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Yue-Gau Chen (陳于高)

Research Center for Environmental Changes (RCEC), Academia Sinica
No. 128, Sec. 2, Academia Rd., Nankang, Taipei 11529, Taiwan ROC
Office Tel: +886-2-2787-5839; +886-2-27872530
Mobile: 0936880151
Email: ygchen@gate.sinica.edu.tw; ygchen@ntu.edu.tw
Lab website link: http://active.gl.ntu.edu.tw/

EDUCATION

1993	Ph.D.	Dept. of Geosciences, National Taiwan Univ., Taiwan ROC
1988	M.S.	Dept. of Geosciences, National Taiwan Univ., Taiwan ROC
1984	B.A.	Dept. of Geosciences, National Taiwan Univ., Taiwan ROC

EMPLOYMENT

2020/01 – present	Director	RCEC, Academia Sinica, Taiwan ROC
2019/06 – present	Distinguished Research Fellow	RCEC, Academia Sinica, Taiwan ROC
2018/08 – present	Executive Secretary	Center for Sustainability Science, Academia Sinica, Taiwan ROC
2018/06 – present	Joint Appointment Research Fellow	Inst. of Earth Sciences, Academia Sinica, Taiwan ROC
2019/06 – present	Joint Appointment Professor	Dept. of Geosciences, National Taiwan University, Taiwan ROC
2012/08 – 2019/05	Distinguished Professor	Dept. of Geosciences, National Taiwan University, Taiwan ROC
2017/01 – 2020/03	Visiting Professor	Earth Observatory Singapore, Nanyang Technology Univ., Singapore
2014/03 – 2016/07	Director General	Dept. of Natural Sciences and Sustainable Development, Ministry of Science and Technology, Taiwan ROC
2012/08 – 2014/02	Director General	Dept. of Natural Sciences, National Science Council, Taiwan ROC
2011/08 – 2012/07	Chairperson	Dept. of Geosciences, National Taiwan University, Taiwan ROC
2003 – 2012/07	Professor	Dept. of Geosciences, National Taiwan University, Taiwan ROC
1997 – 2003	Associate Professor	Dept. of Geosciences, National Taiwan University, Taiwan ROC

HONORS & AWARDS

Outstanding Research Awards of National Science Council, ROC, 2011-2014
Outstanding Research Awards of National Science Council, ROC, 2003-2006
Annual Research Awards of National Science Council, ROC, 1995, 1996, 1997, 1999, 2000
Award for Young Scientist, College of Science, NTU, 2002
Outstanding Teaching Award of National Taiwan Univ., 1999, 2003, 2009
Geological Society America (GSA) Fellow elected in 2008
Merit Research Fellow, Ministry of Science and Technology, 2022

PROFESSIONAL SERVICE

- 2017- : Member, Regional Advisory Committee, AOGS
- 2017- : Member, Publication Committee, AOGS
- 2017- : Member, National Committee of Future Earth, Taipei
- 2016- : Coordinator, Thematic Program Office for Collaboration Research Action: Disaster Risk Reduction and Resilience, Belmont Forum
- 2016- : Council member, Chinese Taipei Geophysical Society

RESEARCH INTEREST (10 ~ 15 lines；內容同時呈現於 RCEC 網頁個人介紹頁)

(1) Paleoclimate and environmental changes by isotope geochemistry;
(2) Earth systems and sustainability sciences;
(3) Geochronology developments and their applications;
(4) Kinematics of seismogenic faults and seismic hazard mitigation.

RESEARCH HIGHLIGHTS (同時呈現於 RCEC 網頁；簡述近期重要研究，每則 5~10 lines)

1. **Precipitation response to Heinrich Event-3 in the northern Indochina as revealed in a high-resolution speleothem record**

   The Heinrich Event (HE), a millennial-scale cold event in the North Atlantic, is characterized by the occurrence of a large amount of coarse terrigenous grains in marine sediments. There are 7 HEs in the past 70 thousand years (HE-6 to HE-0). Among HEs, HE-3 and HE-6 have been categorized as unusual events due to lower proportions of lithic grains found in their corresponding sedimentary layers. In tropical Asia, HE-3 manifestations prominently appear in proxy records from China, Myanmar, northern Borneo, and India. It supports the climatic link between the low latitudes and the North Atlantic. However, the mechanism remains challenging because monsoon intensity may respond to HEs in different magnitudes.

