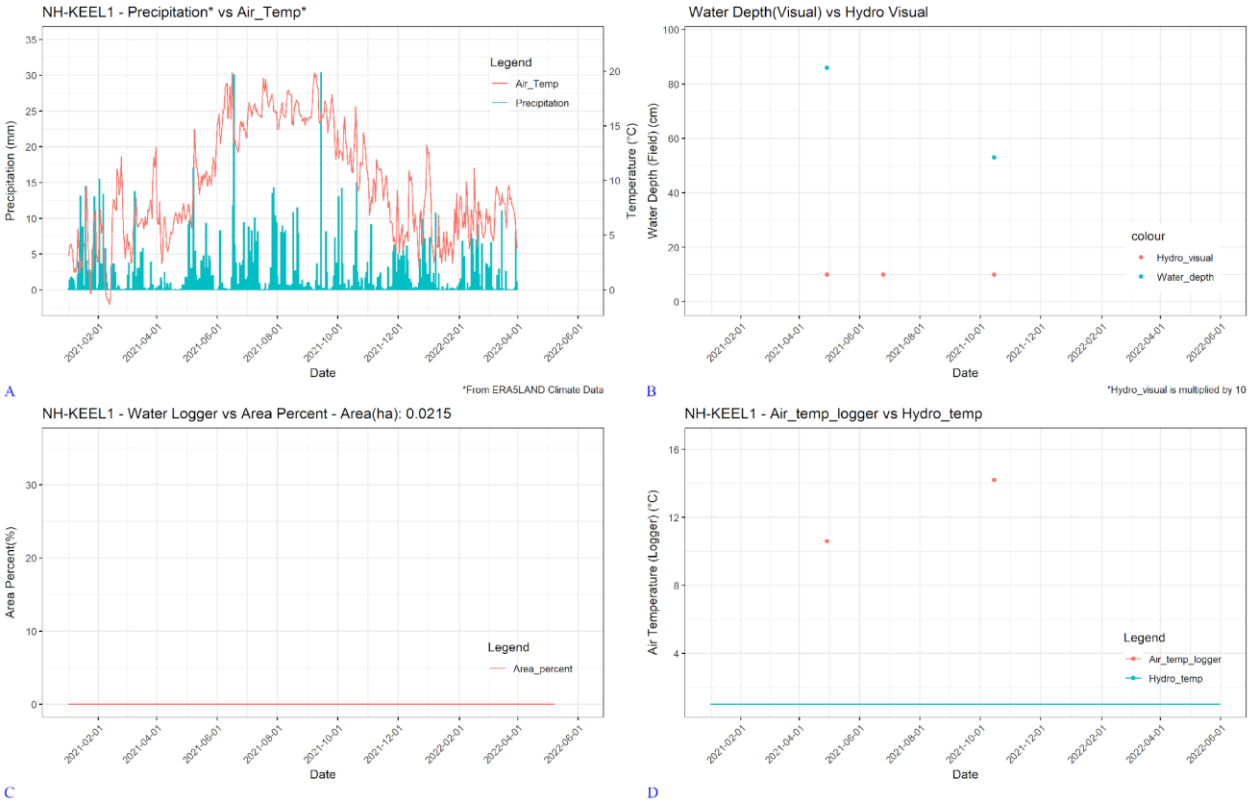
Plot 166. Pond NH-BONF1 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable



