



Forum for Agricultural Risk Management in Development

WEBINAR SERIES

Climate Services for Smallholder Farmers

By Dr. Jim Hansen (IRI, Columbia
University and CCAFS, CGIAR)

Washington DC, United States, December 3rd , 2014



RESEARCH PROGRAM ON
Climate Change,
Agriculture and
Food Security

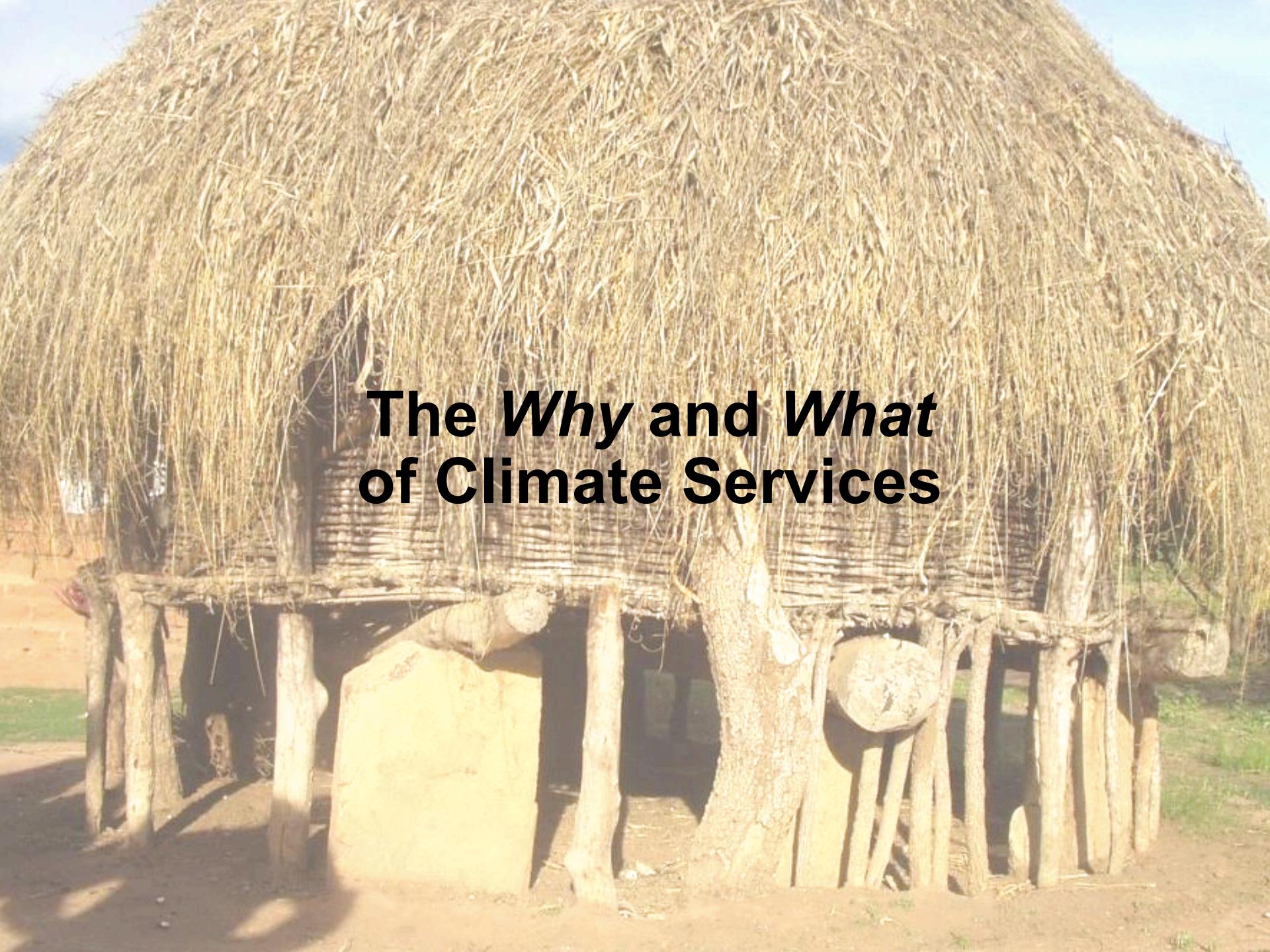


Climate Services for Smallholder Farmers

**Jim Hansen, Flagship 2 Leader: Climate Information
Services and Climate-Informed Safety Nets**

FARMD Webinar, 3 December 2014

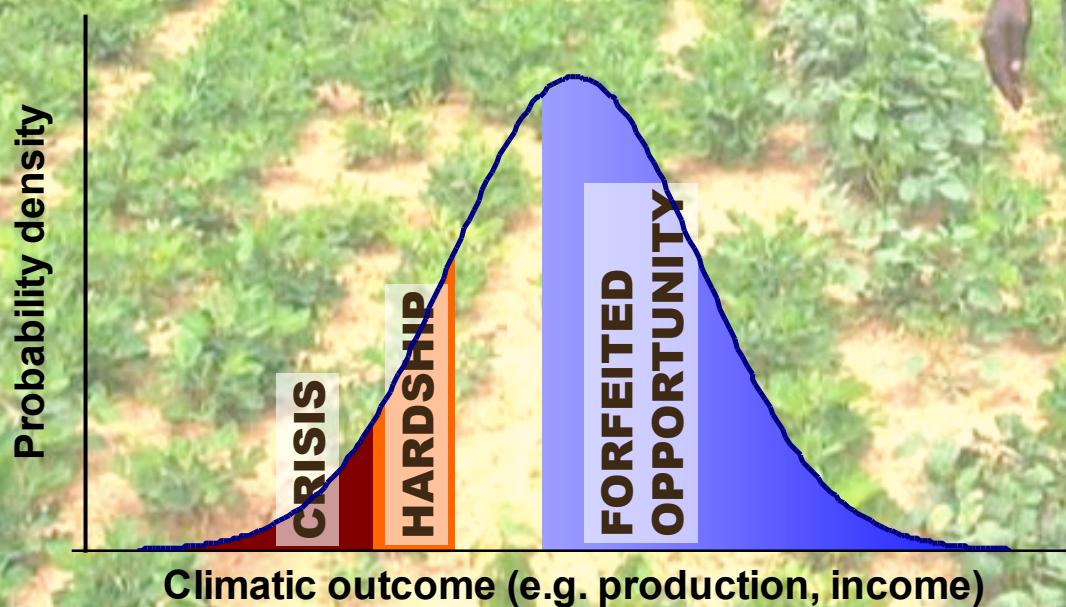


A large, traditional mud-brick structure with a thatched roof, possibly a kiln or storage facility, in a rural setting.

The *Why* and *What* of Climate Services

The cost of climate variability

- Climate risk contributes to chronic poverty, vulnerability, food insecurity
 - Downside risk: shocks
 - Opportunity cost: uncertainty
 - Affects farmers, markets, the food system, the “relief trap”



The cost of climate variability

- Climate risk contributes to chronic poverty, vulnerability, food insecurity
 - Downside risk: shocks
 - Opportunity cost: uncertainty
 - Affects farmers, markets, the food system, the “relief trap”
- Climate variability is increasing
- Several opportunities to help agriculture adapt are...
 - Dependent on information
 - Constrained by information gaps



