THE 4RD

INTERNATIONAL SYMPOSIUM ON ENVIRONMENT AND DEVELOPMENT:

Balancing Development and Conservation - Save Our Air, Soil and Water

September 11-16, 2017

Calgary, Alberta, Canada

https://www.hw-erg.org/

Preface

The 4th International Symposium on Environment, Natural Resources and Ecological Conservation (ISENREC2017)

The Chinese Society of Environmental Resources and Ecological Conservation, World Association of Soil and Water Conservation, Institute of Geographic Sciences and Natural Resources Research of Chinese Academy of Sciences, Guangdong Institute of Eco-environmental Science & Technology, Taiwan Chinese Culture University, The Chinese University of Hong Kong and HW Eco Research Group are organizing the 4th International Symposium on Environment, Natural Resources and Ecological Conservation (ISENREC2017) at Calgary, Alberta, Canada on September 11-16, 2017 (https://www.hw-erg.org/).

Welcome to Calgary, Canada! We are excited to have you join us in this great opportunity to listen to keynote speeches by prestigious and multidisciplinary experts, learn new knowledge, information and concepts, build up international collaborations and see this beautiful country!

ISNREC2017 Committee

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Theme

Balancing Development and Conservation-Save Our Air, Soil and Water.

Topics

1. Greenhouse gas emissions and mitigation strategies
2. Soil protection and remediation
3. Water pollution treatment and prevention
4. Impacts of climate change on ecological environment
5. Ecosystem modeling and its application on environment conservation
6. RS, GPS, GIS and other advanced technologies in ecosystem environment managements.

Committee

Co-Chairs

Prof. Dingqiang Li, Guangdong Academy of Sciences/Guangzhou Branch, Chinese Academy of Sciences (CAS); Director, Chinese Society of Environmental Resources and Ecological Conservation

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Prof. Yongqin David Chen, The Chinese University of Hong Kong

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Dr. Hong Wang, HW Eco Research Group, British Columbia, Canada

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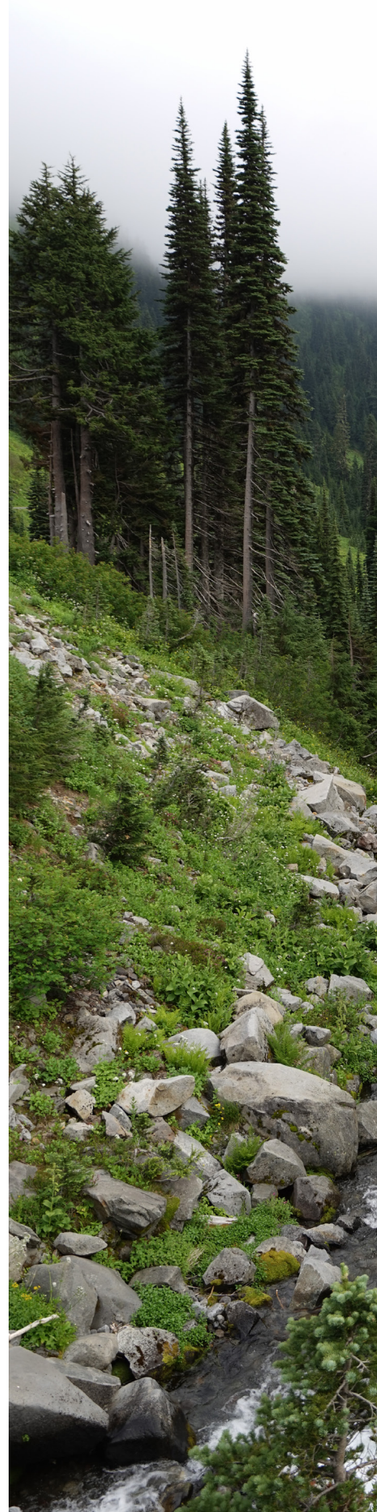
Dr. Mulan Dai, HW Eco Research Group, British Columbia, Canada

Dr. Chao Yang, University of Saskatchewan, Saskatoon, SK, Canada



DETAILED SCHEDULE AND SPEAKERS

Day 0, 10 September, 2017, Sunday

Time	Address
12:00 – 23:00 Registration	COAST PLAZA HOTEL AND CONFERENCE CENTRE, 1316 33rd St. NE, Calgary, Alberta T2A 6B6, Canada

Day 1, 11 September, 2017, Monday

Chair: Dr. Hong Wang

Morning (9:00 – 13:30)

9:00 – 9:10	Opening Speech	Dr. Dingqiang Li
9:10 – 10:10	O1. Keynote Speech: Dr. Roland Kröebel, AAFC, Lethbridge, AB.	Modelling carbon changes in grassland – open questions that are waiting for an answer.
10:10 – 10:30	Group Photography	
10:30 – 11:00	Coffee Break	
11:00 – 11:40	O2. Keynote Speech: Yifeng Zhou, Hongfu Wan and Bin Cheng. Guangdong Institute of World Soil Resources	A preliminary study on using soil conditioner to improve sodic soil in China
11:40 – 13:30	Lunch and Poster Presentation	

, Chair: Dr. Roland Kröebel

Afternoon (13:30 – 17:30)

13:30 – 14:30	O3. Keynote Speech: Dr. Alan Iwaasa, AAFC, Swift Current, SK.	
14:30 – 15:30	O4. Keynote Speech: Prof. NG Sai-leung, The Chinese University of Hong Kong	
15:30 – 16:00	Coffee Break	
16:00 – 16:30	O5. Dr. Yaping Yang	Creation of a new global land cover map through multi-source information integration

16:30 – 17:00	O6. Dr. Zaijian Yuan	Relationships of nitrogen, phosphorus losses and soil erosion in an abandoned arable slope land
17:00 – 17:30	O7. Dr. Jisui Wang	Distribution characteristics of active channels with variable discharges of Anastomosing River, Maqu Reach of the Yellow River
18:00 – 20:00	Welcome Banquet	

Day 2, 12 September, 2017, Tuesday

Chairs: Dr. Alan Iwaasa

Morning (8:30 – 12:00)

