

Water Resource & Management Strategies

National Conference on

Integrated Water Resource Management for enhancing Farmers' Income

March 22, 2017, Hotel Park, New Delhi

Nalin Rawal

Chief Business head – Agribusiness

Skymet Weather Services Pvt Ltd.





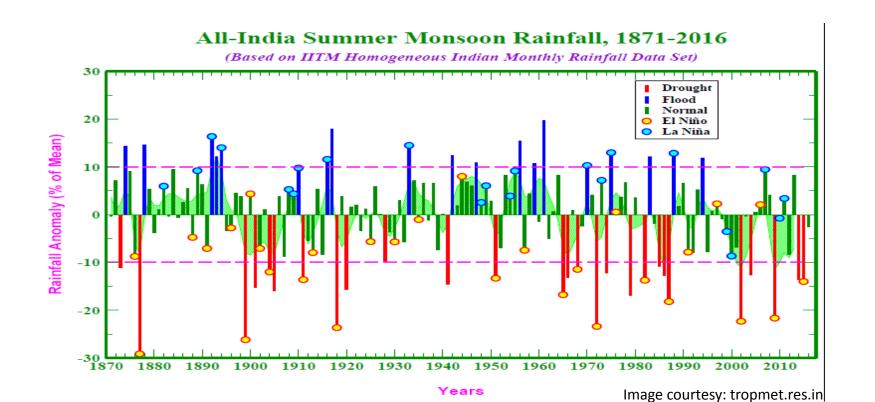
Climate Change – India Perspective

Climate Variability

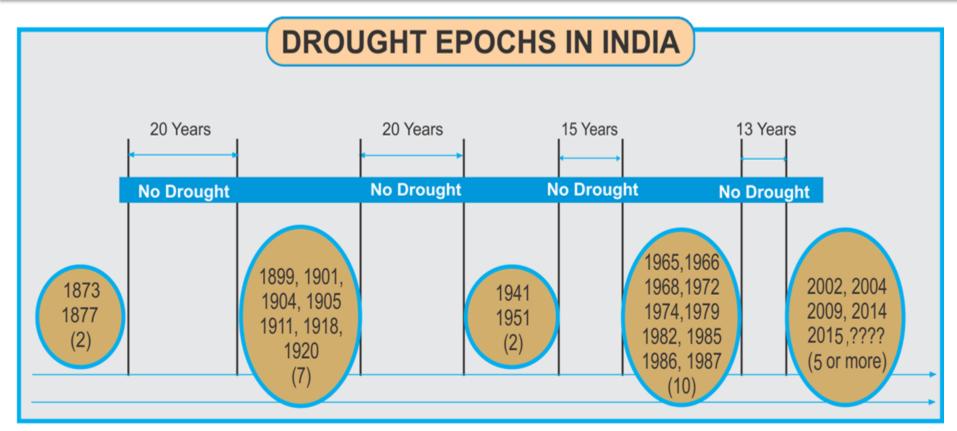


- ✓ In last 146 years (1871 2016)
- √ 19 were major flood years
- ✓ Drought occurred in 26 years

There have been alternating periods extending to 3-4 decades with less and more frequent weak monsoons over India.







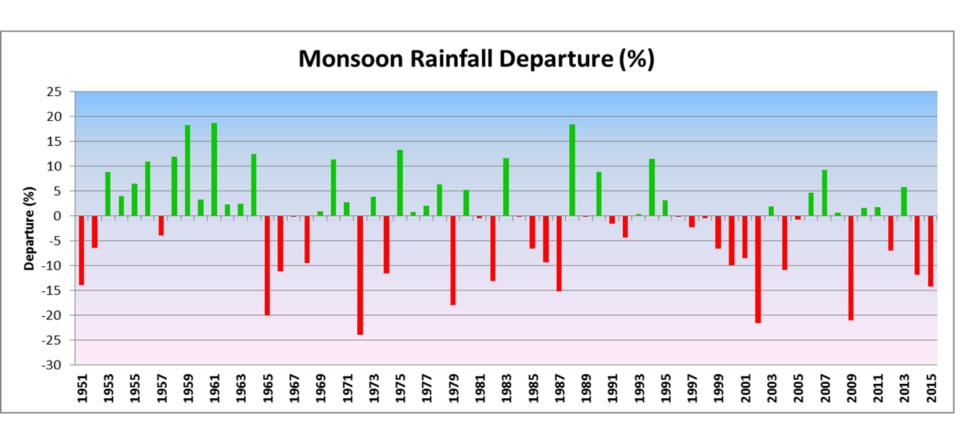
Timeline (years)