   Here, we report a new dataset of speleothem $\delta^{18}O$ from northwestern Vietnam, which covers the duration of the HE-3 with decadal scale resolution. The $\delta^{18}O$ data implies a pronounced excursion in precipitation beginning at around 30.8 thousand years ago (ka), reaching the minimum at 30.3 ka, and then turning to increase in precipitation at 30.2 ka, and finally returning to a higher level at 29.5 ka. It shows a gradual, discontinuous onset and termination of altered

conditions with steps inferred to be on the order of several hundred years. This contrasts to the abrupt HE-3 onset and termination observed by previous studies in Asian monsoon region. We used a coupled slab ocean model (CAM3) to evaluate effects of different degrees of cooling associated with glacial boundary conditions. Magnitudes of cooling ranged from 6 °C and 10 °C (low and high scenarios respectively) around the British Isles relative to the control simulation. The simulated summer (June-July-August) precipitation near northwestern Vietnam presents an ~10% decline which resulted from a southward shift of Indian Ocean's warm pool and summer ITCZ by the cooling in the North Atlantic. (Nguyen et al. 2022)

2. **Synorogenic extension and extrusion in southern Taiwan**

   Extensional deformation is documented in many contractional orogenic belts, which are characterized by high topography, thickened crust, and synorogenic extensional structures at high elevations or on steep topographic slopes. The direction of extension is generally perpendicular or parallel to the orogen. In southern Taiwan, those high rocks in the core of the orogenic belt are dominated by the extension, whereas the lower is dominated by the contraction. In contrast, the mountain heights and crust thickness in southern Taiwan are lower and thinner than in those classic orogens. In addition, the direction of extension is oblique to the orogen rather than orthogonal or parallel to the orogen. These observations suggest a more complicated tectonic process may be responsible for the extension in the core of southern Taiwan. This study integrates late-stage structures and their palestress inversion, with GPS and earthquake focal mechanisms to assess different hypotheses for the origin of synorogenic normal faults in the study area. This study further proposes a southwestward extrusion model in which the lateral and vertical movement of the lower crust in southern Taiwan accommodates the shortening between the obliquely colliding Peikang High and the Luzon Arc. The northeast extension normal faults in the upper crust can be interpreted as to accommodate the lateral and vertical movement of the lower crust in the southern Central Range. This study infers that this southwestward extrusion process may be younger the 0.5 Ma based on thermochronological result and the proposed onset of extrusion in southwest Taiwan is late Pleistocene. (Hsu et al. 2022)

3. **Promotion on the application of Sustainability Science**

   Sustainability science has emerged due to the dilemma human society faced after economics' uprising in the last century. This situation is caused by the overuse of the natural resources and unfair justification on management of the public resources. As a consequence, finding out solutions to tackle the problems above has become important mission of the global human society. The sustainability science is thus intrinsically developed as solution-oriented for the sustainability problems. In early years of the 21th century, related work usually provided only knowledge of the problems themselves or even documented plans merely in literatures. It basically lacked action and strategy for implementation. To reach the goal, scientists have to not only work with engineers and social scientists to translate the knowledge into applicable technology and governance plans, but also need to simultaneously interact with possible

stakeholders. I would like encourage more scientists to be interested in related transdisciplinary subjects and to mediate our scientists with the involvement of the stakeholders. Hopefully RCEC can play the key role to promote the sustainability science not only in Academia Sinica but also make surges with scientists out of the campus.

4. **Development and implementation on science and technology for reaching the global goal of Net Zero emission**

   As we all know already, to reach the goal of net-zero emission by 2050 new technology is highly desired to largely enhance the decarbonization in all emission-producing sectors. Existing different scientific knowledge and technology may be useful to successfully decrease the carbon emission but innovative improvements are highly expected. Accordingly, the research task forces are formed in Taiwan to help meet the national goals. Under such a circumstance and also considering as the leading research institute, Academia Sinica is inevitably to play the major role in science and technology development for the decarbonization of our country. I am currently one of the members sitting in the campus committee to promote this global mission. I would take all opportunities encourage scientists in RCEC who have been trained with relevant knowledge to join the upcoming research teams and to make sure RCEC's presence in such an essential national mission.