9:00 – 9:30	O8. Keynote Speech: Prof. Dingqiang Li, Guangdong Institute of Eco-environmental Science & Technology	
9:30 – 10:00	O9. Dr. Jianfeng He	Monitoring forest dynamic change and its impact on environment using GF-1 images
9:30 – 10:00	Coffee Break	
10:30 – 11:00	O10. Dr. Chao Yang	Incongruous variation of denitrifying bacterial communities as soil N level rises in Canadian oilseed fields
11:00 – 11:30	O11. Dr. Yanfang Sang	Gradation of significance level of trends in precipitation over China
11:30 – 12:00	O12. Dr. Dafang Zhuang	The research of resources and environmental database around China
12:00 – 13:00	Lunch	

	Morning (9:00 – 13:30)	
13:00 – 14:00	O13. Keynote Speech: Dr. Erfu Dai	The influence of soil use and climate change on the structure and function of ecosystems
14:00 – 14:30	O14. Keynote Speech: Dr. Erfu Dai	Effects of land use change on regional climate change in the Loess Plateau
15:00 – 15:30	O15. Dr. Jia Ning	Runoff and sediment Characteristics and Response to Climate Change and Human Activities Along The Yellow River In Ordos - A case study in Ten Great Gullies
15:00 – 15:30	Coffee Break	
15:30 – 16:30	Discussion on the next ISENREC	Chair: Prof. NG Sai-Leung
16:30 – 17:00	Closing Speech	Dr. Dingqiang Li
18:00 – 20:00	Farewell Banquet	

Day 3, 13 September, 2017, Tuesday

Symposium Scientific Tour : Banff, Lake Louise and Moraine Lake

Day 4, 14 September, 2017, Tuesday

Post-Symposium Scientific Tours (Athabasca Glacier, Skywalk, and Bow Lake)

Day 5, 15 September, 2017, Tuesday

Post-Symposium Scientific Tours (Sunshine Meadows, Emerald Lake and Spiral Tunnel)

Day 6, 16 September, 2017, Tuesday

Post-Symposium Scientific Tours (Dinosaurs Valley, Horseshoe Canyon and Royal Tyrrell Museum)

Abstract

O-1. Dr. Roland Kröebel

Modelling carbon changes in grassland – open questions that are waiting for an answer

R. Kröbel, H.H. Janzen, B. Ellert, , AAFC, Lethbridge, AB.

Grasslands are celebrated for their carbon storage potential, compared to that of cultivated soils which are often carbon-depleted. Grasslands, and managed perennial forages, have therefore been heralded as a promising countermeasure to climate change, based on the idea that additional storage of carbon could counteract the steadily increasing concentrations of fossil CO_2 in the atmosphere.

While ag-meteorologists using eddy covariance measurement techniques report that there can be a steady (albeit small) influx of carbon into grasslands over longer periods, it is so highly variable (-2 to +1.4 Mg ha^{-1} yr^{-1}) from year to year that detecting a long-term trajectory is difficult (Petrie et al. 2016). At the same time, soil scientists, facing a large base stock of carbon and a considerable variability in C storage within and between sites, struggle to confirm such changes based on soil C measurements. Given current uncertainty, it is often assumed that carbon stocks in grassland soils are more-or-less at steady state, unless they have been recently converted from annual crop lands.

Yet, climate modellers, policy makers, and the livestock industry keep looking for potentials of carbon sequestration in managed grasslands, calculating with slow gains (50 ± 300 kg C ha^{-1} yr^{-1}) in grasslands (Souzanna et al. 2010) and how to foster such gain through various forms of grazing management. Such carbon gains, it is assumed, could offset some of the livestock production related greenhouse gas emissions, thus lowering the overall contribution of agriculture to the problem of climate change.

With AAFC's whole-farm model Holos, our research group investigates how management practices influence the greenhouse gas emissions of Canadian agricultural production systems, and one area of interest is the cow-calf component of the beef production industry with its large contribution of enteric methane. Cow-calf production in Canada is largely based on extensive grazing systems, and grazing management (e.g., rotational, deferred rotational, and swath grazing), species composition, and grassland seeding are investigated with respect to effects on overall productivity, enteric methane, nitrous oxide and carbon stock change.

While enteric methane and nitrous oxide emissions can be readily calculated from an extensive literature, carbon stock change estimates are highly uncertain for the following knowledge gaps:

Roots

- Rooting pattern for different species
- Root death and renewal
- Annual C contributions of perennial species
- Rhizosphere carbon release
- Manure deposition and incorporation
- Influence of grazing on root growth
- Stocking rate