Source: Skymet

We are in drought epoch

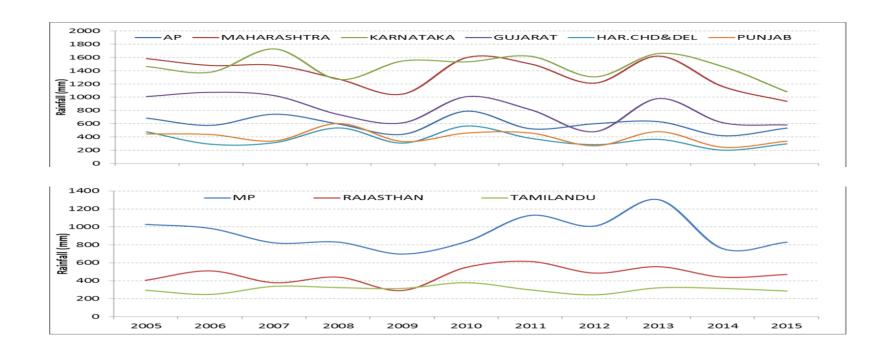


- ☐ In last 50 years, 22 years were the Good Monsoon years with rainfall 101% to 109%.
- ☐ During good monsoon out of 650 districts, 30% (195) districts are at risk of drought or flood.



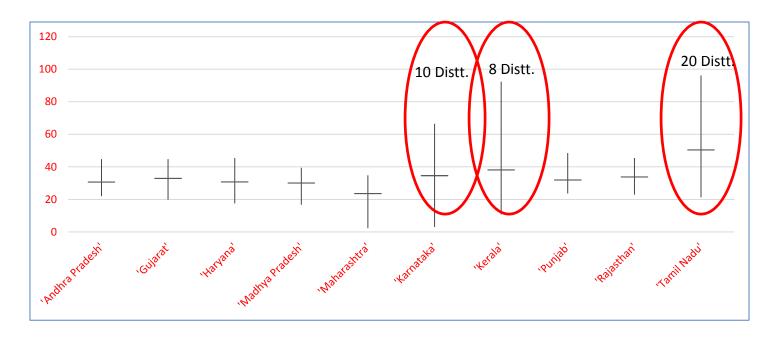


- ☐ In last 11 years, 7 were normal to good monsoon years.
- ☐ Average (JJAS) monsoon activity / rainfall is decreasing in AP, MH, KTK, GJ, Bihar, HR & PB.
- ☐ Monsoon activity is Stable in MP, RJ & TN.



