"Leveraging the (re)insurance sector for financing integrated drought management practices"

Roger Stone, University of Southern Queensland, Australia. World Meteorological Organisation, Commission for Agricultural Meteorology.





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The problem of high volatility/variability - relationship between annual variation in the SOI and annual Australian wheat yield (N Nicholls) - Australia.

Observed and predicted green coffee yields (USQ/ICACS/CATIE) - VietNam





Case study 1: <u>South-East Asia</u>: "Applying seasonal climate forecasting and *innovative insurance solutions* (Willis Ltd) to climate risk management in the agriculture sector in SE Asia"

- "Develop resilient climate risk management systems, best practices <u>and insurance products</u>, to shield smallholder farmers and businesses engaged in coffee, sugar, rice, cassava, rubber, and grazing across the agricultural value chain from physical and financial disaster associated with climate variability and change in SE Asia.
- The project will prepare smallholders, national governments and agricultural businesses for these climate risks by researching, developing and implementing improved crop specific climate risk management systems, training tools and relevant (weather-based index) insurance products".
- USQ/WMO/Willis/CIAT (Includes CCAFS/CGIAR) Hanoi





Outputs:

- Insurance products (e.g. index-based insurance) developed to assist smallholders and businesses across the agricultural value chain, including easy-to-access insurance products;
- Enhanced decision-support tools involving integrated climate/agricultural/hydrological models developed especially to assist smallholder farming systems decisions;
- Integrated extreme climate risk modelling with insurance models and which link with and develop new associated tailored insurance index-based products..
- Willis Ltd is supporting this project by contributing £2.0 million <u>in-kind</u> to develop brokerage arrangements on-ground in order to develop appropriate insurance products.
- Willis Ltd will facilitate joint workshops and meetings at Willis Ltd, London, regarding risk management research conducted in this project. The in-kind contribution will include the salary level of Willis Ltd staff (eg meteorologists and actuarial staff) (Julian Roberts: Head of Global Weather Risks).



Willis Ltd., Lime Street, London

• Total project volume €13,516,993 – BMUB €7,980,445

<u>What attracted Willis Ltd?</u> The development of targeted agricultural-specific seasonal-to-yearly climate forecast outputs, including aspects related to extreme seasonal conditions, focused on the needs of smallholders, rural businesses, exporters, environmental managers, community, governments, and especially insurance institutions.

Delivering:

- improved data collection network coverage in the region;
- improved seasonal climate forecasting system targeted for the needs of decision makers;
- Organizational and technical capacity building systems for local key stakeholders;
- An enabling legal and regulatory framework for climate risk; insurance and, reinsurance;
- Involvement of WMO/CAgM.
- National funding from the German Government.
- Systems relevant to global reinsurance markets and innovative insurance systems linked to an enhanced understanding of extreme climate risks.





Willis

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Client Service	Willis on Risk	About Willis	Investors	Careers	Q Search
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	Willis is one of the pioneers of weather risk hedging. In the US, we have led the development of the business, with clients including industrial companies, utilities, insurers and energy traders. We can advise organisations on all aspects of managing their weather risk, from determining and evaluating exposure, up to and including advice on trading in the market. We can model and price derivatives and insurance programmes and have access to extensive weather data and climatic research. The Willis team has already transacted ever to major worther deals worldwide Our particular strength is in				

whole-season or multi-year deals.

Case Study 2.

Developing a more efficient multi-peril crop insurance system for Australian rural industry.

Re-insurance/insurance brokerage company (Willis Ltd. Australia) seeks to develop a more efficient crop insurance program where the main insurer (Latevo P/L) has improved knowledge of seasonal to decadal climate risk and the value of seasonal climate forecasting to its industry.

Leveraging the Australian Research Council (ARC), that supports industry-led research.





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	ARC Research Centres	The Linkage Projects scheme provides funding to Eligit	ole Organisations to support research and development (R&D) project	inductry			
	Industrial Transformation Research	 are collaborative between higher education research 	archers and other parts of the national innovation system	industry-			
	<u>Programme</u>	are undertaken to acquire new knowledne and Support					
	Linkage Projects	 involve risk arimovation. research funds 					
	Linkage Infrastructure, Equipment	Pronossie for funding under the Linkoge Projects other	na must include at least one Partner Ornanisation. The Partner Ornan	cation			
	and Facilities	must make a contribution in cash and/or in kind to the project. The combined Partner Organisation contributions for a Proposal (i.e.					
	Linkage Learned Academies	the total of the cash and in-kind contributions of the Partner Organisations) must at least match the total funding requested from the					
	Special Projects	ARC.					
	Special Research Initiatives	Special Research Initiatives The objectives of the Linkage Projects scheme are to:					
	Research Highlight	 support the initiation and/or development of long-term strategic research aliances between higher education organisations and other organisations, including industry and end-users, in order to apply advanced knowledge to problems and/or to provide 					
	Sunflower protein 'scissors' provide	e opportunities to obtain national economic, social or cultural benefits					
	sunny news for medicine	 build the scale and focus of research in the research priority areas 					
	Justic	 provide opportunities for researchers to pursue in higher education sector, targeting these who have 	ternationally competitive research in collaboration with organisations	sutside the			
		 encourage growth of a national pool of world-class 	s researchers to meet the needs of the broader Australian innovation :	ystem			
		Applicants should familiarise themselves with the relev	ant Funding Rules and Funding Agreements. Grants from the ARC are	made to			
		nmanisations and individual researchers or research to	ame. The Eurofine Dulae contain the list of Elinible Organizations				

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Agricultural Drought Forecasting and Recovery Tool

- Drought preparedness scenario planning
- Productivity and income forecasting
- Climate preparedness and Diagnostic tool for improved decision making

Design a solution system



Case Study 3. Improving the physical understanding, numerical simulation and forecasts of severe storms and precipitation events over major Australian cities

A proposal for funding under the Australian Research Council (ARC) 'Linkage Grant Scheme'

Dr Stephen Seims; Monash University, Victoria

Professor Roger Stone, University of Southern Queensland.

The Suncorp Insurance Group

"The central objective of this research is to employ a wide range of field observations to better understand the physical processes, synoptic environment and climatology of severe storms and precipitation events across the heavily populated regions of Australia. This understanding will then be used to evaluate and improve present day numerical simulations of such storms. The combination of improved physical understanding and numerical simulations will provide the basis for improving the forecasts and response to such events".



Key points (Willis Ltd):

- Utilise in-kind and otherwise small financial support from insurance or reinsurance/brokerage agencies to enhance larger competitive funding opportunities (eg IKI, ARC, CRC) as the main leverage process.
- Make insurance agencies aware of climate risk issues and the causes of volatility (eg ENSO).
- Investigate using *Brokerage Insurance* and linking to multi-peril crop/farm insurance (eg Latevo P/L) which conducts a 5-year audit on the farming enterprise: which the landholder pays for).
- (Investigate the key newly emerging aspect of "volatility protection".)
- Key aspect is for the **research agencies to provide or suggest a solution to the financing of insurance products for drought** or multi-peril crop insurance protection.
- Identify the means an insurance or reinsurance agency can commercialise the outcomes.

Thank you

Stern and Dawkins (2004) note that, although 'there are pockets of (Australia)' in which seasonal forecasts for rainfall have only marginal skill, beneficial risk management using seasonal forecasts together with a partial hedge with weather derivatives requires forecasts only marginally better than climatology".

"Weather risk tools plus the use of currency swaps (to manage price risk) should produce better hedging against aspects such as drought than waiting to assess the production volume at harvest and selling into an end-of-season pool market".





Example of collar product based on a global index – in this case the SOI

