Digital innovations (Big data; Data platforms) in food agriculture: Innovations development, deployment

30 November 2020

RIMES AGRICULTURE SERVICES

OVERVIEW

ITESH DASH

TEAM LEAD, SYSTEM RESEARCH AND DEVELOPMENT

RIMES

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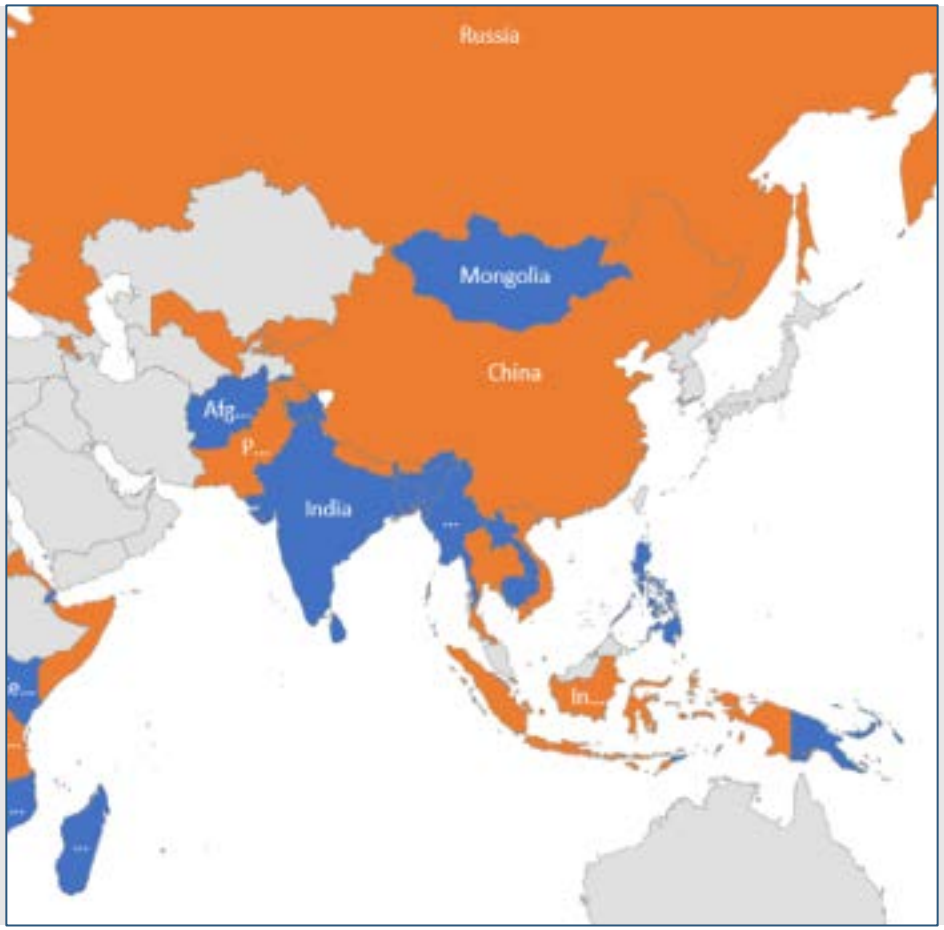
MEMBER AND COLLABORATING COUNTRIES

RIMES

- **R**egional
- **I**ntegrated
- **M**ulti hazard
- **E**arly warning
- **S**ystem



OVERVIEW

- Established on 30 April 2009 and housed in AIT Campus, Pathum Thani, Thailand
- Registered with the UN under Article 102 of the UN Charter
- Intergovernmental, owned and managed by its Member States
- 22 Members and 26 Collaborating countries