Drought Proneness



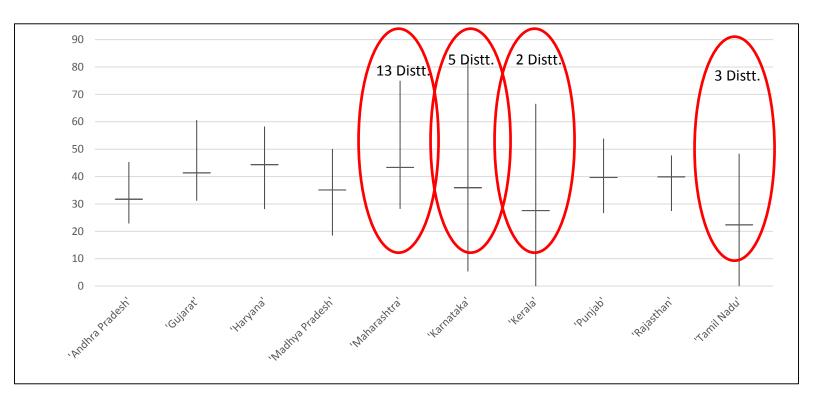


- Karnataka, Kerala and Tamil Nadu, volatility of being deficient is very high
- Under the "good monsoon" year, Maharashtra is the least volatile state and drought probability is quiet low.

Note: Districts receiving <80% of average rainfall are categorized as deficient districts

Flood Proneness





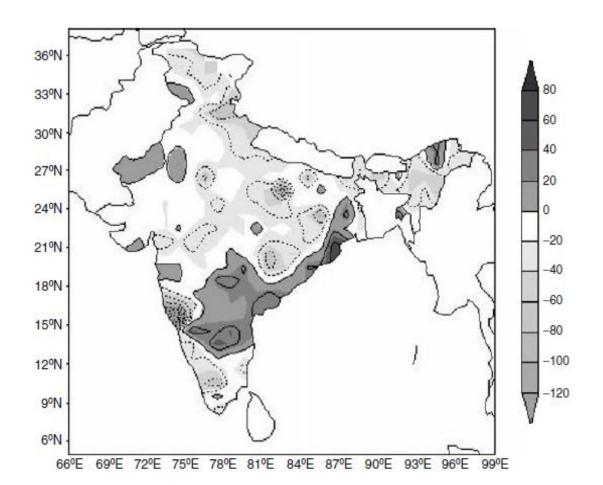
 Under the good monsoon year, Karnataka, Kerala, Tamil Nadu & Maharashtra has the highest risk.

Note: Districts receiving >120% of average rainfall are categorized as excess districts

Increase / decrease in frequency of rainy days during 1901-2005



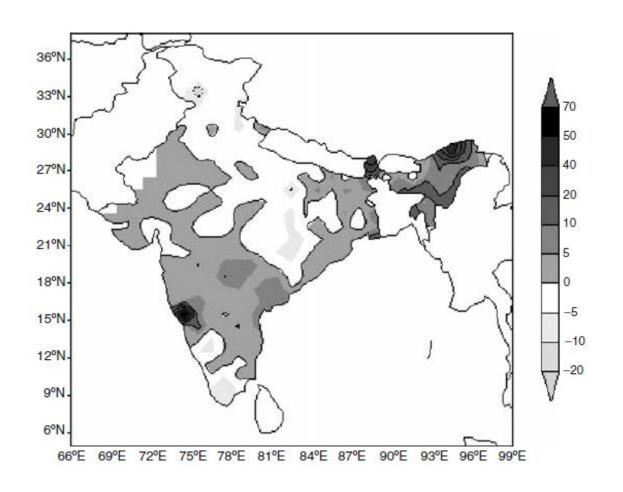
- Number of rainy days are reducing over most part of the country
- However number of rainy days are increasing in peninsular India especially over AP and some parts of Karnataka.



Increase / decrease in frequency of heavy rainfall days during 1901-2005



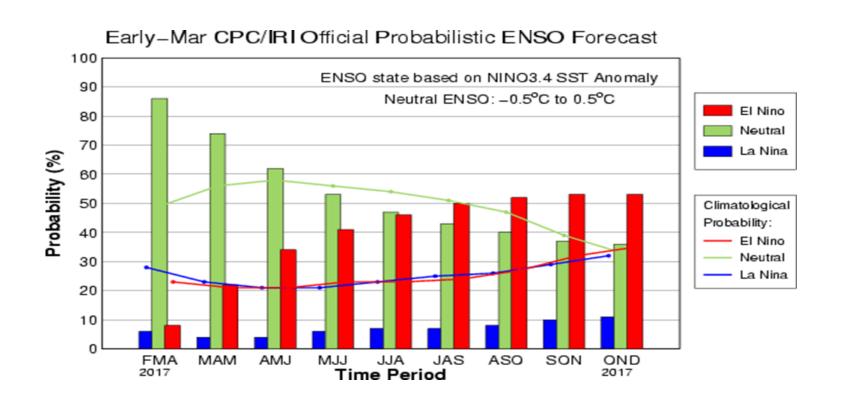
- Number of heavy rainfall days are increasing over most parts of country.
- Extreme rainfall and hence flood risks are increasing significantly in the country except some parts of central India.