	Type of information	Vehicles for delivering information	Farmer decisions affected
WEATHER Days to weeks	 <ul style="list-style-type: none"> Observed rainfall and temperature Daily forecasts up to one week ahead of time Alerts on pests and diseases Early warning of extreme weather events 	 <ul style="list-style-type: none"> Mobile phones Radio Television 	 <ul style="list-style-type: none"> Timing of planting and harvest Timing of fertilizer, pesticide, and irrigation application Protecting lives and property from extreme events

WEATHER

HOURS

DAYS

WEEKS

MONTHS

YEARS

DECades

CENTURIES

Type of information	Vehicles for delivering information	Farmer decisions affected
CLIMATE VARIABILITY Months to Years 	 <ul style="list-style-type: none"> Probabilities for seasonal rainfall and temperature conditions Seasonal climate variables targeted to particular agricultural risks (dry spells, rainy season start date, etc) Historical variability of climate variables 	 <ul style="list-style-type: none"> Selecting crops and varieties Livestock stocking rates and feeding strategies Intensity of input use (fertilizer, pesticides) Labor or marketing contracts Intensifying and diversifying crops Diversifying sources of income

CLIMATE VARIABILITY

HOURS

DAYS

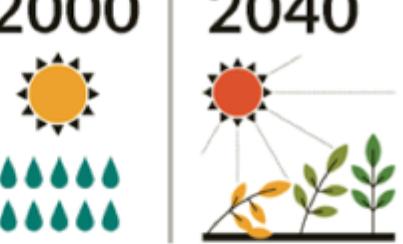
WEEKS

MONTHS

YEARS

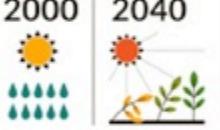
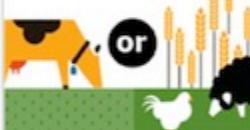
DECades

