

Newsletter

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NEWS

TAR Chairman visits ITP Lhasa campus

On June 13, 2012, Mr. Padma Choling, Chairman of the Tibet Autonomous Region (TAR) visited ITP's Lhasa campus. Delegates were welcomed by ITP director Prof. YAO Tandong. Prof. Yao briefed Mr. Padma Choling on the institute's academic research including research background, achievement, and international cooperation since its establishment. After the presentation, Mr. Padma Choling was given a tour of the Lhasa campus which



included the Lhasa branches of CAS Key laboratory of Tibetan Environment Changes and

Land Surface Processes, the Laboratory of Continental Collision and Plateau Uplift and the Joint Laboratory of Alpine-cold Ecology and Biodiversity on the Tibetan Plateau.

Mr. Padma Choling praised ITP's achievements and its contribution to the sustainable development of TAR. He expressed his hope for research staff in ITP to devote some thinking towards how to properly tackle geological hazards, so as to prevent and/or ameliorate damages caused to Tibetans



by natural hazards. He also encouraged ITP to strengthen collaborations with other research units in TAR, including Tibet University and TAR Academy of Agricultural Sciences.

YAO Tandong re-appointed ITPCAS Director

Prof. YAO Tandong was re-appointed by the Chinese Academy of Sciences (CAS) as the director of ITPCAS for another five-year term beginning from 2012, according to the latest announcement made by CAS.

Jointly announced were the members of ITP's new leading group: YAO Tandong, XIE Pengyun, YANG Yongping and MA Yaoming. The new leading group members will serve in this position for the next five years.

The announcement was made shortly after a visit from a CAS delegation led by CAS Vice President DING Zhongli to the institute. The visit affirmed the inspecting group's confidence in the leading group's capacity and competency in continuing its service for another term.

Twelfth meeting of ITP scientific advisory committee focused on TPE

The twelfth academic advisory committee kicked off at ITP in Beijing on April 27. Present were over ten committee members along with scientific and administrative staff from the institute. ITP director Prof. YAO Tandong welcomed all participants to ITP's new building and



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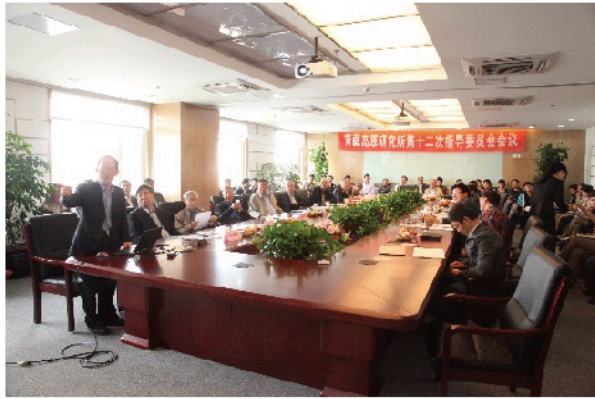
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introduced Third Pole Environment (TPE) program operations. .

Following Prof. YAO's introduction, ITP Profs. XU Baiqing, KANG Shichang, and DING Lin presented on the Sino-Pakistan cooperation, Sino-Nepal joint field expeditions, and TPE's involvement in the scientific aspect of the Shanghai Cooperation Organization, respectively. Additionally important aspects of the program include TPE's holistic network of field

observation and monitoring stations, presented on by Prof. ZHU Liping and training of younger scientists in the region, presented on by Prof. ZHANG Fan.

Members of the advisory committee showed full support for the TPE program and offered suggestions and comments on how to further promote this international effort. Suggestions included developing advanced academic thoughts, importing high technology in the international geosciences research, bearing in mind the unique features of the Tibetan Plateau, and closely cooperating with research units within CAS as well as other academic units within China.