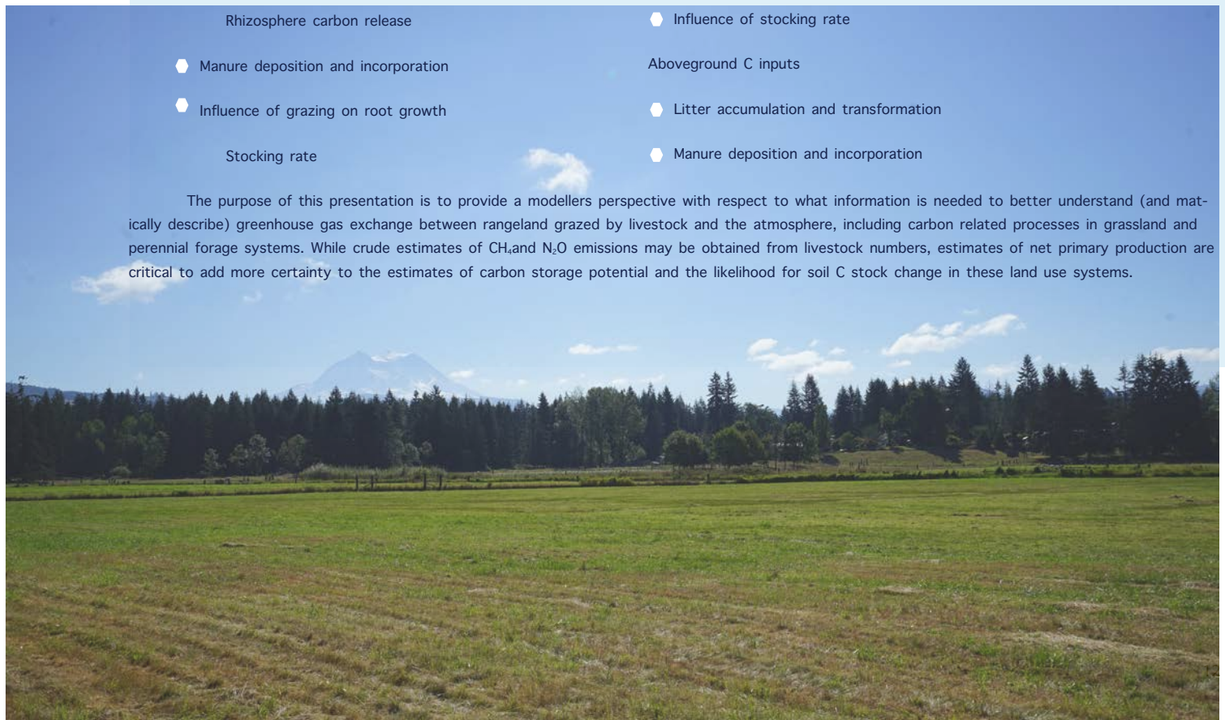
Grassland species composition

- Quality of species mix over time (single species are known)
- Grazing preference
- Rate of utilization
- Influence of stocking rate

Aboveground C inputs

- Litter accumulation and transformation
- Manure deposition and incorporation

The purpose of this presentation is to provide a modellers perspective with respect to what information is needed to better understand (and mathically describe) greenhouse gas exchange between rangeland grazed by livestock and the atmosphere, including carbon related processes in grassland and perennial forage systems. While crude estimates of $CH_4$and N_2O emissions may be obtained from livestock numbers, estimates of net primary production are critical to add more certainty to the estimates of carbon storage potential and the likelihood for soil C stock change in these land use systems.



O-2. Zhou Yifeng, Wan Hongfu, Cheng Bin

A Preliminary Study on Using Soil Conditioner to Improve Sodic Soil in China

Guangdong Institute of World Soil Resources, No.33 Hejing Rd, Liwan District, Guangzhou, China

There are approximately 34.87 million hectares of saline land in China, in which about 10 million hectares are sodic soil or saline-sodic soil, mainly distributed in China northern area and coastal area. Saline-sodic soil is the primary middle and low production soil type in China but a significant reserved land resource. In addition, China coal-fired power plants have installed fluidized gas desulfurization system because of the requirement of environmental protection. The desulfurization system can produce 70 million tons of desulfurization gypsum (also known as FGD gypsum) but the utilization ratio is only 74% and the left led to serious environmental risks. However, desulfurization gypsum is an important material for improving sodic soil. In order to achieve the recycling of industrial wastes and the agricultural sustainable development, Guangdong Institute of World Soil Resources has developed "HARBEST" soil conditioners by using the desulfurization gypsum and weathered coal as the principal raw materials. "HARBEST" soil conditioners have significant effect on improving sodic soil. Experiments showed that "HARBEST" soil conditioners could effectively reduce soil ESP and pH by 10%, improve soil structure and increase crop yield. And field planting showed that the production was significantly increased in rice, corn, cotton, watermelon etc.

O-3. Dr. Alan

Effects of increase pasture species biodiversity on grassland carbon sequestration and biomass production.

Alan D. Iwaasa[1], Aklilu, Alemu[2], Roland, Kroebel[2], and Brian, McConkey[1]

[1]Agriculture and Agri-Food Canada - Swift Current Research & Development Centre – Box 1030, Swift Current, SK., S9H 3X2 - Alan.iwaasa@agr.gc.ca

[2]Agriculture and Agri-Food Canada - Lethbridge Research & Development Centre

It is estimated that about 61.5 M ha of Canadian prairie soils were covered by native grasslands prior to their breaking by tillage for crops. Only about 11.4 M ha of native grassland and rangeland remain and most of this land base is used for grazing by domestic livestock. Native grasslands are recognized as important resources for producing sustainable and high quality forage for grazing livestock/wildlife and an important repository reserve for soil carbon and biodiversity. Recently, Agriculture and Agri-Food Canada and the Canadian Provinces have agreed on a Canadian Agricultural Partnership (effective April 1, 2018) in which one of the priorities is building sector capacity to mitigate agricultural GHG emissions, protect the environment and adapt to climate change by enhancing sustainable growth. The restoration and maintenance of native prairie grasslands can not only provide a sustainable agricultural production system, but also an opportunity to mitigate GHG emissions through soil organic carbon (SOC) sequestration. A long (> 14 years) term research study was first initiated in 2000 in which native pastures were re-established onto land that was annually cropped since the 1920's. The objectives of the study was to evaluate the effects of different native species pasture mixes [simple (7 species) and diverse (14 –species)] and grazing systems [continuous (CG) and deferred rotational grazing (DRG)] on SOC and pasture biomass levels. Results found no primary biomass differences ($P > 0.05$) between simple and diverse pasture mixes after 14 production years under CG. Carbon sequestration was affected by pasture mix and grazing system type interaction ($P < 0.05$) and average SOC was the smallest ($P = 0.004$) for simple mixture under CG. This research showed the importance of continuing long-term research since factors affecting pasture biodiversity and biomass productivity and C sequestration of native pastures are more complex than previously thought.

Agriculture and Agri-Food Canada Research Proposal: Research International Network on Grassland GHG Emissions and Mitigation Strategies or RINGGEMS" was approved for three years (2017 to 2019). One of the main objective of RINGGEMS is to develop a research network between Agriculture and Agri-Food Canada with China/Asian researchers interested in grassland GHG emission and mitigation strategies. If you are a researcher interested in this area please contact me, Dr. Alan D. Iwaasa (alan.iwaasa@agr.gc.ca) to receive further information on RINGGEMS and future meetings in China and/or Canada. Information on RINGGEMS will be posted on HW Eco Research Group website (https://www.hw-erg.org/).

