

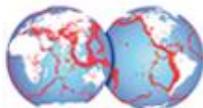


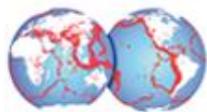
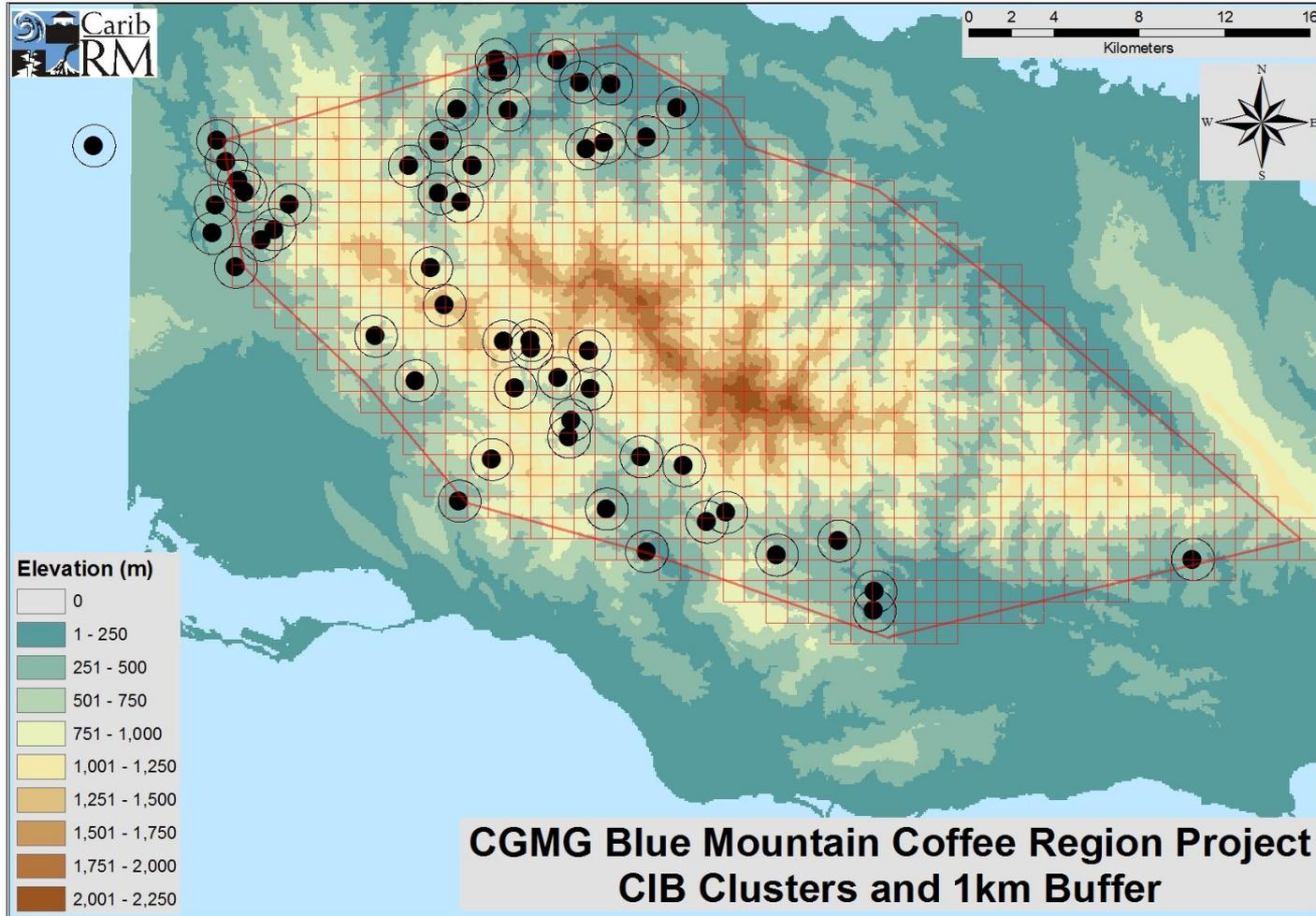
# High resolution hazard modelling to reduce basis risk: An example from Jamaica

Simon Young

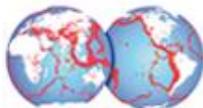
Caribbean Risk Managers Ltd

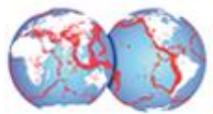
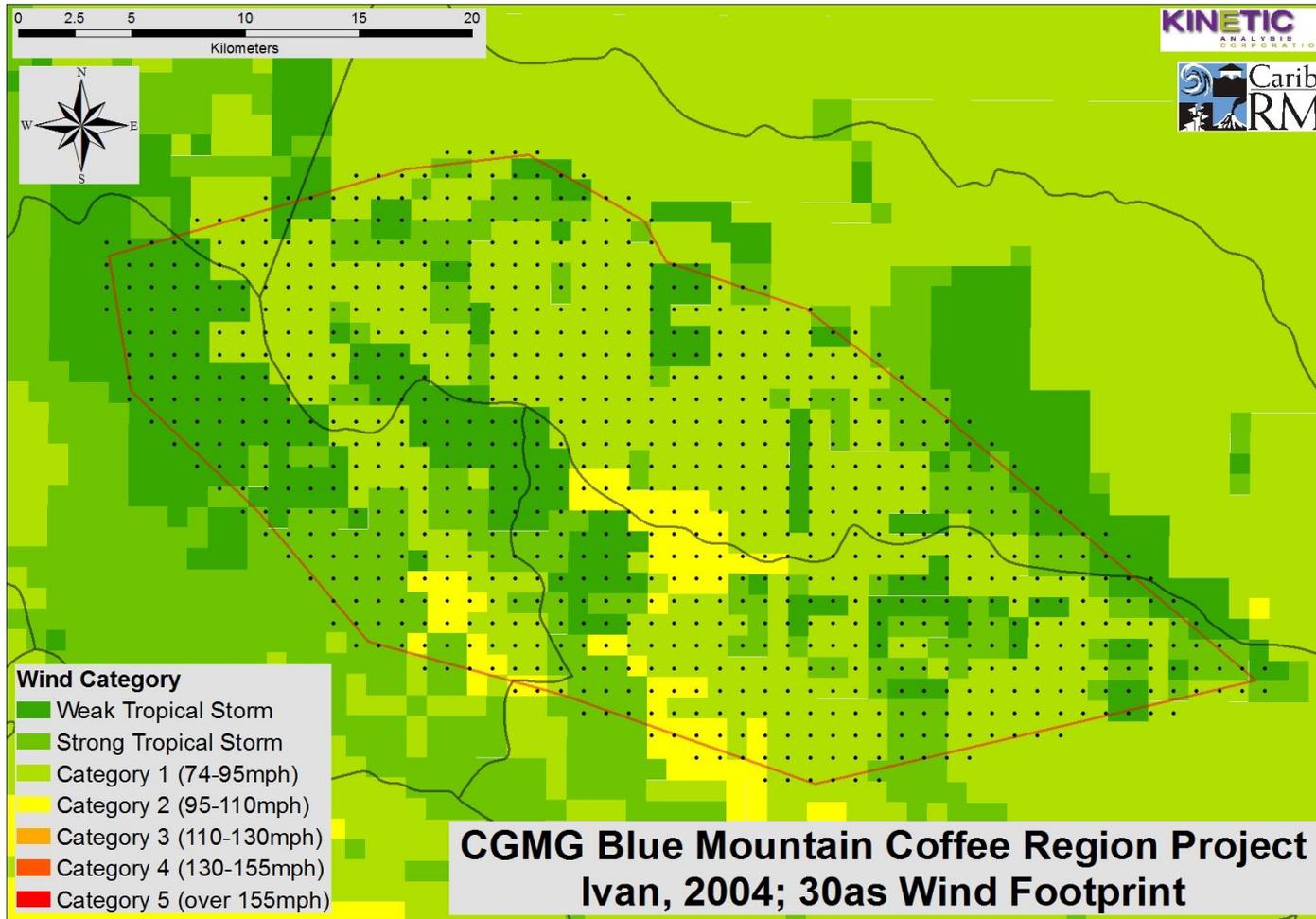
- Blue Mountain Coffee is one of the world's premier brands
