

Kristian Chan

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EDUCATION

Ph.D., Geological Sciences (Polar & Planetary Geophysics), University of Texas at Austin, expected 2024

Dissertation: “A framework for characterizing the near-surface structure of Europa with dual-frequency/bandwidth radar reflectometry”

M.S., Aerospace Engineering, University of Texas at Austin, 2018

B.S., Civil Engineering, Mechanical Engineering (minor), Cornell University, 2013

Exchange student, University of Cantabria (Spain), 2011 to 2012

PUBLICATIONS

Submitted

1. Becker, T. M. et al. (inc. **Chan, K.**). Exploring the composition of Europa with the upcoming Europa Clipper mission. *Space Science Reviews*.
2. Blankenship, D. D. et al. (inc. **Chan, K.**). Radar for Europa Assessment and Sounding: Ocean to Near-surface (REASON). *Space Science Reviews*.
3. Daubar, I. J. et al. (inc. **Chan, K.**). (in press). Planned geological investigations of the Europa Clipper mission. *Space Science Reviews*.
4. Ju, H. T., Han, H. S., Beem, L. H., Ng, G., **Chan, K.**, Lee, J. H., Lee, J. I., Kim, Y. D., & Pyun, S. J. Airborne ice penetrating radar mapping of D2 subglacial lake in David Glacier, Antarctica. *JGR Earth Surface*.
5. Phillips, C. B. et al. (inc. **Chan, K.**). A reconnaissance strategy for landing on Europa, based on Europa Clipper data. *The Planetary Science Journal*.

Published

1. **Chan, K.**, Grima, C., Rutishauser, A., Young, D. A., Culberg, R., & Blankenship, D. D. (2023). Spatial characterization of near-surface structure and meltwater runoff conditions across the Devon Ice Cap from dual-frequency radar reflectivity. *The Cryosphere*, 17(5), 1839-1852.
2. **Chan, K.** (2022). Mapping ice in firn with airborne ice-penetrating radar. *Nature Reviews Earth & Environment*, 3(5), 291-291.
3. Steinbruegge, G. et al. (inc. **Chan, K.**). (2021). PRIME—a passive radar sounding concept for Io. *Bulletin of the American Astronomical Society*, 53(4), 271.
4. Brouet, Y., Neves, L., Sabouroux, P., Cerubini, R., Becerra, P., Grima, C., **Chan, K.**, Antoine Pommerol, A., & Thomas, N. (2018). Dielectric spectroscopy measurements of saline aqueous solutions in the VHF-UHF bands: Toward a dielectric model of icy satellite water reservoirs. 5th IEEE International Workshop on Metrology for AeroSpace (MetroAeroSpace), 145-149.

PRESENTATIONS

1. **Chan, K.**, Grima, C., Gerekos, C. Moore, J. M., & Blankenship, D. D. (2023). Near-surface layer characterization of icy moons: a multi-bandwidth radar reflectometry approach. AGU Fall Meeting 2023, San Francisco, California, USA.
2. Blankenship, D. D. et al. (inc. **Chan, K.**). (2023). Radar for Europa Assessment and Sounding: Ocean to Near-surface (REASON). AGU Fall Meeting 2023, San Francisco, California, USA.

