International Collaboration with Global Impact

NEW FRONTIERS IN ENVIRONMENTAL CHANGE RESEARCH

Priority Research Actions

- Arctic Observing & Research for Sustainability
- Coastal Vulnerability
- Food Security & Land Use Change
- Mountains as Sentinels of Change
- Biodiversity & Ecosystem Services
- Science-driven E-Infrastructure Innovation
- Transformations & Inter-Regional Linkages

International Research case studies

1. Project DRIVER
   Jamie Hannaford
   Bailrigg, UK
   Drought events and water security; developing drought monitoring and early warning systems; characterising socio-economic costs

2. Project METROPOLE
   Catherine Reynolds
   Florida, USA
   Global climate model case studies for communities in Brazil, UK and USA for decision making in regional adaptation to climate change

3. Project TRUC
   Shona Paterson
   London, UK
   Environmental resilience and urban transformation in coastal mega cities: London, Kolkata, Lagos, New York and Tokyo

4. Project DEVS
   Nuala Fittin
   Aberdeen, UK
   Connecting land use change to food availability and security; economic and sociopolitical constraints on food production

5. Project P3
   Dr. Dirk Schmeller
   Leipzig, Germany
   Ecological research and policy action on pollution, pathogens, and human impacts on mountain ecosystems in USA, France, Oman and China

6. Project RACArctic
   Dr. Alan Haynes
   Seattle, USA
   The impacts of climate change related trends in temperature, sea-ice and ocean acidification on marine ecosystems in the Pacific and Atlantic Arctic

7. Project PREBEAL
   Dr. Igor Drobyshhev
   Ainaup, Sweden
   Improving the predictability of boreal forest fire activity and analysing the related socio-economic impacts using palaeoclimatic archives

8. Project CLIMAX
   Dr. Carolina Vera
   Buenos Aires, Argentina
   Drivers in South American climate variability and its impact on extreme events; the use of climate data in socio-economic context

9. Project eI&DM
   Robert Samors
   Rome, Italy
   Developing sustainable practices for data discovery, management and curation, open access scientific data

10. Project THESIS
    Tim Hess
    Cranfield, UK
    Investigating increased sugarcane demand and land use conversions; impact of climate change and rainfall on food security

Global climate model case studies

Case studies

- Sub-Arctic marine ecosystems vulnerable to temperature stress and ocean acidification caused by climate change
  - Cold water corals, Scotland
  - Case study 6

- Characterising climate variability and timing of extreme events, including flooding from extreme rain events
  - Honister Pass, England
  - Case study 7

- Improving the predictability of boreal forest fire activity and analysing the related socio-economic impacts using palaeoclimatic archives

- Developing sustainable practices for data discovery, management and curation, open access scientific data

- Investigating increased sugarcane demand and land use conversions; impact of climate change and rainfall on food security

Local Impact

- Environmental impacts of pollution, pathogens and increased population in vulnerable mountainous regions
  - Ben Nevis, Scotland
  - Case study 1

- Highly populated transformative urban areas (megacities) near coasts face unique threats to climate change and related events

- Regional sea level rise vulnerability assessment with cost analysis for the Town of Sesley for local decision-making on climate change adaptation, resilience and public finance
  - Sesley Coast, England
  - Case study 2

- Coastal-driven weather events (storm surges, sea level rise, coastal erosion, etc.)
  - London, England
  - Case study 3

- Predicting and early warning systems for extreme events such as heat waves, forest fires and flooding in vulnerable, highly populated regions
  - Manchester, England
  - Case studies 1 & 7

- Environmental resilience and urban transformation in coastal mega cities: London, Kolkata, Lagos, New York and Tokyo

35 Countries

48 Research Projects

450 Scientists