

## **Using Artificial Neural Network (ANN) for Short-range Prediction of Cotton Yield in Data-scarce Regions**

### **SUPPLEMENTARY MATERIAL**

The Supplemental Material provides information that describes the number of Landsat images used for each month, and the dataset size (13 vs. 6-yrs) and 6-year climate scenarios investigated in this study. Table S1 – numbers of Landsat 7 ETM images for each month, The rest of the information consists of years contained in each scenarios and their corresponding annual precipitation amounts summarized in 6 tables that include: Table S2 - 13 years baseline scenario (BSL), Table S3 - ppredominantly dry climate scenarios (DS), Table S4 – predominantly wet climate scenarios (WS), Table S5 – predominantly average climate scenarios (AS), and Table S6 - variable climate scenarios (VS). Annual precipitation is used to classify climate scenario categories based on long-term (35 years) average precipitation 575 mm for Menemen region in Turkey. Annual precipitation amounts less than 490 mm were considered dry, between 490 and 660 mm were considered average, and greater than 660 mm were considered wet.

Table S1. The numbers of Landsat 7 ETM images for each month

	<b>April</b>	<b>May</b>	<b>June</b>	<b>July</b>	<b>August</b>
2006	2	2	4	1	3
2007	3	1	1	2	4
2008	1	2	2	3	2
2009	1	3	1	4	3
2010	2	2	2	3	3
2011	1	3	3	2	4
2012	2	2	3	2	-
2013	1	3	3	4	2
2014	2	4	4	3	4
2015	2	1	2	3	2
2016	2	1	2	4	4
2017	3	3	3	4	4
2018	2	3	4	4	4

Table S2. Baseline scenario (BSL) consisting of 13 years with corresponding annual precipitation (P)

<b>13- Year Baseline Scenario (BSL)</b>	
<b>Year</b>	<b>P (mm)</b>
2006	311
2007	245
2008	305
2009	752
2010	823
2011	550
2012	550
2013	730
2014	522
2015	668
2016	489
2017	645
2018	601

Table S3. Predominantly 6-year dry climate scenarios (DS) with corresponding annual precipitation (P)

6-Year Predominantly Dry Scenarios (DS)															
DS1		DS2		DS3		DS4		DS5		DS6		DS7		DS8	
Year	P (mm)	Year	P (mm)	Year	P (mm)	Year	P (mm)	Year	P (mm)	Year	P (mm)	Year	P (mm)	Year	P (mm)
2007	245	2007	245	2007	245.2	2007	245	2007	245	2007	245	2007	245	2007	245
2008	305	2008	305	2008	305.4	2008	305	2008	305	2008	305	2008	305	2008	305
2006	311	2006	311	2006	311.4	2006	311	2006	311	2006	311	2006	311	2006	311
2016	489	2016	489	2016	489.2	2016	489	2016	489	2016	489	2016	489	2016	489
2014	522	2014	522	2014	521.6	2014	522	2014	522	2014	522	2014	522	2014	522
2012	550	2011	550	2018	601.2	2017	645	2015	668	2013	730	2009	752	2010	823

Table S4. Predominantly 6-year wet climate scenarios (WS) with corresponding annual precipitation (P)

[illegible]

Table S5. Predominantly 6-year average climate scenarios (AS) with corresponding annual precipitation (P)

6-Year Predominantly Average Scenarios (AS)															
AS1		AS2		AS3		AS4		AS5		AS6		AS7		AS8	
Year	P (mm)	Year	P (mm)	Year	P (mm)	Year	P (mm)	Year	P (mm)	Year	P (mm)	Year	P (mm)	Year	P (mm)
2007	245	2008	305	2006	311	2016	489	2014	522	2014	522	2014	522	2014	522
2014	522	2014	522	2014	522	2014	522	2012	550	2012	550	2012	550	2012	550
2012	550	2012	550	2012	550	2012	550	2011	550	2011	550	2011	550	2011	550
2011	550	2011	550	2011	550	2011	550	2018	601	2018	601	2018	601	2018	601
2018	601	2018	601	2018	601	2018	601	2017	645	2017	645	2017	645	2017	645
2017	645	2017	645	2017	645	2017	645	2015	668	2013	730	2009	752	2010	823

Table S6. Variable climate scenarios (VS) with corresponding annual precipitation (P)

<b>6-Year Variable Scenarios (VS)</b>			
<b>VS1</b>		<b>VS2</b>	
<b>Year</b>	<b>P (mm)</b>	<b>Year</b>	<b>P (mm)</b>
2007	245	2006	311
2008	305	2016	489
2011	550	2011	550
2018	601	2018	601
2009	752	2015	668
2010	823	2013	730