El Niño Forecast - 2017

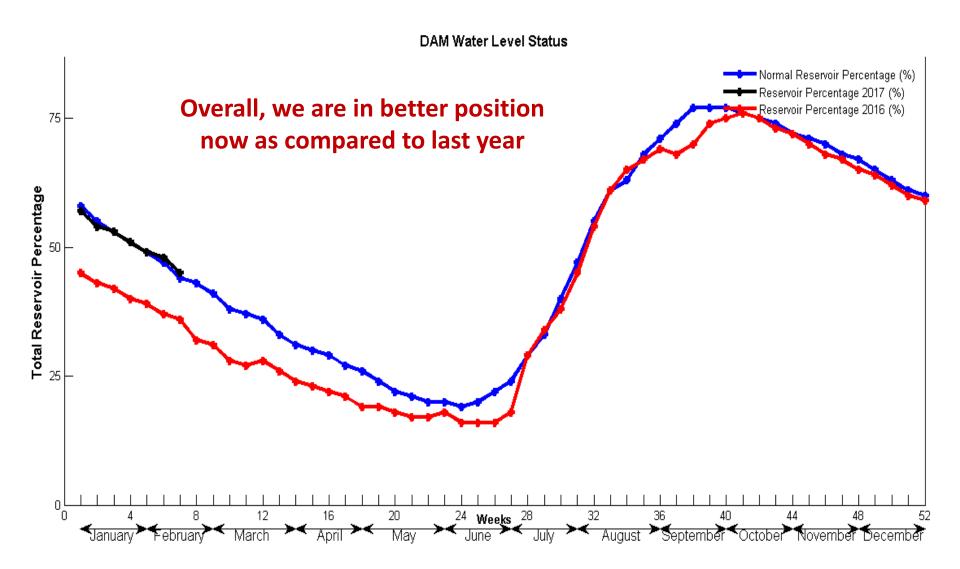


- ENSO-neutral conditions are present
- ENSO-neutral conditions are favored to continue through at least the Northern Hemisphere April' 2017,
- Chances are high for developing El Nino conditions in pacific



Dam water level status





Current Status of Reservoir as compared to last 10 years



States in Good condition

States in Bad condition

State	Reservoir Departure (%)	State	Reservoir Departure (%)
Rajasthan	3.7	Himachal Pradesh	-22.6
Jharkhand	22.2	Gujarat	-18.5
Odisha	19.7	Uttarakhand	-39.1
West Bengal	14.5	Andhra Pradesh	-69.7
Tripura	180.0	Karnataka	-41.8
Maharashtra	4.6	Kerala	-34.0
Uttar Pradesh	52.7	Tamil Nadu	-85.3
Madhya Pradesh	50.1		
Chhattisgarh	22.1		
Telangana	49.8		