3. **[Invited] Chan, K.** (2023). Near-surface structure characterization across the Devon Ice Cap from dual-frequency radar reflectivity. Europa Clipper Geology Working Group, virtual.
4. Blankenship, D. D., Moussessian, A., Young, D. A., **Chan, K.**, Wolfenbarger, N., & Steinbrügge, G. (2023). REASON at Europa “and Beyond”. Juno Open Team Meeting Workshop Galilean Satellite and Radiation Environment, San Antonio, Texas, USA.
5. Grima, C., **Chan, K.**, Blankenship, D., & Bruzzone, L. (2023). Synergistic science at the Jovian icy moons with RIME and REASON. AAS Division for Planetary Science 55th Annual Meeting, San Antonio, Texas, USA.
6. Leonard, E., Belgacem, I., **Chan, K.**, Green, A., Mamo, B., Meyer, H., Mishra, I., Park, N., Psarakis, C., Spiers, E., Styczinski, M., Trinh, K., Velez, M., & Wolfenbarger, N. (2023). Europa Clipper Sunrise. AAS Division for Planetary Science 55th Annual Meeting, San Antonio, Texas, USA.
7. **Chan, K.** (2023). Spatial characterization of near-surface structure and meltwater runoff conditions across the Devon Ice Cap from dual-frequency radar reflectivity: implications for REASON at Europa. Europa Clipper Sunrise, virtual.
8. **[Invited]** Blankenship, D. D., Moussessian, A., Young, D. A., & **Chan, K.** (2023). REASON at Europa and beyond. RIME Science Team Meeting, Trento, Italy. [*given by Chan., K*]
9. Blankenship, D. D., Young, D. A., **Chan, K.**, Wolfenbarger, N. S., Gerekos, C., & Steinbrügge, G. B. (2023). Exploring Europa, Jupiter’s ocean world: A view from Earth. EGU General Assembly 2023, Vienna, Austria.
10. **Chan, K.**, Grima, C., Gerekos, C., & Blankenship, D. D. (2023). RIME-REASON synergistic opportunities for surface and near-surface investigations of icy moons. EGU General Assembly 2023, Vienna, Austria.
11. **Chan, K.**, Grima, C., Moore, J. M., & Blankenship, D. D. (2023). Multi-frequency/bandwidth reflectometry of Ganymede's near-surface. RIME Science Team Meeting, Trento, Italy.
12. Kerr, M., Young, D.A., Richter, T., Blankenship, D. D., Buhl, D., **Chan, K.**, Greenbaum, J., Kaundinya, S., Kempf, S., Liu-Schiaffini, M., Ng, G., Paden, J., & Yan, S. (2023). COLDEX geophysical mapping of the southern flank of Dome A, Antarctica. US Ice Core Open Science Meeting, Seattle, Washington, USA.
13. Kerr, M., Young, D.A., Richter, T., Blankenship, D. D., Buhl, D., **Chan, K.**, Greenbaum, J., Kaundinya, S., Kempf, S., Liu-Schiaffini, M., Ng, G., Paden, J., & Yan, S. (2023). Geophysical mapping of the southern flank of Dome A, Antarctica: Initial results from the inaugural COLDEX airborne survey. International Union of Geodesy and Geophysics General Assembly 2023, Berlin, Germany.
14. Kerr, M., Young, D.A., Richter, T., Blankenship, D. D., Buhl, D., **Chan, K.**, Greenbaum, J., Kaundinya, S., Kempf, S., Liu-Schiaffini, M., Ng, G., Paden, J., & Yan, S. (2023). Geophysical mapping of the southern flank of Dome A, Antarctica: Initial results from the inaugural COLDEX airborne survey. Instabilities and Thresholds in Antarctica (INSTANT) Scientific Committee on Antarctic Research, Trieste, Italy.
15. **Chan, K.**, Grima, C., Moore, J. M., & Blankenship, D. D. (2022). Multi-frequency radar characterization of Ganymede's near-surface. Europlanet Science Congress 2022, Granada, Spain.
16. **[Invited] Chan, K.**, Grima, C., Rutishauser, A., Young, D. A., Culberg, R., & Blankenship, D. D. (2022). Ice layer detection, distribution, and thickness in the near-surface firn on Devon Ice Cap: a new dual-frequency radar characterization approach. Technical University of Denmark, Copenhagen, Denmark.

17. **Chan, K.**, Grima, C., Rutishauser, A., Young, D. A., Culberg, R., & Blankenship, D. D. (2022). Ice layer detection, distribution, and thickness in the near-surface firn on Devon Ice Cap: a new dual-frequency radar characterization approach. EGU General Assembly 2022, Vienna, Austria.
18. Young, D. A., Blankenship, D. D., Wolfenbarger, N. S., Soderlund, K. M., Grima, C., **Chan, K.**, Richter, T. G., & the REASON Science Team. (2020). An ensemble of point models approach for science verification and validation for Europa Clipper's REASON (Radar for Europa Assessment and Sounding: Ocean to Near-Surface) investigation. Lunar and Planetary Science Conference 2020, The Woodlands, Texas, USA.
19. **Chan, K.**, Rutishauser, A., Grima, C., & Blankenship, D. D. (2019). Detection of near-surface frozen brines at Europa: Radar investigation of a Canadian Arctic analog. AGU Fall Meeting 2019, San Francisco, California, USA.
20. Christian, S., Liu-Schiaffini, M., Rutishauser, A., **Chan, K.**, Grima, C., & Blankenship, D. D. (2019). Investigating ice surface elevations derived from laser and radar-sounding measurements over Devon Ice Cap, Canadian Arctic. AGU Fall Meeting 2019, San Francisco, California, USA.
21. Ju, H. T., Lee, J., Beem, L., Ng, G., **Chan, K.**, Lee, J. I., & Blankenship, D. D. (2019). Observation of the subglacial lake in the David Glacier area in Victoria Land. 13th International Symposium on Antarctic Earth Sciences, Incheon, South Korea.
22. **Chan, K.**, Grima, C., Blankenship, D. D., Soderlund, K. M., & Young, D. A. (2018). Dielectric brine-ice mixtures on Europa, and the need for new experiments. Europa Deep Dive 2: Composition, Houston, Texas, USA.
23. **Chan, K.**, Grima, C., Blankenship, D. D., Young, D. A., & Soderlund, K. M. (2017). Mobilization of near-surface brine on Europa. Europa Deep Dive 1: Ice-Shell Exchange Processes, Houston, Texas, USA.

