

# Bukhara-Samarkand (7-10<sup>th</sup>)

## Summary – Krishna Vadrevu

- Tashkent Institute of Irrigation and Melioration – Bukhara Campus
- Jeyran Ecological Center
- Samarkand Agricultural Institute
- Ulugbek's Astronomical observatory (1420), Samarkand
- Land use transect



- Tashkent Institute of Irrigation and Melioration is active since 1923, when Hydrotechnical Faculty of the Turkestan State University the Engineering Melioration Faculty was established.
- Water and land reforms in the region and further irrigation and agricultural development raised the necessity to establish a ***unique water and agricultural school.***

# Bukhara Branch of Tashkent Institute of Irrigation and Melioration

- Faculty of Hydromelioration
- Faculty of Hydraulic Engineering
- Faculty of Land Management and Cadaster
- Faculty of Economics and Management
- Faculty of Automation and Mechanization



## Focus on:

**-Water Management and Amelioration**

**-Salinity treatment – both biological and Engineering methods;**

**-Land use and land cadaster - mostly Geodesy - potential for Space-borne Remote Sensing Data for land survey and applications;**

**Potential collaboration areas:** Water management issues; Remote sensing for LCLUC in the historical Bukhara sites including Archeology – integration with Geodesy; Agriculture LCLUC.

# Jeyran Eco-Center

**Jeyran Ecocenter was established in 1997 for the purpose of the breeding and protection of rare and endangered species of animals.**

The breeding center is located in the south-west of Kyzyl-Kum Desert, 42 km from Bukhara and has the status of protected natural area.

Jeyran Ecocenter obtained the recognition of one of the most effective breeding centers of rare hoofed mammals.

- Jeyran (*Gazella subgutturosa*)
- Endangered Asiatic wild donkey (*Equus hemionus* Pallas) and critically endangered
- Przewalski horse (*Equus przewalskii*), the world population of which is about 3000 heads.



# Field Trip



# Research Questions

- Land degradation and LCLUC changes in arid regions;
- Changing precipitation patterns and droughts;
- Bioclimatology and Floristic diversity;
- Ecosystem functions, resilience, anthropogenic impact on dry land vegetation and use;
- Agroforestry studies;
- Salinity mapping and monitoring; related albedo- and water-table changes over large landscapes;
- Aerosol and dust transport;
- The ecological restoration of degraded drylands and protected areas
- Ecosystem services such as carbon sequestration, dunes stabilization, salinity control, nutrient cycling, climate and hydrological cycle regulation.

# Samarkand Agriculture Institute

Samarkand Agricultural Institute was found in 1929 and now it is considered to be one of the leading educational establishments in agricultural branch in Central Asia.

Higher education: BS, MS, PhD programs;

The 4 faculties of the Institute are training specialists in 17 directions.

**International Collaborations:** USDA's FEP program, Wageningen University (the Netherlands) and others.

**Remote Sensing capabilities are not developed => room for improvement**



# Ulugbek's Astronomical observatory (1420), Samarkand

- Observatory was unique in construction for its time. The basis of observatory was giant goniometer (radius = 40,212m) and the length of arc was 63 meters. The main instrument-sextant-was oriented with amazing exactness by line of meridian from south to north.
- Exactness of observations of Samarkand astronomers is amazing because they were made without help of optical instruments, with unaided eye. Astronomic tables contains coordinates of 1018 stars. His catalog did not lose its value in our days.
- Calculation of the length of star year, which by Ulugbek's calculation is equal to 365 days 6 hours 10 minutes 8 seconds. *Actual length of star year by modern data is 365 days 6 hours 9 minutes 9,6 seconds. Thus the mistake is only less that one minute.*



# Zarafshan – Water Reservoir

- The Zarafshan, River basin has the honor of being Central Asia's most ancient seat of agriculture; 3<sup>rd</sup> largest river; the region's earliest cities were founded there.
- Zarafshan River basin has changed over the past half century. Formerly, it was a sub-basin of the Amu Darya basin but its connection was lost as more and more water from the river and its 70 tributaries was diverted for irrigation.
- Zarafshan reservoir - serving 9-million people; Basin wide management;
- Currently involved in preparing water use plans.
- Drip irrigation efficacy was discussed during the tour



# A Glimpse of Registan Square in Samarkand



# Plov – National Dish





The famous Samarkand  
“lepyoshka”

