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Journal Name:	**British Journal of Applied Science & Technology**
Manuscript Number:	**Ms_BJAST_30934**
Title of the Manuscript:	**Hourly Real-Time Rainfall Estimation for Improved Smart Irrigation System Using Nearby Automated Weather Station**
Type of the Article	

General guideline for Peer Review process:

This journal's peer review policy states that **NO** manuscript should be rejected only on the basis of '**lack of Novelty'**, provided the manuscript is scientifically robust and technically sound.
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PART 1: Review Comments

	Reviewer's comment	**Author's comment** *(if agreed with reviewer, correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)*
Compulsory REVISION comments	**Introduction** **When analysing closed loop system for smart irrigation, it is suggested to refer to *R. Romero, J. Muriel, I. García, and D. Muñoz-de-la Peña, "Research on automatic irrigation control: State of the art and recent results," Agricultural Water Management, vol. 114, pp. 59–66, July 2012*.** **Subsection 2.3** **It does not provide information on how soil moisture sensors are used to calculate irrigation demand. Since it only gives general information about soil moisture sensors. The statement "To increase the accuracy of irrigation calculation the number of soil moisture sensors can be used at different depth of soil level" is not necessarily correct since different levels provide different information that cannot be aggregated.** **Subsection 2.4** **The results presented on Table 1 are not further referred in the paper, so for the scope of this work these results are not relevant. Furthermore, it is not specified which units are used for measuring soil moisture, if the percentage refers to volumetric water content the values around 75% are to high to be measured by the sensors.** **Section 3** **The content of section 3 is not a description of a case study, it just gives general information about the regions. But it does not provide any technical**	**Introduction** Reference added and changes are done in main document. **Subsection 2.3** Net irrigation equation is added, where reading of soil moisture sensors are considered for right amount of irrigation. **The statement "To increase the accuracy of irrigation calculation the number of soil moisture sensors can be used at different depth of soil level"** **has been changed to** **"**To increase the accuracy of irrigation calculation the numbers of soil moisture sensors can be used at different depth of soil level for different growing stage of roots of the plant." **Subsection 2.4** Table 1 changed to the following Shows the reading of the local soil moisture sensor taken on 13th May 2014 from 13:00 hr till 23:00 hr verses remote NCMRWF AWS temperature for the location nearby. Soil moisture used is conductive and values of it shows for % of moisture available. High values due to rainfall in that period.

	information about how the experiments were conducted and what were the conditions presented by each region. **Section 4** **Information presented in this section only considers a specific case, but it does not demonstrate a methodical approach on delaying irrigation based on rainfall information. A mathematical model should be provided in this section.** **Section 5** **This section probably is probably the most important part of the paper, however it just only gives general information about Artificial Neural Network. It would be expected to give detailed information about which variables were used, and how they were processed by the ANN approach. Figure 7 is too general at this level of the paper. There is not any results that measures how well the proposed ANN algorithm works for estimating rainfall.** **Section 6** **This paper states that 152000 liters of water were saved by using the proposed approach, however a more extensive set of experiments should be conducted in order to indicate any water saving numbers. Table 5 is not relevant, and statistical information should be provided by comparing different test cases and experiment scenarios. Results are weak and they are not convincing.**	**Section 3** Changes done This section describes the physical placement of AWS, which are installed by IMD, Gov. of India along with their latitude and longitude. **Section 4** Changes done. This section talks about influence of neighbour region rainfall on the local irrigation filed. In net irrigation equ (1) its P_e factor. **Section 5** Results were added In our study we have taken 10 neighbour AWS precipitation data as input from Jan 2015 to Jan 2016 and estimated unknown AWS precipitation. Ten such experiment are conducted to estimate unknown location with respect to their neighbor AWS. Table 4 shows estimated results RMSE in mm for each AWS precipitation data. The overall RMSE of estimated data is 0.44 **Section 6** Experiment conducted on small data set and hence too many test cases are taken at that time. Result is for one such instance and are applicable whenever precipitation occurs. It is given in decision flow chart.

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Minor REVISION comments	**Line 18: Acronyms NCMRWF and NCR are not defined** **Lines 116-118: Uses roman numbering instead of Arabic when referring to sections** **Fig. 1 – AWS should substitute ASW** **There are some grammatical errors in the paper, so deep grammatical revision should be conducted.**	**Line 18: National Captial Region (NCR)** **Lines 116-118: changed to number instead of roman number.** **Fig. 1: changed as per suggestion** **Proofreading will be done again.**
Optional/General comments	**This paper proposes the use of rainfall estimation to modify irrigation scheduling and save water. Although, this is an interesting idea, the implementation is not clearly explained and the presented results are insufficient. The overall paper content is confused and repetitive. A lot of modifications are required since the paper presents some general ideas but important technical details are missing. There are not any relevant results based on statistical data, neither the test cases are specified.**	