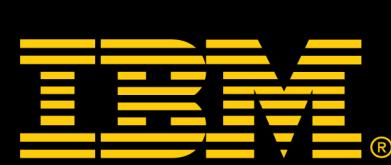


# ENABLING PHILIPPINE FARMERS TO ADAPT TO CLIMATE VARIABILITY USING SEASONAL CLIMATE & WEATHER FORECASTS WITH A CROP SIMULATION MODEL IN AN SMS-BASED FARMER DECISION SUPPORT SYSTEM (FDSS)



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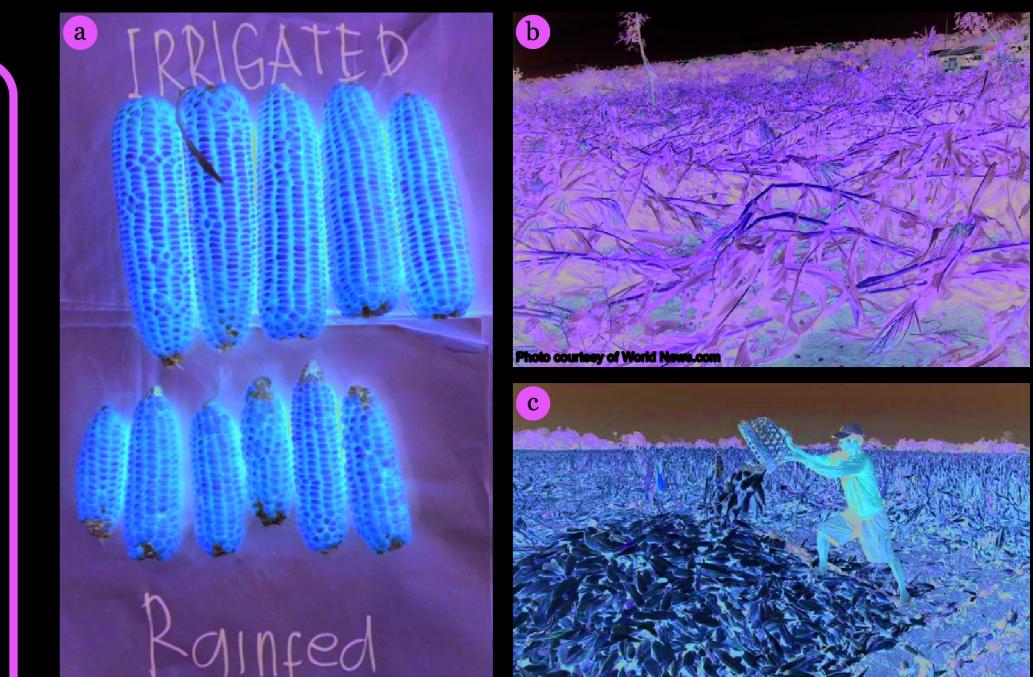
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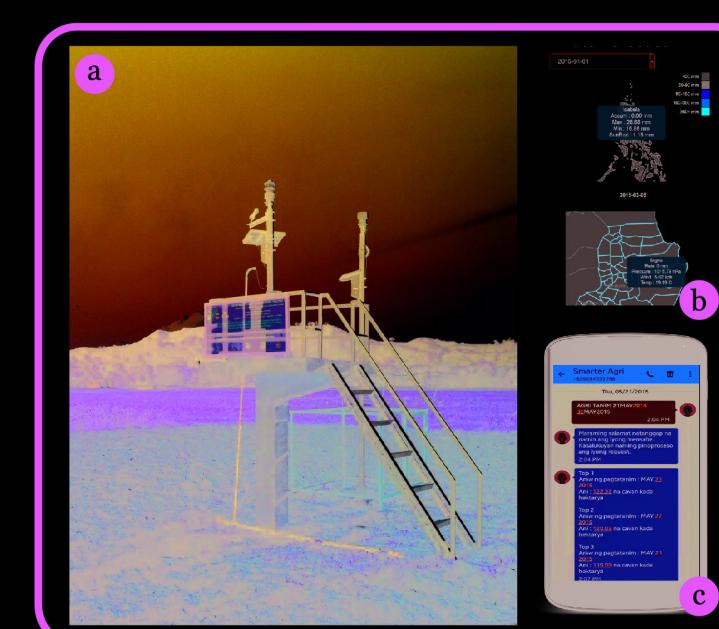