O-4. Prof. NG Sai-leung

Management of High Traffic Trail: a case study of Hong Kong

NG Sai Leung, TAM Ho Chuen, FANG Wei

The Chinese University of Hong Kong

Hiking is a popular activity In Hong Kong. As a small place like Hong Kong, trail degradation is one of the most difficult problems faced by the park managers. In order to prevent the trails from degradation, one common practice is to pave the trail with a hard surface. Recently, there is an increasing concern about the negative effects caused by the paved surface. By comparing the trail conditions of paved and unpaved trails in a country park of Hong Kong, this study aimed at evaluating the strength and shortfalls of paved surface. Results indicated that paved trails were generally maintained in a relatively stable condition, whereas severe degradation might occur in some unpaved trail. Specifically, paved surface could likely reduce the occurrence of soil erosion and root exposure but not trail widening and informal trail formation. This study may provide reference for high traffic trails in the mainland China and other parts of the world.

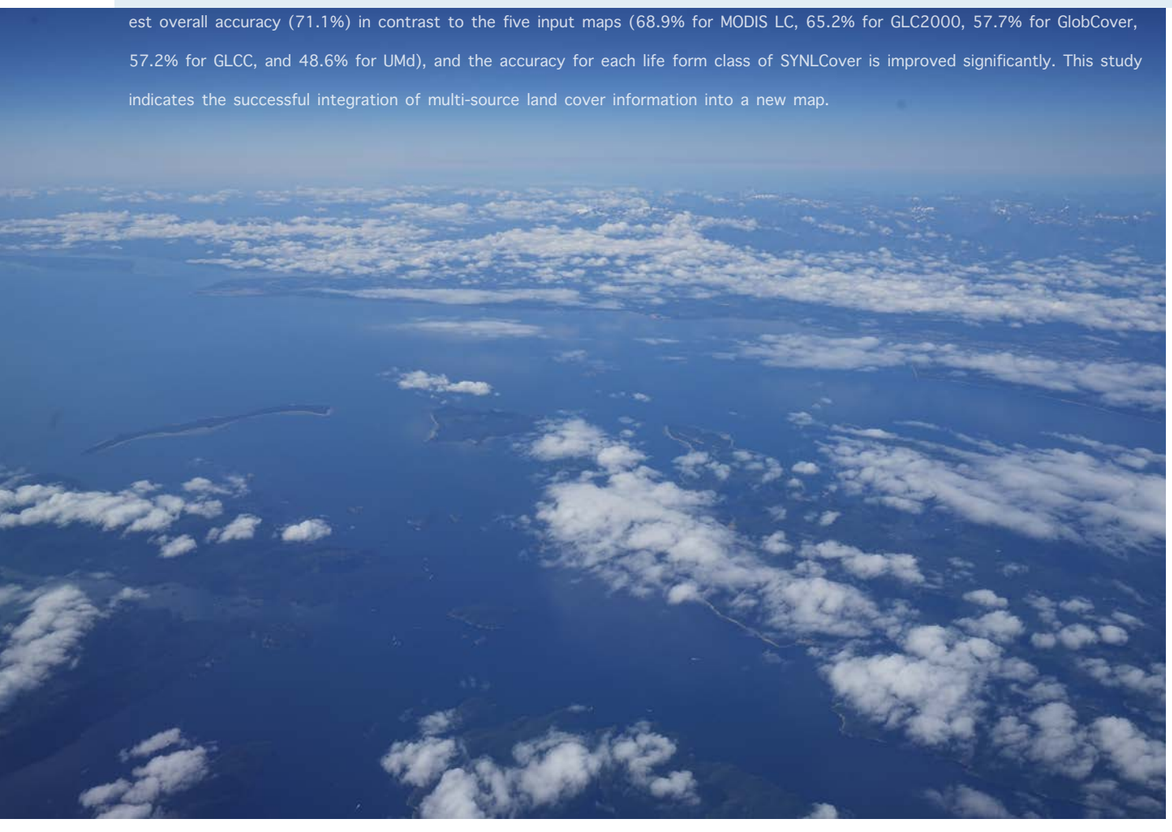
O-5. Yaping Yang

Creation of a new global land cover map through multi-source information integration

Institute of Geographic Sciences and Natural Resources Research, CAS

Initiatives to improve the accuracy of global land cover maps would benefit a number of research fields. This paper proposes a decision-fuse method based on fuzzy logic that merges multi-source land cover information into a best-estimate map with desired legend. We apply this method to generate a new 1-km global land cover map SYNLCover by integrating five global land cover maps (GLCC, UMd, GLC2000, MODIS LC, and GlobCover) and another three global data sets, i.e., VCF (Vegetation Continuous Field), Cropland Probability, and CFTC (Continuous Fields of Tree Cover). All classes of SYNLCover are properly defined in terms of plant functional types, involving life forms and leaf attributes of trees.

The variance indicator maps for SYNLCover regarding life forms and targets legends suggest that the reliability of both is high enough, since its variance value less than 0.5 accounts for 100% and about 78%, respectively. Pixel-based intercomparison reveals the highest map-specific and overall consistency for SYNLCover compared with all other five original land cover maps. Further, rigorous validation of land cover maps using ground truth data over China proves that SYNLCover is more accurate with the highest overall accuracy (71.1%) in contrast to the five input maps (68.9% for MODIS LC, 65.2% for GLC2000, 57.7% for GlobCover, 57.2% for GLCC, and 48.6% for UMd), and the accuracy for each life form class of SYNLCover is improved significantly. This study indicates the successful integration of multi-source land cover information into a new map.