OBJECTIVE

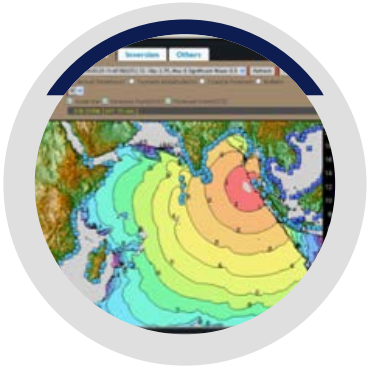
Creating systems and frameworks that can assimilate information on a real-time basis and dynamically render risk scenarios for sectoral benefits

- Climate resilient
- Sustainability
- Capacitate users at each level

SERVICES

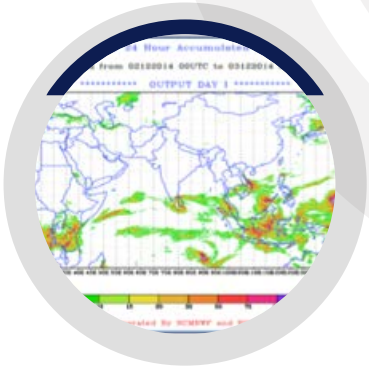
IMPROVING DATA AVAILABILITY

- Enhancement of observing and monitoring systems
- Data integration Platforms
- Regional data sharing initiative



EQ, TSUNAMI & OCEAN SERVICES

- Earthquake and tsunami bulletins
- Ocean state forecasts
- OSFAS, ShakeCast
- INSPIRE, Real-time tsunami loss estimation
- ESCAPE



WEATHER, CLIMATE, AND HYDROLOGICAL SERVICES

- Operational support to countries
- Forecasts Products
- CDAAS, FloCAST, SESAME, CRISH, SMART, SATARK
- Hazard assessments
- Impact based Forecasting

CAPACITY BUILDING OF USERS

- Monsoon Forums
- Impact forecasting
- Climate risk management field schools
- Demonstrations of climate information application
- In-country or Secondment to RIMES

