

Compiling Analysis-ready Ice Data Across Cryosphere Disciplines

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ISSI Team

Bridging the Gap: From Terrestrial to Icy Moons Cryospheres



Background on the ISSI Team:

Ice is omnipresent in our Solar System: on Earth, on different planetary bodies, and on the icy moons in the outer Solar System. Terrestrial and extraterrestrial cryosphere science are, however, mostly developed as independent research fields whereas synergies may shed light on both fields.

- The **International Space Science Institute (ISSI)** Team ‘Bridging the gap: from terrestrial to icy moons cryospheres’ started in 2023 and brings together scientists with different focus in terrestrial and extra-terrestrial cryosphere research.
- Our objective is to **investigate and identify similarities and differences across ice regimes on Earth and beyond**, to support the design of planetary exploration missions that target icy environments.
- Comparative cryosphere research will in the future enable us to **orchestrate terrestrial analogue field tests, lab experiments, and simulation studies** to approximate hypothesized ice regimes at the target bodies better.

As a central activity, we aim for compiling cross-community data sources on

- **ice properties, e.g., physical, chemical, thermodynamic, and mechanical properties across regimes, and**
- **terrestrial analogue sites, e.g. location, ice regimes and field test activity that facilitate comparative cryosphere research.**

Community Data Crowd Sourcing

Challenge: Ice data sources are distributed across data repositories used in different communities, dedicated **material databases**, journal **articles** and their **supplements**, and **field test reports**. Data sources are not readily accessible. Meta-data is not consistent, or even missing!

Idea: Tackle this challenge in a two step approach!

Step 1: Community Data Crowd Sourcing

A community effort is launched to collect a raw, living list of ice property data sources across publication formats distributed in our research networks. In order to activate the community we built this effort on three fundamental paradigms:

- A) The survey has to be **easily accessible**, and allow to contribute in **minimal time**
- B) Results of the survey have to be **instantaneously accessible** by anybody
- C) **Data authors as well as community contributors** are acknowledged (if wanted)

Step 2: Data Curation and Meta Data Enrichment

Quality-checking, curating and harmonizing the list of provided data sources is done at two levels:

- A) Quality checks, e.g. identification of **data source redundancies**, are conducted directly, flagged, and taken care of by the administrators of the survey.
- B) **Data curation into a high-quality, metadata enriched data set** is done subsequently by our team. Outcomes will be published.

Remark:

While the data curation and subsequent publication are ongoing activities of the ISSI team, the raw data source collection is accessible to anybody, and can be used as long as the project is properly acknowledged and cited.

Ice Material Property Survey

Minimal contribution requires you to just enter a url / doi:

Reference to the ice data source *

>> please provide a **doi** as a link or **url** under which the data can be found and accessed

Additional voluntary information gives context and allows instantaneous filtering:

- Publication year & authors
- Contributor and relation to data source
- Contact
- Type of data acquisition
- Type of ice
- Material property included in data source
- Scope of validity of data set
- Data type and data format

Provide your data source and benefit from others contributions 😊!



Ice Property Survey

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