- BUT the industry is highly susceptible to hydro-meteorological hazards
  - Growing season is largely synchronous with Atlantic hurricane season
  - Combination of wind and rain is particularly devastating
  - Mountainous terrain compounds problems

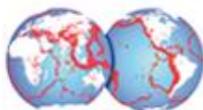
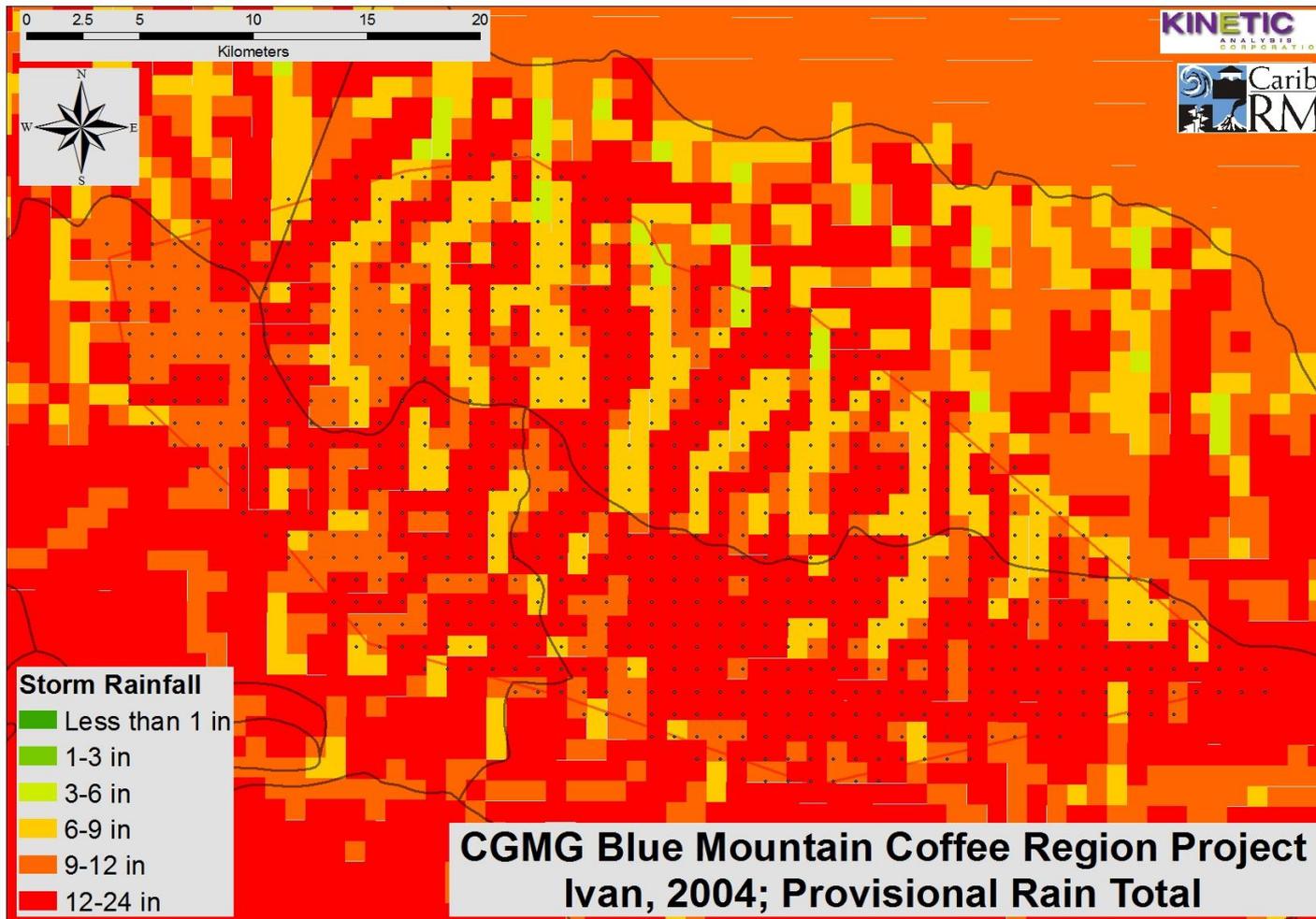




- Traditional indemnity insurance schemes have failed due to a variety of factors