CENTURIES

Type of information	Vehicles for delivering information	Farmer decisions affected
<p>CLIMATE CHANGE Decades or longer</p> <p>2000 2040</p> 	 <ul style="list-style-type: none"> • Projections of future rainfall and temperature • Historical trends in rainfall and temperature • Historical changes in extreme events 	 <ul style="list-style-type: none"> • Major capital investments (buying or expanding landholding, irrigation systems, farm equipment etc) • Changing farming system or livelihood strategy • Deciding whether or not to farm
<p>CLIMATE CHANGE</p>  <p>HOURS DAYS WEEKS MONTHS YEARS DECADES CENTURIES</p>		

From weather to climate services

- Needs depend on decisions
- With increasing lead time:
 - Decisions more context- and farmer-specific
 - Information more uncertain, more complex
 - Therefore the scope of services needed increases
 - Climate services more than an extension of weather services

	Type of information	Vehicles for delivering information	Farmer decisions affected
WEATHER Days to weeks	 <ul style="list-style-type: none"> • Observed rainfall and temperature • Daily forecasts up to one week ahead of time • Alerts on pests and diseases • Early warning of extreme weather events 	 <ul style="list-style-type: none"> • Mobile phones • Radio • Television 	 <ul style="list-style-type: none"> • Timing of planting and harvest • Timing of fertilizer, pesticide, and irrigation application • Protecting lives and property from extreme events
CLIMATE VARIABILITY Months to Years	 <ul style="list-style-type: none"> • Probabilities for seasonal rainfall and temperature conditions • Seasonal climate variables targeted to particular agricultural risks (dry spells, rainy season start date, etc) • Historical variability of climate variables 		 <ul style="list-style-type: none"> • Selecting crops and varieties • Livestock stocking rates and feeding strategies • Intensity of input use (fertilizer, pesticides) • Labor or marketing contracts • Intensifying and diversifying crops • Diversifying sources of income
CLIMATE CHANGE Decades or longer	 <ul style="list-style-type: none"> • Projections of future rainfall and temperature • Historical trends in rainfall and temperature • Historical changes in extreme events 		 <ul style="list-style-type: none"> • Workshops with researchers, agricultural extension agents, and meteorological services. • Major capital investments (buying or expanding landholding, irrigation systems, farm equipment etc) • Changing farming system or livelihood strategy • Deciding whether or not to farm

Integrating climate information and agricultural advisory services



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- Making climate information more farmer-relevant
- Making agricultural advisory services more climate-smart



Key challenges to reaching smallholder farmers, at scale



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- *Salience*: tailoring content, scale, format, lead-time to farm decision-making
- *Legitimacy*: giving farmers an effective voice in design and delivery
- *Access*: providing timely access to remote rural communities with marginal infrastructure
- *Equity*: ensuring that women, poor, socially marginalized benefit
- *Integration*: climate services as part of a larger package of support