O-6. Zaijian Yuan

Relationships of nitrogen, phosphorus losses and soil erosion in an abandoned arable slope land

Guangdong Institute of Eco-environmental Science & Technology

The losses of nitrogen (N) and phosphorus (P) often happened during the process of soil erosion, which was the main sources to cause water eutrophication. Based on artificial rainfall experiments, this study analyzed the dynamic change characteristics of N and P loss processes in an abandoned arable slope land of southern China, and discussed the relationships of N and P losses and soil erosion in this region. The results indicated that the dynamic change of N and P losses and sediment yield rates was significant in the initial stage of runoff (before 10 min) and became stable in the middle and late stage of the runoff (after 20 min) for single rain events. Three forms of the N and P, i.e. ammonium nitrogen (NH_4+-N), nitrate nitrogen (NO_3--N) and soluble phosphorus (OP) losses were mainly through runoff, which accounted for approximately 93%, 98%, and 90% of respective total. However, the losses of total nitrogen (TN) and total phosphorus (TP) from runoff only accounted for 50% and 10% of respective total, which meant half of the nitrogen and most phosphorus losses transported by sediment. The losses of NH_4+-N, NO_3--N, TN,OP and TP and sediment yield had significant linear positive correlations with runoff, and the square of determination coefficient was 0.86, 0.96, 0.94, 0.87, 0.82, 0.75, respectively; the N and P losses and sediment yield had significant linear positive correlations with rainfall, too, and the responding determination coefficient was almost the same as runoff (except OP with a value of 0.89); on the other hand, the losses of NH_4+-N, NO_3--N, TN,OP and TP had significant linear positive correlations with sediment, too, and the square of the determination coefficient was 0.66, 0.64, 0.86, 0.59, 0.97, respectively. Furthermore, the stepwise regression analysis showed that the losses of N and P can be simulated by the linear regression equation between the losses and runoff and/or sediment yield. Results from this study can help to comprehensively understand the mechanism and simulation of non-point source pollution in the red soil region.

O-7. Jisui Wang

Distribution characteristics of active channels with variable discharges of anastomosing river, Maqu reach of the Yellow River

Institute of Geographic Sciences and Natural Resources Research, CAS

Anastomosing river, as a stable and interconnected multi-channel system differing from other river patterns, has caught more and more attentions during the last decades. However, its some features especially the distribution rule of the branching channels under different discharge conditions are still not clear. As an anastomosing river pattern located in the Qinghai-Tibetan Plateau, the Awancang and Cairima anastomosing channel reaches of the Yellow River were selected to be revealed the distribution features of the active channels in this study. The main channel length of the two anastomosing river reaches is 50 km and 65 km, respectively. Based on DEM data, three remote sensing images under different discharge conditions (176m3/s, 978 m3/s, 1610 m3/s) in 2013, and established series of cross-sections with a interval about 2 km which perpendicular to the anastomosing channel belt, the active channels are classified into three kinds and the number of them and distance from active channel to the main channel on every cross-section were obtained. Furthermore, the spatial distribution characteristics of the active channels under the different discharge conditions were revealed and line density in terms of active channel number in unit length along each cross-section was also calculated. The results show that distribution rule of the three kinds of the active channels is the latter is on both sides of the former basically. From this we can infer that the branching channels in the anastomosing river reaches develop from the main channel to its both side. But there are some differences between the two anastomosing river reaches because of different landform factors. For the Awancang anastomosing river reach, the ratio of the three kinds of the active channels on average of all cross-sections is 1:1.67:2.25 in the broader floodplain and grassland/wetland, while is 1:1.22:1.33 in the narrower valley section. For the Cairima anastomosing river reach, the ratio is 1:1.3:1.4 in the narrower valley section while is 1:0.95:1.16 in the broader Gannan grassland section. In the reach of grassland without restrictions of valley, when the main channel occurs bends, the number of the active channels in the inner side of the curves is larger than that in the outside of the curves. This phenomenon is beneficial to maintain the spatial balanced distribution and stability of the anastomosing channel system. In the reach of well-developed anastomosing morphology, there is an excellent linear negative correlation between the line density and valley width. While the line density of the active channels in valley reach is relatively larger so do the difference among them.

O-10. Incongruous variation of denitrifying bacterial communities as soil N level rises in Canadian oilseed fields

Chao Yang[1,2], Chantal Hamel[1], Yantai Gan[1]

[1]Agriculture and Agri-Food Canada - Swift Current Research & Development Centre

[2]Plant Sciences, University of Saskatchewan

Soil N fertilization stimulates the activity of the soil bacterial species specialized in performing the different steps of the denitrification processes. Different responses of these bacterial denitrifiers to soil N management could alter the efficiency of reduction of the greenhouse gas N_2O into N_2 gas in cultivated fields. We used next generation sequencing to show how raising the soil N fertility of Canadian canola fields differentially modifies the diversity and composition of nitrite reductase (nirK and nirS) and nitrous oxide reductase (nosZ) gene-carrying denitrifying bacterial communities, based on a randomized complete blocks field experiment. Raising soil N levels increased up to 60% the ratio of the nirK to nirS genes, the two nitrite reductase coding genes, in the Brown soil and up to 300% in the Black soil, but this ratio was unaffected in the Dark Brown soil. Raising soil N levels also increased the diversity of the bacteria carrying the nitrite reductase gene nirK (Simpson index, P = 0.0417 and Shannon index, 0.0181), and changed the proportions of the six dominant phyla hosting nirK, nirS, and nosZ gene-carrying bacteria. The level of soil copper (Cu) and the abundance of nirK gene, which codes for a Cu-dependent nitrite reductase, were positively related in the Brown (P = 0.0060, R^2 = 0.48) and Dark Brown (0.0199, R^2 = 0.59) soils, but not in the Black soil. The level of total diversity of the denitrifying communities tended to remain constant as N fertilization induced shifts in the composition of these denitrifying communities. Together, our results indicate that higher N fertilizer rate increases the potential risk of nitrous oxide (N_2O) emission from canola fields by promoting the proliferation of the mostly adaptive N_2O-producing over the less adaptive N_2O-reducing bacterial community.