- In particular, Hurricane Ivan in 2004 ended interest by global markets in re/insuring BMC
- Index-based insurance provides a potential solution
  - However, small size of farmers and cultivated areas, and variability in hazard levels over short distances, provide great challenges to reducing basis risk to an acceptable level







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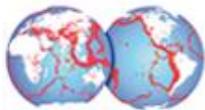
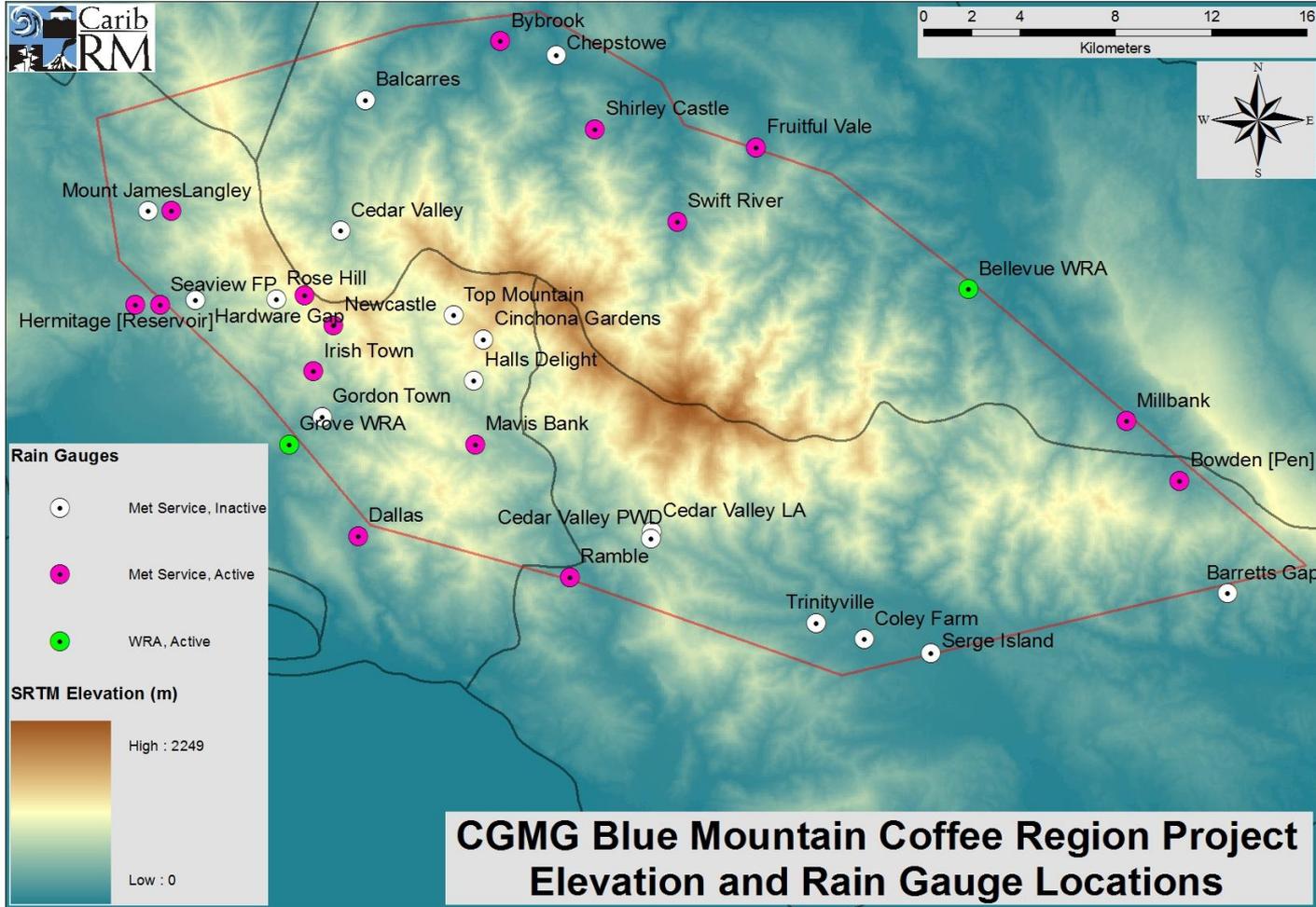
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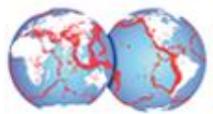
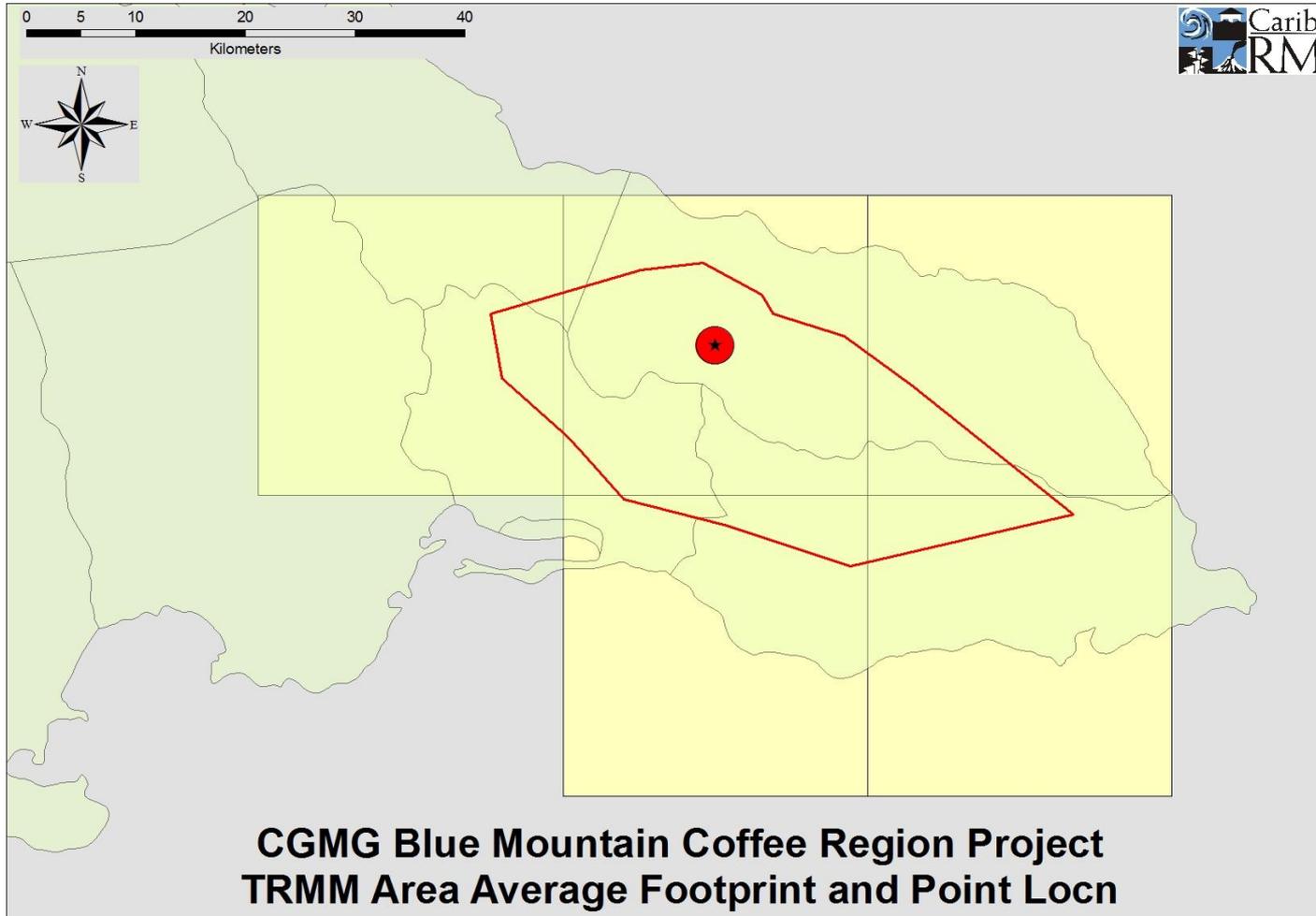
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- Other technical challenges to designing an index based product include:
  - lack of historical wind and rain data in the coffee-growing area
  - lack of quantitative impacts of past events on individual coffee trees