Strategies for Climate Resilience in Agriculture



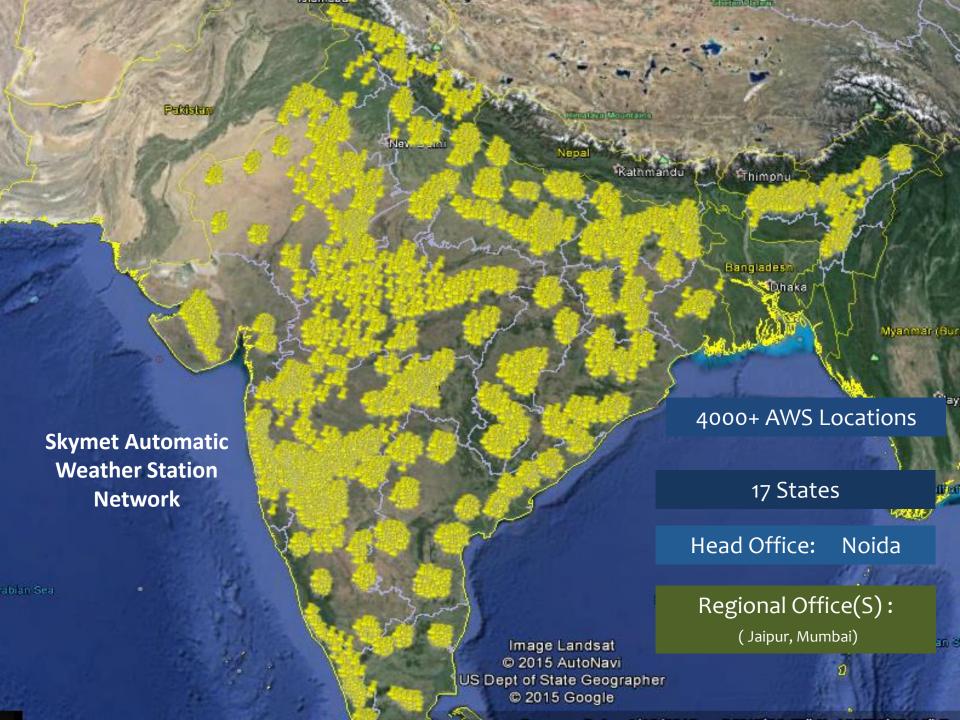
Mitigating Weather Risk

Weather Forecast

Weather forecast & Monitoring

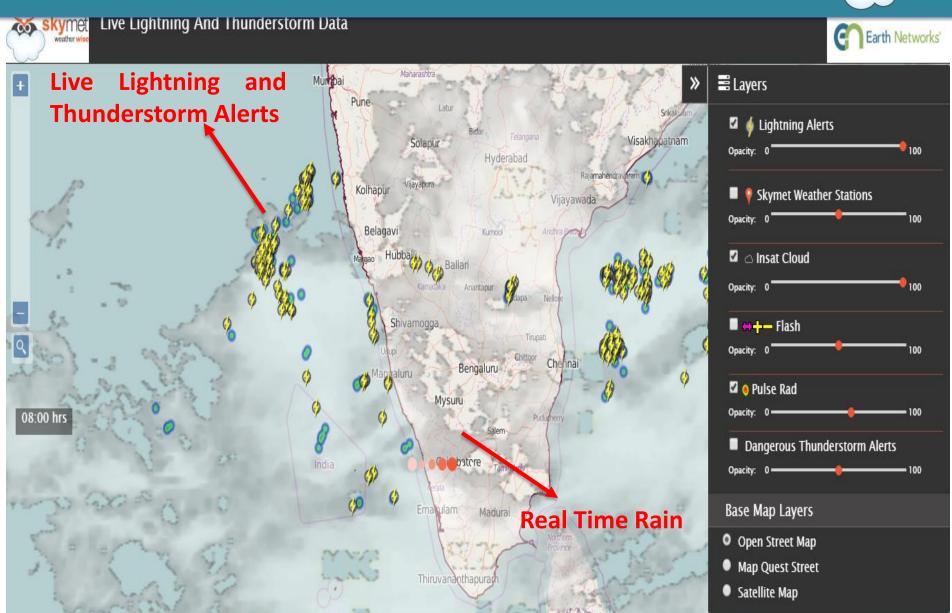


- **❖ Long Term Weather Forecast** − 3/4 months ahead
- **❖ Medium Term Forecast** − 15/30 days ahead
- **❖ Short Term Forecast** − 7 days ahead
- **❖ Weather Alerts** − 24/72 Hrs ahead
- **Live Weather Data** Hourly Live
- * Real Time Weather Live