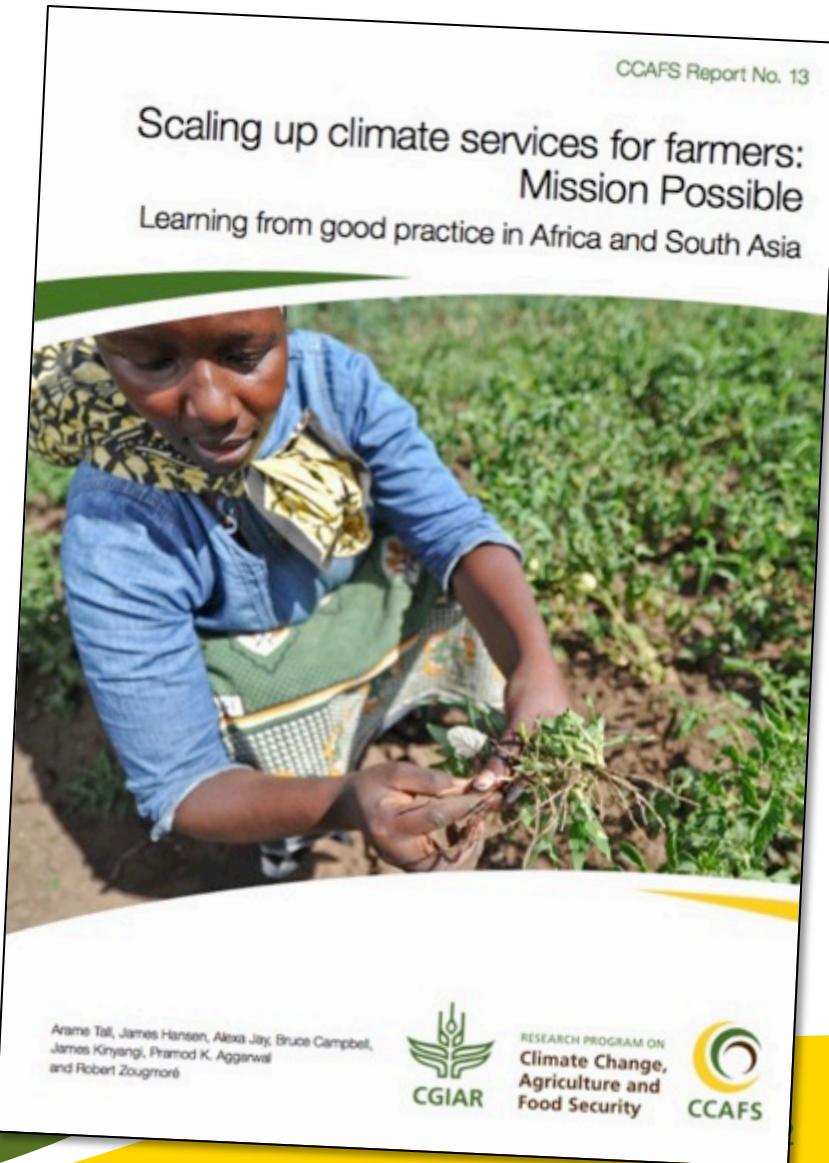
Learning from Good Practice



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- Reviewed 18 case studies
- Mali, India national agromet advisory program evaluations
- How do they address the 5 key challenges?
- Common approaches?
- Generalizable lessons?



Good practice lessons

1. Enabling institutional frameworks
2. Local scale information
3. Seamless forecast products
4. Giving farmers a voice
5. Local and scientific knowledge
6. Face-to-face communication
7. Scalable communication channels
8. Gender and social equity



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CCAFS Report No. 13

Scaling up climate services for farmers:
Mission Possible
Learning from good practice in Africa and South Asia



Aramé Tall, James Hansen, Alexa Jay, Bruce Campbell,
James Kinyangi, Pramod K. Aggarwal
and Robert Zougmoré



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What will it take for climate services to work for smallholder farmers – at scale?

- Hydro-met service capacity to provide farmer-relevant information
- Partnerships, processes for co-production of services
- Scalable communication channels
- Engage and target the vulnerable
- Balance scalable services with context-specific needs

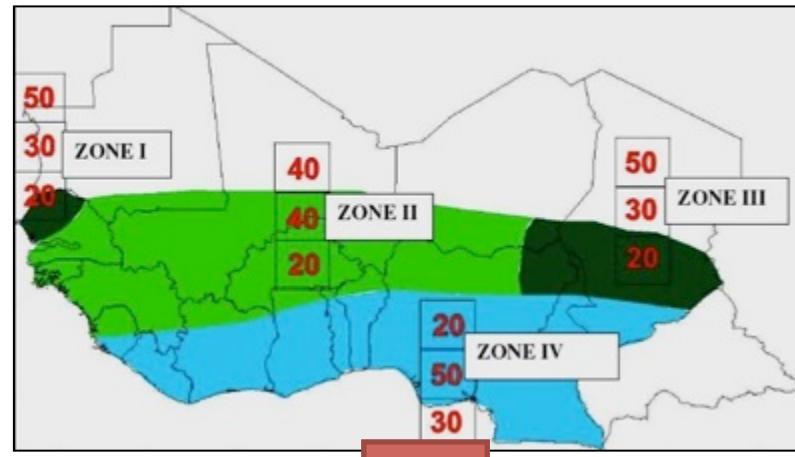
Hydro-met service capacity to provide farmer-relevant information