O-11. Gradation of significance level of trends in precipitation over China

Ping Xie[1], Yuxi Zhao[1], Yan-Fang Sang[2], Haiting Gu[1], Ziyi Wu[1], Vijay P. Singh[3]

[1]State Key Laboratory of Water Resources and Hydropower Engineering Science, Wuhan University, Wuhan 430072, China

[2] Key Laboratory of Water Cycle and Related Land Surface Processes, Institute of Geographic Sciences and Natural Resources Research, Chinese Academy of Sciences, Beijing 100101, China

[3] Department of Biological and Agricultural Engineering & Zachry Department of Civil Engineering, Texas A&M University, 321 Scoates Hall, 2117 TAMU, College Station, Texas 77843-2117, USA

Hydroclimate process is changing and evaluating the significance of its trend is a great challenge. An effective method to do the evaluation is needed. Building on correlation analysis, we propose an approach for evaluating and grading the significance level of trend in a hydroclimate time series, and apply it to evaluate the changes in precipitation over China. The correlation coefficient is established to qutlationship between the hydroclimate time series and its time order. The approach involved first formulating the positive relationship between the correlation coefficient and trend's slope. Then, by determining four thresholds of the correlation coefficient, we graded the significance of trends as five levels: no, weak, moderate, strong and dramatic trend. A greater value of correlation coefficient reflects a greater bigger slope of trend and its higher significance level. Results of Monte-Carlo test indicated the big influence of mean value and volatility discrete degree of a time series on the significance level of its trend. The index of correlation coefficient established can not only reflect the magnitude of a trend but also consider the influence of volatility discrete degree and mean value of the original series. Compared with the Mann-Kendall test used commonly, the proposed approach gave more accurate and specific gradation of the significance level of trends in precipitation over China. Although global change has greatly influenced hydroclimate process worldwide, we found that precipitation over China, with no strong or dramatic significance level of trends, did not show a clear trend, although global change causes some changes in local regions.

O-14. Effects of land use change on regional limate change in the Loess Plateau

Jia Ning[1]*, Jiyuan Liu[1], Quanqin Shao[1], Jiangwen Fan[1]

[1]Key Laboratory of Land Surface Pattern and Simulation, Institute of Geographic Sciences and Natural Resources Research, Chinese Academy of Sciences, Beijing, China

According to the IPCC, the warming of climate is no doubt. With the deeper research of global change, it's well known that land use and cover change （LUCC） due to human activities has played an important role in the global climate change. The study of the LUCC and its effects on the climate system is necessary to the comprehensively and scientifically understand of the climate change. Since 2000, due to implementation of the forestry project, such as returning cropland to woodland and grassland, the land use change from cropland to woodland and grassland has appeared widely in China. In this study, we choose the Loess Plateau as the study area where has a lot of returning cropland to woodland and grassland. Based on the available data, we used the climate model and the comprehensive analysis of GIS to analysis the effect of land use change on the climate regulation service of ecosystem in the Loess Plateau from 2000 to 2010. We tried to assess quantitatively the effect of biophysical processes of land use change on the whole region climate change in the Loess Plateau. The study can offer some scientific basis on the food security, sustainable development and ecosystem protection and so on. In the Loess Plateau, the heat to the atmosphere due to returning cropland to woodland all increased in different zones, which have a positive effect on the climate change. In the plateau zone, the heat to the atmosphere is the largest, while in the arid zone, the one is the smallest. The net radiation change due to returning cropland to woodland all increased in different zones. The largest increase of the net radiation is in the semi-arid zone, while the smallest increase is in the arid zone. Unlike the returning cropland to woodland, returning cropland to grassland didn't cause the heat to the atmosphere increase in all the zones. In the semi-humid zone, the semi-arid zone and the plateau zone, the heat to atmosphere increased. But in the arid zone, the heat to atmosphere decreased. This is mainly because the net radiation change due to returning cropland to grassland caused the net radiation decline in the arid zone. The decline of net radiation in the arid zone is mainly because the decrease of the net shortwave radiation and net longwave radiation due to the returning cropland to grassland. In the other zones, the increase of net radiation is mainly both the increase of the net shortwave radiation and net longwave radiation. From 2000 to 2010, the returning cropland to woodland made the temperature increase only by 0.003℃, and the diurnal temperature range increase by 0.003 ℃ too. In different zones, the effect of the returning cropland to woodland on the diurnal temperature range is relatively larger than the effect on the average temperature. The returning cropland to grassland made the temperature increased by 0.004 ℃, which is more obviously in the spring and the autumn, by 0.007 ℃ and 0.008 ℃ separately. In different zones, there are great differences of the effect by the returning cropland to grassland on the average temperature. The range of the temperature change is between -0.005 ℃ and 0.018 ℃. The change is very little when compared to the real climate change in the Loess Plateau. Similar to the returning cropland to woodland, the effect on the diurnal temperature range is larger than that on the average temperature, but still with a small number range. When come to the local area of returning cropland to woodland, the local temperature increased by 0.112 ℃. However, the returning cropland to grassland has little effect on the average temperature and diurnal temperature range even in the local area where the returning cropland to grassland happened.

O-15. Runoff and sediment Characteristics and Response to Climate Change and Human Activities Along The Yellow River In Ordos - A case study in Ten Great Gullies

Tong Liu

Guangdong Institute of Eco-environmental Science & Technology

Change and influence mechanism of hydrological process is complex, how to scientifically evaluate the runoff and sediment changes and its driving force has received considerable attention. Using non parameter test, climate elasticity approach, and hydrological model, this paper presents a detailed investigation on the changes of flood process, annual streamflow and sediment load. The results show that the occurrence frequency of hyperconcentrated floods is 74% in XiLiuGou basin, Before 1980, the relationship slope between the annual maximum flow and maximum sediment is 1.5787, but after 2000, the slope values were reduced to 0.3319, it shows that under the same flow conditions, sediment concentration reduces to one fifth of the last century 80's, through gradual trend test (Mann–Kendall test), and abrupt change test (Pettitt test) method, a significant decline in runoff and sediment load is detected, and abrupt changes occur in 1997. Then, an integrated approach combining the climate elasticity approach and hydrological modelling approach was applied to attribute the detected runoff changes to climate change and human activities. the relative contributions of climate change and human activities to runoff changes are 23%, 77 % , respectively. The result indicates that human activities, including comprehensive control of soil and water conservation and the operation of check-dams were the major driving forces of the streamflow decrease in the Ten Great Gullies Basin.

Poster Presentation:

P-1. Effect of Antecedent Soil Water on Preferential Flow in Four Soybean Plots in Southwestern China

Yun Cheng[1],Jingjing Yao[1], Jinhua Cheng[1], Long Sun[2], Xin Zhang [3], and Hongjiang Zhang[1]

[1]Beijing Forestry University, Beijing, China.