Live Weather Monitoring



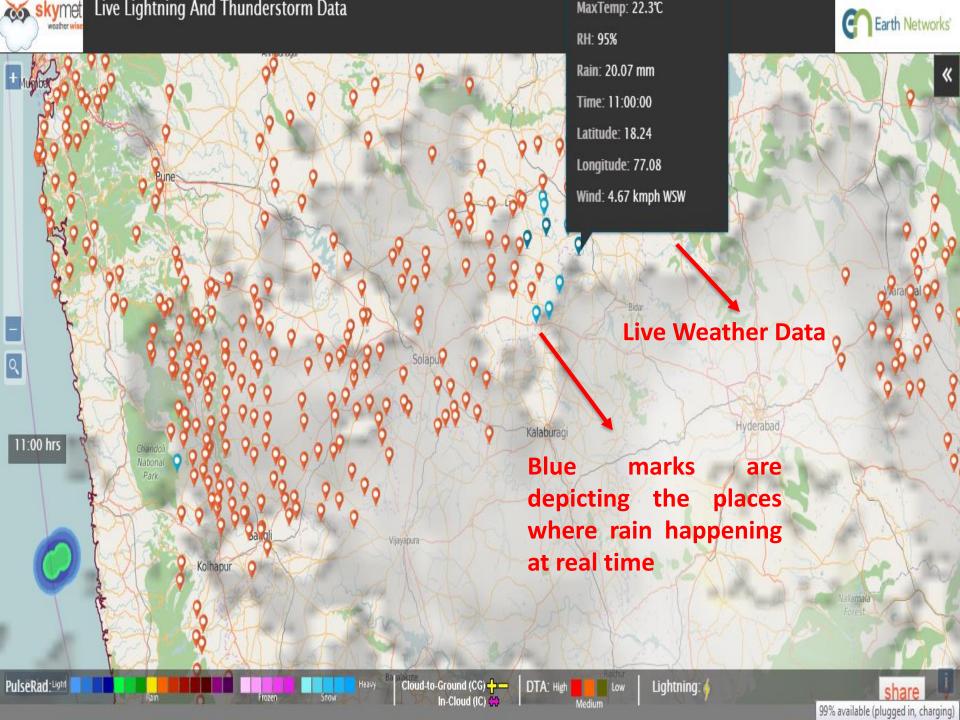


Cloud-to-Ground (CG)

DTA: High

Lightning:

PulseRad:Light



Real Time Crop Advisories



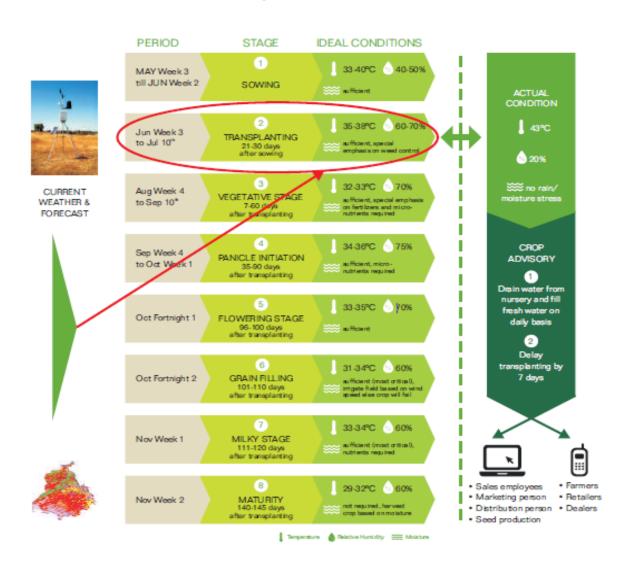


Real Time Crop Advisory Models



REAL TIME CROP ADVISORY

Paddy (Pusa Basmati 1121)