  - lack of quantitative impacts of past events on the industry as a whole

- Rain data patchy and peak events not well recorded by manual gauges
- Also lack of continuity in records – have statistics for multiple decade periods, but only 18 years (max) continuous record
- Satellite approaches not suitable
- Aiming for a modelled rainfall at start, moving to gauge-controlled over time or perhaps some combination of the two





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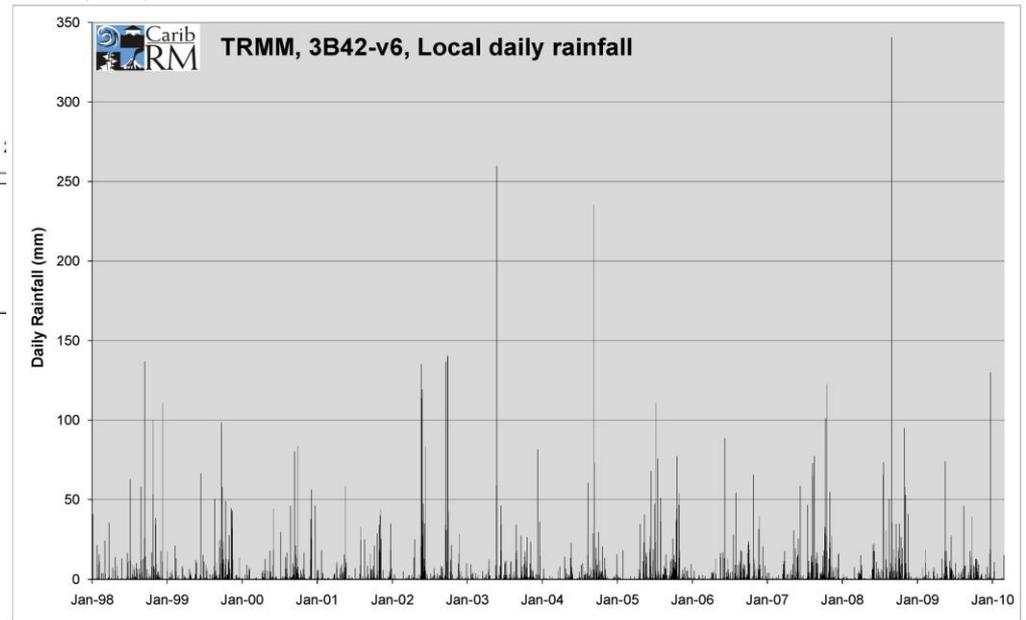
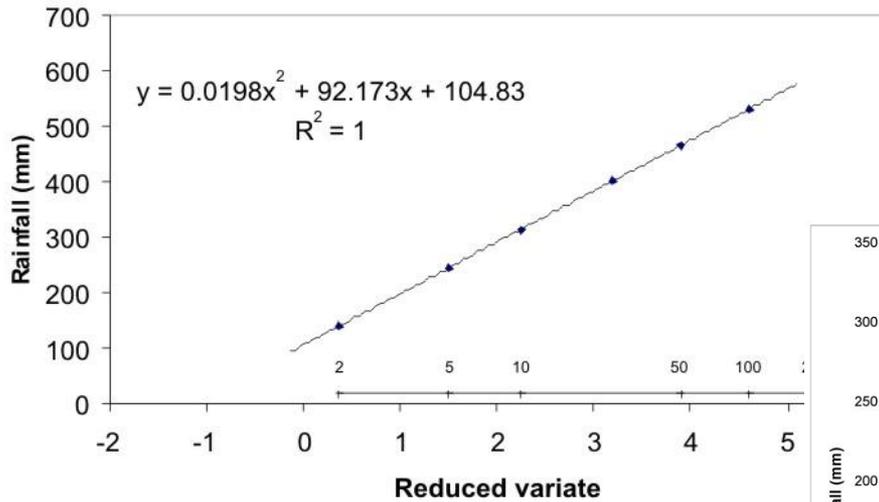
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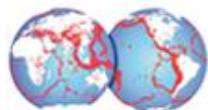
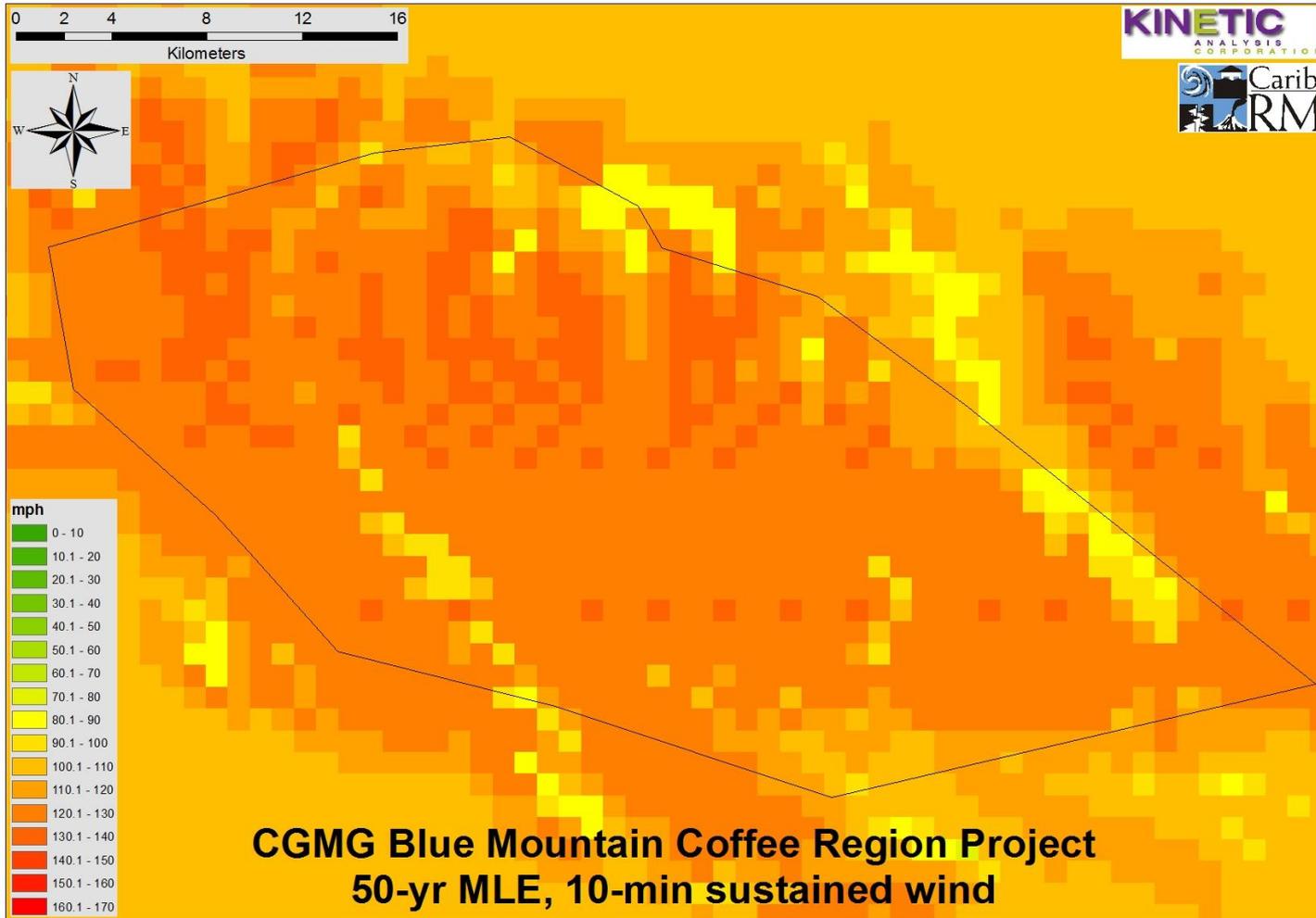




## Return Period Analysis Results for Mavis Bank



- Wind data non-existent in BMCR