PRODUCTION LOSSES (%) OF SELECTED AGRICULTURAL CROPS IN THE PHILIPPINES				
COMMODITY	TYPHOON/FLOOD	LOSSES (% DAMAGES)	PEST & DISEASES	
Rice	2.6 <sup>a</sup> , 62.5 <sup>b</sup>	1.5 <sup>a</sup>	10.0 <sup>b</sup>	
Corn	70.0 <sup>a</sup> , 75.0 <sup>b</sup>	27.0-70.0 <sup>a</sup> , 87.0 <sup>b</sup>	16.0 <sup>c</sup>	65.8 <sup>b</sup>
Banana	5.5 <sup>a</sup>	4.4 <sup>b</sup>		9.4 <sup>b</sup>
Cotton	76.7 <sup>b</sup>	87.0 <sup>b</sup>		72.7 <sup>b</sup>
Sugarcane	18.3 <sup>b</sup>	47.5 <sup>b</sup>		30.0 <sup>b</sup>
Tomato	43.9 <sup>b</sup>	32.5 <sup>b</sup>		27.0 <sup>b</sup>
Coffee	44.2 <sup>b</sup>	43.6 <sup>b</sup>		25.7 <sup>b</sup>

<sup>a</sup>Rincon and Virtucio (2008), <sup>b</sup>SEARCA (2005), <sup>c</sup>Delos Santos et al. (2007)



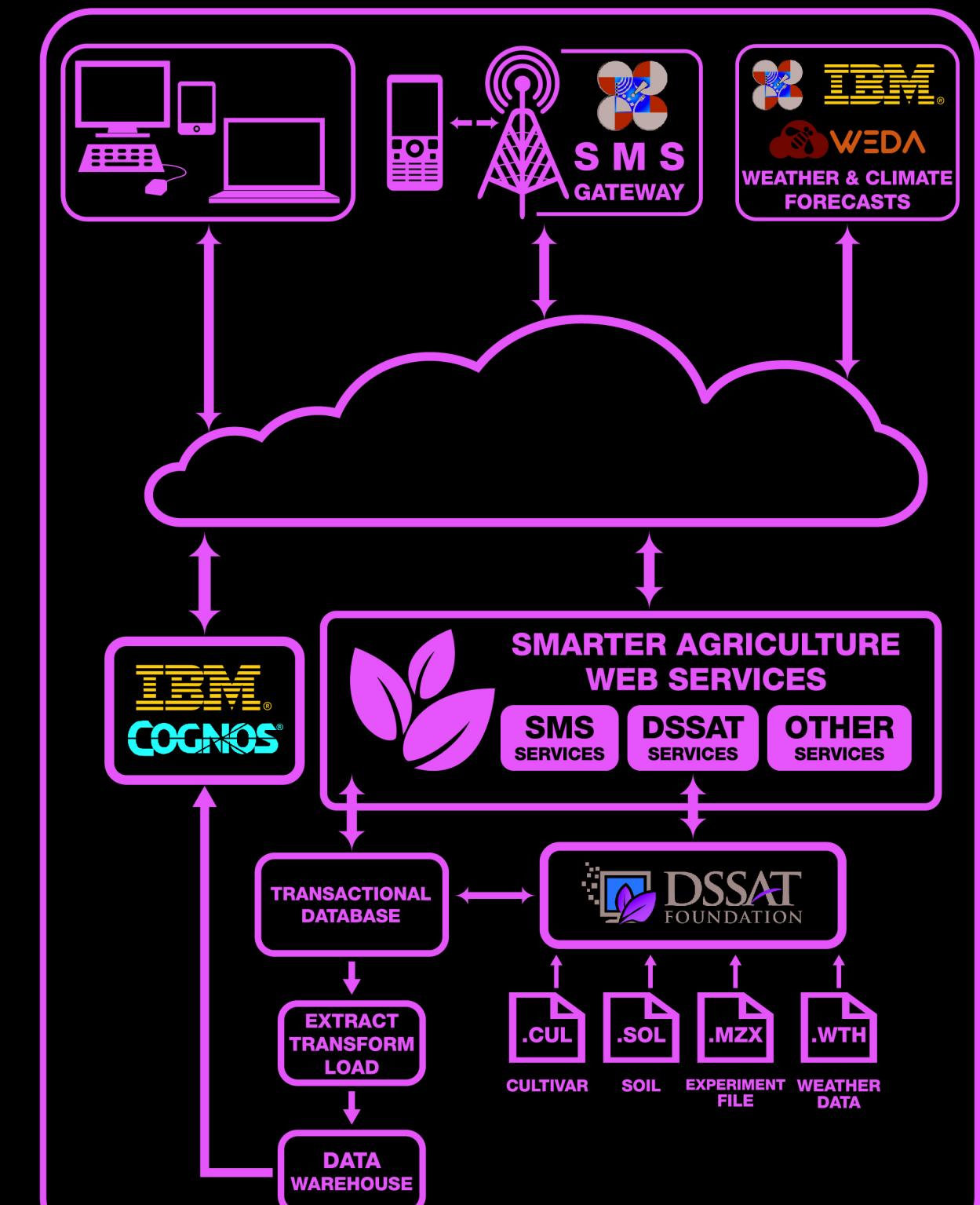
## THE SMARTER AGRICULTURE SOLUTION



**Solutions to Address Climate Change:**  
(a)Meteorological stations; (b)Accurate weather & climate forecasts; (c)Translate information into an easily understood format - SMS and in local language if possible