REPRESENTATIVE PUBLICATIONS (*: corresponding author)

1. Hsu, Y.J.*, Chang, Y.S., Liu, C.C., Lee, H.M., Linde, A.T., Sacks, S.I., Kitagawa, G., **Chen, Y.G.** (2015). Revisiting borehole strain, typhoons, and slow earthquakes using quantitative estimates of precipitation-induced strain changes. ***J. Geophys. Res. - Sol. Ea.***, 120(6), 4556-4571. **(IF: 3.350, ▲: 34)**

2. Yu, T.L., Wang, B.S., You, C.F.*, Burr, G. S., Chung, C.H., **Chen, Y.G.** (2015). Geochemical effects of biomass burning and land degradation on Lanyu Islet, Taiwan. ***Limnology and Oceanography***, 60(2), 411-418. **(IF: 3.383, ▲: 6)**

3. Wu, T.S.*, Jain, M., Guralnik, B., Murray, A.S., **Chen, Y.G.** (2015). Luminescence characteristics of quartz from Hsuehshan Range (Central Taiwan) and implications for thermochronometry. ***Radiation Measurements.***, 81, 104-109. **(IF: 1.442, ▲: 8)**

4. Chen, G.H.*, Xu, X.W., Wen, X.Z., **Chen, Y.G.** (2016). Late Quaternary Slip-rates and Slip Partitioning on the Southeastern Xianshuihe Fault System, Eastern Tibetan Plateau. ***Acta Geologica Sinica-English Edition.***, 90(2): 537-554. **(IF: 1.708, ▲: 43)**

5. Hsu, W.H., Byrne, T.B., Ouimet, W., Lee, Y.H., **Chen, Y.G.***, Soest, M., Hodges, K. (2016). Pleistocene onset of rapid, punctuated exhumation in the eastern Central Range of the Taiwan orogenic belt. ***Geology***, 44(9) 719-722. **(IF: 4.635, ▲: 53)**

6. Kuo, Y.T., Ku, C.S., **Chen, Y. G.***, Wang, Y., Lin, Y.N.N., Chuang, R.Y., Hsu, Y.J., Taylor, F.W., Huang, B.S., Tung, H. (2016). Characteristics on Fault coupling along the Solomon megathrust based on GPS observations from 2011 to 2014. ***Geophys. Res. Lett.***, 46(13) 5819-8526. **(IF: 4.212, ▲: 5)**

7. Chang, C.C.*, Burr, G. S., Jull, A.J.T., Russell, J.L., Biddulph, D., White, L., Prouty,

N.G., **Chen, Y.G.**, Shen, C.C., Zhou, W.J., Lam, D.D. (2016) Reconstructing surface ocean circulation with ^{129}I time series records from corals. ***J. Environ. Radioact.*** 165, 144-150. **(IF: 2.310, ▲: 20)**

8. Chao, W.A.*, Wu, Y.M., Zhao, L., Chen, H.E., **Chen, Y.G.**, Chang, J.M., Lin, C.M. (2017). A first near real-time seismology-based landquake monitoring system. ***Scientific Reports*** 7, srep 43510. **(IF: 4.259, ▲: 28)**

9. Yu, T.L., Wang, B.S., Shen C.C.*, Wang, P.L. Frank T.Y., Burr, G.S., **Chen, Y.G.** (2017) Improved analytical techniques of sulfur isotopic composition in nanomole quantities by MC-ICP-MS. ***Analytica Chimica Acta***, 988, 34-40. **(IF: 4.95, ▲: 23)**

10. Fellin, M.G.*, Chen, C.Y., Willett, S.D., Christl., M., **Chen, Y.G.** (2017). Erosion rates across space and timescales from a multi-proxy study of rivers of eastern Taiwan. ***Global and Planetary Change***, 157,174-193. **(IF: 3.915, ▲: 32)**

