



International Lithosphere Program

• Activity Report 2021 – Task Forces

Project Title: Lithosphere structure and mineral resources
Project No.: 1
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1. Highlights of recent ILP Task Force work/results

The activities of 2021 were hampered by COVID-19.

TF leader I. Artemieva had an invited presentation by at the European Geosciences Union virtual meeting EGU-2021 (April 2021) in connection with her EGU Augustus Love Medal of 2021.

TF leader S. Dong, together with O. Petrov (VSEGEI, Russia) published a 260 page long volume with Springer on “Tectonics of Asia”, which is one the key target geodynamic provinces hosting large mineral resources.

In 2021, TF had a dedicated session (see #2), where invited and keynote lectures presented the overview of the state-of-the art research of various problems related to the links between the lithosphere dynamics and magmatic ore deposits. The TF session was highly interdisciplinary with a broad representation of various geophysical and geochemical approaches, and many presentations emphasized the necessity to combine various datasets in integrated interpretations. Short presentations and posters covered a broad range of topics related to formation and identification of magmatic ore deposits. Geographically, they focused on the Neo-Tethys belt of Turkey and Iran, Eastern and South China, South Africa, Central Mongolia, and the Baltic Shield. Methodologically, they includes studies based on thermo-barometry and geochemistry, gravity and magnetic inversion, thermal and numerical modeling, seismic reflection, seismic tomography, and seismic receiver functions.

2. Presence at international meetings/workshops (this year)

Because of COVID-19, it was not practically possible to have a session at international meetings of 2021. Dedicated TF workshops were not possible for the same reason. TF meeting workshop at the International Geological Congress (India, March 2020, then moved to 2021) could not happen because IGC was cancelled.

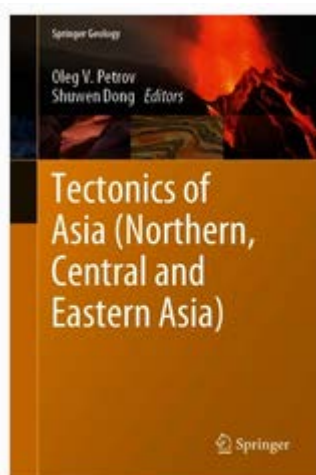
Among successful activities the most important was:

A dedicated session “Lithosphere structure and its control on mineral system (Jointly sponsored by ILP TF 1 ‘Lithosphere structure and mineral resources’)” at the international virtual conference DEEP-2021 (Beijing, China, November 2021).

The session included 3 oral blocks with 1 invited lecture, 2 keynote lectures, 17 oral presentations and 20 posters. The number of on-line participants was around 100, which provided a very good exposure of the TF activities to a broad community.

3. Important publications of ILP Task Force members (max. five)

Author1, Initial1; Author2, Initial2; etc., “Title”, Journal, Vol./No., Pages, DOI, Year.



Petrov OV, Dong S, “Tectonics of Asia (Northern, Central and Eastern Asia)”, Springer, 262 pp., ISBN: 978-3-030-62001-1, 2021.

Buntin S, Artemieva IM, Malehmir A, Thybo H, et al. “Long-lived Paleoproterozoic eclogitic lower crust”, Nature Communications, 12, Article number: 6553, doi: 10.1038/s41467-021-26878-5, 2021.

Guangming F, Lü Q, Yan J, Farquharson CG, et al.,. “3D mineral prospectivity modeling based on machine learning: A case study of the Zhuxi tungsten deposit in northeastern Jiangxi Province, South China”. Ore Geology Reviews: 104010, doi: 10.1016/j.oregeorev.2021.104010, 2021.

Chen X, Dong S, Shi W, Zusa AV, et al., 2021. ”Magnetostratigraphic ages of the Cenozoic Weihe and Shanxi Grabens in North China and their tectonic implications”. Tectonophysics 813, 228914, doi: 10.1016/j.tecto.2021.228914, 2021.

Reis NJ, Teixeira W, D'Agrella-Filho MS, Bettencourt JS, Ernst RE, et al., “Large igneous provinces of the Amazonian Craton and their metallogenic potential in Proterozoic times”, Geological Society, London, Special Publications 518, doi: 10.1144/SP518-2021-7, 2021.

4. New contacts (this year)

TF's development was hampered by COVID-19; TF is establishing new contacts, also with other TFs.

Prof. Qingtian LÜ (SinoProbe Center, China), Dr. Michael Dentith (University of Western Australia, Australia) and Dr. Yaoguo Li (Colorado School of Mines, USA) have joined TF as conveners of the TF's session at DEEP-21 meeting (Beijing, China, November 2021). Prof. Qingtian LÜ and Prof. Lijun Liu gave keynote invited lectures at the TF's session at DEEP-21 meeting

Dr. Graham Begg (Australia) has joined TF as a convener of the TF's session at EGU-2022.

TF leader I. Artemieva was elected as an incoming President of the European Geosciences Union Council for 2023-2025, and as EGU Vice-President for 2022, 2026. These prestigious posts provide opportunities for extending international professional network and therefore are important for the TF's partnership.

5. Usage of ILP funding (this year)

NONE.

TF1 has not used any money at all since its initiation in summer 2019.

6. Activities planned for 2022

- TF dedicated session at the European Geosciences Union hybrid meeting EGU-2022 (May, Vienna).
- TF participation in the TARGET conference ("Targeting for a New Era of Discovery") associated with 6th International Archean Symposium (Perth, Australia) which is planned for July 2022.