



Activity Report 2024 – Task Forces / Coordination Committees

Project Title: **Lithospheric Heat Flow – Global Data Assessment Project**

Project No.: **2021-TF8**

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1. Highlights of recent ILP Task Force work/results

The Global Heat Flow Data Assessment Project, guided and supervised by ILP TF VIII, is designed to provide a quality-controlled, authenticated global database of heat-flow values and other thermal data. This project supports the International Heat Flow Commission (IHFC) and started in May 2021.

- The project was kicked off with 65 collaborators in May 2021 and increased to 125+ by end of 2024.
- **24hrs 3rd Global Heat Flow Day held – 22/02/2024**
 - The 3rd Global Heat Flow Day was designed as an outreach initiative by ILP TF VIII and IHFC to teach/support the global heat-flow community on how to work with the new GHFD structure and how to update legacy-heat flow data into the new structure. ILP TF VIII and IHFC volunteers led a non-stop series of twelve 2-hour online video meeting sessions over the 24-hour period of UTC 22 February 2024. 48 participants joined the sessions over the day. The ILP TF VIII is planning a fourth 24hr Global Heat Flow Day in 2025.
- **Heat-flow Spring 2024 – April 2024**
 - The heat flow spring 2024 was co-organized by the ILP TF VIII to provide different formats of community interaction during the EGU General Assembly in Vienna, Austria. The Heat Flow Spring included three splinter sessions:
 - April 17th, 2024: stakeholder splinter meeting on the new research data infrastructure for global heat flow data of the World Heat Flow Database project.
 - April 18th, 2024: joint splinter meeting of our Task Force VIII for the annual business meeting and to initiate discussion with other TF.
 - April 19th – 21st, 2024: standardization workshop on the development of heat flow as essential ocean variable.
 - The splinter meetings were attended in-person by 26 participants from 12 countries around the world.
- **Heat-flow fellowships extended**
 - In 2024, the fellowships were continued and hosted in Paris and Potsdam.
 - Fellowship applications of the 4th and 5th round were from Algeria, Cameroon, China, Djibouti, Egypt, India, Mexico, Nigeria, Turkey, USA
 - The fellows from Algeria, China, Colombia, and India spent a total of 14 months under the guidance of the ILP TF.
- **2024 release of GHFD**
 - We have released the 2024 version of the Global Heat Flow Database and substantially increased the amount of QC heat flow data.

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

Balkan-Pazvantoğlu, E., Neumann, F., Norden, B., **Fuchs, S.** (2024): Assessment of the Türkiye Heat Flow Database 2023 - Abstracts, EGU General Assembly 2024 (Vienna, Austria and Online 2024).

<https://doi.org/10.5194/egusphere-egu24-16175>

Fuchs, S., Norden, B., Neumann, F., Balkan-Pazvantoğlu, E., Elbarbary, S., Petrunin, A. G., Global Heat Flow Data Assessment Group (2024): Quality makes a difference: a preliminary update of the

global continental heat flow dataset - Abstracts, EGU General Assembly 2024 (Vienna, Austria and Online 2024). <https://doi.org/10.5194/egusphere-egu24-15177>

Jennings, S., Elger, K., Fuchs, S., Neumann, F., Norden, B., Frenzel, S., Maes, S., Ott, N. (2024): Geoluminate: A community-centric framework for the creation, deployment and ongoing development of decentralized geoscience data portals - Abstracts, EGU General Assembly 2024 (Vienna, Austria and Online 2024). <https://doi.org/10.5194/egusphere-egu24-19849>

Neumann, F., Fuchs, S., Norden, B., Balkan-Pazvantoğlu, E., Petrunin, A. G., Elbarbary, S., Jennings, S., Elger, K., Frenzel, S., Ott, N., Maes, S., Global Heat Flow Data Assessment Group (2024): The heat flow data assessment project: Transformation of the global heat flow database - Abstracts, EGU General Assembly 2024 (Vienna, Austria). <https://doi.org/10.5194/egusphere-egu24-16952>

Ford, J., Ferraccioli, F., Mather B., Armadillo E., Forsberg R., Ebbing J., Gohl K., Eagles G., Green C., Fulla J., and Verdoya M. (2024) New aeromagnetic anomaly compilations help unveil regional-scale Antarctic subglacial geothermal flux heterogeneity. Abstracts, EGU General Assembly 2024 (Vienna, Austria). <https://doi.org/10.5194/egusphere-egu24-19549>

Ford, J., Ferraccioli, F., Mather B., Armadillo E., Forsberg R., Ebbing J., Gohl K., Eagles G., Green C., Latorraca P., Fulla J., and Verdoya M. (2024). Heat flux heterogeneity unveiled beneath Antarctic subglacial lake districts. Abstracts, AGU, Washington D.C. 9-13 Dec. 2024.

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

Verdoya, M., Beardsmore, G., Harris, R. (2024): Advances in heat flow studies and thermal structure of the lithosphere. Special Issue of Tectonophysics, 878, 230316, ISSN 0040-1951. <https://doi.org/10.1016/j.tecto.2024.230316>.

Global Heat Flow Data Assessment Group et al. (2024): The Global Heat Flow Database: Release 2024. GFZ Data Services. <https://doi.org/10.5880/figdgeo.2024.014>

Zhu, W.J., Liu, S.W., 2024. Heat flow and thermal structure of the South China Sea. Earth-Science Reviews, 261, 105028, doi:10.1016/j.earscirev.2024.105028

Wang, Y.B., Liu, S.W., Chen, C.Q., et al. 2024. Compilation of terrestrial heat flow in continental China (5th edition), Chinese Journal of Geophysics (in Chinese), 67(11):4233-4265, doi: 10.6038/cjg2024S0284.

4. New contacts (this year)

Further six colleagues joined as collaborators of our Global Data Assessment Project:

- Xiaoxue Jiang, China
- Dr. Abdelkader Ait Quali, Algeria
- Ayan Dutta, India
- Chuanqing Zhu, China
- Saman Firdaus Chishti, India
- Andres Ruzo, Chile

5. Usage of ILP funding (this year)

Beardsmore, Verdoya and Juan Contreras received ILP TF support for travel expenses around the summer school. Florian Neumann visited and screened the archives from LDEO in NY, USA. We saved some money for 2025 in order to support travel to Lisbon (IASPEI/ILP) meeting.

6. Activities planned for 2025

1) A 4th edition of the 24hrs Global Heat Flow Day – 25/02/2025

The 24-hrs Global Heat Flow Day is a one-day outreach initiative by ILP TF VIII and IHFC to teach/support the global heat flow community on transforming legacy heat flow data into the new structure considering the new quality standards.

2) Symposia at EGU and IASPEI/IAGA

The ILP TF VIII and the IHFC are setting up a session (EGU General Assembly 2025) and a symposia (IASPEI-IAGA Joint Assembly 2025), with heat flow related topics. The task force will also present in the ILP related symposia.

- 3) Securing the LDEO archive of marine heat flow data**
We plan to visit the LDEO archives to digitize the Abbott archive from LDEO.
- 4) Completion and submission of EOVS spec sheets**
We plan to submit spec sheets to establish heat flow as essential ocean variable.
- 5) Heat flow fellowships**
The sixth and the seventh fellowship round are planned for March and September 2025.