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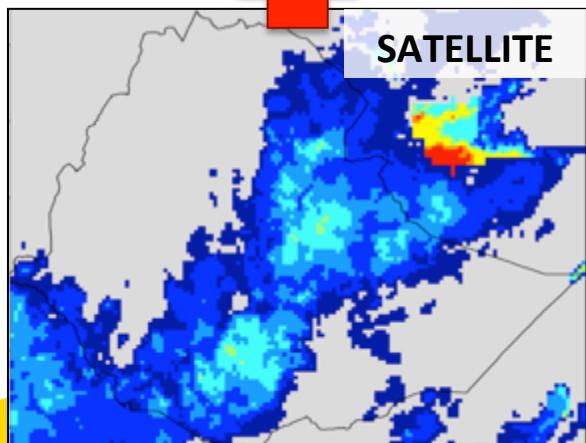
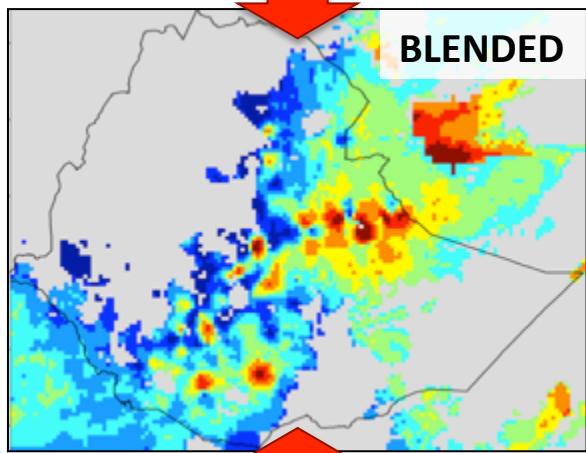
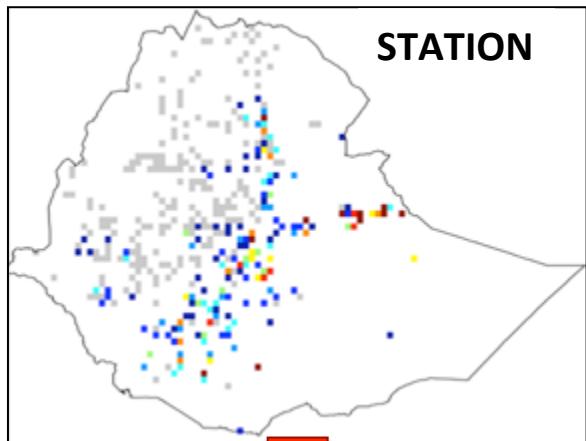
- Salience challenges:
 - Spatial scale
 - Beyond seasonal averages
 - Uncertainty, communicated in context of history
 - Impacts and management
- Challenges that developing country NHMS face:
 - Sparse historic observations
 - Data policy, incentives
 - Human capacity



Hydro-met service capacity to provide farmer-relevant information

ENACTS (Enhancing NAtional ClimaTe Services):

- Started in Ethiopia
- Satellite + station, 10 km grid, 31 year complete record
- Data Library platform to build “maproom” products from data
- Owned, implemented by NHMS





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DIRECTION GÉNÉRALE DE LA MÉTÉOROLOGIE



Levier de développement

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Map room

Analyses climatiques et applications

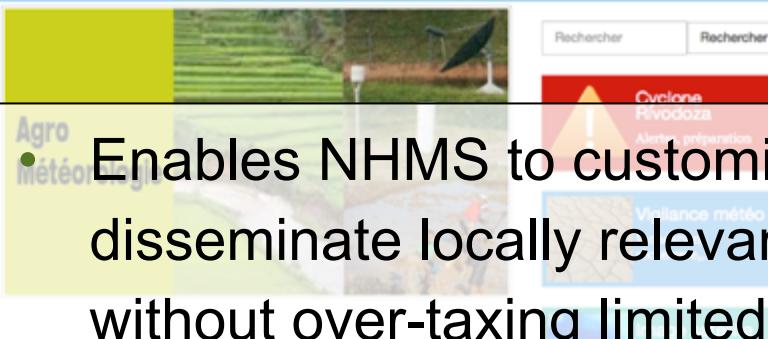
Prévisions Nationales

Prévision pour ce matin

Antananarivo 17°C

Toamasina 23°C

Fianarantsoa 20°C



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Enables NHMS to customize, generate, disseminate locally relevant information without over-taxing limited human resources.

- Implications for climate services for farmers

National Meteorology Agency

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Welcome! Click on the region on map to view the weather forecast for 06 October 2013.

Weather Forecast

- Northern Coast
- Southern Coast
- Northeastern Highlands
- Lake Victoria Basin
- Central Western Region
- South Western Highlands
- Southern Region

Upcoming Events

There are no Upcoming Events at present.