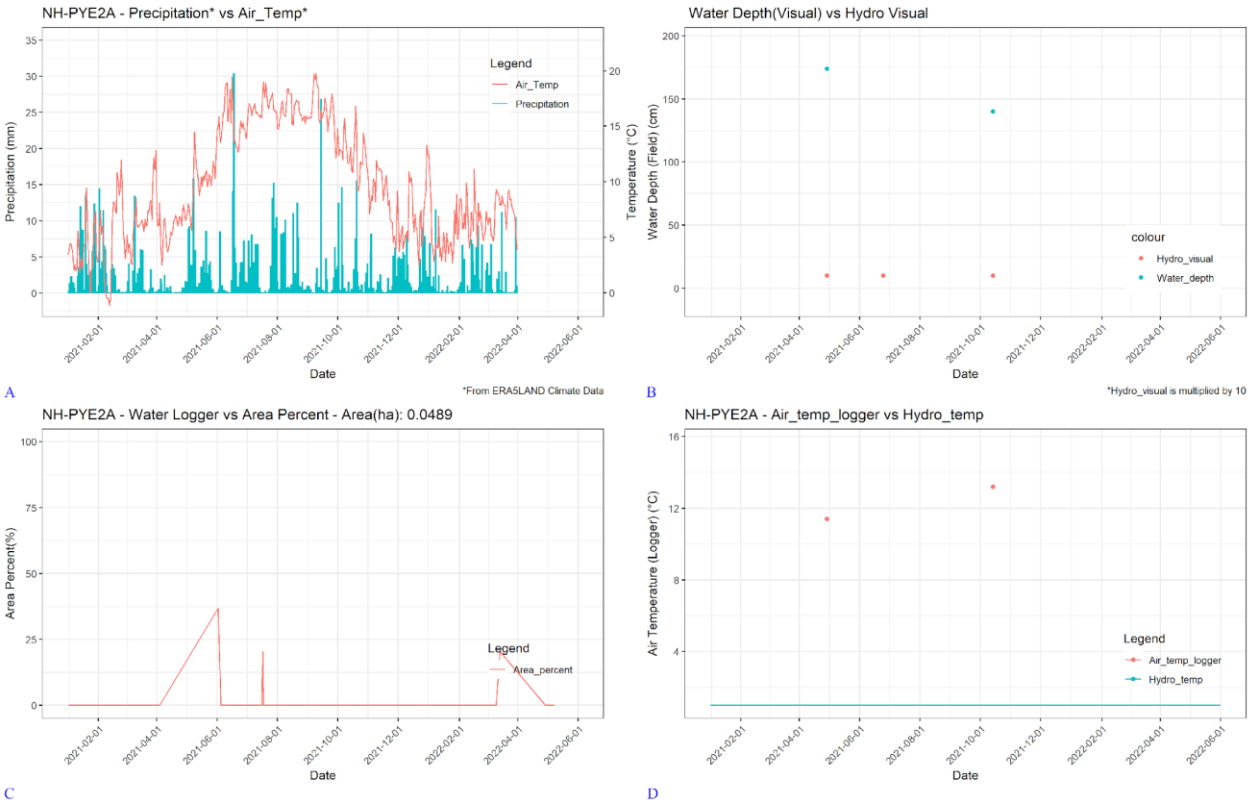
Plot 167. Pond NHB-PIPO with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable



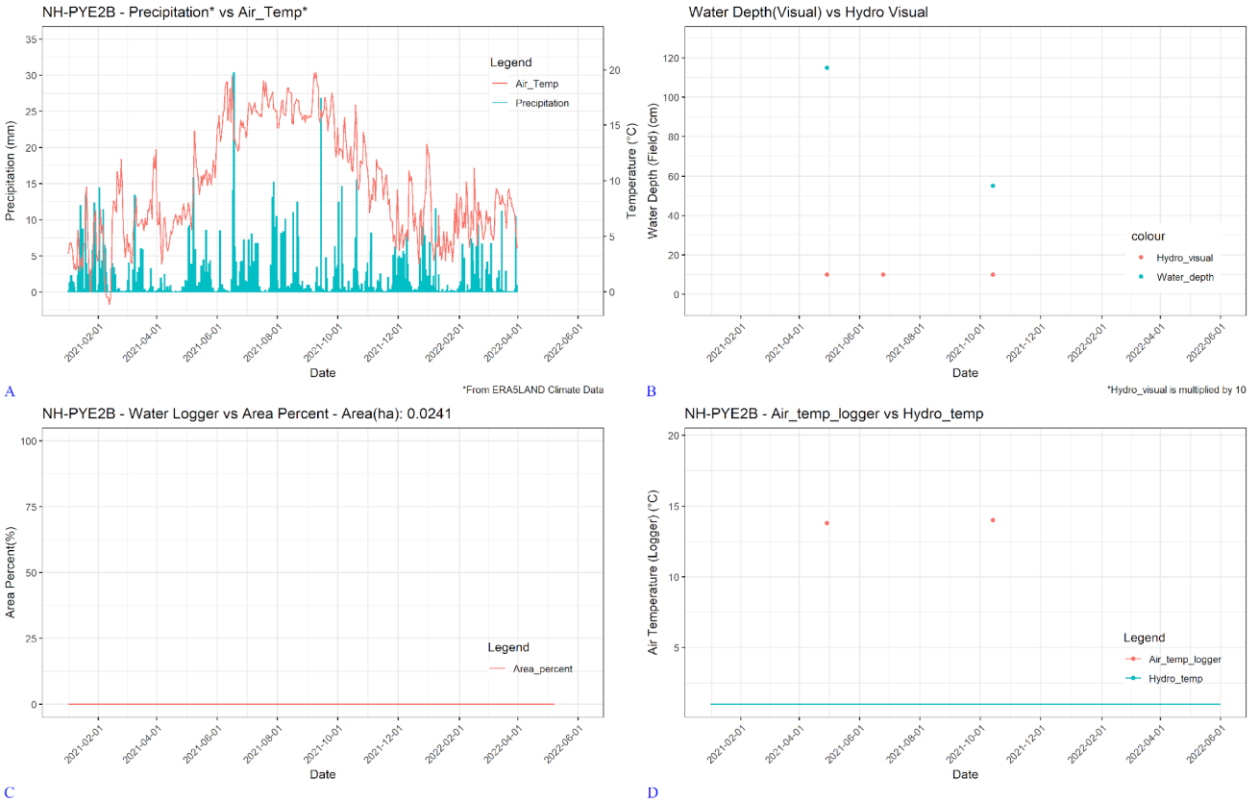
Plot 168. Pond NH-COLG4 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable