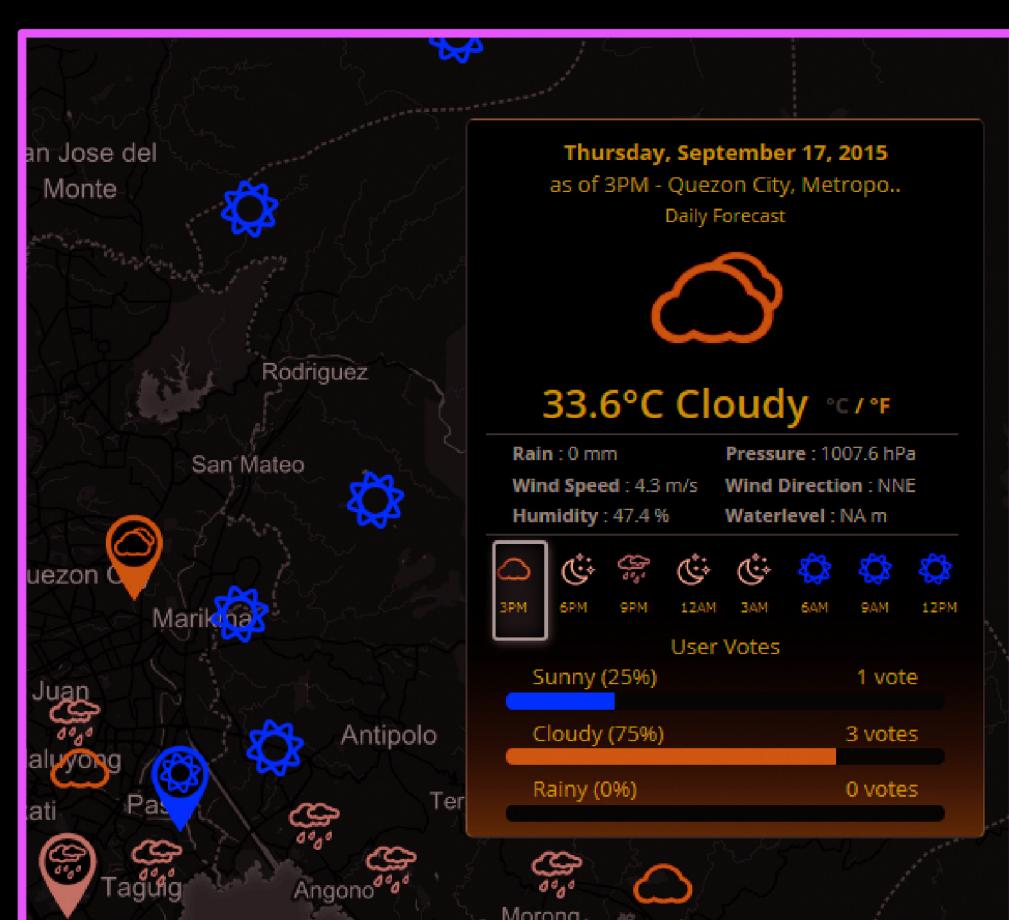


**(a)DSSAT screenshot; Customized Advisory for farmers in (b)web and (c)mobile**



Architectural Overview

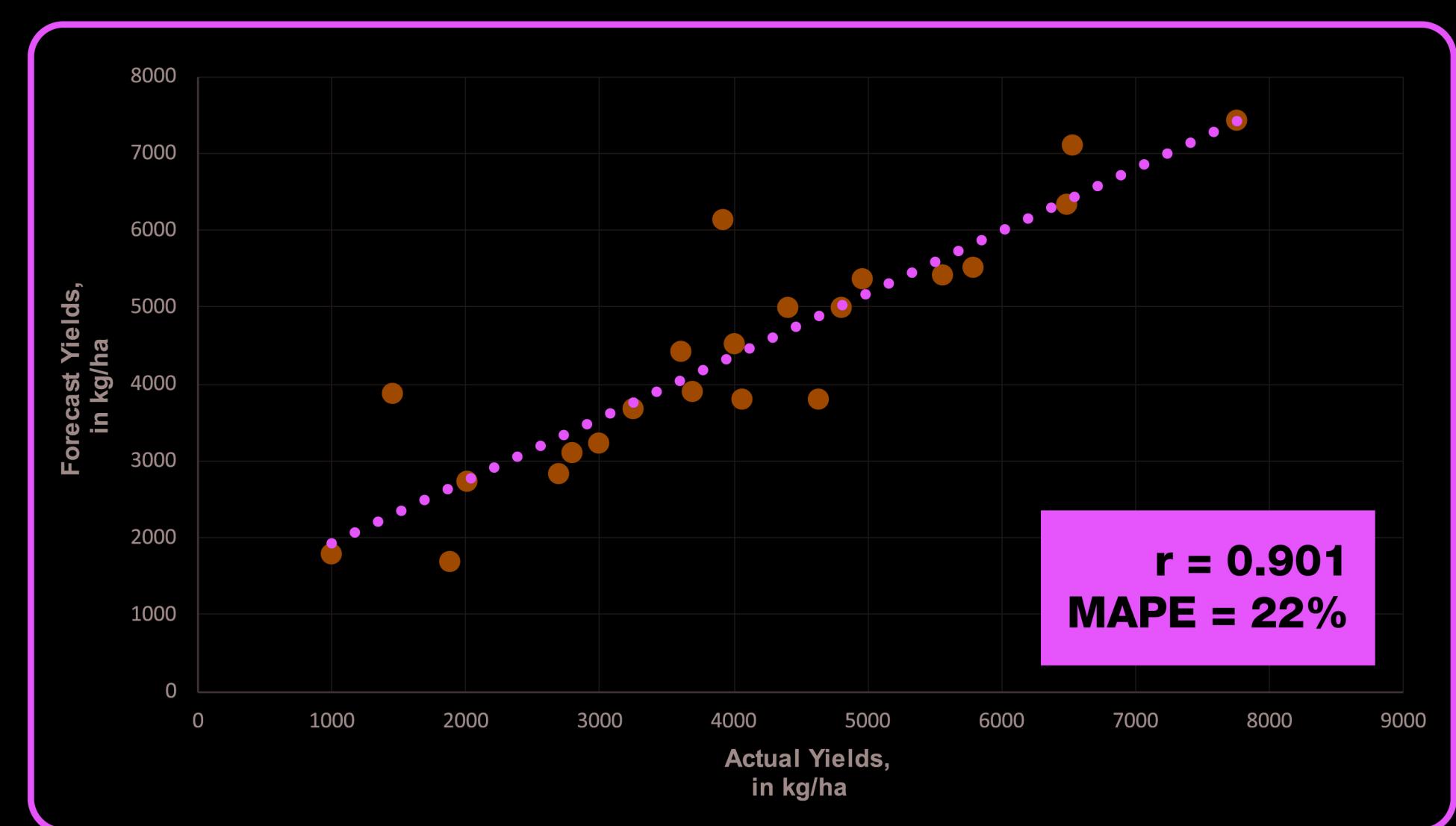
## RESULTS



**WEATHER & CLIMATE FORECASTS:**  
Modifications were made to improve the capability of the WRF to forecast on a specific farm

FARMER	CROP VARIETY	YIELDS	
		ACTUAL	SIMULATED
FARMER 1	DEKALB 6819	6533	7101
FARMER 2	NK 8850	5560	5411
FARMER 3	NK 8840	1000	1775
FARMER 4	NK 8840	3248	3669
FARMER 5	DEKALB 9132	3689	3900
FARMER 6	DEKALB 6819	3919	6119
FARMER 7	NK 8850	5795	5517
FARMER 8	DEKALB 9132	4000	4511
FARMER 9	DEKALB 9132	3600	4419
FARMER 10	DEKALB 9132, PIONEER	2800	3096
FARMER 11	DEKALB 6919	4960	5363
FARMER 12	PIONEER 3774	2987	3218
FARMER 13	NK 8840	7760	7412
FARMER 14	DEKALB 9132, PIONEER 30780	4800	4975
FARMER 15	DEKALB 9132	4060	3794
FARMER 16	DEKALB 9132	2005	2725
FARMER 17	PIONEER 9047	4640	3796
FARMER 18	NK 8840	6480	6322
FARMER 19	NK 8840	2700	2817
FARMER 20	DEKALB 9132, NK 8850, NK 8840	1456	3857
FARMER 21	DEKALB 9132	1880	1685
FARMER 22	DEKALB 9132	4410	4978

Summary of Pilot Study Results



THE CORRELATION COEFFICIENT BETWEEN THE ACTUAL AND FORECAST YIELDS IS AT 0.901. THIS MEANS THAT THE MODEL HAS GOOD CAPABILITY TO ACCURATELY PREDICT THE FUTURE YIELDS FOR CORN. IN ADDITION TO THAT, THE MEAN ABSOLUTE PERCENTAGE ERROR OF THE MODEL FORECASTS IS AT 22% WHICH MEANS THAT THE FORECAST YIELDS OF THE MODEL IS OFF BY 22% ON THE AVERAGE FROM THE ACTUAL YIELDS.

## CONCLUSION