More Events>

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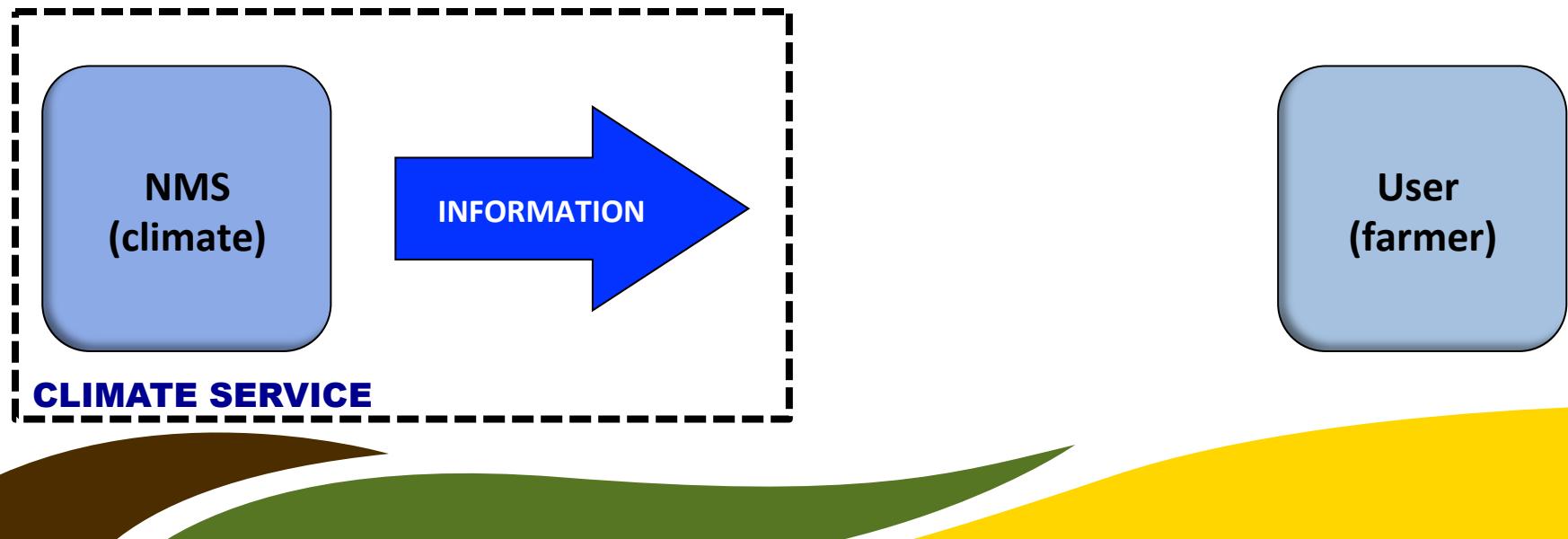
Institutional arrangements, partnerships, processes for co-production



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- Limitations of supply-driven climate services



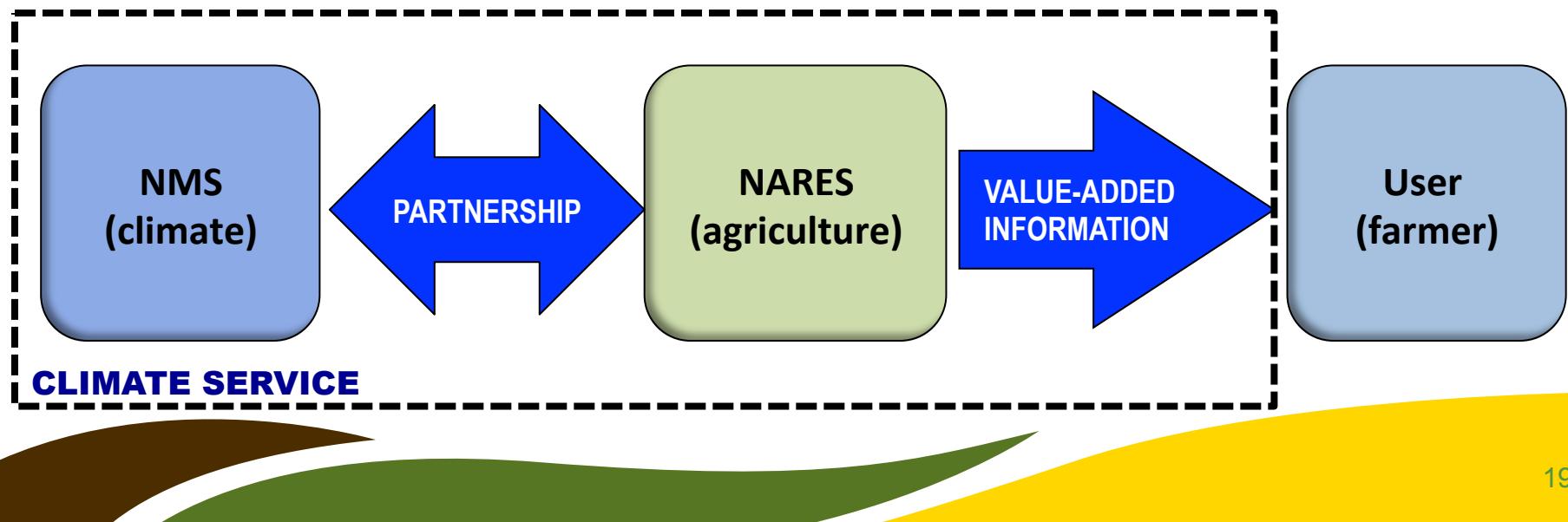
Institutional arrangements, partnerships, processes for co-production



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- Limitations of supply-driven climate services
- Expand the boundary to agricultural research and development
 - Multi-agency climate services governance framework
 - Adopted by GFCS