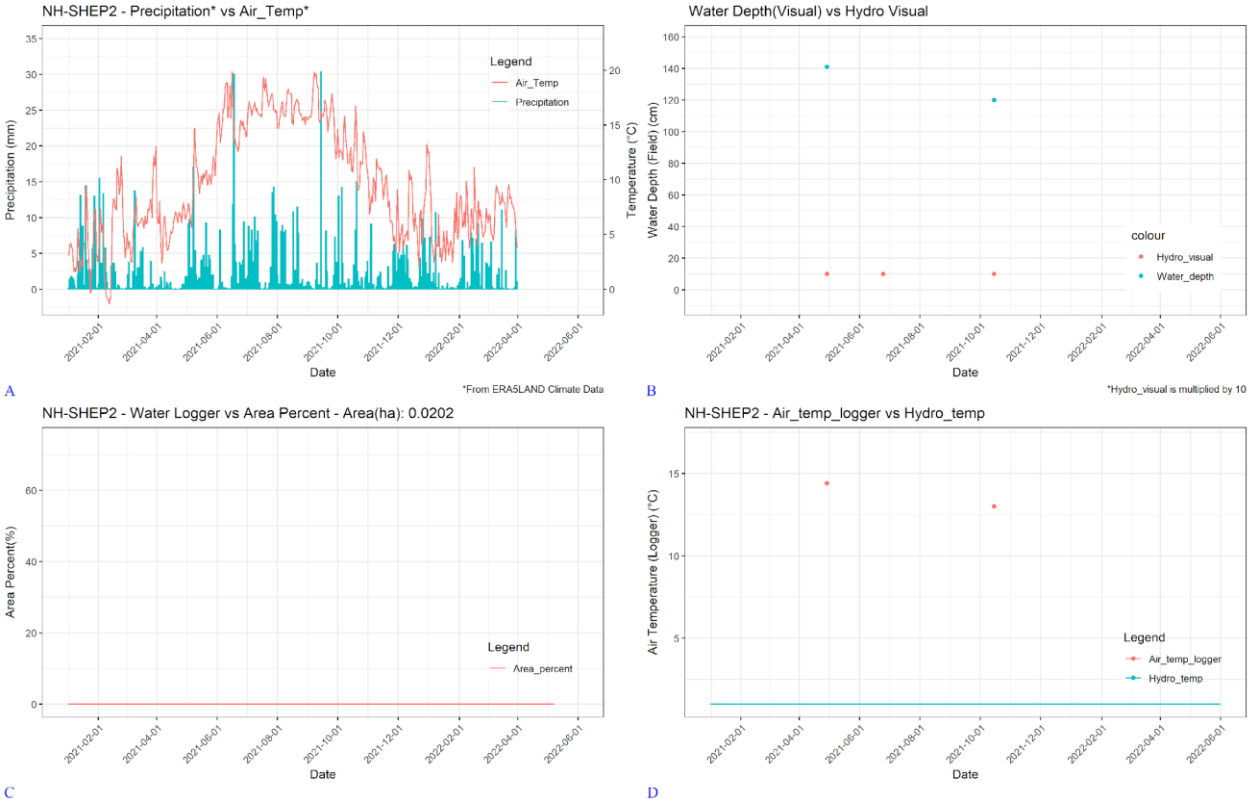
Plot 169. Pond NH-KEEL1 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable



Plot 170. Pond NH-PYE2A with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable



Plot 171. Pond NH-PYE2B with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable



Plot 172. Pond NH-SHEP2 with A) Meteorological Data, B) Hydro Visual vs Water Depth, C) Hydroperiod vs Water Logger, D) Air Temperature Logger vs Hydro Temp Variable

Ponderful

Coordinator: Prof. Sandra Brucet, University of Vic – Central University of Catalonia

Project Manager: Dr. Diana van Gent, University of Vic – Central University of Catalonia

Contact: diana.vangent@uvic.cat

Duration: 1 December 2020 to 1 December 2024

Website: www.ponderful.eu

Facebook: /Ponderful-331847228188664

Pond Ecosystems for Resilient Future Landscapes in a Changing Climate

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