UNITED NATIONS ESCAP
Economic and Social Commission for Asia and the Pacific

WORLD BANK GROUP

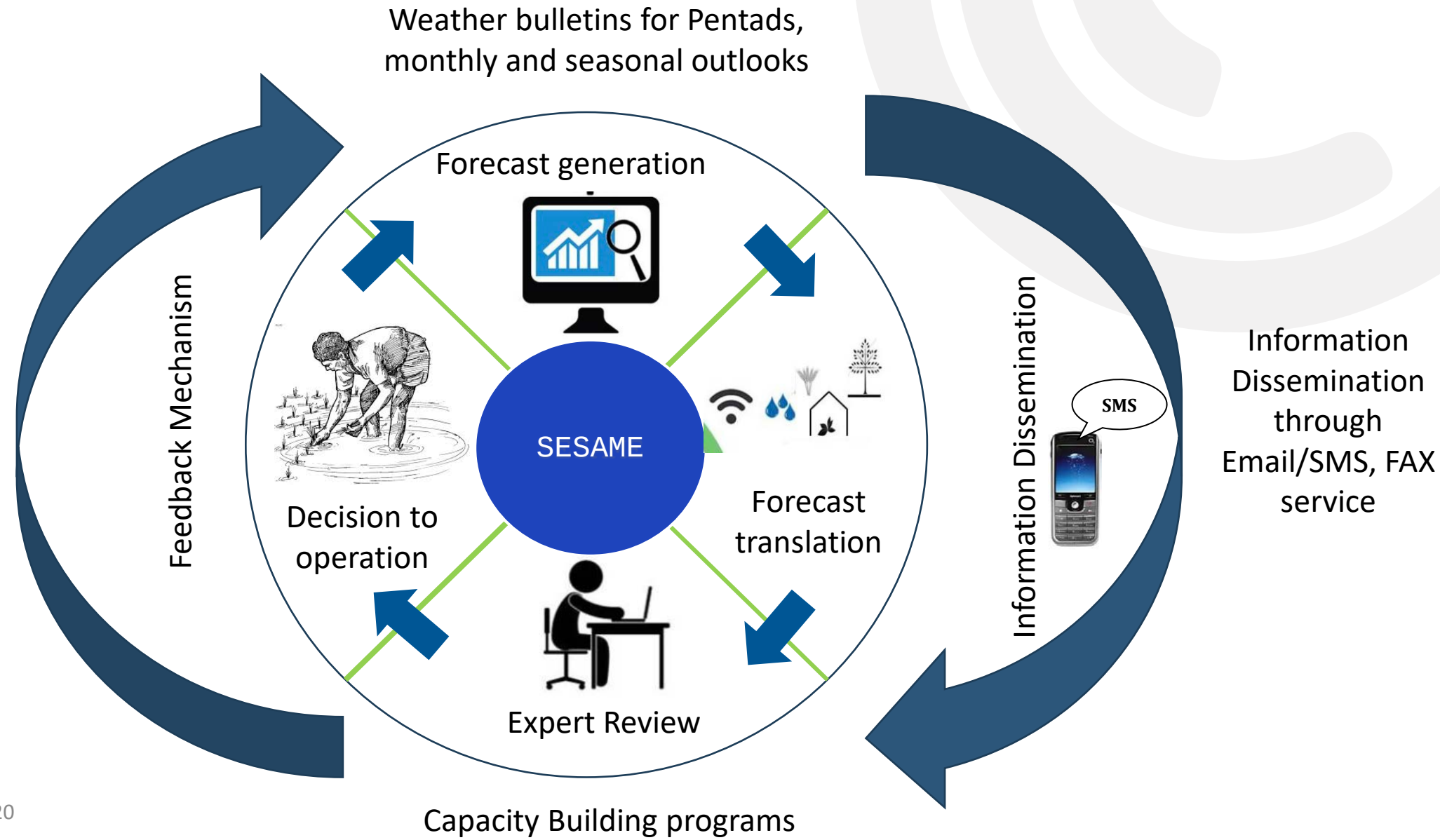
SESAME

SPECIALIZED EXPERT SYSTEM FOR AGROMETEOROLOGICAL EARLY WARNING

MYANMAR, INDIA, SRI LANKA, BHUTAN, CAMBODIA, FIJI, PNG, BANGLADESH

RIMES

SESAME - CONCEPT



INTEGRATED SYSTEMS

Automated platforms that can put data into operations combining a wide-array of weather and climate information