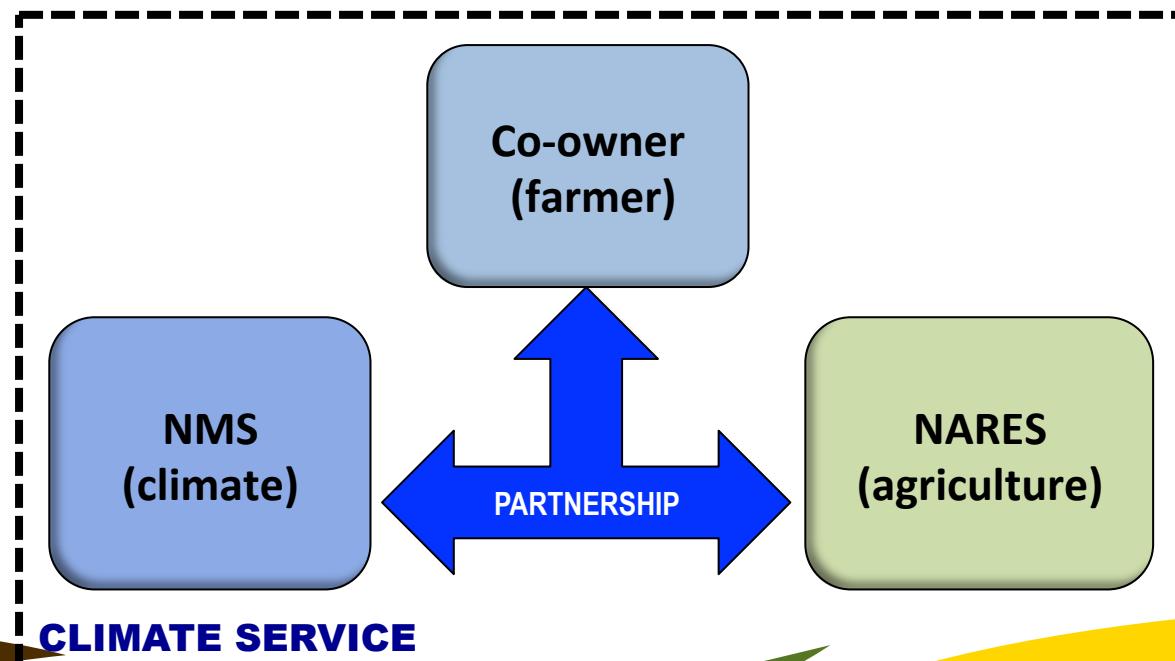
Institutional arrangements, partnerships, processes for co-production



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- Limitations of supply-driven climate services
- Expand the boundary to agricultural research and development
- Expand the boundaries to give farmers an effective voice



Exploit scalable communication channels

- Institutional channels
 - Face-to-face interaction for seasonal planning
 - Training for agricultural extension, other intermediaries



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CCAFS

Workshop Report: Developing a
Methodology to Communicate Climate
Services for Farmers At Scale

June 2013

Sumiko May, James Hansen and Aarame Tall

ICRISAT

ILRI
INTERNATIONAL
LIVESTOCK
RESEARCH INSTITUTE

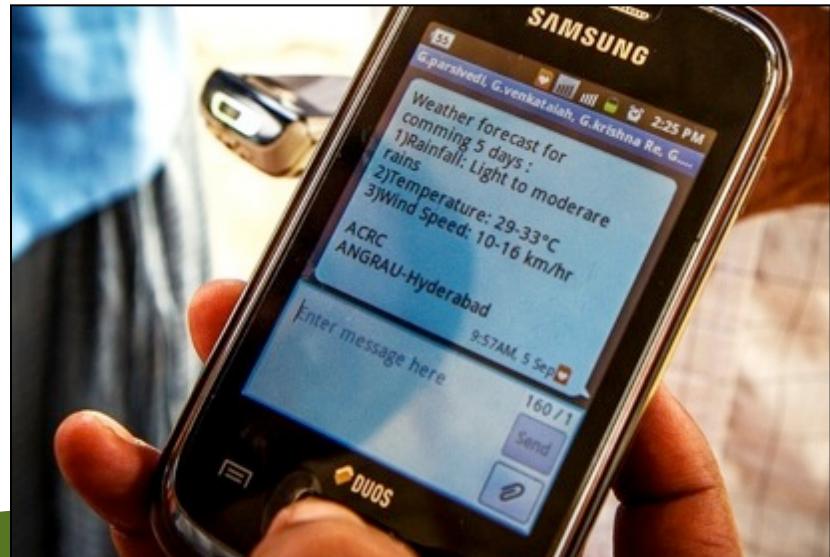
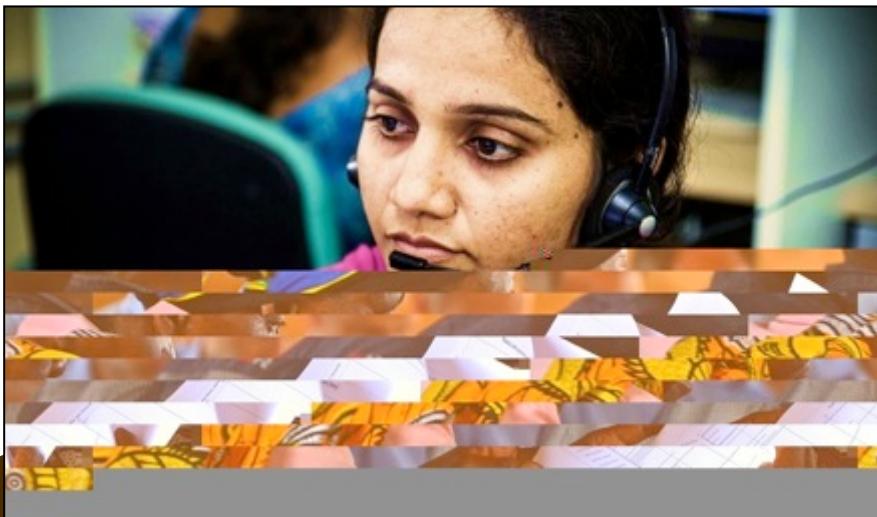
Exploit scalable communication channels