11. Chang, Q., Lee, J.C.*, Hunag, J.J., Wei, K.Y., **Chen, Y. G.**, Byrne, T. B. (2018). Identifying the source of fluvial terrace deposits using XRF scanning and Canonical Discriminant Analysis: A case study of the Chihshang terraces, eastern Taiwan. ***Geomorpholog.***, 308, 204-214. **(IF: 2.958, ▲: 7)**

12. Ku, C.S.*, Kuo, Y.T., Chao, W.A., You, S.H., Huang, B.S., **Chen, Y.G.**, Taylor, F.W., and Wu, Y.M. (2018). "A First-Layered Crustal Velocity Model for the Western Solomon Islands: Inversion of the Measured Group Velocity of Surface Waves Using Ambient Noise." ***Seismological Res. Lett.***, 89, 2274-2283. **(IF: 3.734, ▲: 5)**

13. Chen, C.T.*, Chan, Y. C., Beyssac, O., Lu, C.Y., **Chen, Y.G.**, Malavieille, J., Kidder, S.B., Sun, H.C. (2019). "Thermal History of the Northern Taiwanese Slate Belt and Implications for Wedge Growth During the Neogene Arc-Continent Collision " ***TECTONICS***. 38(9) 3335-3350 **(IF: 3.975, ▲: 11)**

14. Nguyena, D.C., **Chen, Y.G.***, Chiang, H.W.*, Shen, C.C., Wang, X., Doan, L.D., Yuan, S., Lone, M.A., Yu, T.L., Lin, Y., Kuo,Y.T. (2020) A decadal-resolution stalagmite record of strong Asian summer monsoon from northwestern Vietnam over the Dansgaard–Oeschger events 2–4. ***J. Asian Earth Sci.: X***, 3, 100027 **(IF: 2.988, ▲: 6)**

15. Wang, L.C.*, Chou, Y.M., Chen, H.F., Chang, Y.P., Chiang, H.W., Yang, T.N., Shiau, L.J., **Chen, Y.G.** (2021). Paleolimnological evidence for lacustrine environmental evolution and paleo-typhoon records during the late Holocene in eastern Taiwan. ***J. Paleolimnol***, 68, 7-23 **(IF:2.265, ▲: 13)**

16. Nguyen, D.C., Lee, S.Y., **Chen, Y.G.***, Chiang, H.W., Shen, C.C., Wang, X.F., Lam, D.D., Lin, Y. (2022). Precipitation response to Heinrich Event-3 in the northern Indochina as revealed in a high-resolution speleothem record. ***J. Asian Earth Sci.: X***, 7, 100090 **(IF:3.374, ▲: 4)**

17. Wang, Y., Lin, Y.N.*, Ota, Y., Chung, L.H., Shyu, J.B.H., Chiang, H.W., **Chen, Y.G.**, Hsu, H.H., Shen, C.C. (2022). Mud diapir or fault-related fold? On the development of an active mud-cored anticline offshore southwestern Taiwan. ***Tectonics***, 41(9), e2022TC007234 **(IF:5.261, ▲: 9)**

18. Lin, K.*, Shen, C.C., Duan, W., Tan, L., Kong, X., Lee, S.Y., **Chen, Y.G.**, Wang, X. (2022). Early anthropogenic impacts on the Indian summer monsoon induced by land-use and land-cover changes. ***J. Geophys. Res. Atmos***., 127(18), e2022JD036754 **(IF:5.217, ▲: 0)**

19. Hsu, W.H., Byrne, T.B., Lewis, J.C., **Chen, Y.G.***, Yeh, P.Y. (2022). Synorogenic extension and extrusion in southern Taiwan. ***Tectonophysics***, 840, 229562 **(IF:3.66, ▲: 1)**

20. Shyu, C.J., Tan, E.*, Kirstein, L.A., Stuart, F.M., Chen, Y.G. (2023). The exhumation history of the middle Hsuehshan Range, Taiwan, as revealed by zircon thermochronological modeling. ***Tectonophysics,*** 860, 229907 **(IF:2.9, ▲: 1)**