SCIENTIFIC ACTIVITIES

National 973 Program on Tibetan Plateau climate changes reviewed for further development

June 4-7, 2012, a workshop was held in Taiyuan, China, to discuss the relationship between land-air interaction and atmospheric circulation irregularity over the Tibetan Plateau. The workshop also acted as an overview of Working-group 1 within the National 973 program entitled "Tibetan Plateau climate system variations, their influences on East Asia and their mechanisms."

The workshop was presided over by program PI Prof. MA Yaoming. Prof. Ma first introduced the contents and research goals of the entire program, emphasizing on the importance of outcomes from Working-group 1 to the success of the program. Profs HU Zeyong, LIU Liangyun and WANG Cheng then took turns reporting on subjects under each of their charges, including comprehensive experimental approaches and research progress, ecosystems in the hinterland and southeastern Tibetan Plateau, aero-remote sensing and intensified ground observation in studying land surface processes in selected regions along the East Asian moisture transportation route. Studies of interactions between land-air interactions on the Tibetan Plateau and East Asian atmospheric circulation abnormality were also reported on and reviewed during the workshop.

Present at the workshop were over 30 scientific staff from CAS institutes including ITPCAS, the Center for Earth Observation and Digital Earth (CEOD), and the Cold and Arid Regions Environmental and Engineering Research Institute (CAREERI). Profs. LU Shihua and WANG Jiemin were also in attendance to guide further development of the program.

Hydrometeorological processes on the Third Pole themed a session at EGU General Assembly

A special session entitled "Observation and modeling of hydrometeorological processes in high elevation areas" was held in Austria during the 2012 European Geosciences Union (EGU) General Assembly (April 22-27, 2012). The session focused on recent research achievements in the observation and modeling of hydrometeorological processes in the Tibetan Plateau and its surroundings, widely regarded as the "Third Pole."



The session was jointly sponsored by EGU and the Third Pole Environment (TPE) program. The session was developed through the efforts of ITP Profs. MA Yaoming and ZHANG Fan, along with Prof. Bob Su of the University of Twente, the Netherlands, and Dr. Peter J. van Oevelen of the Global Energy and Water Cycle Experiment (GEWEX) project. Attendees included scientists from various nations including China, Germany, U.S.A., Netherlands, Spain, Italy, and Turkey. The session consisted of 11 oral presentations and 16 poster presentations in addition to opportunities for networking and in-depth communication.

International academic exchanges and communications such as this are one of TPE's top activities, in an effort to draw more attention to and deepen the global understanding of environmental changes in the Third Pole region.

China to launch integrated expedition to data-scarce areas on Tibetan Plateau

The initial meeting for the program entitled "Integrated expedition to data-scarce areas on the Tibetan Plateau" was held at ITP on June 25, 2012. Headed by Prof. ZHU Liping, this program is comprised of three major research subjects: (1) investigation of basic data for catchment hydrology, (2) land cover and soil quality survey, and (3) survey of vegetation diversity and plant communities. Mr. PENG Yiqi, Deputy Director of the Bureau of Basic Research, Ministry of Science and Technology China (MOST) attended the meeting. He proposed several issues to pay attention to during implementation, including the orientation and uniqueness of the program, efficient management, and science popularization.



PIs, ZHU Liping, LIU Linshan and GUO Ke, also took turns reporting on their plans for carrying out the program. Subjects included detailed research contents, approaches, and



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schedule and expected outcomes. Academic advisory committee members, headed by Prof. SUN Honglie, also gave some suggestions on implementation approaches. Prof. Sun pointed out the importance to combine and collaborate in and amongst the three subjects. An east-west extensional transect was suggested, as was the application of new methods and techniques. The advisory committee also highlighted the importance of preparation, and asked participants of the program to bear in mind basic requirements for the expedition, i.e. the acquisition of valuable data in such a data-scarce area. Outcomes from this expedition should at least include high-resolution mapping of soil and vegetation, as well as a dataset of hydrological parameters at both catchment and regional scales.