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- Institutional channels
- Media and ICT
 - Rapid dissemination of short-lead information
 - Complement face-to-face communication



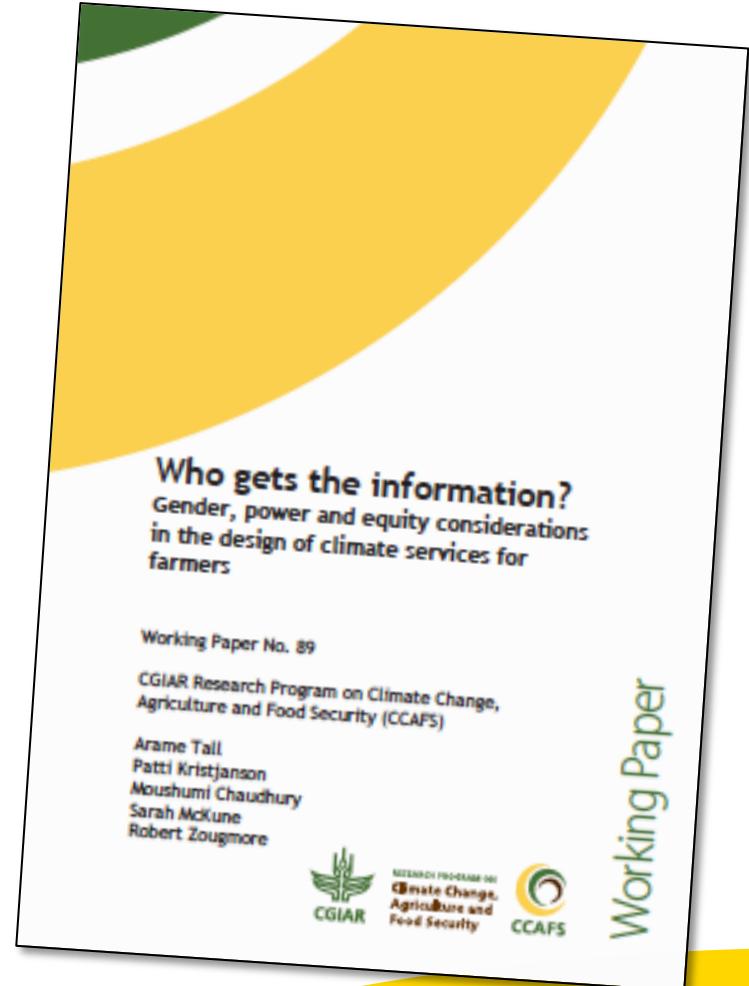
Target and involve the vulnerable and marginalized



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- *One size does not fit all.*
- Gender-responsive:
 - Climate information
 - Communication methods
 - Response strategies
- Engage, assess, target
- Incorporate gender challenges into training for intermediaries



Balancing scalable services with context-specific needs?

- The dilemma
- Ensure farmers, particularly those who are marginalized and vulnerable, have a voice
- Easy wins that are relevant to many
- Iterative assessment and refinement process





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Thank you

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<http://ccafs.cgiar.org/themes/climate-risk-management>



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By Dr. Jim Hansen (IRI, Columbia
University and CCAFS, CGIAR)

jhansen@iri.columbia.edu

Q&A

Visit Also: <http://ccafs.cgiar.org/themes/climate-risk-management>

Washington DC, United States, December 3rd , 2014