

Notes from Agricultural Land Use & Water Resources Panel

- Models used in IPCC Fifth Assessment Report (AR5) show no improvement on precipitation prediction.
 - ✓ High uncertainty about changes in future precipitation in Central Asia region.
 - ✓ Low uncertainty about increasing future temperature in Central Asia region, including many more “tropical nights” when minimum temperature does not drop below 20 °C.
 - ✓ Ag sector diversification after 1991 has led to increased share of vegetables/fruits/nuts production that may be more at risk with increasing tropical nights.
- Current land monitoring system in UZ presents challenges for data gathering & integration, including no spatially explicit land cover/management information system.
 - ✓ Land reform processes in UZ after 1991 have led to smaller farm sizes, creation of protected areas, fewer pastures, and other changes in distribution of land uses.
 - ✓ Need for the development of management plans for ecologically sensitive lands.
 - ✓ Land change monitoring projects funded by Germans have focused on fine-scale analysis of representative areas to capture shifting land use patterns post-independence.
- From perspective of the international development community, important ongoing paradigm shift from focus on remote sensing of patterns and processes in the landscape to those in the farmscape.
 - ✓ Increased availability of high spatial resolution RS data enables farmscape planning and management.

Notes from Monitoring of Land Use, Water Resources, and Fire & Impacts Panel

- Significant changes in utilization of pasture resources & livestock in KZ post-independence
 - ✓ Biomass on KZ pastures exceeds forested land carbon
 - ✓ Need RS imagery to map pastureland productivity for decision support
- Regionally calibrated monthly LAI time series produced for Kazakhstan 1982-2010
 - ✓ Validation process following CEOS protocols
 - ✓ Data products and model document freely available from Univ Göttingen for using in modeling and research on sustainable water use
- Central Asian countries only contribute 2% to detected global fires
 - ✓ Most fires associated with weed burning
 - ✓ GOF-C-GOLD provides fire coordination activities at global scale
- Impact of urban areas in dryland areas
 - ✓ Urban heating and cooling areas relative to rural areas
 - ✓ Differential crop water use detected through remote sensing
- Advanced operational snow cover mapping in Central Asia
 - ✓ To be implemented in Kyrgyzstan in 2014
 - ✓ To force AISHF model to calculate glacial mass balance for decision-making
- Analysis of precipitation dynamics would benefit from training in geospatial technologies
- Need for well-coordinated international investment to establish regional capacity-building center similar to what ICIMOD does in Nepal
- Approach USAID contacts within each country, but need sustainable consortium of international funders
- Need training/educational programs in parallel with MS/PhD research programs
- Need to be well linked to key national institutions to make impact on ground

Overview on Agricultural Resources

- Countries of Central Asia are predominantly agricultural (60% of the population live in rural areas)
- Agriculture accounts for an average of 25% of GDP. (In Kazakhstan, agriculture accounts for 8% of GDP).
- Agriculture in Central Asia occurs in semi-desert and mountain regions. Land suitable for crop production is c. 20% of total agricultural land (and as low as 4% in Turkmenistan). Livestock production important.
- Cotton and wheat are the dominant crops in Central Asia. (Kazakhstan does not cultivate much cotton). Cotton production relies heavily on irrigation. 80% of cropland in Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan is irrigated. 7% irrigation in Kazakhstan. Overall cotton is decreasing and being replaced by wheat.
- Large areas brought under the plow by the Virgin Land Campaign Lands have been degraded by excessive mono-crop cultivation. Large areas of salinization exist resulting from poor irrigation practices.
- The region produces a wide variety of smaller crops inc. barley, corn, flax, grapes, beets, apples, apricots and nuts
- Animal husbandry constitutes a large part of Central Asian agriculture - Cattle, sheep, and poultry