"Integrated expedition to data-scarce areas on Tibetan Plateau" was funded by MOST in May, 2012, as a Special Key Program of the National Basic Work for Science and Technology. ITP acts as the main organizer for this expedition, in cooperation with three other CAS institutes including the Institute of Geographical Sciences and Natural Resources Research, the Institute of Botany and Chengdu Institute of Mountain Hazards and Environment.

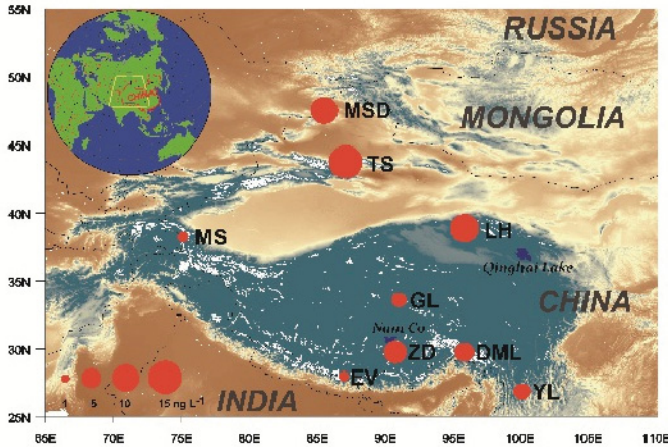
Breakthroughs made in the study of mercury distribution in West China

From 2005 to 2010, extensive glacier snow sampling campaigns were carried out over western China by ITP Prof. KANG Shichang and his colleagues. The research team selected 14 snowpits from 9 glaciers to obtain vertical distribution profiles of mercury (Hg). Their study found that total Hg (THg) concentrations in the glacier snow ranged from <1 to 43.6 ng L^{-1} , and exhibited clear seasonal variations with lower values in summer than in winter. Higher THg concentrations are typically observed in glacier snow from the northern region where atmospheric particulate loading is comparably high.

The group also found large dependence of glacier snowpit Hg on particulate matters, especially particulate Hg that is less prone to post-depositional changes, thus identifying glacier snowpit Hg as a valuable record of atmospheric Hg deposition. Accordingly, they estimated atmospheric Hg depositional fluxes as ranging from 0.74 to $7.89 \text{ } \mu\text{g m}^{-2} \text{ yr}^{-1}$, which agree very well with the global natural values, but are one to two orders of magnitude lower than that of neighboring East Asia. Moreover, the group discovered elevated Hg concentrations in refrozen ice layers in several snowpits subjected to intense melt, and thus warned that Hg can be potentially released to meltwater.

Such research represents the first comprehensive study of mercury distribution in the data-scarce western China. Entitled "Mercury Distribution and Deposition in Glacier Snow over Western China", the study has undergone the peer-review process and was recently published in Environmental Science and Technology.

As West China is home to the largest aggregate of glaciers outside the polar regions, this study not only reveals the existence of Hg in remote areas of China, but also lays a solid foundation for further study on how glaciers in this area affect the transport and cycling of mercury regionally and globally.



INTERNATIONAL COOPERATION

Academic exchanges with Myanmar Geosciences Society

In order to strengthen cooperation with scientists around the Third Pole region, ITP welcomed a delegation from Myanmar Geosciences Society (MGS) on April 5th. The delegation consisted of present and former Presidents of the MGS, Prof. Soe Myint and Dr. Win Swe, and MGS Vice-President Dr. Kyaing Sein. Both sides began by acquainting each other with their international cooperation and academic programs. The Myanmar delegates followed by introducing "Geosciences study of Myanmar" and "Nature Resources of Myanmar" to ITP scientific staff. In exchange, ITP Profs. DING Lin and TIAN Lide both introduced from each of their own perspectives geological and environmental studies in and around the Third Pole region. The Myanmar delegates were later shown around the laboratories under construction in the new ITP building.

Future, comprehensive cooperation between ITP and MGS in both geological and environmental studies around the Third Pole region is expected to be achieved through deepened mutual understanding.