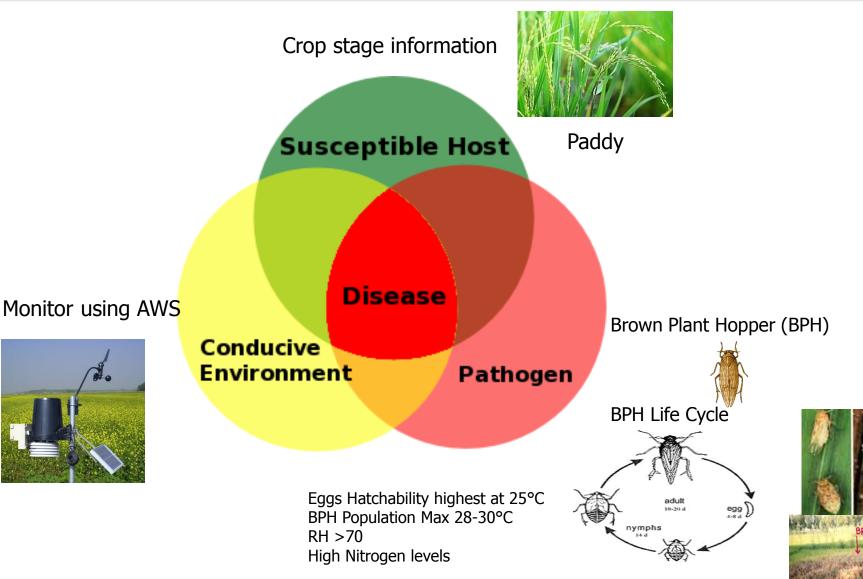




Pest Forecasting Model

BPH Forecasting – Paddy







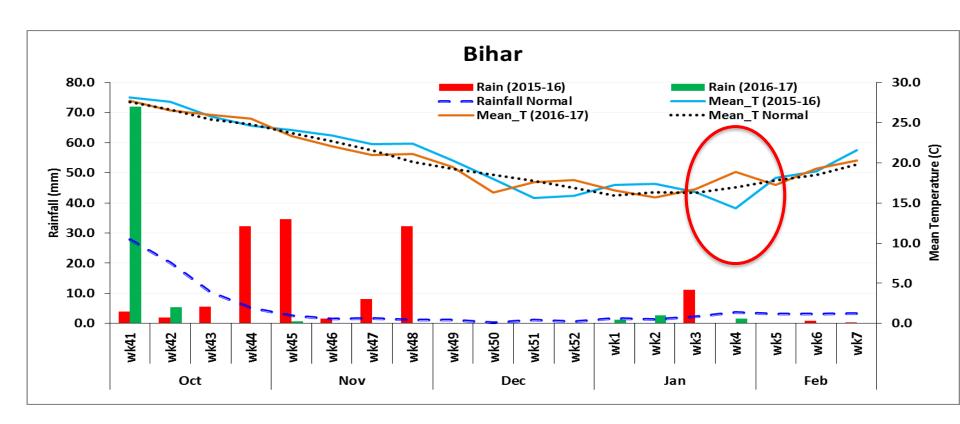
Crop Risk Management



Example - Bihar maize crop Status - 2017



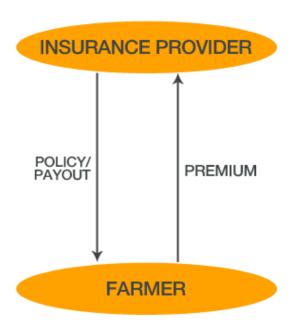
- √ No Rainfall was observed from 3rd week of Oct till Dec'16
- ✓ Temperature was above normal by 4 to 5 degree in month of January and Feb is also above normal.
- ✓ Early sown crop is normal however mid & late sown crop is under stress