- Has to be a modelling approach, which is well tested and validated at ~1km resolution
- New weather stations can start to collect data and build a baseline – then can be useful in normalising the model outputs



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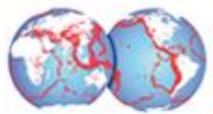
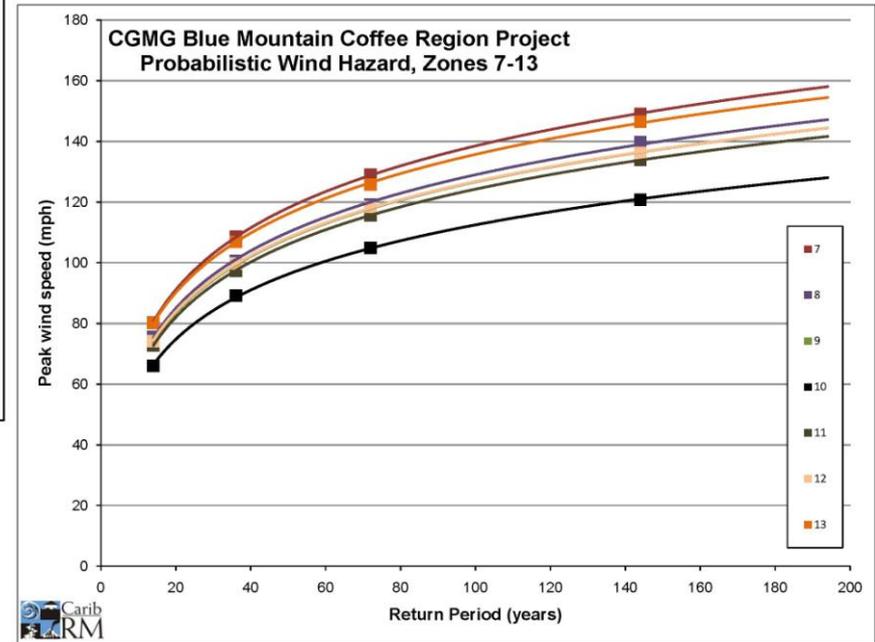
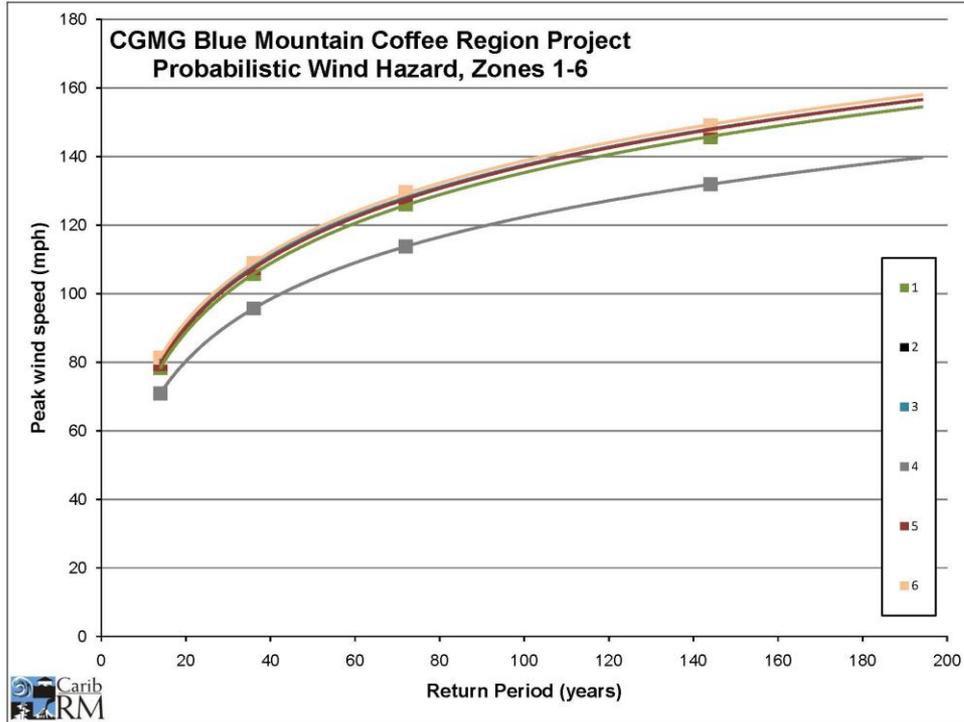


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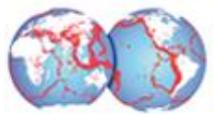
