Observations & Science

FUTURE EARTH WATER-ENERGY-FOOD NEXUS WORKSHOP
Pietermaritzburg, South Africa, 21-23 November 2016
Questions #1: Needs in order to manage WEF

• Lack of information in public space e.g. from Mining industry, but should be released under free information act (South Africa)

• Facilitating the exchange of information regardless being good or news

• Biggest challenge climate data – weather services need to generate income to fund staff, stations etc.

• When available often restricted in terms of stations, resolution etc.

• SA: If funded by public funds – data need to be public. Project specific activities working on an understanding how data can/should be shared.

• EO open and free data – but information not free
Question #2: Science questions to reduce uncertainties

• Often work in pillars (water, food, energy) need to work on innovative and integrative solutions
• Show implications/impacts on e.g. food production, water supply, energy cost
  • BAU vs. through scenarios
  • “Wetches” concept and MAPS (mitigation and planning scenarios)
• Integrated models working on the different trade-offs
  • How do we integrate different data types, sensors?
• Risk framework – e.g. Risk hot-spots (climate change)
Question #3: Benefits from information integration

• Government more reactive than long-term planning
  • User friendlieness e.g. ”Pixi” publications, policy brief
• Private sector: Financial viability, CSR, public perception
  • Risk profiles – will this be negatively perceived locally, nationally, internationally
  • Specifically: Mining, energy, forestry
• Land use trends (mapping and modelling) e.g. Bush encroachment (carbon, fuel, GW water impacts)
  • CO2 fertilization, changing fire regimes
  • Use forestry for carbon sequestering, may not always be the best in a WEF Nexus context
Questions #4: Earth Observation support

• EO – how accurate?
  • Large portefolio of products which has been validated, but difficult to cover all environments
  • Global standard products available (rainfall, vegetation, soil moisture)
    • Even if not perfect – sometime only information use
• Always looking for opportunity to get more ground data
  • citizen science could help
• The challenge is the process on how to turn data into information
  • Algorithms
  • Volume
  • ...
• Mining: Water extraction, water quality, vegetation health
  • Sentinel resolution
Question #5: Information system needs

• Integrative modelling, Adoptive Risk framework
• Links to socio-economic data
  • Africa generally national (HDI, WB indicators)
  • South Africa finer level
• EO can help to downscale:
  • Population (night light, build-up)
  • VHR data – for urban characterisation (informal settlements, building inventory)
• Looking towards industry for information (e.g. Farmacia, electricity use, seed sales) – scope for a pilot project?
Question #6: Merging models

• National indicator framework:
  
  • Water -> water supply
  • Food -> net export
  • Power -> capacity in MW, ratio renewable to coal/fossil capacity

• Different triangles for different scenarios to
Question #7: Citizen science

- Weather stations, campaign towards schools
  - Monitored by teacher/Kids
  - Has longevity
  - QA because used in science projects

- App for water leakages!

- Examples Energy, Agriculture
  - Household energy supply, online anonymous submit usage

- Making better usage of existing open source projects (e.g. OSM)