CUSTOMISED CROP RISK MANAGEMENT SOLUTIONS

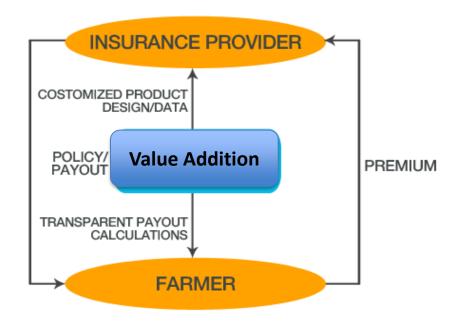


Weather Based Crop Insurance PROPOSED



Drawbacks:

- Inadequate product
- Cryptic payout calculations
- Opaque payouts
- Mistrust on insurance



Benefits:

- Customized product
- Transparent payout calculations
- Equitable payouts
- Trust build-up on insurance

CROP INSURANCE PRODUCT CUSTOMIZATION - MAIZE



Crop		Maize	\Box				
District	Ea	ast Godavari					
Taluka	All locations						
Season		Rabi					
flowering stage cover:	Maximum temperature (which may	cause premature pollen shedding)					
Cover definition: No. of days of maximum temperature above benchmark for the phase							
	Phase 1	Phase 2					
From	15-Feb-16	22-Feb-16					
То	21-Feb-16	27-Feb-16					
Benchmark (degree centigrade)	34	36					
Strike (days)>=	3						
Exit (days)	12						
Notional (Rs/days)	556						
Payout (Rs)	5000						
Total payout	5000						
Disease o	onducive cover: Fruit setting stage /	maturity/ pre harvest					
Cover definition: days confirming to rainfall > 10mm and relative humidity at 8:00 am > 80%							
	Phase						
From	1-Mar-15						
То	31-Mar-15						
Strike (days)>=	3						
Exit (days)	10						
Notional (Rs/day)	714						
Payout (Rs)	5000						
Total payout	5000						
Total Payout	10000						
Premium rate (exclusive of taxes)	1000						

TRANSPARENCY – INFORMATION & PAYOUTS





NAME : RAJESH KUMAR

F NAME : TAPESHWAR SHARMA
ADDRESS : VILL- BALSA, POST- BALSA

DIST- BALSA, ASSAM

PLAN : XYZ

STATION : ASSAM

ADD STATION



TOTAL PAYOUT TILL DATE

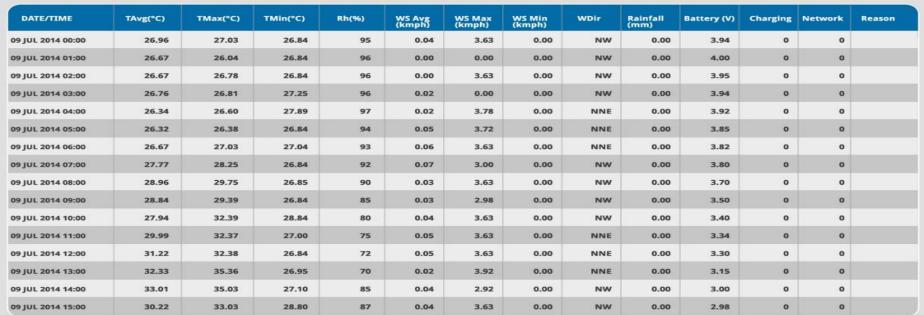
₹ 5000

TEHSIL SUMMARY

STATION NAME	LEAST MIN(°C)	LEAST MAX(°C)	TOTAL RAINFALL
BALSA	26.25	35.32	28.69
BARAMA	26.25	35.32	28.69
DHARAMDHAMA	26.25	35.32	28.69
JALAH	26.25	35.32	28.69
NAGRIJULI	26.25	35.32	28.69
TAMULPUR	26.25	35.32	28.69

CHANGE STATION

ASSAM





THANK YOU

for more info pl contact info@skymetweather.com

+91(120)4094500