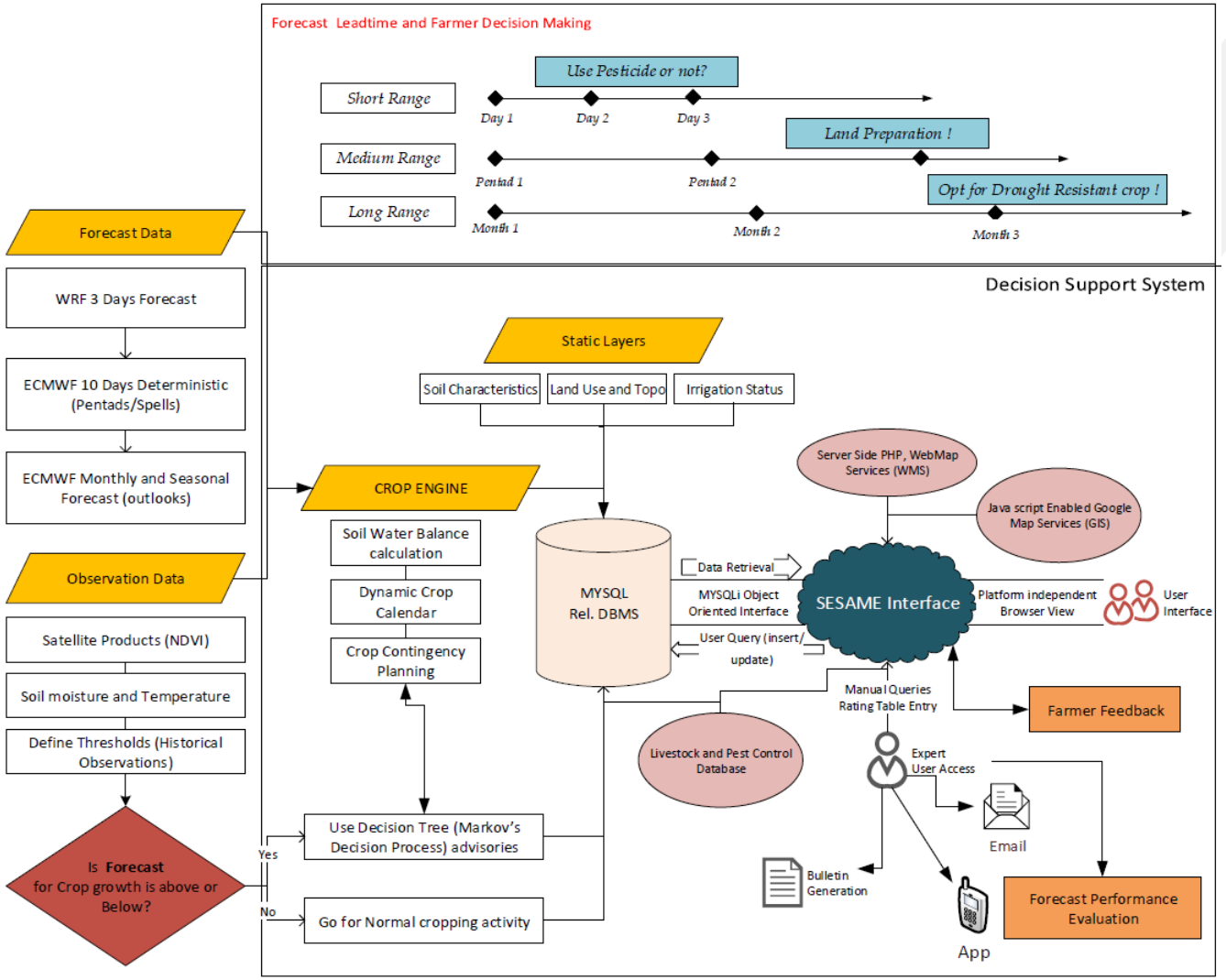
01 | Improved Data Management

02 | Faster processing and communications – novel methods

03 | Quicker evaluation and feedback

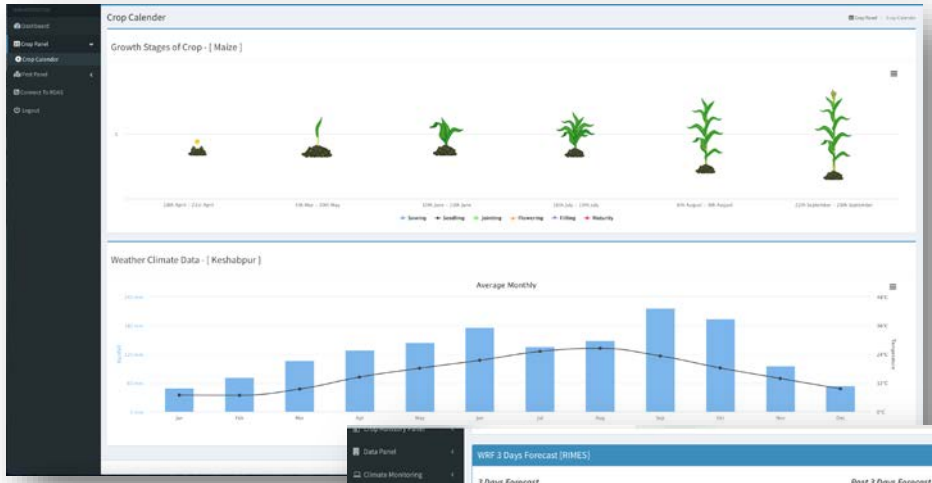
04 | Experts Reviews at multiple nodes and levels