[2]State Key Laboratory of Urban and Regional Ecology, Research Center for Eco-Environmental Sciences, Chinese Academy of Sciences, Beijing, China.

[3]Shanxi Academy of Forestry Sciences, Taiyuan, China.

Antecedent soil water exerts considerable influence on the infiltration rate and distribution of preferential flow. Effects of antecedent soil water on preferential flow were investigated through dye experiments with Brilliant Blue FCF (C.I. Food Blue 2) in four soybean plots with low (LWC) and high(HWC) antecedent soil water levels. Changes in soil water were measured during the dye experiments. Horizontal and vertical soil slices were exposed every 10 cm approximately 24 h after the dye tracer application, and staining ratios (stained area to total area) were calculated from photographs. This study demonstrated that the dye tracer infiltrated to a mean depth of 56 cm at an average rate of 1,455mm/h in the LWC plots and to a mean depth of 34 cm and at an average rate of 523 mm/h in the HWC plots. Finger flow occurred in Layer B of the LWC plots, possibly resulting in their deeper infiltration depth. The staining ratio in each layer of the LWC plots was generally larger than the corresponding one of the HWC plots. In both the LWC and HWC plots, the average staining ratios decreased with soil depth and exhibited a sharp decrease from Horizon A to B. The largest effect of antecedent soil water on dye tracer movement was found in Layer B. The results indicated that preferential flow was substantial under conditions of low antecedent soil water content in the conditions found in southwestern China. These results could be helpful in improving crop yields and reducing pollution of shallow groundwater by leading farmers to irrigate and till the soil surface with the appropriate frequency.

P-2. Transformation and fate of labeled chemical fertilizer N in soil-crop system

Xin Chen

Institute of Applied Ecology, CAS

Email list

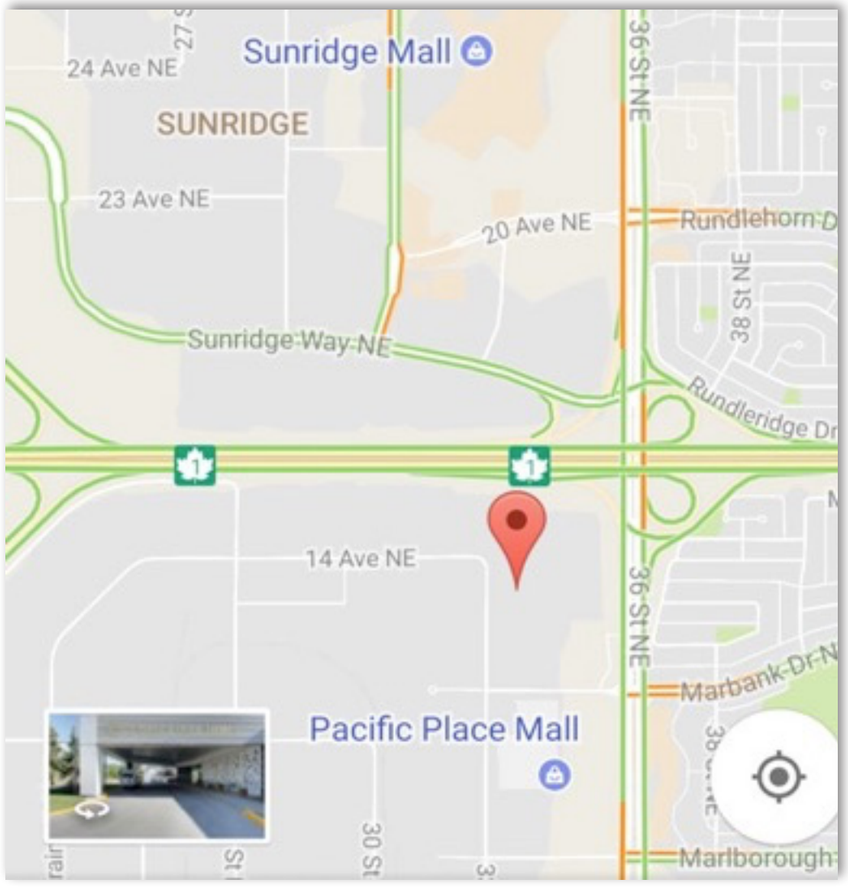
Name	Email
白燕	baiy@lreis.ac.cn
蔡强国	caiqg@igsnrr.ac.cn
程炯	chengjiong@soil.gd.cn
程云	chengyun@bjfu.edu.cn
程斌	chengbin@hdxy.cn
陈欣	chenxin@iae.ac.cn
戴尔阜	daief@igsnrr.ac.cn
何剑锋	hejianfeng@igsnrr.ac.cn
李铖	licheng1210@126.com
刘通	liut.11b@igsnrr.ac.cn
李定强	lidq@gzb.ac.cn
宁佳	ningj.12b@igsnrr.ac.cn
桑燕芳	sangyf@igsnrr.ac.cn
万洪富	hfwan@soil.cn
王随继	wangsj@igsnrr.ac.cn
王宏	hong_wang_aafc@hotmail.com
杨超	chy995@mail.usask.ca
杨雅萍	yangyp@igsnrr.ac.cn
袁再健	selfsurpass@163.com
庄大方	zhuangdf@igsnrr.ac.cn
Ng Sai Leung	slng@cuhk.edu.hk
Roland Kroebel	roland.kroebel@agr.gc.ca
Alan Iwaasa	alan.iwaasa@agr.gc.ca

Maps

Location of conference:

COAST PLAZA HOTEL AND CONFERENCE CENTRE

1316 33rd St. NE, Calgary, AB T2A 6B6, Canada



Flying to Vancouver

Calgary International Airport (YYC) handles non-stop domestic and international flights daily to and from North and Central America, Europe, Asia, and Australia, and is operational 24 hours a day, 365 days a year. Due to its proximity to Asia, YYC is the major gateway between Canada and Asia now, with more trans-Pacific flights in Canada. For travelers heading to the United States, YYC is one of eight Canadian airports that have U.S. Border Preclearance facilities. Now, Hainan airline also joined the YYC which makes travel between China and Canada becomes more convenient.