ITP strengthens cooperation with University of Iceland



Invited by ITP Prof. YAO Tandong, Helgi Bjornsson and Thora Ellen Thorhallsdottir, professors from the University of Iceland visited ITP from May 26 to June 7, 2012. Their visit included academic exchanges and an academic seminar on May 31.

During the seminar, Prof. Bjornsson gave a presentation overviewing the state of glaciers in Iceland, while Prof. Thorhallsdottir presented on rates and patterns of pro-glacial ecosystem development in Iceland. The presentations were followed by discussion and expressions of intentions for further cooperation between ITP and the University of Iceland.

Academic exchanges between Chinese and Icelandic scientists began in 2010. This recent visit by Icelandic scientists to ITP will further aid mutual understandings and future cooperation.

Third China-Nepal joint expedition to Langtang Valley

Backed by the TPE program, the third China-Nepal joint expedition to the Langtang valley was conducted April 23-May 25, 2012, with an aim of providing data for the comparative study of climate and environment on the northern and southern slopes of the Himalayas. The expedition team consisted of five Chinese members headed by Prof. TIAN Lide, and three Nepalese members headed by Prof. Lochan P. Devkota.





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The expedition succeeded in acquiring glacial mass balance data from the Yala Glacier by measuring the glacial tongues and absolute height of the glacier surface using differential GPS and ground-penetrating radar. Expedition crews also collected surface snow and snow pit samples from the Yala Glacier as well as checked the operational status of two AWS machines at Kyangjin Gompa (3900 m a.s.l) and Tarahara (119 m a.s.l). Precipitation and river water samples from Kyanjin Gompa and Langtang Valley were collected for the period from April 2011 to April 2012, meteorological data was downloaded and rain gauges were re-configured for the coming year. The expedition also harvested additional river water and soil samples en route.

Passive samplers for persistent organic pollutants were set up along the slopes—a new task tackled on this expedition.



Visits and Academic Exchanges

**Deliang Chen, University of Gothenburg, Sweden
& Chongyu Xu, University of Oslo, Norway**

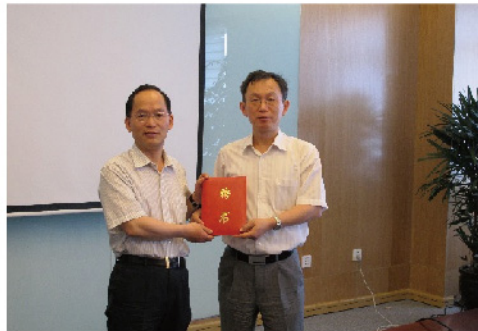
Deliang Chen, the former Executive Director of the International Council for Sciences (ICSU), elected member of the Royal Swedish Academy of Sciences and professor at University of Gothenburg, Sweden, along with Prof. Chongyu Xu from the University of Oslo, Norway, visited ITP Beijing on May 6-8, 2012. They were invited by ITP Prof. YAO Tandong with the purpose of conducting academic exchanges and exploring potential fields of cooperation in hydrometeorology on the Tibetan Plateau.

A workshop was held to acquaint scientists from both sides with each other's research. Prof. Xu gave an overview of hydrological modeling under the changing environment, followed by presentations from nine ITP professors who introduced each of their own academic activities on the Tibetan Plateau. Presentations ranged from field station networks at play on the Plateau to scientific cooperation with central Asia, from the impact of black carbon on Tibetan glaciers to water stable isotope study, and from in situ observation to hydrological modeling on the Tibetan Plateau.

Profs Deliang Chen and Chongyu Xu were also issued Certificates of Employment by ITP director Prof. Yao as adjunct professors at ITP. Deepened communication took place throughout the visit with more cooperation and academic exchange expected to follow.