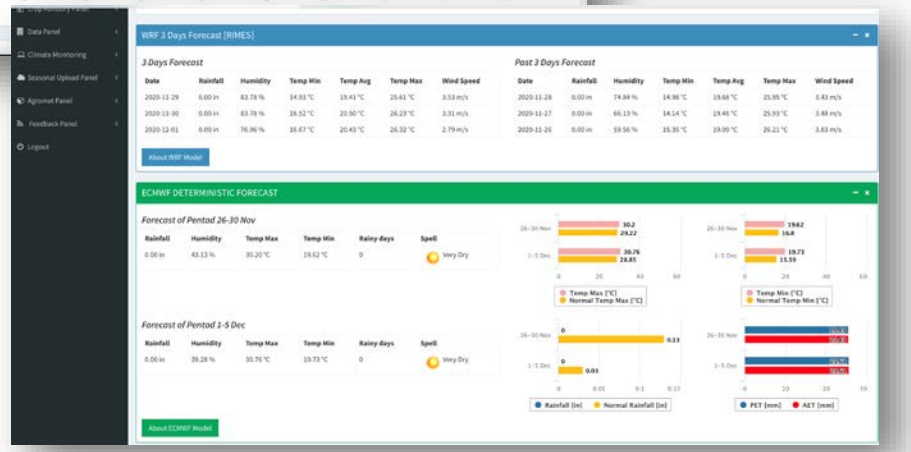
05 | Systems that can learn and train



SYSTEM INTERFACE

APP INTERFACE





WEB INTERFACE

PHASED PROGRESS

Myanmar DHM

Piloted in the Dry-zone region for 2 townships

IMD Agro-DSS

Customization and development, inclusion of monthly and seasonal forecasts

Machine learning Decision Process

Extension to other countries, local language, machine learning

Tamil Nadu Pilot in two districts

Customized and tested with crop data for two districts; linking with Observational data , verification pages for short-, medium- forecasts

Expansion to whole of India (AMFUs) and Myanmar

SESAME integrated to IMDs agro-met operations for all AMFUs and 17 townships in Myanmar and for all townships in 2020

**AMFU=Agro Met Firld Units*

Sustained Operation

Online Trainings to PNG, Myanmar, Cambodia

***Scalability**. System can be seamlessly expanded to any region

PROCESS

TOP DOWN – TECHNOLOGY
BOTTOM UP - CAPACITY

PROCESS

Top Down

- Translating forecast into crop-relevant information
- Providing easy access to best available forecast products
- Facilitating feedback