21. Lin,K.*, Han, T., Zhang, Y., Shen, C.C., Lee, S.Y., Wang, J., Mohtar, A.T., Huang, K.F., Chiang, H.W., Chen, Y.G.*, Wang, X. (2024). Influences of East Asian winter monsoon and El Niño-Southern Oscillation variability on the Kuroshio intrusion to the South China Sea over the past 60 years. ***Geophys. Res. Lett.,*** 51(2), e2023GL104155 **(IF:5.2, ▲: 7)**

22. Chen, P.J., Wu, C.H., Chen, Y.G.*, Lee, S.Y.* (2024). Impact of solar activity and ENSO on the early summer Asian Monsoon during the last millennium. ***Geophys. Res. Lett.,*** 51(3), e2023GL105668 **(IF:5.2, ▲: 4)**

23. Lu, C.H., Hsu, Y.C., Chang, C.P*, Chen, Y.G. (2024). A conjugated structure discloses interaction between two fault systems in eastern Taiwan during 2022 Guangfu earthquake. ***Terr. Atmos. Ocean. Sci.,*** 35(1), 9 **(IF:0.8, ▲: 1)**

24. Lin, K.*, Han, T., Morgan, K., Kench, P.S., Chen, Y.G., Wang, X. (2024) Tracing the stepwise warming trend in the tropical Indian Ocean through a 40-year record of oxygen isotope composition in Maldives corals. ***Earth Planet. Sci. Lett.,*** 647, 119025 **(IF:4.8, ▲: 0)**

25. Lu, C.H., Chuang, R.C., Chiang, C.C., Yen, J.Y., Ching, K.E., Chen, Y.G.* (2025) Detecting infrastructure hazard potential change by SAR techniques on postseismic surface deformation: A case study of 2016 Meinong earthquake in southwestern Taiwan. ***Eng. Geol.,*** 344, 107827 **(IF:6.9 ▲: 5)**

26. Chiang, H.W., Chen, Y.G., Lee, S.Y.*, Nguyen, D.C.*, Shen, C.C., Lin, Y., Doan, L.D. (2025) Speleothem evidence of solar modulation on the south Asia monsoon intensity. ***npj Clim. Atmos. Sci.,*** 8(1), 105 **(IF:8.5 ▲: 0)**

27. Lin, K.*, Chen, M., Wang, J., Shu, C., Chen, Y.G., Wang, X. (2025) Coral records indicate six-decade rise and fall of atmospheric lead emission in China. ***Commun. Earth Environ.,*** 6, 376 **(IF:8.1 ▲: 0)**

Others (Invited Talks，Keynote speech et al.)

Invited Talks

- 2020, Invited Talk, Facing post-COVID 19 challenges on geosciences from the perspectives of CGU in Taiwan, JpGU
- 2020, Invited Lecture, Environmental Aspects in Sustainability Sciences, Dept. Geoscience, National Taiwan Univ
- 2020, Invited Lecture, Networking and Opportunities for the Global Sustainability, National Tung-Hua Univ

- 2020, Invited Lecture, Global Warming, Environmental Change, and Sustainability, National Chung-Cheng Univ
- 2021, Invited Lecture, Sustainability Science in our Digital Future, National Central Univ.
- 2022, Invited Lecture, New Technology Development under Global Warming: to Emit and to Capture, National Museum of Natural Science.
- 2023, Invited Keynote, Pathways towards sustainability under global warming: the viewpoint of geoscientists, CGU, Taipei, Taiwan
- 2023, Invited Talk, From Earth System Science towards Sustainability Science, JpGU, Makuhari, Chiba, Japan
- 2024, Invited keynote, Recommended Novel Technology for Taiwan Net-Zero towards 2050, Net Zero City Expo, Nankang, Taipei, Taiwan.
- 2024, Invited Talk, The priority assessment for Net-Zero Technology in Taiwan, The Forum for Net-Zero Transition: Opportunities and Challenges, City Net-Zero Exposition, Taipei
- 2024, Invited Keynote, New Mission of Humankind—Using Clean Energy to Reverse the Worsening Situation Caused by Global Warming, Public Speech of Open-house Day of Academia Sinica