Prof. Yao (left) issuing Certificate of Employment to Prof. Deliang Chen (right)



Prof. Yao (left) issuing Certificate of Employment to Prof. Chongyu Xu (right)

Rob Van der Voo, University of Michigan, USA

Professor Rob Van der Voo of Earth and Environmental Sciences at the University of Michigan started his visit to ITP as a CAS "Einstein Visiting Professor" on May 18, 2012. The visit included a seven-day lecture series on "the tectonic evolution of Eurasia" and a public lecture on May 31 2012 in ITP.

During his series of lectures from May 21 to 29, Prof. Van der Voo covered aspects ranging from the opening of the Atlantic Ocean, to the formation and evolution of the Mediterranean Sea and the Tethys Ocean, to the uplift and deformation of the Tibetan plateau, to the evolution of the Central Asian Orogenic Belt, and finally to paleogeographic reconstruction and evolution of the super continent Pangea and Gondwana. Over 30 audiences attended the serial lectures.

During the public lecture on May 31, 2012, Prof. Van der Voo was first presented the "CAS Einstein Professorship" certificate by ITP director Prof. YAO Tandong on behalf of the CAS President Prof. BAI Chunli. Professor Van der Voo is experienced in using the characteristics of ancient magnetic fields recorded by rocks (a subdiscipline called paleomagnetism) to determine the positions of ancient continents and oceans. His lecture, titled "Linking deep mantle processes with surface plate motion", also showed new progresses in the geophysics that recent evidences from the deep mantle processes can help to constrain the positions of continents. With the assumption that diamondiferous kimberlites must have originated above the edges of the Large Low Shearwave Velocity Provinces, paleomagnetists can now constrain continental positions in the Paleozoic, when the longitudes are well known unconstrained due to the limit of paleomagnetic results. This new global reconstruction is of great interest for paleogeography, paleoclimate models and tectonic analysis of Paleozoic plate motions.



Mark Harrison, Earth and Planetary Science Letters (EPSL)



Earth and Planetary Science Letters (EPSL) is a distinguished journal reporting note-worthy achievements in earth sciences research. How to go about submission was the subject of a talk given by Prof. Mark Harrison, editor-in-chief of EPSL, at ITP Beijing on May 23, 2012.

Prof Harrison was invited by ITP Prof. DING Lin for possible cooperation in the future. An important message Harrison shared was EPSL's intention to increase the publication and editing of scientific papers contributed by Chinese scientists.

Also interested in plateau uplift, Prof. Harrison exchanged notes with ITP scientists on the study of Tibetan Plateau uplift. Further cooperation in this aspect is expected to follow.

Youxue Zhang, University of Michigan, USA

Youxue Zhang, renowned geologist and professor from the University of Michigan, visited ITP on May 24, 2012. He was invited to conduct academic exchanges with the scientific staff from ITP.



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During the academic exchange, Prof. Zhang gave a talk entitled “Dynamics of gas-driven eruption: volcanic eruption, lake eruption, possible ocean eruption, and coal mine gas explosion”. Discussion thereafter focused on the potential applications of relevant theoretical and experimental approaches in the study of geochemistry and geodynamics in the Tibetan Plateau region.



YE Ming, Florida State University, USA

Invited by ITP Prof. ZHANG Fan, associate Professor YE Ming from Florida State University visited ITP Beijing on May 25, 2012 to conduct academic exchanges.

Entitled “Quantification of predicative uncertainty in subsurface environmental modeling,” the talk given by Dr. Ye presented model studies of geologic, geochemical and hydrological processes, including possible causes related to parameter and model uncertainties. He focused his talk on tackling some important issues in uncertainty analysis such as wide-targeted space, the non-linearity of computer input/output and the necessity for pretext identification when adopting the Bayesian approach. Dr. Ye addressed some of the difficulties associated with large numerical calculations and statistical models, and also discussed the calculation of model statistics using the Bayesian model.