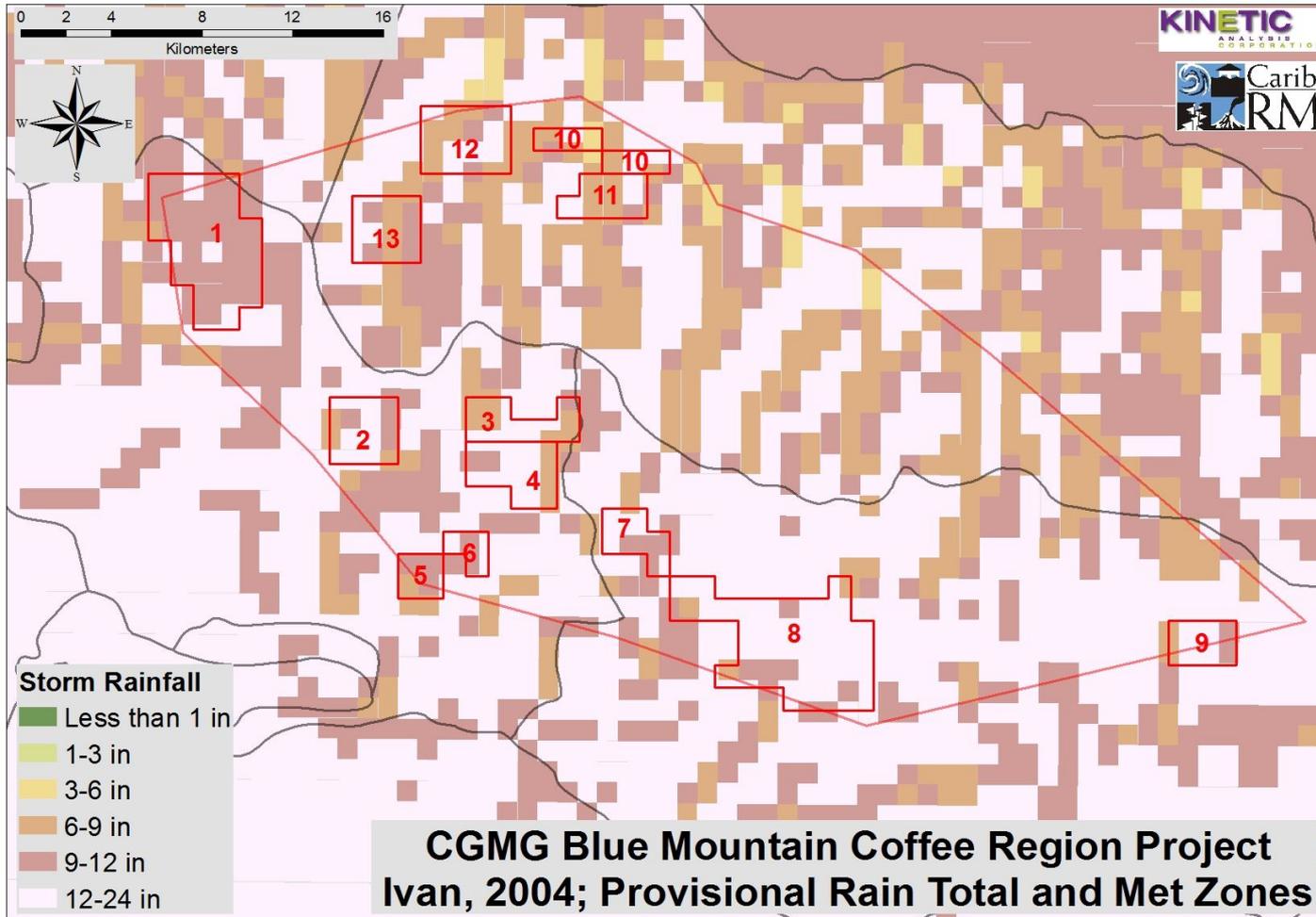
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- For contracting purposes, need to identify clusters of producers who are faced with similar hazard characteristics
- Need to assess both probabilistic hazards (for contract design and pricing) and also single event impacts (for payout calculation)
- Zonation is not the same for these two views of hazard.