Crop-sensitivity and location specific needs

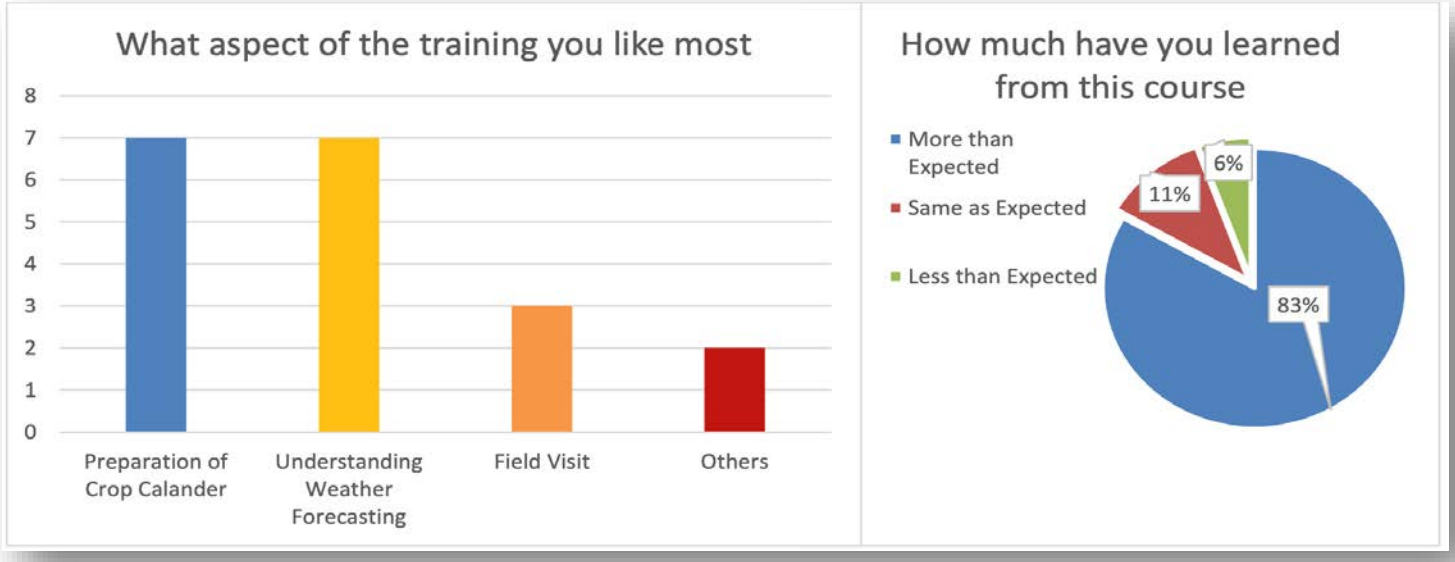
- Understating crop weather interaction and impacts of climate
- Understanding domain climate, water resources, pest and disease outbreak in relation to weather

Bottom-up

- Enhancing farmers' receptivity and capacity in ingesting multi-timescales information into plans and decisions
- understanding weather forecast information and its translation into farm actions

FARMER'S FEEDBACK

- Training force to think and analyse the challenges and probable solutions
- It make them aware that so much information which could help them to take decisions for daily farming activities is available for free
- Imparted them with skills to use the weather forecasts and take decisions based on it, bought a holistic change in approach towards farming
- Able to relate the agronomic practices to weather and generate advisories based on forecast
- New practices significantly reduced the input cost over seasons



CHANGES IN APPROACH FOR FARMING

Water Management

- Farmers understand the specifics of the crop water requirement. This approach saved several unnecessary hours of pumping

Pest Management

- Significantly reduced the spraying of pesticides due to knowledge on IPM provided

Livestock management

- Forecast products help them understand the behavior of livestock and prepare accordingly during the extremes

Other changes

- Attitude towards farming has changed overtime and they feel much more confident in using NHMS forecast products

KEY TO SUSTAINABILITY

1. Strong Institutional Interface: NHMS and Sectoral User institutions
2. Sustained Support to Ag. Sector - till new tools and practices integrated – (SOP)
3. Improving quality and accuracy of products
4. Common core technical capacity: meet demands of countries with differing capacities
5. Strong and constant feedback systems
6. Trust and Accountability

CLOSING THOUGHTS

- Orchestrating all the global, regional and national components to deliver services to an information aware community

- National effort with a variety of institutional partnerships and community involvement