Dr. Ye also delivered a course on model calibration and predictive uncertainty analysis May 23-24, 2012, with over 30 graduate staff attending the course. Dr. Ye talked about detailed mathematical calibration during the course and elaborated on sensitivity analysis, model calibration and uncertainty analysis from basic theories to application. Focuses were also laid on the non-linear regression and Bayesian models. Besides just presenting theory, Dr. Ye also asked audience members to practice on their own computers and become familiar with software applications such as ModelMuse and UCODE. He also conducted in-depth academic exchanges with attendees on detailed approaches in model calibration.

Dr. Ye is currently the associate editor of Water Resources Research. In 2012, he won the Early Career Award by the US Department of Energy and was elected fellow of the American Geological Society.

Zhongbo (Bob) Su, University of Twente, the Netherlands

Upon invitation by Prof. MA Yaoming, Prof. Zhongbo (Bob) Su, Chair of the Department of Water Resources in the Faculty of Geo-information Science and Earth Observation (ITC) of the University of Twente, visited ITP on June 28, 2012.

Prof. Su gave a lecture entitled “Recent Advances in Earth Observation of Water Cycle.” during which he introduced the latest research results by his team in the area of energy and water cycle. He first introduced some fundamental concepts of the energy and mass balance on the Earth's surface, and some basic formulas. He then briefed on some major observation programs (including in situ observation and satellite remote sensing) carried out in Europe in the water cycle study, highlighting the joint project with CAS in the soil humidity monitoring at Maqu, Tibet. Also presented were some preliminary results of soil humidity, sensible /latent heat variability and soil heat flux on the Tibetan Plateau with numerical simulation and data assimilation. For a case study, he elaborated on the parameterization of land processes model for unsaturated soils, taking the air flow influence into consideration. His lecture concluded with some brief introduction of the application of their approaches and results in monitoring arid environment.

TIBETAN PLATEAU OBSERVATION AND RESEARCH PLATFORM (TORP) ACTIVITIES

Heads of meteorological bureaus in Southwest China visited SETORS

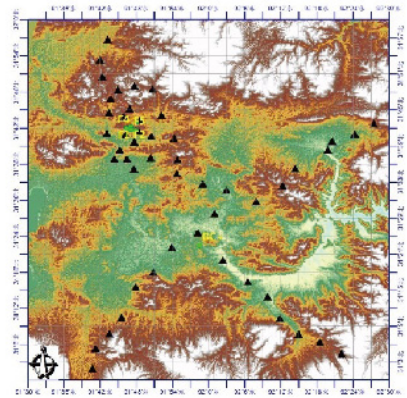
A group of delegates from meteorological bureaus in southwest China was invited by ITP Prof MA Yaoming to SETORS for a visit in mid-May, 2012. The delegates included Prof. YU Rucong, Deputy Administrator of the China Meteorological Administration, heads of scientific departments within the bureaus, as well as leaders from universities in southwest China.

The delegation expressed their approval of SETORS's rapid development in meteorological observation and monitoring. Prof Yu of the CMA stated his wish that the meteorological bureaus will collaborate with ITP further in an effort to jointly contribute to scientific research of the Tibetan Plateau.

Soil moisture/temperature monitoring network in Nagqu, Tibet

The network for monitoring soil moisture and temperature in Nagqu, Tibet, China has been established and maintained since July of 2010. There are currently 57 sets of instrument installed in an area covering approximately 10,000 km² around Nagqu. This network aims to provide satellite footprint-scale or GCM grid-scale soil moisture/temperature observations to validate the scale-matching passive/active satellite products or GCM outputs.

According to the program plan, scientific staff would maintain the network twice every year (June and September/October). The latest one was done this October, 2012. The soil profile samples have also been collected at each site (see map on the right) during each maintenance since June, 2012. Nearly two years' data have been accumulated as of now. These first-hand data play an important role not only for investigations' validation, but also in the land-atmosphere interaction studies, as well as algorithm developments for land hydrology over the Tibetan Plateau.



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