For more information please visit www.yyc.com.

Travelling through Vancouver

For many travelers coming to Calgary from the U.S. or abroad, flights through Vancouver may be cheaper and more convenient that flying into Calgary directly. For more information please visit www.yvr.ca

Public Transit

Calgary Transit provides public bus transportation to and from Calgary International Airport (YYC). Route 300, Route 100 and Route 430 connect to the airport terminal. Calgary Transit's Route 57 provide service along McCall Way to 78 Avenue NE (this area includes the Air Canada and WestJet campus). Route 32 provides service to YYC's Global Logistics Park – South on the west side of the airport property. Please check more details and fares on the website: http://www.yyc.com/en-us/travellerinfo/groundtransportation/publictransportation.aspx.

Taxis and Limos

There are several taxi companies in Calgary with taxis readily available at the airport and many downtown hotels. For more information and fares please check the website: http://www.yyc.com/en-us/travellerinfo/groundtransportation/taxis,sedans.aspx.

Rental

There are a number of car rental companies that are located in the YYC airport parkade. Most companies offer free shuttle service from hotels to their pick-up and drop-off locations in downtown. Driving arrangements can be made in advance via the web. You could find more details of car a few of the car rental companies located in Vancouver: http://www.yyc.com/en-us/travellerinfo/groundtransportation/carrentals.aspx.

Parking at Calgary downtown

Limited parking is available for guests staying in hotel (extra fee may apply). Payed visitor parkings for those staying at downtown are also available at various parkades. Information regarding rates and where to park can be found at: http://parking.downtowncalgary.com.

Visitor parking can be paid by cash or credit card.

Climate (What to Wear!)

Calgary enjoys warm, comfortable summers with moderate temperatures that are tempered by mountains around. In summer, average high temperatures are 22.2°C (71.9°F) and average low temperatures are 8.5°C (47.3°F). Come autumn/ fall temperatures decrease achieving average highs of 11°C (51.7°F) during the day and lows of -2.1°C (28.2°F) generally shortly after sunrise. Evenings, especially in the surrounding mountains, can be cool, so it's best to pack a light jacket and sweater.

Accessibility

Calgary enjoys a reputation as being one of the most accessible cities in the world among travelers with special needs. Whether using wheelchairs, white canes, seeing eye dogs or hearing aids, Calgary leads the way in making the area a more livable place for people with disabilities through its progressive transportation systems, innovative housing and recreational opportunities.

Languages

English is the predominant language in Calgary, and is one of Canada's two official languages, French being the other.

Time Zone

Calgary is on Mountain Time Zone, which is 7 hours behind Coordinated Universal Time. The clock time in this zone is based on the mean solar time at the 105th meridian west of the Greenwich Observatory.

Metric Measures

Canada follows the International Metric System. Temperatures, rainfall measures, distance, weights, and velocity are expressed in metric units.

Electricity

Outlets and voltage (120 volts) are the same as in the United States. Small appliances such as hair dryers, irons, razors, etc. can be used in Canada. For those from other countries, adapters are required for electrical appliances. The frequency of electrical current in Canada is 60 Hz.

Customs/Entry/Visa Require ments

International visitors must have a valid passport for entry into Canada. Visitors from many countries do not require a visa to visit Canada (for example, United States, Japan, Australia, Italy, Switzerland, among others). For a full listing of "Visa exempt travelers", see http://www.cic.gc.ca/english/visit/visa-exempt.asp

However, citizens from some countries require a visa to visit Canada. For a listing of countries whose citizens require a visa, see http://www.cic.gc.ca/english/visit/visas.asp

Other important information for all visitors to Canada may be found at http://www.cic.gc.ca/english/visit/index.asp

Please be sure to check with your nearest Canadian Embassy or Consulate well in advance of travel to obtain the appropriate documentation, as it may take several weeks or months for a visa application to be processed. If you require a Letter of Invitation, please contact the Registration Secretariat (registration@housing.ubc.ca) as soon as possible. A letter of invitation is issued solely for the purpose of assisting participants with visa applications and/or to obtain funding for their attendance at the conference, and will only be issued once full payment of registration fees has been made. Such a letter does not imply any financial obligation on the part of the conference organizers.

Personal & Medical Insurance

Individual travelers are strongly advised to obtain their own personal health or travel insurance as desired. Liability insurance is the responsibility of each individual delegate. The Canadian Medical Health Insurance Plan does not cover visitors to Canada and delegates should therefore have their own medical coverage.

Tipping

Tipping in Calgary is normal and is around 15%-25% of the bill.

Smoking and Alcohol

Smoking is restricted in many places in Calgary, including public transportation, restaurants, places of work, enclosed public areas, and within 3 meters of any door or air intake, and within 6 meters of any food service areas and patios. The legal drinking age in A.B. is 19 years of age.

Currency/Money Matters

The currency of Canada is the Canadian dollar (sign: $ or C$; code: CAD). It is recommended that all visitors use Canadian currency when traveling within Canada. Visitors can exchange currency at Canadian chartered banks, trust companies, credit unions, or at offices of foreign exchange brokers, but it is advised to have local currency on hand prior to arriving.

Money

Paper bills: $5 (blue), $10 (purple), $20 (green), $50 (red), and $100 (brown) denominations.

Coins include the nickel (5¢), dime (10¢), quarter (25¢), loonie ($1) and toonie ($2).

Electronic transactions

Credit cards, ATMs, and direct-debit cards are commonly used in Canada.

Visa, MasterCard, and American Express are widely accepted in most stores and restaurants.

Banks

YYC offers Currency Exchange Services, and has a Royal Bank of Canada, as well as several ATMs (Automated Teller Machines) throughout the airport.

There are various banks in Calgary downtown. The Bank of Montreal (MasterCard), Canadian Imperial Bank of Commerce (CIBC) and Scotia-bank are located within walking distance of accommodation, and have 24-hour ATMs.

Orgnized By

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The Chinese University of Hong Kong

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