- Localized Data to generate customized information

THANK YOU

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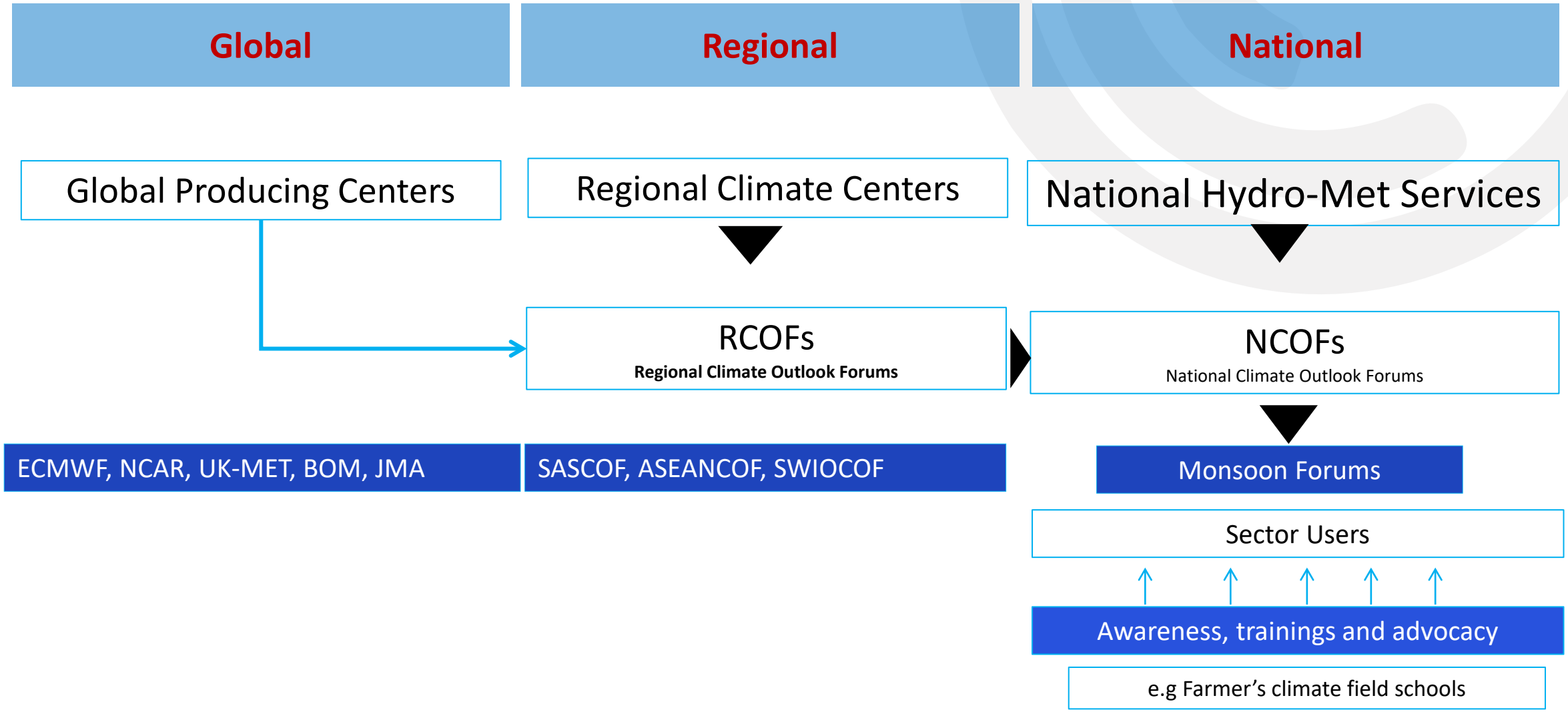
CONNECTING SCIENCE, INSTITUTIONS



The Process is embedded into national and local systems

DECISION MAKING PROCESS

Department of Agriculture

Provincial Office

Extension Workers

Farmer Leaders

DSS Development

Co-development process

Involving the stakeholders from the beginning in the development process

Collaborative Research

Demand Driven Research

Collaboration with AIT and National Agricultural Research Institutes

Farmers

Articulate Demand

Understand Farmers need

Recommendations

Receive recommendations, and feedback on the performance

Capacity Building

Develop and conduct regular trainings, ToTs, FARM schools

SESAME Operation

Develop and operationalize SESAME, involving all stakeholders including NHMS, DOA, NARI

Refine

Process refinement based on the learnings from the season