TECHNICAL REPORTS

1. Young D. A., Wolfenbarger, N. S., Richter, T. G., Grima, C., Scanlan, K. M., Steinbruegge, G., **Chan, K.**, Soderlund, K. M., & Blankenship, D. D. (2022). REASON measurement quality requirement verification and validation: A nadir link budget approach using 1D point models of Europa for radar sounding, reflectometry, and altimetry (IOM-REASON-2019-001). Jet Propulsion Laboratory Interoffice Memorandum.
2. Young D. A., Wolfenbarger, N. S., Scanlan, K. M., Steinbruegge, G., **Chan, K.**, Gerekos, C., & Blankenship, D. D. (2022). Model physics for REASON verification and validation of measurement quality requirements for sounding, reflectometry, and altimetry (IOM-REASON-2022-002). Jet Propulsion Laboratory Interoffice Memorandum.

AWARDS

European Geosciences Union Outstanding Student and PhD Candidate Presentation Award (2023)
 University of Texas Institute for Geophysics Graduate Student Fellowship (2023)
 University of Texas Institute for Geophysics Outstanding Graduate Student Award (2023)
 University of Texas at Austin Center for Planetary Systems Habitability Travel Award (2023)
 NASA Texas Space Grant Consortium Fellowship (2020)
 International Glaciological Society Travel Award (2019)
 Europa Deep Dive 1: Ice-Shell Exchange Processes Travel Award (2017)

PRESS RELEASES

Texas student's work travels to Jupiter, helps track climate change on Earth, KXAN, NBC (2023)
 New radar technique lets scientists probe invisible ice sheet region on Earth and Icy Worlds, JSG/UTIG, (2023)

SERVICE & OUTREACH ACTIVITIES

Mentor, NASA Here to Observe (H2O) Program for the Europa Clipper mission (2021 to 2022; 2023 to 2024)
 Co-convener, Building a Cross-Disciplinary Understanding of Ocean Worlds Habitability at the Dawn of the Europa Clipper Mission, AbSciCon (2024)

Co-convenor, Juno's Multi-instrument View of Europa, Ganymede, and Io, AGU Fall Meeting (2023)
Volunteer, education and outreach event, Europa Clipper Science Team Meeting, San Juan, Puerto Rico (2023)
Panelist, undergraduate research traineeship experience, Jackson School of Geosciences, University of Texas at Austin (2023)
Coordinator, research associate candidate hires student meetings, University of Texas Institute for Geophysics (2022)
Panelist, geology for kindergarten to 5th grade students, Acton Elementary School (2022)
Geoscience Ambassador, Jackson School of Geosciences, University of Texas at Austin (2021 to 2022)
Mentor, Miguel Liu-Schiaffini and Sam Christian, Surface elevations on Devon Ice Cap from laser and radar measurements, University of Texas Institute for Geophysics (2019)

FIELD EXPERIENCE

Field Assistant for airborne geophysical surveys supporting base operations, flight planning, logistics, and preliminary data quality control and analysis

- McMurdo Station, Antarctica, November 2022 to December 2022
- Jang Bogo Station, Antarctica, November 2018 to December 2018

WORK EXPERIENCE

University of Texas Institute for Geophysics

- Graduate Research Assistant, Austin, TX, June 2017 to Present
Support science requirements verification and validation as well as Phase E costing activities for the REASON instrument, as a graduate student affiliate of the Europa Clipper Science Team

Dragados USA

- Civil Engineer II/Project Engineer, Minford, OH, May 2015 to July 2016
Coordinated the design and construction of structures for the Portsmouth Bypass Project (\$429 million) to ensure compliance with contract documents
- Civil Engineer I, New York, NY, January 2014 to April 2015
Prepared technical proposals and bids for heavy civil construction contracts
- Intern, Barcelona, Spain, July 2012
Provided groundwater monitoring and support for the construction of the L9/L10 Barcelona Metro