Volcano hazard characterization

- Stephen Sparks, Bristol
- Key questions:
  - Recurrence rates of different kinds of hazardous volcanic phenomena (e.g. explosive eruptions, lavas, pyroclastic flows, large landslides, lahars) of different magnitude and intensity?
  - What areas are affected by hazardous phenomena and how can the attendant risk be quantified?
  - Which areas are at high risk from future eruptions?

Volcanoes, cont.

- Data
  - Smithsonian Institution
  - Japanese Catalogue of active volcanoes
  - Volcanic Hazards Atlas of the Caribbean
- Methods
  - extreme value techniques to assess recurrence rates of large explosive eruptions
  - ensemble modelling with Monte Carlo techniques to estimate return periods and aperiodicity
  - Bayesian Belief Networks (BBN) for risk assessment

Volcanoes cont.

- Priority areas of work
  1) Recurrence rates of large magnitude volcanic eruptions
  2) Hazard databases: proof-of-concept study on volcanic landslides
  3) Intensity (magma eruption rate) data base
  4) Time gap database for large explosive eruptions
  5) Methods development

Volcanoes, cont.

- Acutal and proposed collaborators
  - Dr Stuart Cole, Dr Willy Aspinall and Dr Gordon Woo
  - Smithsonian Institute
  - Regional partners
  - Reinsurance industry?
- Resource requirements
  - full-time postdoctoral researcher
  - full-time person to develop and manage the databases
  - funds for student help in systematic data mining
  - funds for GRIP meetings